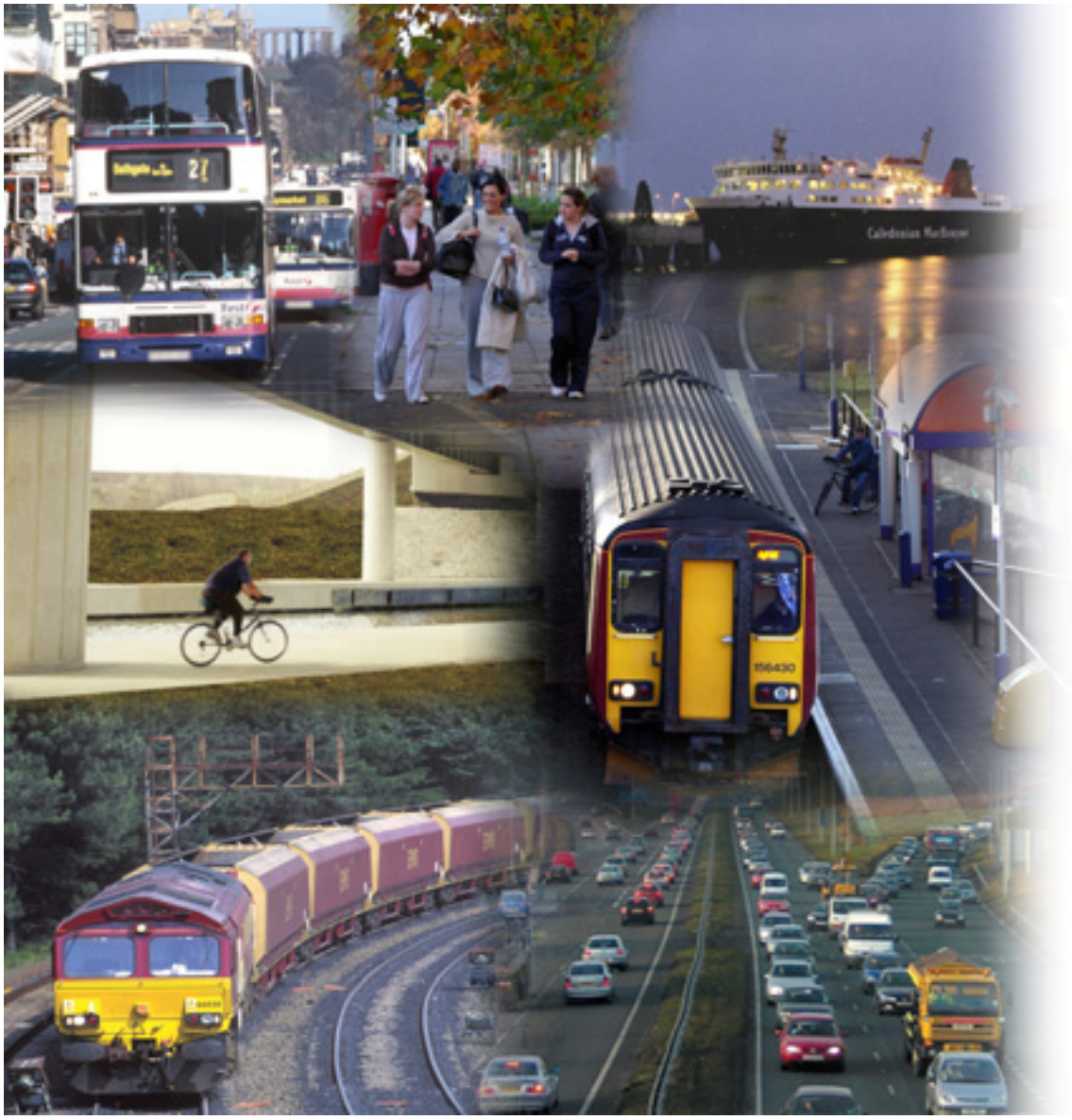
Strategic Transport Projects Review
Report 3:
Generation, Sifting and Appraisal of Interventions

October 2008



Report 3

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Authorisation

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1 Introduction

1.1 Background

The Strategic Transport Projects Review (STPR) will make recommendations on a portfolio of land-based transport investments to be delivered between 2012 and 2022 that will most effectively contribute towards the Government's overall Purpose to create a more successful country, with opportunities for all of Scotland to flourish through increasing sustainable economic growth. This Purpose will be achieved through delivery of the three Key Strategic Outcomes identified in the National Transport Strategy:

- Improving journey times and connections;
- Reducing emissions; and
- Improving quality, accessibility and affordability.

The output from the STPR will be focused specifically on strategic land-based interventions that require delivery or significant support from national government. To understand how the totality of transport interventions will contribute to the Government's overall Purpose and the three Key Strategic Outcomes of the National Transport Strategy, consideration must also be given to the range of complementary transport interventions that may be brought forward by national, regional and local transport authorities.

For the purposes of the STPR, the National Strategic Transport Network has been defined as illustrated in Figure 1. The key elements of the network have been identified as:

- **Urban Networks** – the nationally significant parts of the transport network within the four largest cities of Aberdeen, Dundee, Edinburgh and Glasgow, aligning with the City Regions identified within the Cities Review and the National Planning Framework;
- **Strategic Nodes** – due to their location, Perth and Inverness act as strategically significant nodes on the national transport network; and
- **Corridors** – areas containing the transport network connecting the four largest cities and strategic nodes to each other, to the national boundaries, or to the peripheral and rural communities.

Two significant areas for transport investment have been brought forward ahead of the full review – the Forth Replacement Crossing[1] and a report on rail improvements between Edinburgh and Glasgow[2]. In both cases, the economic and political priority given to such investment is clear, and advancing the feasibility work allows the benefits from the ultimate investment to be secured more quickly. Work undertaken as part of these reviews to identify and appraise interventions is not reported in this document.

[1] http://www.transportscotland.gov.uk/projects/forth-replacement-crossing
[2] http://www.transportscotland.gov.uk/files/documents/projects/StrategicProjectsReviewEtc/Ed-gla-rail-improvements-summary.pdf

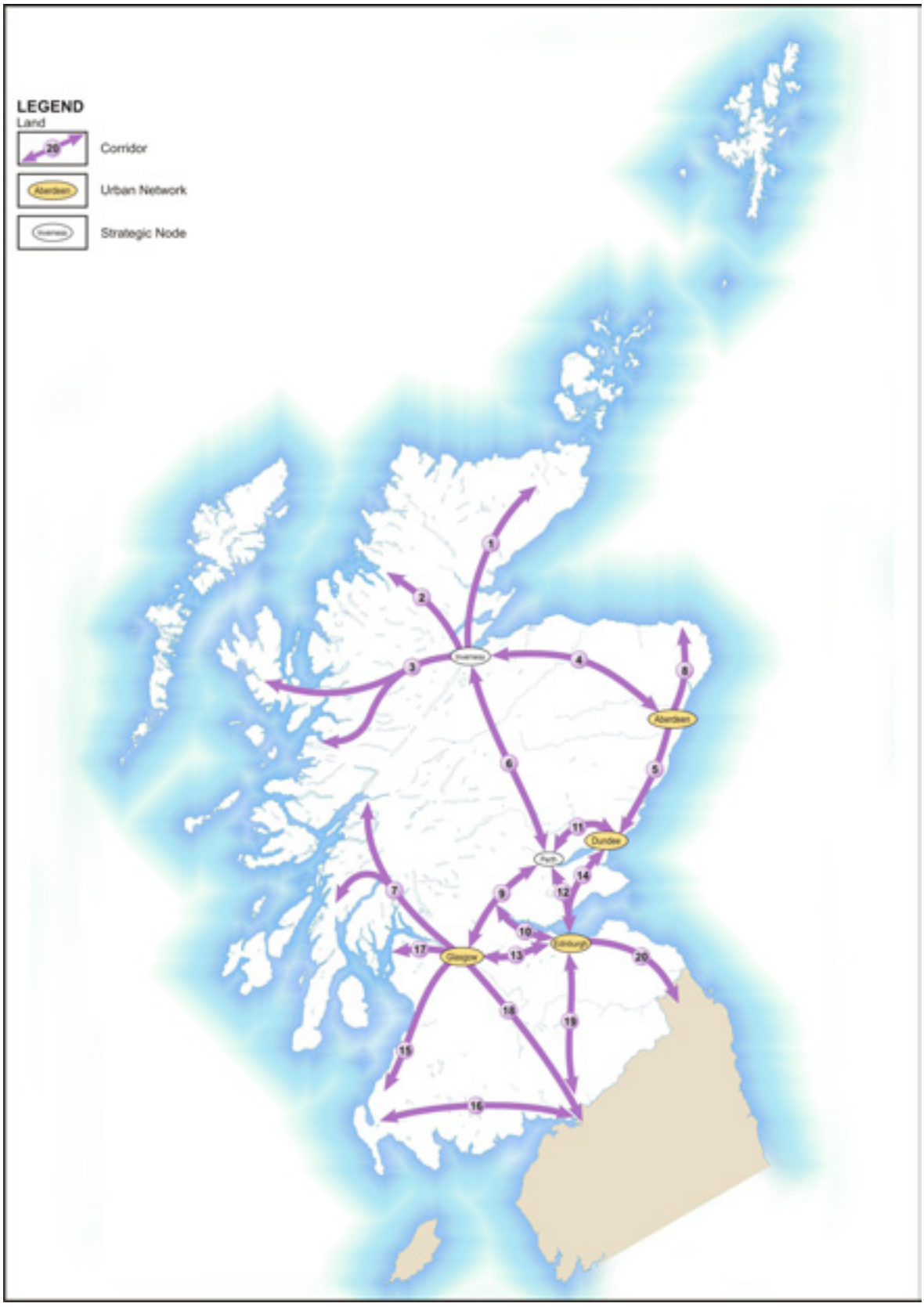

Figure 1 – National Strategic Transport Network

This is the third in a series of reports produced as part of the STPR. Report 1 presented details of the existing and future performance of the strategic transport network. Report 2 detailed the policy expectations and national objectives that provide the framework for determining both the future required performance of the strategic network and the specific objectives that will deliver these elements of the national transport strategy.

1.2 Purpose of this Report

This report presents the output from two of the STPR work packages: SWP5, covering the generation and sifting of interventions; and SWP6, covering the appraisal of those interventions that were considered to merit further appraisal.

1.3 Summary of Approach

SWP5 took the objectives presented in Report 2, and proposed a wide range of interventions to meet these objectives. Initial development of interventions was undertaken through internal workshops involving members of the Consultant's team and the Scottish Government with knowledge and experience in a variety of transport fields. This approach brought a broad spectrum of experience, expertise and views to the intervention development process. In addition, a review of existing proposals was undertaken, largely by desk research and dialogue with Regional Transport Partnerships and the other STPR Reference Groups. A sifting process was then conducted to ensure that the interventions being taken forward are: within the scope of the STPR; contribute significantly to the objectives set; and are deliverable.

The purpose of SWP6 was to appraise the interventions which had the potential to make a significant contribution towards the STPR objectives and the Government's central Purpose of achieving sustainable economic growth. The appraisal used the methodologies and criteria in the Scottish Transport Appraisal Guidance (STAG) which are designed to measure the deliverability and feasibility of proposed interventions in the context of the policy, economic and transport objectives which they seek to address.

This report describes the findings of the option generation, sifting and appraisal process, and presents details of the interventions to be retained following the appraisal process.

1.4 Report Structure

Chapter 2 of the report describes the **generation and sifting process**, covering the approach, sifting criteria, sources of the interventions and output from the process.

Chapter 3 provides details of the **initial appraisal process**, which particularly addressed multiple, mutually exclusive interventions which contribute to the same objectives. This allowed those interventions which contribute to each objective most effectively to be taken forward for detailed appraisal. A summary of each initial appraisal is given, together with the rationale for each conclusion reached.

Chapter 4 then outlines the **detailed appraisal process** and again highlights those interventions that have been retained following the initial appraisal.

2 Option Generation, Development and Sifting Process

2.1 Approach

This Chapter describes the method used for generating intervention packages for consideration in the appraisal process of the STPR. This follows on from the identification of constraints and opportunities presented in Report 1 and the setting of expectations and objectives shown in Report 2.

The methodology for generating, developing and sifting proposed intervention packages is shown in Figure 2. The generation and sifting process was informed by:

- The Government's central Purpose of increasing sustainable economic growth;
- Key Strategic Outcomes of the National Transport Strategy, and the network investment hierarchy;
- Constraints and opportunities across Scotland's transport network highlighted in Report 1;
- National objectives and specific objectives for urban networks, Strategic nodes and corridors, as listed in Report 2; and
- Aspirations and proposals of key stakeholders.

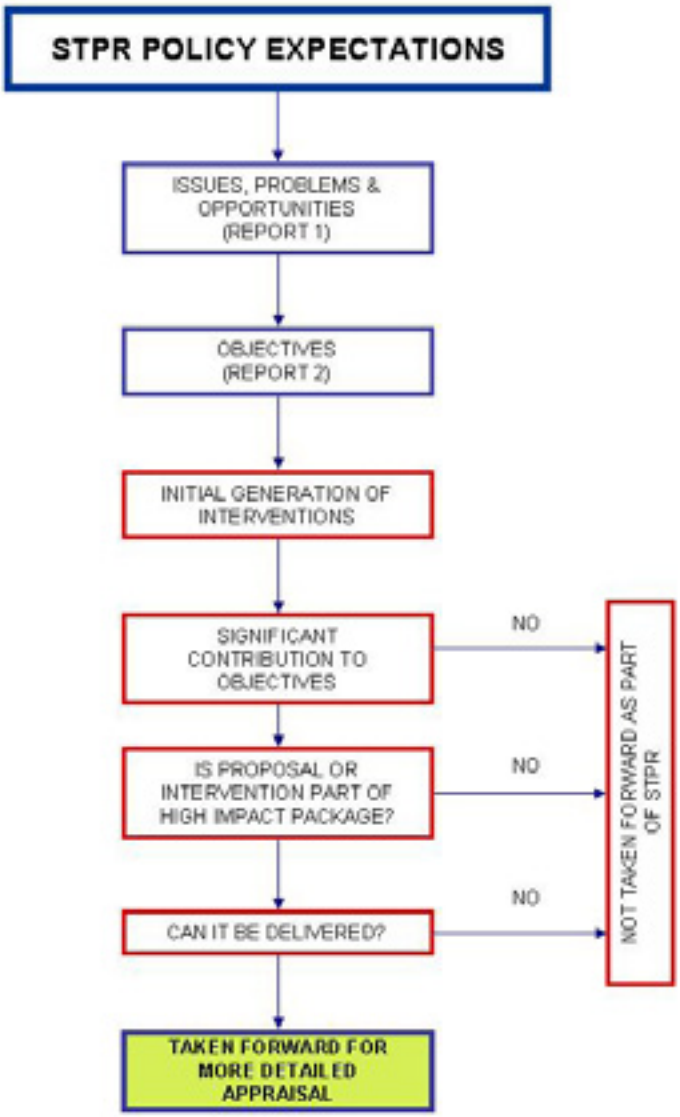

Figure 2 Approach to Intervention Generation and Development

2.2 Initial Generation of Interventions

Interventions were developed in progressive stages, with a series of iterative refinements to improve their focus and effectiveness. Further recognition of the investment hierarchy was considered when identifying appropriate levels of interventions. The hierarchy is:

- Firstly, **maintain and safely operate** existing assets;
- Secondly, promote a range of measures, including innovative solutions, to **make better use of existing capacity** (interventions may include technology based, fiscal and 'soft measures' in addition to engineering solutions); and
- Thirdly, promote **targeted infrastructure improvements**.

The STPR will therefore not bring forward recommendations for infrastructure improvements without first considering the requirement for, and effectiveness of, interventions in the first two categories.

Initial development of interventions was undertaken through internal workshops involving members of the Consultant's team and the Scottish Government with knowledge and experience in a variety of transport fields. This approach brought a wide range of experience, expertise and views to the intervention development process. All members of the workshops were familiar with the issues, constraints and opportunities detailed in Report 1, together with the objectives detailed in Report 2.

Interventions were initially developed with a focus on addressing the specific issues within the urban networks, strategic nodes and corridors. Further development work was then undertaken to address, where possible, national and cross corridor issues to identify appropriate interventions.

2.3 Existing Proposals

It is important to take due cognisance of the views of stakeholders when developing the potential options to be taken forward within the STPR. Consequently, a review of existing proposals was undertaken, largely by desk research and dialogue with Regional Transport Partnerships and the other STPR Reference Groups. This identified proposals that may address particular stakeholder objectives but did not necessarily match those of the STPR. Some stakeholder-generated proposals were considered for the STPR providing they were within the context of Government policy and the STPR objectives. Those which were within context and scope were taken forward to the subsequent development of intervention packages. Those considered not being in context or scope are listed in Appendix B.

2.4 Development of Intervention Packages

A key principle of the STPR is that interventions should make a significant contribution to the objectives defined in Report 2. Emerging interventions were assessed against these criteria. Those which did not meet the criteria were considered for packaging together with other complementary interventions. Those which were not packaged in this manner were not taken forward for further appraisal and are listed in Appendix B.

The packaging process brought together complementary interventions to optimise their chances of appraisal success in the progression following initial and detailed appraisal stages at a scale of operation commensurate with the STPR. Initial packages were therefore defined at a high level and could contain specific interventions essential to their definition and others that were valuable but not essential. Interventions that were taken forward to the formal appraisal process were then reviewed and, if appropriate, defined in a greater level of detail.

2.5 Deliverability of Interventions

Developed intervention packages were assessed against deliverability criteria. This included consideration of any major potential legal, technical, financial or environmental obstacles to delivery within the STPR timescale. It is expected that the STPR will not specifically include interventions that are the responsibility of Local Authorities and Regional Transport Partnerships to develop and deliver. However, it is recognised that a range of delivery partners will be needed for measures which address both national and local objectives. Those that were not considered viable due to deliverability issues were not taken forward, and are listed in Appendix B.

2.6 Output from Option Sifting Process

Table 2.1 lists those interventions that were considered to merit further appraisal within this review. Further details of these interventions and the specific objectives that they meet are contained in Appendix A.

Table 2.1: Interventions taken forward from Sifting Process

National, Urban Networks, Strategic Nodes and Corridors	Intervention ID	Intervention Title
National	301	Expansion of Trunk Road Intelligent Transport System
	302	Enhancing Rail System Capacity through Targeted Improvements
	303	Further Electrification of the Strategic Rail Network
	304	Integrated Ticketing
	305	Reconfiguration of the National Rail Timetable
	307	Creation of Strategic Park-&-Ride/Choose Sites and Quality Bus Corridors
	308	Strategic Road Safety Plan
Aberdeen	67	Aberdeen Airport Public Transport Interchange
	115	Aberdeen Bus Priority Measures and Park-&-Ride Network
	162	Suburban Light/Heavy Rail Services Across Aberdeen
Dundee	15	Suburban Rail Services Across Dundee
	60	Dundee Northern Relief Road
	61	Grade Separation of Junctions on the A90 Kingsway in Dundee
	62	Dundee Bus Priority and Park-&-Ride Network
	63	Co-locate Dundee Bus Station with Rail Station
Edinburgh	72	Expand Edinburgh South-East Bus Priority and Park-&-Ride Network
	76	Upgrade Edinburgh Haymarket Public Transport Interchange
	77	Edinburgh Waverley Public Transport Interchange
	84	Rail Service Frequency Enhancements between Edinburgh and Newcraighall
	114	Suburban Rail Services Across Edinburgh
	121	Priority Vehicle Lane on the M8 between Junctions 1 and 3
	122	Priority Vehicle Lane on the M90/A90 between Halbeath and the Forth Road Bridge
	129	Priority Vehicle Lane on the A720 Edinburgh City Bypass
	156	Intelligent Transport System Initiatives on the A720 Edinburgh City Bypass
Glasgow	25	Divert Cumbernauld and Falkirk Grahamston Services to Glasgow Queen Street Low Level
	41	M77 Corridor Bus Priority Measures and Park-&-Ride Network
	43	Glasgow Subway Upgrade and Modernisation

National, Urban Networks, Strategic Nodes and Corridors	Intervention ID	Intervention Title
	44	Divert Whifflet and Edinburgh (via Shotts) Rail Services to Glasgow Central Low Level
	48	Construction of Glasgow Crossrail
	50	New-Cross Glasgow Rail Tunnel connecting Shields, Muirhouse, Cowlairs and Bellgrove
	51	Lengthen Trains and Platforms in Strathclyde
	53	Glasgow Light Rapid Transit Network and Busway System
	116	M74 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre and Areas to the South-East
	175	New River Clyde Rail Crossing and Glasgow Outer-Suburban Circular Rail Service
	182	New Glasgow City Centre Rail Terminal at St Enoch
Inverness	55	Inverness Southern Bypass from the A96 to the A82
Perth	161	Grade separation of Broxden and Inveralmond roundabouts
1 Inverness to Wick / Thurso and Northern Isles	1	Augment Far North Line Rail Services with Express Coach Services
	109	Speed Enforcement Measures on the A9 north of Inverness and on the A99
	110	Online Trunk Road Improvements on the A9 North of Tore Roundabout and the A99
	126	Rail Infrastructure and Service Enhancements on the Far North Line
2 Inverness to Ullapool and Western Isles	78	Speed Enforcement Measures on the A9 between Inverness and Tore and on the A835
	79	Online Trunk Road Improvements on the A835 between Tore Roundabout and Ullapool
3 Inverness to Fort William and Western Isles	2	Speed Enforcement Measures on the A82 between Inverness and Fort William, the A87, the A887 and the A830
	9	Online Trunk Road Improvements on the A82 between Fort William and Inverness, the A87, the A887 and the A830
4 Aberdeen to Inverness	3	Upgrade A96 to Dual Carriageway between Inverness and Nairn
	4	New Bypasses on the A96
	5	Speed Enforcement Measures on the A96
	6	A96 Road Safety Improvements
	8	A96 Dual Carriageway between Inverness and Aberdeen
	56	Inverness Bus Priority Measures and Park-&-Ride

National, Urban Networks, Strategic Nodes and Corridors	Intervention ID	Intervention Title
	58	Rail Service Enhancements between Inverness and Nairn
	142	Rail Service Enhancements between Aberdeen and Inverness
	152	Express Coach Service Facilities between Aberdeen and Inverness
5 Dundee to Aberdeen	16	Rail Service Enhancements between Aberdeen, Dundee, Edinburgh and Glasgow
	145	Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen via Perth
	167	Roll-On Roll-Off Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness via Perth
6 Inverness to Perth	10	A9 Dualling
	11	A9 Upgrading
	13	Rail Enhancements on the Highland Mainline between Perth and Inverness
	146	Rail Freight Enhancements between Mossend, Grangemouth and Inverness
7 Glasgow to Oban/Fort William and Western Isles	29	Online Trunk Road Improvements on the A82 South of Fort William, A83, A85 west of Tyndrum and A828
	30	Speed Enforcement Measures on the A82 between Glasgow and Fort William, the A83 between Tarbert and Kennacraig, the A85 between Tyndrum and Oban, the A828 and on the A830
8 Aberdeen to North East Scotland	170	Online Trunk Road Improvements on the A90 north of Aberdeen
9 Glasgow to Perth	23	Upgrade of M80 Junction 1/M8 Junction 13
	26	Lengthen Trains and Platforms between Glasgow and Dunblane/Alloa
	42	M80/A80 Corridor Bus Priority Measures and Park-&-Ride Network
	128	Speed Enforcement Measures on the M80/M9/A9 Corridor between Glasgow and Perth
	153	Grade Separation of Junctions on the A9 between Keir Roundabout and South of Perth
	157	Intelligent Transport System Initiatives on the M80 and A80
10 Edinburgh to Stirling	17	Lengthen Trains and Platforms Between Edinburgh and Dunblane
	18	Rail Service Frequency Enhancements between Edinburgh and Dunblane
	20	M9 Bus Priority Measures and Park-&-Ride

National, Urban Networks, Strategic Nodes and Corridors	Intervention ID	Intervention Title
		Network
	21	Grangemouth Road Access Upgrades
	22	Rail Access Improvements to Grangemouth
12 Edinburgh to Perth	35	Rail Service Enhancements between Perth and Edinburgh
	36	New Rail Line between Perth and Inverkeithing
	154	Intelligent Transport System Initiatives on the M90 and A90
	163	Rail Freight connections to the Port of Rosyth
13 Edinburgh to Glasgow	32	New Light Rapid Transit Line between Edinburgh and Livingston
	33	Rail Service Frequency Enhancements between Edinburgh and Livingston South
	34	M8 and A71 Bus Priority and Park-&-Ride Network between Edinburgh, Livingston and Bathgate
	40	M8 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre and Areas to the East
	100	Electrification of Edinburgh to Glasgow via Shotts
	102	Extensive Rail Service and Infrastructure Enhancements between Edinburgh and Glasgow via Falkirk High
	103	Upgraded Rail Line between Edinburgh and Glasgow via Carstairs
	104	New High Speed Rail Line between Edinburgh and Glasgow
	105	Rail Service Frequency Enhancements between Edinburgh and Glasgow via Shotts and Carstairs
	134	Improved Road Links to Edinburgh Airport
	137	Rail Service Frequency Enhancements between Edinburgh and Bathgate
	140	Intelligent Transport System Initiatives on the M8 between Glasgow and Harthill
	141	Intelligent Transport System Initiatives on the M8 between Edinburgh and Harthill
	172	New connection between the M74 and M8
14 Edinburgh to Dundee	69	Cross Forth Ferry Facilities
	93	Rail Service Enhancements Between Edinburgh and Dundee
	95	Light Rapid Transit connections between Fife and Edinburgh
	96	Fife Bus Priority Measures and Park-&-Ride Network
	97	Rail Service Frequency Enhancements between Edinburgh and Fife

National, Urban Networks, Strategic Nodes and Corridors	Intervention ID	Intervention Title
	108	New Rail Connections in Fife
	180	Online Trunk Road Improvements on the A92
15 Glasgow to Stranraer and South West	91	Rail Service Frequency Enhancement between Glasgow and Kilmarnock
	92	Rail Service Frequency Enhancement between Glasgow and the Ayrshire Coast
15 Glasgow to Stranraer and South West	112	Lengthen Trains and Platforms between Glasgow and the Ayrshire Coast
	113	Lengthen Trains and Platforms between Glasgow and Kilmarnock
	158	Selective Upgrades to the A77
	159	Selective Upgrades to the A737
	165	Double-deck Trains between Glasgow and the Ayrshire Coast
	166	Double-deck Trains between Glasgow and Kilmarnock
	173	Extension of Glasgow Southern Orbital from East Kilbride to M73/M74
16 Stranraer to North West England and beyond	171	Online Trunk Road Improvements on the A75
	174	Roll-On Roll-Off Rail Freight Enhancements between Stranraer, Kilmarnock and the Border
	176	Intelligent Transport System Initiatives on the A75
17 Glasgow to Inverclyde and Islands	39	M8 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre, Glasgow Airport and Areas to the west
	87	Lengthen Trains and Platforms and Reduce Journey Times between Glasgow and Inverclyde
	88	Rail Service Frequency Enhancements and Reduce Journey Times between Glasgow and Inverclyde
	89	Speed Enforcement Measures on the M8 and A8 between Glasgow and Inverclyde
	90	New Bypass Around Greenock
	111	Reopen Rail Freight Connection to Greenock Port
	127	New Rail Line between Kilmacolm and Paisley Canal
	132	Grade Separation of Junctions on the A8 between Langbank and Greenock
	135	New Rail Line between Wemyss Bay and Largs
	139	Intelligent Transport System Initiatives on the M8 between Glasgow and Inverclyde
18 Glasgow to North West England and beyond	85	Intelligent Transport System Initiatives on the M74

National, Urban Networks, Strategic Nodes and Corridors	Intervention ID	Intervention Title
	86	Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line
	130	Enhancements to Rail Freight between Glasgow and the Border via Dumfries
	131	New Motorway Link between the M73 and Coatbridge
18 Glasgow to North West England and beyond	150	Roll On-Roll Off Rail Freight Enhancements between Glasgow and the Border via Lockerbie/Dumfries
	168	Priority Vehicle Lane on the M74 between Hamilton and Glasgow
	181	Online Trunk Road Improvements on the A76
19 Edinburgh to North West England and beyond	169	Online Trunk Road Improvements on the A68, A7 and A702
20 Edinburgh to North East England and beyond	80	New Light Rapid Transit Line between Edinburgh and Haddington
	82	Rail Service Enhancements between Edinburgh and Dunbar
	83	New Rail Line from the East Coast Mainline between Longniddry and Haddington
	119	New Light Rapid Transit Line from Edinburgh to Dalkeith and Penicuik
	120	New Rail Line from the Borders Rail Link at Eskbank to Penicuik
	177	Online Trunk Road Improvements on the A1

3 Initial Appraisal

3.1 Initial Appraisal Approach

The initial appraisal identified those interventions which merited detailed appraisal consistent with the STAG Part 1 methodology. By undertaking a mainly qualitative appraisal, it was possible to demonstrate which interventions would contribute significantly to the STPR objectives and meet the appraisal criteria. All interventions that passed through the sifting process were subjected to this initial appraisal.

In some cases, appraisal work had been undertaken previously by third parties. Where available, this information was reviewed and, where appropriate, used to assist in the appraisal process.

3.2 Initial Appraisal Criteria

At the sifting stage, many of the interventions considered were of a largely conceptual nature; e.g. “enhanced rail services to x.” For the purpose of the initial appraisal, it was necessary to expand the definition of particular interventions to provide a more tangible “project” to appraise, bearing in mind the objectives it was intended to address.

At this stage in the process, the largely qualitative appraisal considered a number of criteria, as shown in the example below in Table 3.1.

Table 3.1: Initial Appraisal Criteria

Criteria	Commentary included (example text)
Performance against STPR Objective(s)	Makes significant contribution to the objective of eliminating crowding in this area
Performance against Key Strategic Outcomes	Significant improvement to quality and accessibility of public transport into Glasgow
Deliverability	No insurmountable deliverability issues
Relationship to other interventions	Outcomes can also be achieved by intervention xx (additional peak hour services)

3.3 Output from Initial Appraisal

136 interventions were considered at the Initial Appraisal stage. Of these, 112 were considered appropriate for Detailed Appraisal. Table 3.2 lists those interventions taken forward. Appendix C contains details of interventions that were not considered appropriate for more detailed appraisal and the rationale for these interventions not being taken forward. Appendix C also contains a list of interventions that were not progressed following more detailed appraisal, as outlined in Chapter 4.

Table 3.2: Interventions taken forward from Initial Appraisal.

Intervention ID	Intervention Title	Intervention ID	Intervention Title
1	Augment Far North Line Rail Services with Express Coach Services	30	Speed Enforcement Measures on the A82 between Glasgow and Fort William, the A83 between Tarbert and Kennacraig, the A85 between Tyndrum and Oban, the A828 and on the A830
2	Speed Enforcement Measures on the A82 between Inverness and Fort William, the A87, the A887 and the A830.	33	Rail Service Frequency Enhancements between Edinburgh and Livingston South
3	Upgrade A96 to Dual Carriageway between Inverness and Nairn	34	M8 and A71 Bus Priority and Park-&-Ride Network between Edinburgh, Livingston and Bathgate
4	New Bypasses on the A96	35	Rail Service Enhancements between Perth and Edinburgh
5	Speed Enforcement Measures on the A96.	36	New Rail Line between Perth and Inverkeithing
6	A96 Road Safety Improvements	39	M8 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre, Glasgow Airport and Areas to the West
9	Online Trunk Road Improvements on the A82 between Fort William and Inverness, the A87, the A887 and the A830	40	M8 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre and Areas to the East
10	A9 Dualling	41	M77 Corridor Bus Priority Measures and Park-&-Ride Network
11	A9 Upgrading	42	M80/A80 Corridor Bus Priority Measures and Park-&-Ride Network
13	Rail Enhancements on the Highland Mainline between Perth and Inverness	43	Glasgow Subway Upgrade and Modernisation
15	Suburban Rail Services Across Dundee	44	Divert Whifflet and Edinburgh (via Shotts) Rail Services to Glasgow Central Low Level
16	Rail Service Enhancements between Aberdeen, Dundee, Edinburgh and Glasgow	48	Construction of Glasgow Crossrail
18	Rail Service Frequency Enhancements between Edinburgh and Dunblane	50	New Cross Glasgow Rail Tunnel connecting Shields, Muirhouse, Cowlairs and Bellgrove
20	M9 Bus Priority Measures and Park-&-Ride Network	53	Glasgow Light Rapid Transit Network and busway system
21	Grangemouth Road Access Upgrades	55	Inverness Southern Bypass from the A96 to A82
22	Rail Access Improvements to Grangemouth	56	Inverness Bus Priority Measures and Park-&-Ride
25	Divert Cumbernauld and Falkirk Grahamston Services to Glasgow Queen Street Low Level	58	Rail Service Enhancements between Inverness and Nairn
26	Lengthen Trains and Platforms between Glasgow and Dunblane/Alloa	60	Dundee Northern Relief Road
29	Online Trunk Road Improvements on the A82 South of Fort William, A83, A85 west of Tyndrum and A828	61	Grade Separation of Junctions on the A90 Kingsway in Dundee

Intervention ID	Intervention Title	Intervention ID	Intervention Title
62	Dundee Bus Priority and Park-&-Ride Network	100	Electrification of Edinburgh to Glasgow via Shotts
63	Co-locate Dundee Bus Station with Rail Station	102	Extensive Rail Service and Infrastructure Enhancements between Edinburgh and Glasgow via Falkirk High
72	Expand Edinburgh South-East Bus Priority and Park-&-Ride Network	103	Upgraded Rail Line between Edinburgh and Glasgow via Carstairs
76	Upgrade Edinburgh Haymarket Public Transport Interchange	104	New High Speed Rail Line between Edinburgh and Glasgow
78	Speed Enforcement Measures on the A9 between Inverness and Tore and on the A835.	105	Rail Service Frequency Enhancements between Edinburgh and Glasgow via Shotts and Carstairs
79	Online Trunk Road Improvements on the A835 between Tore Roundabout and Ullapool	109	Speed Enforcement Measures on the A9 north of Inverness and on the A99
82	Rail Service Enhancements between Edinburgh and Dunbar	110	Online Trunk Road Improvements on the A9 North of Tore Roundabout and the A99
84	Rail Service Frequency Enhancements between Edinburgh and Newcraighall	111	Reopen Rail Freight Connection to Greenock Port
85	Intelligent Transport System Initiatives on the M74	112	Lengthen Trains and Platforms between Glasgow and the Ayrshire Coast
86	Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line	113	Lengthen Trains and Platforms between Glasgow and Kilmarnock
87	Lengthen Trains and Platforms and Reduce Journey Times between Glasgow and Inverclyde	115	Aberdeen Bus Priority Measures and Park-&-Ride Network
88	Rail Service Frequency Enhancements and Reduce Journey Times between Glasgow and Inverclyde	116	M74 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre and Areas to the South-East
89	Speed Enforcement Measures on the M8 and A8 between Glasgow and Inverclyde	119	New Light Rapid Transit Line from Edinburgh to Dalkeith and Penicuik
91	Rail Service Frequency Enhancement between Glasgow and Kilmarnock	121	Priority Vehicle Lane on the M8 between Junctions 1 and 3
92	Rail Service Frequency Enhancement between Glasgow and the Ayrshire Coast	122	Priority Vehicle Lane on the M90/A90 between Halbeath and the Forth Road Bridge
93	Rail Service Enhancements Between Edinburgh and Dundee	127	New Rail Line between Kilmacolm and Paisley Canal
95	Light Rapid Transit connections between Fife and Edinburgh	128	Speed Enforcement Measures on the M80/M9/A9 Corridor between Glasgow and Perth
96	Fife Bus Priority Measures and Park-&-Ride Network	129	Priority Vehicle Lane on the A720 Edinburgh City Bypass
97	Rail Service Frequency Enhancements between Edinburgh and Fife	131	New Motorway Link between the M73 and Coatbridge

Intervention ID	Intervention Title	Intervention ID	Intervention Title
132	Grade Separation of Junctions on the A8 between Langbank and Greenock	168	Priority Vehicle Lane on the M74 between Hamilton and Glasgow
134	Improved Road Links to Edinburgh Airport	169	Online Trunk Road Improvements on the A68, A7 and A702
137	Rail Service Frequency Enhancements between Edinburgh and Bathgate	170	Online Trunk Road Improvements on the A90 North of Aberdeen
139	Intelligent Transport System Initiatives on the M8 between Glasgow and Inverclyde	171	Online Trunk Road Improvements on the A75
140	Intelligent Transport System Initiatives on the M8 between Glasgow and Harthill	173	Extension of Glasgow Southern Orbital from East Kilbride to M73/M74
141	Intelligent Transport System Initiatives on the M8 between Edinburgh and Harthill	175	New River Clyde Rail Crossing and Glasgow Outer-Suburban Circular Rail Service
142	Rail Service Enhancements between Aberdeen and Inverness	176	Intelligent Transport System Initiatives on the A75
145	Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen via Perth	177	Online Trunk Road Improvements on the A1
146	Rail Freight Enhancements between Mossend, Grangemouth and Inverness	180	Online Trunk Road Improvements on the A92
153	Grade Separation of Junctions on the A9 between Keir Roundabout and South of Perth	181	Online Trunk Road Improvements on the A76
154	Intelligent Transport System Initiatives on the M90 and A90	182	New Glasgow City Centre Rail Terminal at St Enoch
156	Intelligent Transport System Initiatives on the A720 Edinburgh City Bypass	301	Expansion of Trunk Road Intelligent Transport System
157	Intelligent Transport System Initiatives on the M80 and A80	302	Enhancing Rail System Capacity through Taregted Improvements
158	Selective Upgrades to the A77	303	Further Electrification of the Strategic Rail Network
159	Selective Upgrades to the A737	304	Integrated Ticketing
161	Grade separation of Broxden and Inveralmond roundabouts	305	Reconfiguration of the National Rail Timetable
162	Suburban Light/Heavy Rail Services Across Aberdeen	307	Creation of Strategic Park-&-Ride/Choose Sites and Quality Bus Corridors
163	Rail Freight connections to the Port of Rosyth	308	Strategic Road Safety Plan

4 Detailed Appraisal

4.1 Introduction

The output from the Initial Appraisal was a list of 109 discrete interventions that would make a significant contribution towards the objectives and that satisfied the initial appraisal criteria. These interventions were then reviewed, refined and, where appropriate, combined to form complementary packages for the respective urban networks, strategic nodes or corridors.

The purpose of this Chapter is to outline:

- The detailed appraisal approach;
- The packaging of the interventions; and
- The results of the detailed appraisal process.

4.2 Detailed Appraisal Criteria

Building on the Initial Appraisal criteria, the purpose of the Detailed Appraisal was to undertake a quantified review of the performance of the interventions, or packages of interventions, against:

- STPR objectives;
- STAG Part 2 appraisal criteria;
- The Key Strategic Outcomes;
- The Government's Strategic Objectives; and
- Implementability criteria.

The performance of each intervention or package was then summarised in the Option Summary Tables, highlighting how it addressed the appraisal criteria and the Government's Purpose.

4.3 National Indicators

Having identified the various appraisal criteria, it was necessary to define appropriate indicators for measuring performance at a strategic level. Six key principal indicators were subsequently identified as being the most appropriate for assessment of the strategic impact. These were:

- Labour catchment potential (labour catchments within 1 hour's journey of an area of economic activity);
- Journey time benefits (travel times between key economic nodes);
- Carbon emissions (CO_2e emissions);
- Accessibility impacts (access to key services located in major centres);
- Value for money; and
- Accident impacts (change in the number and severity of accidents).

Table 4.1 maps these indicators against the STPR national objectives and the Key Strategic Outcomes. With the majority of the objectives listed, there is more than one applicable indicator and where this is the case, all relevant indicators have been listed in the indicators column.

Table 4.1: KSO – National Objectives / STPR Indicators

KSO	National Objective	Indicators
Improved Journey Time and Connections	Promote 'competitive' inter-urban journey times	• labour catchments within 1 hour's journey of an area of economic activity; • travel times between key economic nodes; and • access to key services located in major centres.
	Reduce inter-urban journey time on public transport	• labour catchments within 1 hour's journey of an area of economic activity; • travel times between key economic nodes; and • access to key services located in major centres.
	Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) where STAG appraisal demonstrates that a strong economic case can be balanced with environmental objectives. Elsewhere on the trunk road network provide improvements to journey time reliability	• labour catchments within 1 hour's journey of an area of economic activity; • travel times between key economic nodes; • access to key services located in major centres; and • value for money.
	Promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres	• labour catchments within 1 hour's journey of an area of economic activity; • travel times between key economic nodes; and • access to key services located in major centres.
	Maximise the labour catchment area in city regions where economic evidence demonstrates that this is required (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel i.e. planning policy)	• labour catchments within 1 hour's journey of an area of economic activity; • travel times between key economic nodes; and • access to key services located in major centres.
	Support the development and implementation of proposed national development identified in the NPF2	• labour catchments within 1 hour's journey of an area of economic activity; • travel times between key economic nodes; • access to key services located in major centres; and • value for money.

KSO	National Objective	Indicators
Reduced emissions	Reduce CO_2e emissions per person km	• CO_2e emissions per passenger kilometre.
	Stabilise total CO_2e emissions	• CO_2e emissions.
	Reduce CO_2e emissions in line with expectations from the emerging climate change bill	• CO_2e emissions.
Improved Quality, Accessibility and Affordability	To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period	• change in the number and severity of accidents.
	Promote seamless travel	• number of interchanges.
	Improve the competitiveness of public transport relative to the car	• labour catchments within 1 hour's journey of an area of economic activity; and • travel times between key economic nodes.
	Improve overall perceptions of public transport	Qualitative assessment.

For each intervention, the appropriate indicators outlined in the table above have been quantified, and reported within the Option Summary Tables, in Annexes 1, 2 and 3.

4.4 Technical Analysis

Where appropriate, interventions were coded in the Transport Model for Scotland (TMfS). In some cases, additional bespoke appraisal methods were used to quantify particular benefits for intervention such as climbing lanes and sections of 2+1 carriageway designed to improve overtaking opportunities and reduce accidents.

For interventions tested in TMfS, the appraisal considered the performance in 2017 and 2022 against the agreed 'Reference Case'.

Economic analysis was undertaken using the TUBA software[3] in accordance with the current government guidance. The ENEVAL[4] suite of programmes associated with TMfS was used to calculate the emissions based environmental output.

[3] http://www.tuba.org.uk/
[4] http://www.tmfs.org.uk/

In the case of some of the national interventions, a qualitative appraisal was carried out, referring, where appropriate, to evidence elsewhere or best practice in the UK and overseas.

4.5 Output from Detailed Appraisal

Description of Packages

The purpose of combining interventions was to develop packages that would provide a significant contribution towards the STPR objectives and the Government's Purpose. In some cases, particularly in the context of the rail network, these packages covered combined interventions across a number of corridors, which were targeted at common objectives.

In combining rail interventions, it was necessary to ensure that the individual elements of the packages were not mutually exclusive (e.g. two improvements to rail services that, if combined, would require more paths than are available on the network).

Once the detailed appraisal was completed, some interventions were not progressed following more detailed appraisal. These packages are detailed in Appendix C.

The packages that were appraised in detail are listed in Table 4.2. A full description of these packages is contained in Appendices D and E. Option Summary Tables for all interventions or packages of interventions listed in Appendices C, D or E are contained in Annexes 1, 2 and 3.

4.6 Interventions retained after Detailed Appraisal (Appendix D)

Tables 4.3, 4.4 and 4.5 contain details of the interventions retained after the appraisal process for the three levels of investment:

- Firstly, **maintain and safely operate** existing assets;
- Secondly, promote a range of measures, including innovative solutions, to **make better use of existing capacity** (Interventions may include technology based, fiscal and 'soft measures' in addition to engineering solutions); and
- Thirdly, promote **targeted infrastructure improvements**.

Level One - Maintain and Safely Operate

A number of interventions which contribute to the objectives of reducing accident levels and operating a safe transport network have been retained after the detailed appraisal. Table 4.3 lists those packages with further details contained in Appendix D.

Level Two - Make Better use of Existing Capacity

Making better use of existing capacity has been largely addressed by the identification of a series of interventions that target the operation of the networks at the national level. The interventions listed in Table 4.4, and detailed in Appendix D, are aimed at increasing the efficiency of the network by:

- Improving the operation of trunk road network;
- Re-casting the rail timetable to increase competitiveness of longer distance trips;
- Improving the competitiveness of strategic bus services; and
- Reducing levels of emissions on the road and rail network.

Level Three - Targeted Infrastructure Improvements

Even with the implementation of the level one and two packages of interventions, a series of infrastructure improvements were considered necessary to contribute significantly towards the STPR objectives and the Government's purpose.

These interventions consider the road and rail network and facilitate the more effective movement of goods and people. These particular packages are listed in Table 4.5, with further details contained in Appendix D.

4.7 Interventions not retained after Detailed Appraisal (Appendix E)

A number of those interventions listed in Table 4.1, were not recommended to be taken forward after detailed appraisal. The reasons these interventions were not recommended were that they:

- Did not perform as well as an alternative which appears in Appendix D;
- Were considered to be more appropriately delivered outside of STPR; and/or
- Were more likely to be delivered after the period of the STPR (2012-2022).

Appendix E presents details of these and the reasons that they were not recommended for being taken forward through the STPR process.

Table 4.2: List of Interventions taken forward for Detailed Appraisal

Title of Intervention	Title of Intervention
Level 1: Maintaining and Safely Operating the Network	**Level 2: Making Better use of Existing Capacity**
Strategic Road Safety Plan	Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations
Maintaining and Safely Operating Scotland's Rail Network	Further Electrification of the Strategic Rail Network
Targeted Programme of Measures to Reduce Accident Severity on the A9 North of Inverness	Enhancing Rail System Capacity through Targeted Improvements
Targeted Programme of Measures to Reduce Accident Severity on the A9 and A835 between Inverness and Ullapool	Integrated Ticketing
Targeted Programme of Measures to Reduce Accident Severity between Inverness, Fort William, Mallaig and Skye (A82, A87, A830, A887)	Reconfiguration of the National Rail Timetable
Targeted Programme of Measures to Reduce Accident Severity on the A96 between Aberdeen and Inverness	(Strategic) Park-&-Ride/Park-&-Choose
Targeted Programme of Measures to improve road standards between Glasgow and Oban/Fort William(A82)	
Implement Targeted Programme of Measures to improve links to the Loch Ryan port Facilities from the Trans European Network	
Route Management between: • Aberdeen and North East Scotland (A90); • Edinburgh and Dundee (A92); • Ayrshire and Dumfries (A76); • Edinburgh and North West England (A68/A7/A702); • Edinburgh and North East England (A1); • The A83, A85, A828	

Title of Intervention	Title of Intervention
Level 3: Targeted Infrastructure Improvements	
A9 upgrading from Dunblane to Inverness	Construction of Glasgow Crossrail
Rail Enhancements on the Highland Mainline between Perth and Inverness	New Busway between Glasgow City Centre, Clydebank and Glasgow Airport
Upgrade A96 to Dual Carriageway between Inverness and Nairn	New Link between the M73 and Coatbridge
Rail Service Enhancements between Aberdeen and Inverness	Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness
Rail Enhancements between Aberdeen and the Central Belt	New Rail Line between Perth and Inverkeithing
Dundee Northern Relief Road	Rail Freight connections to Rosyth Port
Suburban Rail Services Across Aberdeen	Improved Road Links to Edinburgh Airport
Grangemouth Road and Rail Access Upgrades	Inverclyde Road Improvements
Edinburgh to Glasgow Rail Improvements Programme	Glasgow Subway Upgrade and Modernisation
Rail Enhancements in the East of Scotland	New Light Rapid Transit Line to South East Edinburgh
Targeted Road Congestion / Environmental Relief Schemes	Augment Far North Line Rail Services with Express Coach Facilities
West of Scotland Strategic Rail Enhancements	Rail Freight Access Enhancements to Greenock Port
Inverkeithing to Halbeath Rail Line	Extension of Glasgow Southern Orbital from East Kilbride to M73/M74
Rail Enhancements between Inverclyde/Ayrshire and Glasgow	Inverness Southern Bypass from the A9 to A82
Upgrade Edinburgh Haymarket Public Transport Interchange	
Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line	
Light Rapid Transit connections between Fife and Edinburgh	
Suburban Rail Services Across Dundee	
Co-locate Dundee Bus Station with Rail Station	

Table 4.3: Level One Interventions Retained after Detailed Appraisal

Ref No	Title of Intervention
D1	Strategic Road Safety Plan
D2	Maintaining and Safely Operating Scotland's Rail Network
D3	Targeted Programme of Measures to Reduce Accident Severity on the A9 North of Inverness
	Targeted Programme of Measures to Reduce Accident Severity on the A9 and A835 between Inverness and Ullapool
	Targeted Programme of Measures to Reduce Accident Severity between Inverness, Fort William, Mallaig and Skye (A82, A87, A830, A887)
	Targeted Programme of Measures to Reduce Accident Severity on the A96 between Aberdeen and Inverness
	Route Management between: Aberdeen and North East Scotland (A90); Edinburgh and Dundee (A92); Ayrshire and Dumfries (A76); Edinburgh and North West England (A68/A7/A702); Edinburgh and North East England (A1); and The A83, A85, A828.
D4	Implement Targeted Programme of Measures to improve links to Loch Ryan port facilities from the Trans European Network
D5	Targeted Programme of Measures to improve road standards between Glasgow and Oban/Fort William(A82)

Table 4.4: Level Two Interventions Retained after Detailed Appraisal

Ref No	Title of Intervention
D6	Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations
D7	Further Electrification of the Strategic Rail Network
D8	Enhancing Rail System Capacity through Targeted Improvements
D9	Integrated Ticketing
D10	Reconfiguration of the National Rail Timetable
D11	(Strategic) Park-&-Ride/Park-&-Choose Strategy

Table 4.5: Level Three Interventions Retained after Detailed Appraisal

Ref No	Title of Intervention
D14	A9 upgrading from Dunblane to Inverness
D15	Rail Enhancements on the Highland Mainline between Perth and Inverness
D16	Upgrade A96 to Dual Carriageway between Inverness and Nairn
D17	Rail Service Enhancements between Aberdeen and Inverness
D18	Rail Enhancements between Aberdeen and the Central Belt
D19	Dundee Northern Relief Road
D21	Grangemouth Road and Rail Access Upgrades
D22	Edinburgh to Glasgow Rail Improvements Programme
D23	Rail Enhancements in the East of Scotland
D24	Targeted Road Congestion / Environmental Relief Schemes
D25	West of Scotland Strategic Rail Enhancements
D27	Rail Enhancements between Inverclyde/Ayrshire and Glasgow
D28	Upgrade Edinburgh Haymarket Public Transport Interchange
D29	Enhancements to Rail Freight between Glasgow and the Border via West Coast Mainline
D30	Light Rapid Transit connections between Fife and Edinburgh
D31	Inverkeithing to Halbeath Rail Line

Appendix A

STPR Interventions

National

Intervention	301	Expansion of Trunk Road Intelligent Transport System
Description		Introduction of a toolkit of measures on the motorway and the trunk road network in Central Scotland, covering priority vehicle lanes, ramp metering and intelligent signing.
Justification		This intervention will contribute to several national objectives, including 'journey time reductions on the trunk road network for prioritised vehicles' and (improved) journey time reliability for all users while 'maximising the labour catchment area in city regions'. This will have a significant impact on road users through efficient management of the trunk road network and by providing journey time information. There are unlikely to be any deliverability issues with this intervention as it would be implemented in line with emerging best practice experience from across Scotland and the UK.

National objectives addressed:

Objective Addressed	*Promote 'competitive' inter-urban journey times.*
Objective Addressed	*Reduce inter-urban journey time on public transport.*
Objective Addressed	*Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. high occupancy vehicles, freight, bus) where STAG appraisal demonstrates that a strong economic case can be balanced with environmental objectives. Elsewhere on the trunk road network provide improvements to journey time reliability.*
Objective Addressed	*Promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*Maximise the labour catchment area in city regions where economic evidence demonstrates that this is required (favouring public transport and high occupancy vehicles and balancing with other policy measures that promote reduction in need to travel i.e. planning policy).*
Objective Addressed	*Support the development and implementation of relevant proposed national developments identified in the NPF2.*
Objective Addressed	*Reduce CO2e emissions per person km.*
Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period.*
Objective Addressed	*Improve the competitiveness of public transport relative to the car.*

Intervention	302	Enhancing Rail System Capacity through Minor Improvements
Description		Upgrading of rail signalling to reduce headways and improve throughput and efficiency on the network.
Justification		This intervention will contribute to several national objectives, including 'competitive inter-urban journey times' and 'reduced journey times between the central belt and Aberdeen / Inverness' while 'maximising the labour catchment area in city regions' (through improved journey time reliability on the rail network). This will have a significant impact on those using the rail network, as the removal of rail bottlenecks will improve the journeys made by all users. In addition, the removal of bottlenecks and a transfer from road to rail, will contribute to reductions in CO2e emissions. There are unlikely to be any deliverability issues with this intervention, however, there may be some disruption to travellers during construction work. Where possible this would be programmed to take place during scheduled periods of routine maintenance.

National objectives addressed:

Objective Addressed	*Improve the competitiveness of public transport relative to the car.*
Objective Addressed	*Stabilise total CO2e emissions.*
Objective Addressed	*Reduce CO2e emissions per person km.*
Objective Addressed	*Maximise the labour catchment area in city regions where economic evidence demonstrates that this is required (favouring public transport and high occupancy vehicles and balancing with other policy measures that promote reduction in need to travel i.e. planning policy).*
Objective Addressed	*Promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*Promote 'competitive' inter-urban journey times.*
Objective Addressed	*Reduce inter-urban journey time on public transport.*

Intervention	303	Further Electrification of the Strategic Rail Network
Description		Electrification of the strategic rail network, focusing initially on the central belt.
Justification		This intervention will contribute to several national objectives, including reduced CO2e emissions and improved journey time reliability. Further electrification of the strategic rail network will encourage a transfer from road to rail by offering a more attractive and reliable service. The intervention will also contribute towards a reduction in CO2e emissions by reducing the number of diesel services and provide significant improvements to journey time reliability for existing users. There are unlikely to be any deliverability issues with this intervention, however, there may be some disruption to travellers during construction work, where possible this would be programmed to take place during scheduled periods of routine maintenance.

National objectives addressed:

Objective Addressed	*Improve the competitiveness of public transport relative to the car.*
Objective Addressed	*Promote seamless travel*
Objective Addressed	*Reduce inter-urban journey time on public transport.*
Objective Addressed	*Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. high occupancy vehicles, freight, bus) where STAG appraisal demonstrates that a strong economic case can be balanced with environmental objectives. Elsewhere on the trunk road network provide improvements to journey time reliability.*
Objective Addressed	*Stabilise total CO2e emissions.*
Objective Addressed	*Reduce CO2e emissions per person km.*
Objective Addressed	*Improve overall perceptions of public transport.*

Intervention	304	Integrated Ticketing
Description		A national integrated ticketing system for all modes of public transport, similar to the system currently used in London and the Netherlands.
Justification		This intervention would make a significant contribution to several national objectives, including the promotion of 'seamless travel' and 'improved overall perception of public transport' by providing improved interchange between modes and improved quality of journey. This is expected to further contribute towards national objectives by encouraging greater use of public transport. This intervention would be delivered under current best practice through the ScotRail franchise, however further work would be required to provide the necessary framework of integration across the national bus / ferry network in Scotland.

National objectives addressed:

Objective Addressed	*Maximise the labour catchment area in city regions where economic evidence demonstrates that this is required (favouring public transport and high occupancy vehicles and balancing with other policy measures that promote reduction in need to travel i.e. planning policy).*
Objective Addressed	*Promote seamless travel*
Objective Addressed	*Improve the competitiveness of public transport relative to the car.*
Objective Addressed	*Improve overall perceptions of public transport.*

Intervention	305	Reconfiguration of the National Rail Timetable
Description		Reconfigure the national rail timetable according to a hierarchy of services (city-city, commuters, regional).
Justification		This intervention would have a significant contribution to several national objectives, including the promotion of 'seamless travel' and improving 'the competitiveness of public transport relative to the car' by providing improved service patterns and faster connections across the network. This is expected to further contribute towards national objectives by encouraging greater use of public transport. It is considered that this intervention would be deliverable under current best practice through the ScotRail franchise.

National objectives addressed:

Objective Addressed	*Promote seamless travel*
Objective Addressed	*Improve the competitiveness of public transport relative to the car.*
Objective Addressed	*Reduce CO2e emissions per person km.*
Objective Addressed	*Support the development and implementation of relevant proposed national developments identified in the NPF2.*
Objective Addressed	*Promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*Reduce inter-urban journey time on public transport.*
Objective Addressed	*Improve overall perceptions of public transport.*
Objective Addressed	*Maximise the labour catchment area in city regions where economic evidence demonstrates that this is required (favouring public transport and high occupancy vehicles and balancing with other policy measures that promote reduction in need to travel i.e. planning policy).*

Intervention	307	Creation of Strategic Park-&-Ride/Choose Sites and Quality Bus Corridors
Description		Creation of a series of strategic Park-&-Ride/Choose sites using a common branding and marketing campaign. Creation of appropriate bus priority measures and unique branding on elements of the strategic road network.
Justification		This intervention would significantly contribute to several national objectives, including the promotion of 'seamless travel', improving 'the competitiveness of public transport relative to the car' and maximising 'the labour catchment area in city regions'. The intervention would have a significant impact on objectives through the provision of seamless connections between cars and bus services, bus priority measures, consistent branding, high quality passenger information and reductions in journey time into the city centres. This is expected to further contribute towards national objectives by encouraging greater use of public transport. Delivery of this intervention should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facility.

National objectives addressed:

Objective Addressed	*Maximise the labour catchment area in city regions where economic evidence demonstrates that this is required (favouring public transport and high occupancy vehicles and balancing with other policy measures that promote reduction in need to travel i.e. planning policy).*
Objective Addressed	*Improve overall perceptions of public transport.*
Objective Addressed	*Improve the competitiveness of public transport relative to the car.*
Objective Addressed	*Reduce CO2e emissions per person km.*
Objective Addressed	*Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. high occupancy vehicles, freight, bus) where STAG appraisal demonstrates that a strong economic case can be balanced with environmental objectives. Elsewhere on the trunk road network provide improvements to journey time reliability.*
Objective Addressed	*Reduce inter-urban journey time on public transport.*
Objective Addressed	*Promote seamless travel*

Intervention	308	Strategic Road Safety Plan
Description		Support the ten year Strategic Road Safety Plan through a combination of measures, programmes and policies supporting this strategy.
Justification		This intervention would significantly contribute to the objective 'to promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period' by achieving the national targets for casualty reductions, promoting network improvements and implementing initiatives that will support the plan. Improvements to the strategic road network would be deliverable through best practice, while other initiatives could be delivered through a range of partnerships.

National objectives addressed:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period.*

STPR Interventions

Aberdeen

Intervention	67	Aberdeen Airport Public Transport Interchange
Description		Co-locate Aberdeen Airport terminal and railway stations on the same site to create a public transport interchange.
Justification		Locating Aberdeen Airport terminal building on the same site as Dyce (Aberdeen Airport) railway station would provide better integration between the two modes. This intervention would significantly contribute towards the objective 'to improve accessibility, primarily by public transport, to and between the airport and Aberdeen city centre', by negating the need to transfer between the existing Dyce railway station and the airport terminal, which at present are remote from one another. The intervention would be implemented in line with current best practice.

Objectives addressed in Aberdeen:

Objective Addressed	*To improve accessibility, primarily by public transport, to and between the City Centre, Dyce, the airport and South East Aberdeen.*

Intervention	115	Aberdeen Bus Priority Measures and Park-&-Ride Network
Description		A network of Park-&-Ride sites and bus priority measures on the approaches to Aberdeen. The intervention also includes improvements at the A90/A96 junction.
Justification		This intervention would significantly contribute to the objective 'to improve accessibility, primarily by public transport, to and between the City Centre, Dyce, the airport and South East Aberdeen' by providing bus priority measures that would assist in reducing bus journey times across the city and significantly improve reliability. The Park-&-Ride facilities would improve access to these bus services for people living across the wider area around Aberdeen. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in Aberdeen:

Objective Addressed	*To improve accessibility, primarily by public transport, to and between the City Centre, Dyce, the airport and South East Aberdeen.*

Intervention	162	Suburban Light/Heavy Rail Services Across Aberdeen
Description		A frequent service providing opportunities for through trips between the commuting towns on the outskirts of Aberdeen, with the opening of some new suburban rail stations. Trains services to and from Dyce Station would also be improved. This is expected to require additional suburban rolling stock, changes to track layout and construction of the new stations. This option also includes provision of Park-&-Ride, bus stops and access for cyclists and walkers at each station.
Justification		This intervention would significantly contribute to the objective of 'improving accessibility, primarily by public transport, to and between the City Centre, Dyce, the airport and South East Aberdeen' by providing more frequent cross-city rail services, connecting towns and communities such as Inverurie, Aberdeen City Centre and Stonehaven, as well as suburbs of Aberdeen such as Bridge of Don, Kintore, Cove Bay and Bieldside. This intervention would be implemented in line with current best practice.

Objectives addressed in Aberdeen:

Objective Addressed	*To improve accessibility, primarily by public transport, to and between the City Centre, Dyce, the airport and South East Aberdeen.*

STPR Interventions

Dundee

Intervention	15	Suburban Rail Services Across Dundee
Description		A frequent service from Arbroath to Perth, with a new station at Dundee West and calling at all intermediate stations. This would require additional suburban rolling stock, changes to track layout and signalling to allow for the increased service frequency and construction of the new station. Additional improvements to stations on this route to improve the environment for passengers are included.
Justification		This intervention would significantly contribute to the objective of 'improving bus/rail interchange opportunities' by increasing the number of rail services. This would significantly reduce the connection time between modes and make the interchange between modes more attractive. This intervention would also contribute to addressing the objective of 'improving public transport accessibility and competitiveness to Dundee West' by providing heavy rail connections to this area which do not presently exist. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in Dundee:

Objective Addressed	*To improve the public transport accessibility and competitiveness to Dundee West.*
Objective Addressed	*To improve bus/rail interchange opportunities.*

Intervention	60	Dundee Northern Relief Road
Description		A new bypass around Dundee from the A90 west of Invergowrie to the A90 north of Dundee.
Justification		The A90 Kingsway is currently used as both a bypass for long distance traffic between Perth / Central Belt and the north east and by local traffic. This intervention would significantly contribute to the objective of 'reducing the conflict between long distance and local traffic' as the provision of a new bypass would enable long distance traffic to bypass the Kingsway. The Northern Relief Road would be delivered in line with current best practice, however there are potential environmental issues which would require mitigation during the planning and construction phases of this intervention.

Objectives addressed in Dundee:

Objective Addressed	*To reduce the conflict between longer distance and local traffic.*

Intervention	61	Grade Separation of Junctions on the A90 Kingsway in Dundee
Description		Grade separation of all/some roundabouts on the A90 Kingsway, with ramp metering at these and existing grade separated junctions.
Justification		Grade separation of the remaining roundabouts on the A90 Kingsway would significantly contribute towards the objective of 'reducing the conflict between long distance and local traffic' by removing delay to long distance traffic currently experienced at the existing roundabouts. Ramp metering would also reduce the impact of traffic joining the A90 on long distance traffic. The intervention would be delivered in line with current best practice, however due to the proximity of the road to residential and commercial properties along the length of the route there are potential environmental and land issues which would need to be addressed during the planning and construction phases of this intervention.

Objectives addressed in Dundee:

Objective Addressed	*To reduce the conflict between longer distance and local traffic.*

Intervention	62	Dundee Bus Priority and Park-&-Ride Network
Description		Network of Park-&-Ride sites on the A90 (West), A932, A90 (North), A92 (East) and A92 (Tay Road Bridge) approaches to Dundee, with associated bus priority measures into and through Dundee.
Justification		This intervention would significantly contribute to the objective 'to improve public transport accessibility and competitiveness to Dundee West' by providing bus priority measures that would significantly improve reliability, reduce bus journey times across the city and offer a more competitive alternative to the car. The Park-&-Ride facilities would improve access around Dundee, including to and from the rail station. The intervention would be implemented in line with current best practice.

Objectives addressed in Dundee:

Objective Addressed	*To improve the public transport accessibility and competitiveness to Dundee West.*
Objective Addressed	*To improve bus/rail interchange opportunities.*

Intervention	63	Co-locate Dundee Bus Station with Rail Station
Description		Remodel the existing bus and rail stations and locate them on the same site to create a public transport interchange.
Justification		Locating Dundee bus and rail stations on the same site would significantly contribute towards the objective 'to improve bus/rail interchange opportunities', thereby promoting seamless travel and improving strategic links between bus and rail. The intervention would be implemented in line with current best practice.

Objectives addressed in Dundee:

Objective Addressed	*To improve bus/rail interchange opportunities.*

STPR Interventions

Edinburgh

Intervention	72	Expand Edinburgh South-East Bus Priority and Park-&-Ride Network
Description		Bus priority measures on the South/East approaches to Edinburgh including the A1/A199, the A7/A68 between Dalkeith, Newtongrange and Edinburgh. Bus priority measures would also be implemented at the A1/A720 junction and at the A7/A720 Sheriffhall Roundabout. This intervention also includes bus priority measures on the Edinburgh City Bypass to encourage cross Edinburgh services to locations such as Edinburgh Park.
Justification		This intervention would significantly contribute to the objective to 'maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' through expansion of the Park-&-Ride network and by providing bus priority, which would significantly reduce delay for existing and future bus users. Bus priority measures around the Edinburgh City Bypass would improve public transport connections between the economic areas located to the east and west of the city. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas, however there may be impact due to physical constraints along the City Bypass The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Objectives addressed in Corridor 20:

Objective Addressed	*To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.*

Intervention	76	Upgrade Edinburgh Haymarket Public Transport Interchange
Description		Creation of a rail / tram / bus / coach / taxi interchange at Haymarket station, including reconstruction of Haymarket station to increase passenger circulation capacity.
Justification		This intervention would significantly contribute to the objective 'to enhance public transport interchange opportunities' by providing a multi-modal station, with easy transfer between a variety of public transport modes. This would significantly improve public transport access to areas in the north and west of Edinburgh. The construction of this intervention may impact on the operation of the rail network, however these constraints are not expected to impact on the overall deliverability.

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*

Intervention	77	Edinburgh Waverley Public Transport Interchange
Description		Creation of a rail / bus / coach interchange at Edinburgh Waverley station, requiring significant station reconstruction works.
Justification		This intervention would significantly contribute to the objective 'to enhance public transport interchange opportunities' by providing a multi-modal station, with easy transfer between a variety of public transport modes, thereby removing the need to walk between the existing bus and rail stations. The construction of this intervention may impact on the operation of the rail network. In addition, due to the proximity of the World Heritage site mitigation measures would be required, which may impact on the configuration of the station buildings and associated infrastructure.

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*

Intervention	84	Rail Service Frequency Enhancements between Edinburgh and Newcraighall
Description		Increase the service frequency between Edinburgh and Newcraighall to four trains per hour. This would require additional rolling stock, capacity enhancements at Waverley station through to Portobello Junction and the line between Portobello Junction and Newcraighall to allow for this increased frequency. Services could run through Edinburgh to provide cross city connections to Haymarket, Edinburgh Park, South Gyle or Livingston.
Justification		This intervention would significantly contribute to the objective 'to enhance public transport interchange opportunities' by providing twice as many services into Edinburgh than presently operate. Furthermore an increase in frequency between Edinburgh and Newcraighall would have a significant impact on increasing the attractiveness of public transport as it would reduce the average waiting time for a train. Reducing the average waiting times would improve interchanges between rail services and other modes of public transport. This intervention would be deliverable under current best practice through the ScotRail franchise.

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*

Objectives addressed in Corridor 20:

Objective Addressed	*To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.*

Intervention	114	Suburban Rail Services Across Edinburgh
Description		Cross Edinburgh service from Livingston North to Shawfair utilising the Edinburgh Suburban Line. This would require enhancement of the infrastructure, additional rolling stock and signalling.
Justification		This intervention would significantly contribute to the objective 'to maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' by providing additional capacity and frequency and better connections to two of Edinburgh's areas of economic activity, West Edinburgh and South East Edinburgh. The delivery of this intervention would utilise the existing railway tracks, some of which is currently used for freight only.

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*

Objectives addressed in Corridor 13:

Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*

Intervention	121	Priority Vehicle Lane on the M8 between Junctions 1 and 3
Description		Widen the M8 motorway between Livingston (Junction 3) and the A720 (Junction 1) to provide a third lane dedicated to priority vehicles.
Justification		This intervention would significantly contribute to the objective 'to maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' by significantly reducing the impact of congestion for bus users and improving links to west and central Edinburgh. The intervention would also provide benefits for goods vehicles if they were allowed to use the priority vehicle lane. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Objectives addressed in Corridor 13:

Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*

Intervention	122	Priority Vehicle Lane on the M90/A90 between Halbeath and the Forth Road Bridge
Description		Widen the M90/A90 motorway between Halbeath and the Forth Road Bridge to provide a third lane dedicated to priority vehicles.
Justification		This intervention would significantly contribute to the objective 'to maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' by significantly reducing the impact of congestion for bus users and improving links to west and central Edinburgh. The intervention would also provide benefits for goods vehicles if they were allowed to use the priority vehicle lane. This intervention would be deliverable under current best practice.

Objectives addressed in Edinburgh:	
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objectives addressed in Corridor 12:	
Objective Addressed	*To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*
Objective Addressed	*To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.*
Objectives addressed in Corridor 14:	
Objective Addressed	*To reduce public transport journey time between Edinburgh and Dundee.*
Objective Addressed	*To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*

Intervention	129	Priority Vehicle Lane on the A720 Edinburgh City Bypass
Description		Widen the A720 Edinburgh City Bypass to provide a third lane dedicated to priority vehicles. Includes junction improvements at the A1, Sheriffhall and Hermiston.
Justification		This intervention would significantly contribute to the objective 'to maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' by significantly reducing the impact of congestion for bus users and improving links between the areas of economic activity located to the east and west of the city. Delivery may be impacted due to physical constraints along the City Bypass, however this issue could be mitigated during the planning and design stages.

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	156	Intelligent Transport System Initiatives on the A720 Edinburgh City Bypass
Description		Intelligent Transport Systems, priority vehicle lanes, ramp metering, variable speed limits and hard shoulder running for priority vehicles on the A720 Edinburgh City Bypass.
Justification		This intervention would significantly contribute the objective of 'maintaining the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' and 'promoting efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2' by reducing delays and congestion on the City Bypass. The various elements of the intervention will have a significant impact on road users through efficient management of the City Bypass. There are a number of well developed and cost effective measures that can be applied where appropriate. The introduction of an additional lane may be impacted due to physical constraints along the City Bypass, however this issue could be mitigated during the planning and design stages. There area number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.*

STPR Interventions

Glasgow

Intervention	25	Divert Cumbernauld and Falkirk Grahamston Services to Glasgow Queen Street Low Level
Description		Electrification of the Glasgow to Cumbernauld and Falkirk Grahamston line (along with the construction of the Garngad Curve) and diversion of these services into Glasgow Queen Street Low Level. Also includes the construction of new stations at Blochairn, Bannockburn and Bonnybridge and turnback facilities at Kelvinhaugh.
Justification		This intervention would significantly contribute to the objective 'rail capacity and connectivity issues in central Glasgow' by diverting services from Falkirk Grahamston and Cumbernauld from Glasgow Queen Street high level to the low level platforms. This would result in an increase in capacity on this route, in addition to allowing an increase in services between Glasgow Queen Street and Croy. The diversion of the services into the low level platforms would also significantly improve connectivity between the west of Glasgow and the north by providing a same platform interchange. Additionally this intervention would contribute to the objective to 'increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange' by running services directly to communities such as Partick, Clydebank, Dalmuir and Milngavie from Cumbernauld and Falkirk. This would also provide an improved connection from the north of Glasgow to the regeneration area along the Clyde Waterfront. It is considered that this intervention would be deliverable under current best practice.

Objectives addressed in Glasgow:	
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objectives addressed in Corridor 9:	
Objective Addressed	*To address current and forecast rail overcrowding into Glasgow.*

Intervention	41	M77 Corridor Bus Priority Measures and Park-&-Ride Network
Description		Bus priority measures, including hard shoulder bus lanes or guided busways to serve Glasgow city centre and the south west of Glasgow.
Justification		This intervention would significantly contribute to the objective 'to increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange' by reducing the impact of increased congestion on journey times and journey time reliability for bus services into Glasgow city centre and the south west of the city. The proposed Park-&-Ride facilities would improve access to these bus services for people living in a wide area to the south and south west of the city. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in Glasgow:

Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*

Intervention	43	Glasgow Subway Upgrade and Modernisation
Description		Upgrade and modernisation of Glasgow Subway to optimise performance and increase frequency.
Justification		This intervention would significantly contribute to the objectives 'to address rail capacity and connectivity issues in central Glasgow' and 'to increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange' by increasing rail capacity between Glasgow city centre, Glasgow's West End, Govan and communities between Govan and the city centre. This would have a significant impact on accessibility between these communities, the city centre and the Clyde Waterfront and would also have a positive impact on journey times beyond Glasgow from these communities, by reducing the average wait time when interchanging between modes. The upgrading and modernisation of the existing subway line and facilities would be deliverable under current best practice.

Objectives addressed in Glasgow:

Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	44	Divert Whifflet and Edinburgh (via Shotts) Rail Services to Glasgow Central Low Level
Description		The conversion of diesel services to electric traction and diverting them into the Glasgow Central Low Level (Argyle Line). This would also require turnback facilities at Exhibition Centre or improvements to the line between Partick and Hyndland. Whifflet services would be extended to Ravenscraig with a new station at Carnbroe.
Justification		This intervention would significantly contribute to the objectives 'to address rail capacity and connectivity issues in central Glasgow' and 'to increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange' by increasing service frequency between Glasgow city centre and Whifflet and increasing rail capacity into Glasgow. It would also significantly improve connectivity between Whifflet and communities to the west of Glasgow city centre, including the regeneration areas along the River Clyde, by providing the same platform interchange at Glasgow Central Low Level. There would be no deliverability issues with this intervention as it would be implemented in line with current best practice.

Objectives addressed in Glasgow:

Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	48	Construction of Glasgow Crossrail
Description		This would involve the reopening of the Glasgow City Union Line for passenger trains, with two new spurs. The first spur, the Strathbungo Link, would be from Muirhouse South Junction to the City Union Line. The second spur would be from the City Union Line on to the North Electric Line heading west at High Street. Some services from the south and west would be diverted from Glasgow Central high level to Glasgow Queen Street low level, some additional services would run into both Glasgow Central and Glasgow Queen Street and additional services would also run across Glasgow from the south and west to the east and north without serving either of the two main stations.
Justification		This intervention would significantly contribute to the objectives targeted at improving public transport in and around the economic centre of Glasgow and the regeneration areas by increasing rail capacity into Glasgow through a transfer of services that currently operate into Glasgow Central high level to divert into Glasgow Queen Street low level. This would allow new services to operate into Glasgow Central high level. The services which would operate into Glasgow Queen Street low level would be able to run through Glasgow and serve communities to the west of the city centre, providing significantly improved connections to the regeneration areas along the Clyde Waterfront. This would also remove the need for passengers who travel from the south of Glasgow to Aberdeen or Inverness to have to transfer between Glasgow Central and Glasgow Queen Street, reducing the journey time to the north and making public transport as a choice, more attractive. This intervention would be deliverable under current best practice, however there are potential environmental issues due to size and scale of this intervention which would almost certainly require mitigation during the planning and construction phases of this intervention.

Objectives addressed in Glasgow:

Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	50	New Cross Glasgow Rail Tunnel connecting Shields, Muirhouse, Cowlairs and Bellgrove
Description		This intervention would include the construction of a heavy rail tunnel across Glasgow with a new underground city centre station. The tunnel would connect the network south of the Clyde with the network to the north and east of Glasgow city centre. This would require significant infrastructure works.
Justification		This intervention would significantly contribute to the objectives 'to address rail capacity and connectivity issues in central Glasgow' and 'increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange' by providing a step change in rail capacity into Glasgow. This intervention would allow a significant number of services to run across Glasgow from areas such as Inverclyde and Ayrshire to Edinburgh, Stirling and north of the Central Belt to Dundee and Aberdeen, which would reduce the need to interchange between Glasgow Central and Glasgow Queen Street stations. This intervention would be deliverable under current best practice, however there are potential environmental issues due to size and scale of this intervention which would almost certainly require mitigation during the planning and construction phases of this intervention.

Objectives addressed in Glasgow:	
Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objectives addressed in Corridor 9:	
Objective Addressed	*To address current and forecast rail overcrowding into Glasgow.*

Intervention	51	Lengthen Trains and Platforms in Strathclyde
Description		The introduction of longer trains across the Strathclyde area would necessitate the lengthening of platforms at stations within this area, as well as additional rolling stock and capacity enhancements at Glasgow Central.
Justification		This intervention would significantly contribute to the objective 'to address rail capacity and connectivity issues in central Glasgow' by increasing the number of coaches on services across Strathclyde and thereby providing additional seating capacity, without having to run any additional services. This would improve public transport accessibility to Glasgow city centre and across the region. This intervention would be deliverable through the ScotRail franchise.

Objectives addressed in Glasgow:	
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objectives addressed in Corridor 9:	
Objective Addressed	*To address current and forecast rail overcrowding into Glasgow.*
Objectives addressed in Corridor 13:	
Objective Addressed	*To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.*
Objectives addressed in Corridor 15:	
Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*
Objectives addressed in Corridor 17:	
Objective Addressed	*To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.*

Intervention	53	Glasgow Light Rapid Transit Network and Busway System
Description		This would see the development of a light rapid transit network across Glasgow. This would be a mixture of new lines, lines on existing redundant infrastructure and conversion of heavy rail to light rail. This intervention could also include a busway system along the River Clyde, connecting in to Clyde Fastlink and continuing west to serve Clydebank, Renfrew and Glasgow Airport.
Justification		This intervention would significantly contribute to the objective to improve 'rail capacity and connectivity', would 'increase the public transport access to and between areas of economic activity and regeneration' and promote efficient and effective transport links to Glasgow Airport by releasing capacity on railway services into Glasgow, which would reduce the demand for travel on the heavy rail network. The LRT network would significantly improve public transport accessibility from parts of the conurbation that are not currently served by rail and provide direct connections across the city, including the city centre, regeneration areas along the River Clyde and areas of economic activity such as Hillington and Glasgow Airport. This intervention would be implemented in line with current best practice.

Objectives addressed in Glasgow:	
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objectives addressed in Corridor 17:	
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*

Intervention	116	M74 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre and Areas to the South-East
Description		Bus priority measures, including hard shoulder bus lanes or guided busways to serve Glasgow city centre and Park-&-Ride facilities accessible from the motorway.
Justification		This intervention would significantly contribute to the objective 'to increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange' by significantly reducing the impact of increased congestion on journey times and journey time reliability into Glasgow city centre and the Clyde Gateway regeneration area. The Park-&-Ride facilities would also improve access to these bus services for people living in the wider area. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in Glasgow:

Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*

Intervention	175	New River Clyde Rail Crossing and Glasgow Outer-Suburban Circular Rail Service
Description		This intervention would involve a number of new and upgraded rail links in Glasgow. A new crossing of the River Clyde would be provided, connecting the line to and from Paisley Gilmour Street with the line between Jordanhill and Yoker. A new chord would be provided at Anniesland to connect the North Electric Line with the branch from Maryhill. A number of lines and junctions would be upgraded, such as the City Union Line and Bellgrove Junction. Starting at Maryhill and working clockwise, a new outer-suburban service would use the existing Maryhill Branch to Cowlairs, the City Union to Shields and the new link under the Clyde to Jordanhill and onwards to Maryhill. Services would also operate from west or south of Paisley (e.g. Gourock or Ayr), across the river to communities such as Airdrie, Dalmuir and Milngavie.
Justification		This intervention would significantly contribute to the objectives of 'addressing rail capacity and connectivity issues in central Glasgow' and 'increasing the public transport access to and between areas of economic activity and regeneration with minimal need for interchange' by significantly improving connectivity within and across Glasgow through new direct rail connections between communities that are not currently connected. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in Glasgow:

Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	182	New Glasgow City Centre Rail Terminal at St Enoch
Description		Construction of a new St Enoch Station to the south of the St Enoch Centre. This would connect with the Glasgow City Union Line with connections both north towards Bellgrove and south towards Barrhead and Paisley.
Justification		This intervention would significantly contribute to the objective 'to increase public transport access to and between areas of economic activity and regeneration with minimal need for interchange' and 'to address rail capacity and connectivity issues in central Glasgow' by providing a new station in the centre of Glasgow that can be accessed from a number of existing railway routes. The intervention would provide a step change in the provision of public transport, serving journeys through and to Glasgow reducing the impact of interchange. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in Glasgow:	
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objectives addressed in Corridor 1:	
Objective Addressed	*To enhance public transport accessibility and reduce public transport journey time to and from Inverness.*
Objectives addressed in Corridor 15:	
Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

STPR Interventions

Inverness

Intervention	55	Inverness Southern Bypass from the A96 to A82
Description		New link road from the A96 at Smithton to the A9 at Inshes, upgrade to dual carriageway, and then upgrading the existing B8082 between Inshes and Dores Roundabout, new crossing of the Caledonian Canal and the River Ness between Dores Roundabout and the A82 at Torvean.
Justification		This intervention would significantly contribute to the objective 'to reduce the conflict between longer distance and local traffic' by allowing long distance traffic from the A9 and A96 to the A82 to avoid Inverness city centre. It would also further reduce conflict and contribute to the objective of 'improving connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport' by allowing traffic between the A9 and A96 to avoid Raigmore Interchange. Reducing this conflict and delay at Raigmore could significantly benefit trips from the south heading into Inverness or east towards Nairn, and also reduce delays for trips from Inverness Airport, Nairn and communities east of Inverness travelling into Inverness city centre. This intervention would be deliverable under current best practice, however there are potential environmental issues during the second element of this intervention, due to the crossings of both the River Ness and Caledonian Canal which would require mitigation during the planning and construction phases of this intervention.

Objectives addressed in Inverness:

Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*
Objective Addressed	*To reduce the conflict between longer distance and local traffic.*

Objectives addressed in Corridor 4:

Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

STPR Interventions

Perth

Intervention	161	Grade separation of Broxden and Inveralmond roundabouts
Description		Grade separation of Broxden and Inveralmond roundabouts.
Justification		This intervention would significantly contribute to the objectives to 'promoting continuing reduction in accident rates and severity rates across the strategic transport network' and 'reducing emissions per person kilometre' by significantly reducing congestion and improving the smooth flow of traffic, including heavy goods vehicles, along the A9 around Perth. This intervention would be deliverable under current best practice, however land constraints adjacent to Inveralmond Roundabout would require mitigation within the planning and design stages.

Objectives addressed in Perth:	
Objective Addressed	*To contribute to reducing the emissions per person kilometre.*
Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*
Objectives addressed in Corridor 6:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To improve the operational effectiveness of the A9 as it approaches Perth and Inverness.*
Objectives addressed in Corridor 9:	
Objective Addressed	*To reduce the severity of accidents to the national average.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

STPR Interventions

1 Inverness to Wick / Thurso and Northern Isles

Intervention	1	Augment Far North Line Rail Services with Express Coach Services
Description		Coach stop facilities to serve communities north of Inverness, including those in the Black Isle and Dornoch areas. Services would provide direct connections with Northern Isles ferries. This intervention would also include improvements to the A9 to reduce journey time variability and the introduction of Park-&-Ride services.
Justification		This intervention contributes to the objective to 'enhance public transport accessibility and reduce public transport journey time to and from Inverness' by providing express coach facilities along the Far North Line. This would improve public transport accessibility significantly by allowing a more frequent service to operate and for it to call at communities not served by the existing railway line. Furthermore, public transport journey times would also improve as some services would take a more direct route than the existing rail line. There would be no deliverability issues with this intervention, however detailed discussions with bus/rail operators, the local authority and the Regional Transport Partnership would be required.

Objectives addressed in this corridor:

Objective Addressed	*To enhance public transport accessibility and reduce public transport journey time to and from Inverness.*

Intervention	109	Speed Enforcement Measures on the A9 north of Inverness and on the A99
Description		Speed Enforcement Measures on the A9 north of Inverness and on the A99 at locations where vehicle speed is a contributing factor to accidents.
Justification		This intervention would significantly contribute to the objective 'to reduce fatal and severe accident rates' and is likely to make a significant impact by ensuring greater compliance with speed limits. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the fatal and severe accident rates to the national average or lower.*

Intervention	110	Online Trunk Road Improvements on the A9 North of Tore Roundabout and the A99
Description		Measures such as realignment and widening of carriageway and junction improvements at specific locations on the A9.
Justification		This intervention would significantly contribute to the objective 'to reduce fatal and severe accident rates to the national average or lower' by providing safe overtaking opportunities and improved road standards along the route. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the fatal and severe accident rates to the national average or lower.*

Intervention	126	Rail Infrastructure and Service Enhancements on the Far North Line
Description		Improvements on the existing railway line between Inverness and Wick/Thurso to improve line speeds, reduce journey times and increase service frequencies. This is expected to include new rolling stock, upgrading the quality of the track and dynamic loops.
Justification		This intervention would significantly contribute to the objective 'to enhance public transport accessibility and reduce public transport journey time to and from Inverness' by making track improvements to the Far North Line between Inverness and the far north of Scotland. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To enhance public transport accessibility and reduce public transport journey time to and from Inverness.*

STPR Interventions

2 Inverness to Ullapool and Western Isles

Intervention	78	Speed Enforcement Measures on the A9 between Inverness and Tore and on the A835
Description		Speed Enforcement Measures on the A9 between Inverness and Tore and on the A835 between Tore and Ullapool at locations where vehicle speed is a contributing factor to accidents.
Justification		This intervention would significantly contribute to the objective 'to reduce fatal and severe accident rates' and is likely to make a significant impact by ensuring greater compliance with speed limits. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident, fatal and severe rates to the national average.*

Intervention	79	Online Trunk Road Improvements on the A835 between Tore Roundabout and Ullapool
Description		Measures such as realignment of carriageway and junction improvements at specific locations on the A835.
Justification		This intervention would significantly contribute to the objective 'to reduce fatal and severe accident rates to the national average or lower' by providing safe overtaking opportunities and improved road standards along the route. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident, fatal and severe rates to the national average.*

STPR Interventions

3 Inverness to Fort William and Western Isles

Intervention	2	Speed Enforcement Measures on the A82 between Inverness and Fort William, the A87, the A887 and the A830.
Description		Speed Enforcement Measures on the A82 between Inverness and Fort William, the A87, the A887 and the A830 at locations where vehicle speed is a contributing factor to accidents.
Justification		This intervention would significantly contribute to the objective 'to reduce the accident rate to current national average without adversely impacting on accident severity' and is likely to make a significant impact by ensuring greater compliance with speed limits. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident rate to current national average without adversely impacting on accident severity (see also Corridor 7).*

Intervention	9	Online Trunk Road Improvements on the A82 between Fort William and Inverness, A87, A887 and A830
Description		Measures such as hard strip provision for agricultural vehicles, realignment of particular stretches of the route and junction improvements along the A82.
Justification		This intervention would significantly contribute to the objective 'to reduce the accident rate to the current national average without adversely impacting on accident severity' by providing safe overtaking opportunities and improved road standards along the route. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident rate to current national average without adversely impacting on accident severity (see also Corridor 7).*

STPR Interventions

4 Aberdeen to Inverness

Intervention	3	Upgrade A96 to Dual Carriageway between Inverness and Nairn
Description		Upgrade the A96 to dual carriageway between Nairn and Inverness. Further improvements to Raigmore Interchange, including bus priority measures.
Justification		This intervention would significantly contribute to the objectives of 'improving connectivity particularly by public transport between Inverness city centre and the growth areas to the east, including Inverness Airport'; 'reducing the accident rate and severity to the national average'; and 'improving journey time and increased opportunities to travel, particularly by public transport between Aberdeen and Inverness'. Upgrading the A96 to dual carriageway between Nairn and Inverness would have a significant impact on reducing accident rates by providing a higher standard of road compared with the existing single carriageway. It would also significantly improve connectivity between Inverness and communities to the east by reducing journey times, along this section of the corridor, and for longer distance journeys between Aberdeen and Inverness. This intervention would be deliverable under current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*
Objective Addressed	*To reduce the accident rate and severity rate to current national average.*
Objective Addressed	*To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.*

Objectives addressed in Inverness:

Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Intervention	4	New Bypasses on the A96
Description		Bypasses on the A96 around the towns of Nairn, Keith and Elgin.
Justification		This intervention would significantly contribute to the objectives of 'reducing the accident rate and severity rate to current national average' and to 'improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness' by reducing both the number of accidents in the corridor and the conflict between long distance and local trips that occurs within the town centres. Reducing this conflict and the associated delays would significantly contribute to improving journey times between Aberdeen and Inverness. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.*
Objective Addressed	*To reduce the accident rate and severity rate to current national average.*

Intervention	5	Speed Enforcement Measures on the A96
Description		Speed Enforcement Measures on the A96 between Aberdeen and Inverness at locations where vehicle speed is a contributing factor to accidents.
Justification		This intervention would significantly contribute to the objective 'to reduce the accident rate and severity rates to current national average' and is likely to make a significant impact by ensuring greater compliance with speed limits. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident rate and severity rate to current national average.*

Intervention	6	A96 Road Safety Improvements
Description		The introduction of sections of WS2+1, climbing lanes, junction improvements, overtaking lay-bys and hard strips for agricultural vehicles at specific locations.
Justification		This intervention would significantly contribute to the objective of 'reducing the accident rate and severity rate to the current national average' by providing targeted traffic engineering interventions at specific locations. The improved road standard and safer overtaking opportunities would have a significant impact on reducing the number and severity of accidents. This intervention would be deliverable under current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident rate and severity rate to current national average.*

Intervention	8	A96 Dual Carriageway between Inverness and Aberdeen
Description		Upgrade the existing single carriageway A96 to dual carriageway, with bypasses around the towns of Nairn, Keith and Elgin.
Justification		This intervention would significantly contribute to the objectives of 'improving connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport', 'reducing accident rate and severity rate to the current national average' and 'to improve journey time, and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness' by providing a dual carriageway designed to modern standards between the two cities. Dualled sections and bypasses of the three towns along the route could significantly benefit private car trips, freight and trips by coach as well. This intervention would also have more localised benefits and would help to improve connectivity between Inverness and the growth areas to the east. Furthermore, by upgrading this road to modern design standards a reduction in accident rates would be expected. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:	
Objective Addressed	*To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.*
Objective Addressed	*To reduce the accident rate and severity rate to current national average.*
Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Objectives addressed in Inverness:	
Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Intervention	56	Inverness Bus Priority Measures and Park-&-Ride
Description		Bus based Park-&-Ride site at Dalcross with a link to Inverness Airport, including bus priority measures on the A96 and at Raigmore Interchange.
Justification		This intervention would significantly contribute to the objective 'to improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport' by providing facilities to support bus services and priority measures that would help ensure competitive and reliable bus journey times. Park-&-Ride facilities would enable trips to originate from a wide area and continue their journey to Inverness city centre by public transport. The bus priority measures would also significantly improve journey times and journey time reliability for longer distance bus services. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in this corridor:

Objective Addressed	*To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.*
Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Objectives addressed in Inverness:

Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Objectives addressed in Corridor 6:

Objective Addressed	*To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onwards to the central belt).*

Intervention	58	Rail Service Enhancements between Inverness and Nairn
Description		Increased frequency of rail services between Nairn and Inverness, including a new station at Dalcross with Park-&-Ride facilities. This would include infrastructure enhancements, additional rolling stock and construction of a new station.
Justification		This intervention would significantly contribute to the objective 'to improve connectivity, particularly by public transport between Inverness and the areas to the east including Inverness Airport' by increasing rail service frequencies and providing a new rail station close to Inverness Airport. This intervention would be deliverable under current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Objectives addressed in Inverness:

Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Intervention	142	Rail Service Enhancements between Aberdeen and Inverness
Description		Improvements to the railway between Aberdeen and Inverness to allow increase Would require line speed improvements, track capacity, signalling improvements and additional rolling stock. Possible addition to include electrification of the line.
Justification		This intervention would significantly contribute to the objective 'to improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness' and 'to improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport' by providing a more frequent and faster service at regular intervals through the day. This intervention will provide a significant impact through an hourly frequency service and a reduction in journey time by approximately 30 minutes. This intervention would be deliverable under current best practice through the ScotRail franchise, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.*
Objective Addressed	*To improve connectivity, particularly by public transport between Inverness city centre and the growth area to the east including Inverness Airport.*

Intervention	152	Express Coach Service Facilities between Aberdeen and Inverness
Description		Facilities along the corridor to support an express coach service between Aberdeen and Inverness. This would include high quality waiting facilities, real time information, integration with rail and local bus services, bus priority measures and bus lanes.
Justification		This intervention would significantly contribute to the objective of 'improving journey time and opportunity to travel, particularly by public transport, between Aberdeen and Inverness' by significantly improving journey time reliability through fewer stops and bus priority measures. Improved waiting facilities, real time information and integration of express coach and local bus services would increase opportunities to travel by public transport and make public transport more attractive to users. This intervention would be deliverable in line with current best practice.

Objectives addressed in this corridor:

Objective Addressed	*To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.*

STPR Interventions

5 Dundee to Aberdeen

Intervention	16	Rail Service Enhancements between Aberdeen, Dundee, Edinburgh and Glasgow
Description		Direct and half hourly express service with reduced journey times between Aberdeen and Dundee, with one train an hour to Glasgow and one train an hour to Edinburgh, and no stops at intermediate settlements . This would require line speed improvements, additional loops to allow freight trains to be passed, upgraded signalling to reduce the headway times and it may require work to remove the single track at Montrose. It is also likely to require more powerful rolling stock which may be best utilised through electrification. This would be complementary to the Aberdeen and Dundee suburban rail interventions which retain rail services for intermediate settlements.
Justification		This intervention would significantly contribute to the objective 'to improve public transport competitiveness between Dundee and Aberdeen' and 'to promote journey time reductions, particularly by public transport, between the central belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres' by significantly improving rail journey times between the two cities. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:	
Objective Addressed	*To improve the public transport competitiveness between Aberdeen and Dundee (and hence onwards to the central belt).*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Aberdeen:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the Aberdeen and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Dundee:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between Aberdeen and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Glasgow:	

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Perth:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Corridor 9:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Corridor 11:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Corridor 14:	
Objective Addressed	*To promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	145	Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen via Perth
Description		An increased number of available paths for freight trains between Mossend, Grangemouth, Dundee and Aberdeen via Perth, increased length of loops and removal of speed limits that are below 75mph for freight trains. Increased loading gauge to permit larger containers to be carried and provision of bi-directional signalling along the route to reduce the impact of engineering works.
Justification		This intervention would significantly contribute to the objective 'to contribute to reducing both overall emissions and emissions per person kilometre through providing for alternatives to road freight movement in the corridor'. These improvements would make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times, allowing freight to arrive at times suitable for the final receiver and allowing standard 9' 6" deep sea containers to be carried. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to reducing both overall emissions and emissions per person kilometre through providing for alternatives to road freight movement on the corridor.*

Intervention	167	Roll On-Roll Off Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness via Perth
Description		A full upgrade of the route between the central belt, Aberdeen and Inverness to allow roll-on/roll-off freight trains to operate. This would require extensive works to increase the loading gauge, route availability and number of trains operating. Signalling improvements would facilitate bi-directional running and 24 hour access to the route. New facilities in the central belt, Perth, Aberdeen and Inverness will allow goods vehicles to drive on and off and electrification will allow services to be operated by electric locomotives.
Justification		This intervention would encourage the transfer of freight traffic from road to rail and therefore significantly contribute to the objective of 'reducing emissions between Dundee and Aberdeen' by reducing the variability of journey times on the A9 and A90 through the removal of slower moving vehicles. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to reducing both overall emissions and emissions per person kilometre through providing for alternatives to road freight movement on the corridor.*

Objectives addressed in Corridor 6:

Objective Addressed	*To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity.*

STPR Interventions

6 Inverness to Perth

Intervention	10	A9 Dualling
Description		Upgrade existing A9 to dual carriageway throughout between Inverness and Perth with associated junction improvements.
Justification		This intervention would contribute significantly to the objective 'to improve journey times between Inverness and Perth, and onwards to the central belt', by increasing the speed limit along the majority of its length and removing the impact of heavy goods vehicles and coaches on private cars that currently occurs on the existing sections of single carriageway. The intervention would contribute to the 'issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity' by providing dual carriageway standard between Perth and Inverness which would significantly improve safety and reduce driver frustration on the full length of the route. This intervention would be deliverable under current best practice, however there are potential significant environmental impacts which would need to be investigated further and which may need to be mitigated during the planning and construction of this intervention.

Objectives addressed in this corridor:	
Objective Addressed	*To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity.*
Objective Addressed	*To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onwards to the central belt).*
Objective Addressed	*To improve the operational effectiveness of the A9 as it approaches Perth and Inverness.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Glasgow:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Inverness:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between Inverness and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Perth:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Corridor 9:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	11	A9 Upgrading
Description		A9 Dual carriageway from Perth to Blair Atholl with associated improvements to the remainder of the route.
Justification		This intervention would contribute significantly to the objective 'to improve journey times between Inverness and Perth, and onwards to the central belt', by increasing the speed limit along much of its length and reducing the impact of heavy goods vehicles and coaches on private cars that currently occurs on the existing sections of single carriageway. Although this intervention would not fully address 'issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity', the new dual carriageway and 2+1 sections would significantly contribute to improving safety and reducing driver frustration. This intervention would be deliverable under current best practice, however there are potential environmental issues which may need to be mitigated during the planning and construction of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To improve the operational effectiveness of the A9 as it approaches Perth and Inverness.*
Objective Addressed	*To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onwards to the central belt).*
Objective Addressed	*To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity.*

Objectives addressed in Edinburgh:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Glasgow:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Inverness:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between Inverness and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Perth:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Corridor 9:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	13	Rail Enhancements on the Highland Mainline between Perth and Inverness
Description		Improvements to the Highland Mainline to permit an increase in service frequency and line speed. Necessary improvements would include additional loops, dynamic loops or lengthening the double track sections, signalling improvements and/or more powerful rolling stock (which may be achieved through electrification).
Justification		This intervention would significantly contribute to the objective to' reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onwards to the central belt)' and 'promoting journey time reductions, particularly by public transport, between the central belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centre' through significant line improvements and provision of additional peak services that arrive in Glasgow, Edinburgh or Inverness before 10am and depart after 5pm. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:	
Objective Addressed	*To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onwards to the central belt).*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Glasgow:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Inverness:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between Inverness and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Perth:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Corridor 9:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	146	Rail Freight Enhancements between Mossend, Grangemouth and Inverness
Description		An increased number of available paths for freight trains between Mossend, Grangemouth and Inverness via Perth, increased length of loops and removal of speed limits that are below 75mph for freight trains. Increased loading gauge to permit larger containers to be carried and bi-directional signalling to reduce the impact of engineering works.
Justification		This intervention would significantly contribute to the objective 'to address issues of driver frustration' by encouraging a transfer of freight from road to rail thereby reducing the number of goods vehicles on the A9. The improvements would make a significant impact on rail journey time for freight movement, which would make this mode of travel more attractive to hauliers. The subsequent reduction in the number of goods vehicles on the A9 would remove a portion of slow moving vehicles from the road leading to less driver frustration. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity.*

Objectives addressed in Corridor 9:

Objective Addressed	*To reduce the severity of accidents to the national average.*

STPR Interventions

7 Glasgow to Oban / Fort William and Western Isles

Intervention	29	Online Trunk Road Improvements on the A82 south of Fort William, A83, A85 west of Tyndrum and A828
Description		Measures such as climbing lanes, sections of WS2+1 carriageway and additional lay-bys to permit safer overtaking.
Justification		This intervention would significantly contribute to the objective to 'reduce accident severity to the national average' and 'to provide improved road standards and overtaking opportunities' by improvements targeted at and adjacent to identified road accident clusters. Providing safer overtaking opportunities would have a significant impact on improving safety on the routes. This intervention would be deliverable in line with current best practice, however there are potential environmental issues which would need to be mitigated during the planning and construction phases.

Objectives addressed in this corridor:

Objective Addressed	*To provide improved road standards and overtaking opportunities.*
Objective Addressed	*To reduce accident severity to the national average.*

Intervention	30	Speed Enforcement Measures on the A82 between Glasgow and Fort William, the A83 between Tarbert and Kennacraig, the A85
Description		Speed Enforcement Measures on the A82, A83, A85, A828 and A830 at locations where vehicle speed is a contributing factor to accidents.
Justification		This intervention would significantly contribute to the objective 'to reduce accident severity to the national average' and is likely to make a significant impact by ensuring greater compliance with speed limits. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To reduce accident severity to the national average.*

STPR Interventions

8 Aberdeen to North East Scotland

Intervention	170	Online Trunk Road Improvements on the A90 north of Aberdeen
Description		Realignment of the road, junction improvements, climbing lanes, sections of WS2+1 carriageway, hard strips for agricultural vehicles and the provision of additional lay-bys to permit safer overtaking.
Justification		This intervention would significantly contribute to the objective 'to promote a continuing reduction in accident rates and severity rates across the strategic transport network' by significantly improving the standard of road provision on the A90 north of Aberdeen. These measures would reduce the number and severity of accidents at specific locations. This intervention would be deliverable under current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

STPR Interventions

9 Glasgow to Perth

Intervention	23	Upgrade of M80 Junction 1/M8 Junction 13
Description		Upgrading the merge between the M80 and M8 in Glasgow to improve the operation of the junction.
Justification		This intervention would significantly contribute towards the objective 'to improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow' and support the objective of 'promoting journey time reductions between the central belt and Aberdeen/Inverness' by significantly improving the operation of this junction. This intervention would be deliverable under current best practice.

Objectives addressed in this corridor:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.*

Intervention	26	Lengthen Trains and Platforms between Glasgow and Dunblane/Alloa
Description		Redevelop Glasgow Queen Street and other stations between Glasgow and Perth to allow trains of up to 8 coaches to run on this route. Requires new rolling stock and platforms to be lengthened at Glasgow Queen Street, Bishopbriggs, Lenzie, Croy, Larbert, Bridge of Allan, Alloa and Dunblane. Additional car parking at stations.
Justification		This intervention would significantly contribute to the objective 'address current and forecast rail overcrowding into Glasgow' by increasing the number of coaches on services between Glasgow and Dunblane/Alloa and thereby providing additional seating capacity, without having to run any additional services. This intervention would be deliverable through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To address current and forecast rail overcrowding into Glasgow.*

Intervention	42	M80/A80 Corridor Bus Priority Measures and Park-&-Ride Network
Description		Bus priority measures, including hard shoulder bus lanes or guided busways to serve Glasgow city centre, plus Park-&-Ride facilities accessible from the motorway.
Justification		This intervention would significantly contribute to the objectives of improving the efficiency and reliability of the southern sections of the M80, particularly by priority vehicles, through the introduction of bus priority measures. This intervention is expected to reduce journey time, particularly by public transport and increase the overall capacity of public transport in and out of Glasgow city centre, which could contribute to addressing the issue of rail overcrowding. The proposed Park-&-Ride facilities would improve access to these bus services for people living in a wide area to the north east of the city. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in this corridor:

Objective Addressed	*To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.*
Objective Addressed	*To address current and forecast rail overcrowding into Glasgow.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Glasgow:

Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	128	Speed Enforcement Measures on the M80/M9/A9 Corridor between Glasgow and Perth
Description		Speed Enforcement Measures on the M80 and A80 between Glasgow and Stirling, and on the M9 and A9 between Stirling and Perth at locations where vehicle speed is a contributing factor to accidents.
Justification		The provision of speed enforcement measures on the M80/A80 and M9/A9 would contribute to the objective 'to reduce the severity of accidents to the national average'. The intervention is likely to make a significant impact by ensuring greater compliance with speed limits. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the severity of accidents to the national average.*

Intervention	153	Grade Separation of Junctions on the A9 between Keir Roundabout and South of Perth
Description		Grade separation of all junctions on the A9 between Dunblane and Perth, including Keir Roundabout, however excluding Broxden Roundabout. This allows closure of all gaps in the central reservation.
Justification		This intervention significantly contributes to the objective of 'reducing the severity of accidents to the national average' by removing all accidents resulting from vehicles that currently cross the carriageway, which are commonly serious or fatal in nature. The Grade separation of Keir Roundabout will significantly reduce forecast delays on the A9, thereby reducing journey time between Aberdeen/Inverness and the central belt. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the severity of accidents to the national average.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Aberdeen:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the Aberdeen and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Dundee:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between Aberdeen and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Glasgow:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Inverness:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between Inverness and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*

Objectives addressed in Perth:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Corridor 5:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Corridor 6:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	157	Intelligent Transport System Initiatives on the M80 and A80
Description		Intelligent Transport Systems, priority vehicle lanes, ramp metering, variable speed limits and hard shoulder running for priority vehicles on the M80 and A80 between Haggs and the M8 merge.
Justification		This intervention would significantly contribute to the objective of 'improving the efficiency and reliability of the operation of the southern sections of the M80 on Approach to Glasgow, particularly for priority vehicles' by making more efficient use of the available road space. Giving priority to buses and other priority vehicles would encourage people to car share or take the bus, thereby enabling the trunk road network to carry more people. Ramp metering and variable speed limits reduce congestion, improve journey time reliability and maximise capacity by ensuring that the flow of traffic onto the trunk road network is smooth. There area number of well developed and cost effective measures that can be applied where appropriate., however physical constraints may impact on the configuration of any hard shoulder running.

Objectives addressed in this corridor:

Objective Addressed	*To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.*

STPR Interventions

10 Edinburgh to Stirling

Intervention	17	Lengthen Trains and Platforms Between Edinburgh and Dunblane
Description		Lengthen trains and platforms to provide more capacity per train between Edinburgh and Dunblane. Replace existing two coach trains with three coach trains (and pairs of two coach trains replaced with pairs of three coach trains).
Justification		This intervention would significantly contribute to the objective 'to address shortfalls in the provision of public transport to and from Edinburgh and to increase public transport modal share' by increasing the number of coaches on services between Dunblane and Edinburgh and thereby providing additional seating capacity, without having to run any additional services. This would improve public transport accessibility to Edinburgh and encourage a shift in mode from road to rail. This intervention would be deliverable through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	18	Rail Service Frequency Enhancements between Edinburgh and Dunblane
Description		Capacity enhancements to provide four trains per hour between Edinburgh and Dunblane. This could include new stations at Bannockburn and Winchburgh, and capacity enhancements at locations such as Stirling to Larbert, Newbridge Junction and Haymarket to Edinburgh Waverley. Some services would terminate at Haymarket in Edinburgh and Alloa rather than Dunblane.
Justification		This intervention would significantly contribute to the objective 'to address shortfalls in the provision of public transport to and from Edinburgh and to increase public transport modal share' by providing a increase in public transport capacity into Edinburgh. The additional capacity together with the new stations is expected to encourage a shift in mode from road to rail. This intervention would be deliverable through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	20	M9 Bus Priority Measures and Park-&-Ride Network
Description		Bus priority measures on the M9 corridor between Falkirk and Edinburgh (including the A8 between Newbridge and the City Centre) to support express bus services, and out-of-town Park-&-Ride sites.
Justification		This intervention would significantly contribute to the objective 'to address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share' by providing bus priority measures and Park-&-Ride facilities that would significantly improve reliability, reduce bus journey times between Falkirk and Edinburgh and offer a more competitive alternative to the car. The intervention would improve access by public transport to Edinburgh and is expected to make a significant impact on modal share by encouraging a shift in mode from private car to bus. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in this corridor:

Objective Addressed	*To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	21	Grangemouth Road Access Upgrades
Description		Upgrades to Junction 6 on the M9 and upgrades to the A801 between Grangemouth and Junction 4 of the M8.
Justification		This intervention would significantly contribute to the objectives 'to improve access to Grangemouth Port and freight hub' and 'promote efficient and effective transport links to support the development and implementation of the proposed national development at Grangemouth and Edinburgh Airport identified in the NPF2', through the provision of westbound slip roads onto the M9 close to Grangemouth which would significantly improve the direct link from Grangemouth to the M8.This intervention would be delivered in accordance with best practice.

Objectives addressed in this corridor:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.*
Objective Addressed	*To improve access to Grangemouth port and freight hub.*

Objectives addressed in Corridor 13:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.*

Intervention	22	Rail Access Improvements to Grangemouth
Description		Capacity enhancements at and around Grangemouth Junction including increased loading gauge to W12, a new east facing link from Grangemouth to Polmont and electrification between Coatbridge and Grangemouth.
Justification		This intervention would significantly contribute to the objectives 'to improve access to Grangemouth port and freight hub' and 'to promote efficient and effective transport links to support the development and implementation of the proposed national development at Grangemouth and Edinburgh Airport identified in the NPF2', through a range of improvements that would significantly improve journey time reliability and accessibility to the port. Electrification would allow freight trains to be operated on the West Coast Mainline by faster electric locomotives, which removes the need to change to diesel locomotives at Mossend or Coatbridge. Improvements to the loading gauge and a new link from Grangemouth to Polmont would allow the movement of larger containers and provide direct access to/from the east. Infrastructure would also enable passenger services to be introduced to Grangemouth by extending the services from Falkirk Grahamston. This intervention would be delivered in accordance with best practice.

Objectives addressed in this corridor:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.*
Objective Addressed	*To improve access to Grangemouth port and freight hub.*

Objectives addressed in Corridor 13:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.*

Objectives addressed in Corridor 18:

Objective Addressed	*To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.*

STPR Interventions

12 Edinburgh to Perth

Intervention	35	Rail Service Enhancements between Perth and Edinburgh
Description		Journey time improvements through infrastructure enhancements and the introduction of express services.
Justification		This intervention would significantly contribute to the objective 'to reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport' and 'to promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day' by providing a significantly faster rail connection between the two centres. Line improvements and fewer stops on express services would significantly reduce rail journey time and contribute to allowing business journeys to take place within one day. This intervention would be deliverable under current best practice through the ScotRail franchise.

Objectives addressed in this corridor:	
Objective Addressed	*To promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objectives addressed in Perth:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	36	New Rail Line between Perth and Inverkeithing
Description		A direct rail link between Perth and Inverkeithing via Halbeath, following a similar alignment of the M90. This would require new track, signalling and rolling stock.
Justification		This intervention would significantly contribute to the objective 'to reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport' and 'to promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day' by providing a significantly faster rail connection between the two centres. Line improvements, faster trains and a significantly shorter route would greatly reduce rail journey time and contribute to allowing business journeys to take place within one day. This intervention would be deliverable under current best practice, with operation through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.*

Objectives addressed in Edinburgh:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Objectives addressed in Perth:

Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	154	Intelligent Transport System Initiatives on the M90 and A90
Description		Intelligent Transport Systems, priority vehicle lanes, ramp metering, variable speed limits and hard shoulder running for priority vehicles on the M90 and A90 between Perth and Edinburgh.
Justification		This intervention would significantly contribute to the objective 'to improve the efficiency of the M90/A90 during periods of peak demand' by making more efficient use of the available road space. Giving priority to buses and other priority vehicles would encourage people to car share or take the bus, thereby enabling the trunk road network to carry more people. Ramp metering and variable speed limits reduce congestion, improve journey time reliability and maximise capacity by ensuring that the flow of traffic onto the trunk road network is smooth. There area number of well developed and cost effective measures that can be applied where appropriate, however physical constraints may impact on the configuration of any hard shoulder running.

Objectives addressed in this corridor:	
Objective Addressed	*To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*
Objective Addressed	*To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objectives addressed in Corridor 14:	
Objective Addressed	*To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*
Objective Addressed	*To reduce public transport journey time between Edinburgh and Dundee.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*

Intervention	163	Rail Freight connections to the Port of Rosyth
Description		Construction of a new rail link and associated infrastructure enhancements from the Dunfermline to Longannet line to the Port of Rosyth or Improvements to the Inverkeithing South Junction and Inverkeithing Central Junction and passenger trains on the Fife Circle along with further improvements to the rail branch line between Inverkeithing South Junction and the Port of Rosyth.
Justification		This intervention would significantly contribute to the objective to 'promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth' by providing a more direct link from Rosyth to the West Coast Mainline which would reduce freight journey times and allow freight to avoid the busy Inverkeithing Central Junction where a large number of passenger trains pass. The less expensive alternative of improving Inverkeithing Central Junction would provide more efficient access and reduce freight journey times. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*

Objectives addressed in Corridor 14:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*

STPR Interventions

13 Edinburgh to Glasgow

Intervention	32	New Light Rapid Transit Line between Edinburgh and Livingston
Description		Extension of Edinburgh Tram or alternative light rapid transit system from Gogar to Livingston, with a loop round Livingston serving both railway stations.
Justification		This intervention would significantly contribute to the objective 'to increase public transport capacity and frequency between Livingston and Edinburgh' by introducing a new mode of transportation between the two areas, which would significantly increase public transport capacity and opportunities to travel on frequent services. This intervention would be deliverable under current best practice, however there are potential promotional issues and environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*

Intervention	33	Rail Service Frequency Enhancements between Edinburgh and Livingston South
Description		Increased number of services between Livingston South and Edinburgh (with the option to extend some or all services across Edinburgh to Newcraighall or North Berwick), with associated capacity enhancements and additional rolling stock. This may require a new bay platform on the south side of Haymarket station to allow services to terminate before Waverley.
Justification		This intervention would significantly contribute to the objective 'to increase public transport capacity and frequency between Livingston and Edinburgh' by increasing the number of trains, and therefore the available number of seats and services between the two centres. This intervention would be deliverable under current best practice through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	34	M8 and A71 Bus Priority and Park-&-Ride Network between Edinburgh, Livingston and Bathgate
Description		Bus priority measures on the Edinburgh City Bypass, M8/A8 and A71 corridors between Livingston and Edinburgh, including bus based Park-&-Ride.
Justification		This intervention would significantly contribute to the objectives 'to increase public transport capacity and frequency between Livingston and Edinburgh' and 'to make best use of the available road space and better manage peak demand', by providing bus priority measures and Park-&-Ride facilities. These measures would make best use of available road space by enhancing capacity while improving journey time and reliability by public transport between the two centres. Furthermore, it is expected that the improvements would encourage a shift in mode from private car to bus, which would reduce the number of journeys by car thereby contributing to the management of demand during peak periods. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in this corridor:

Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*
Objective Addressed	*To make best use of the available road space and better manage peak demand.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	40	M8 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre and Areas to the East
Description		Bus priority measures, including hard shoulder running, bus lanes or guided busways to serve Glasgow city centre, and Park-&-Ride facilities accessible from the motorway.
Justification		This intervention would significantly contribute to the objectives 'to make best use of the available road space and better manage peak demand', by providing bus priority measures and Park-&-Ride facilities. These measures would make best use of available road space by enhancing capacity while improving journey time and reliability by public transport for people living in a wide area to the east of the city (including those travelling from Edinburgh and east central Scotland). Furthermore, it is expected that the improvements would encourage a shift in mode from private car to bus, which would reduce the number of journeys by car thereby contributing to the management of demand during peak periods. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in this corridor:

Objective Addressed	*To make best use of the available road space and better manage peak demand.*

Objectives addressed in Glasgow:

Objective Addressed	*To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.*
Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	100	Electrification of Edinburgh to Glasgow via Shotts
Description		Enhanced frequency of services on the Edinburgh to Glasgow via Shotts line through revision of the stopping pattern and electrification of the remainder of the route, as well as other infrastructure enhancements along the route.
Justification		This intervention would significantly contribute to the objectives to increase public transport capacity, frequency and to provide journey time reductions by electrifying the Edinburgh to Glasgow via Shotts line as this will provide a greater number of reliable services, an increase in the number of seats and a reduction in travel time along the route. The removal of diesel trains is expected 'to contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions'. This intervention would be implemented in line with current best practice.

Objectives addressed in this corridor:	
Objective Addressed	*To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.*
Objective Addressed	*To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.*
Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	102	Extensive Rail Service and Infrastructure Enhancements between Edinburgh and Glasgow via Falkirk High
Description		An enhanced service on the Edinburgh to Glasgow via Falkirk High line. Speed increased through a programme of electrification and major infrastructure enhancements.
Justification		This intervention would significantly contribute to the objectives 'to increase public transport capacity and reduce journey time between Edinburgh and Glasgow' and 'contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions' by providing a faster electrified service between Glasgow and Edinburgh via Falkirk High. This intervention would include a significant increase of 900 seats per hour on 6 services resulting in a step change in capacity and frequency. Reduced journey time and improved overall performance of the service would occur through increased line speed to 125mph, a programme of electrification and major infrastructure enhancements. Electrification of the lines would contribute towards reduced emissions within the corridor between Edinburgh and Glasgow. This intervention would be deliverable under current best practice through the ScotRail franchise.

Objectives addressed in this corridor:	
Objective Addressed	*To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.*
Objective Addressed	*To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objectives addressed in Glasgow:	
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	103	Upgraded Rail Line between Edinburgh and Glasgow via Carstairs
Description		An enhanced service on a high speed link between Edinburgh Waverley and Glasgow Central through significant infrastructure enhancements to the existing route via Carstairs as well as major new railway construction.
Justification		This intervention would significantly contribute to the objectives 'to increase public transport capacity and reduce journey time between Edinburgh and Glasgow' and 'contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions' by providing enhanced services on an upgraded line between Glasgow and Edinburgh via Carstairs. This intervention would include a significant increase of 900 to 2,200 seats per hour, on 6 services resulting in a step change in capacity and frequency. Improved overall performance of the service would reduce travel time between the cities to between 35 and 40 minutes. The increased provision of electrified services would contribute towards reduced emissions within the corridor between Edinburgh and Glasgow. This intervention would be deliverable under current best practice through the ScotRail franchise, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:	
Objective Addressed	*To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.*
Objective Addressed	*To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objectives addressed in Glasgow:	
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	104	New High Speed Rail Line between Edinburgh and Glasgow
Description		A new dedicated high-speed route between Edinburgh and Glasgow offering a major step change in journey time, service frequency and performance through major construction works. For the purposes of testing, it has been assumed that this route is high-speed conventional rail, but this could equally be any high-speed technology such as Maglev.
Justification		This intervention would significantly contribute to the objective 'to increase public transport capacity and reduce journey time between Edinburgh and Glasgow' by offering a major step change in journey time, service frequency and performance through major construction works. The enhanced service would provide a journey time of 30 minutes between the two cities. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Objectives addressed in Glasgow:

Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	105	Rail Service Frequency Enhancements between Edinburgh and Glasgow via Shotts and Carstairs
Description		This intervention would provide improved journey times, two 'semi-fast' Edinburgh to Glasgow trains per hour, additional seating capacity on the Edinburgh to Glasgow via Carstairs and Shotts route as well as better connections at Glasgow Central Station.
Justification		This intervention would significantly contribute to the objectives 'to increase public transport capacity and frequency between Livingston and Edinburgh' and 'to increase public transport capacity and reduce journey time between Edinburgh and Glasgow' by introducing more services between Edinburgh and Glasgow via Shotts or Carstairs and providing a significant increase to seating capacity between these locations. This intervention would be deliverable under current best practice through the ScotRail franchise.

Objectives addressed in this corridor:	
Objective Addressed	*To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.*
Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objectives addressed in Glasgow:	
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	134	Improved Road Links to Edinburgh Airport
Description		New road connection from the M8 between Junctions 1 and 2 to Edinburgh Airport.
Justification		This intervention would significantly contribute to the objective 'to promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2' by providing a direct link from Edinburgh Airport to the Scottish motorway network. This would improve links to the airport by avoiding the existing A8 between Gogar Roundabout and Newbridge Roundabout thus providing capacity to accommodate the planned growth of passengers using the airport. This intervention would be implemented in line with current best practice.

Objectives addressed in this corridor:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.*

Objectives addressed in Edinburgh:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.*

Objectives addressed in Corridor 10:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.*

Objectives addressed in Corridor 12:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*

Objectives addressed in Corridor 14:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*

Intervention	137	Rail Service Frequency Enhancements between Edinburgh and Bathgate
Description		Increased service provision upon completion of the Airdrie to Bathgate Railway. These could either run across Edinburgh to Shawfair or North Berwick, providing cross-city connections, or terminate at Haymarket.
Justification		This intervention would significantly contribute to the objective 'to increase public transport capacity and frequency between Livingston and Edinburgh' by providing an increased number of services from Livingston and Bathgate to two of Edinburgh's areas of economic activity, West Edinburgh and South East Edinburgh. This intervention would be deliverable under current best practice through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To increase public transport capacity and frequency between Livingston and Edinburgh.*

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	140	Intelligent Transport System Initiatives on the M8 between Glasgow and Harthill
Description		Intelligent Transport Systems, priority vehicle lanes, ramp metering, variable speed limits and hard shoulder running for priority vehicles on the M8 between the Kingston Bridge and Harthill Services.
Justification		This intervention would significantly contribute to the objective 'to make better use of the available road space and better managing peak demand' and 'to contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions' by giving priority to targeted vehicle classes and reducing congestion. Giving priority to buses and other priority vehicles would encourage people to car share or take the bus, thereby enabling the trunk road network to carry more people. Ramp metering and variable speed limits reduce congestion, improve journey time reliability and maximise capacity by ensuring that the flow of traffic onto the trunk road network is smooth. There area number of well developed and cost effective measures that can be applied where appropriate, however physical constraints may impact on the configuration of any hard shoulder running.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.*
Objective Addressed	*To make best use of the available road space and better manage peak demand.*

Objectives addressed in Glasgow:

Objective Addressed	*To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.*

Intervention	141	Intelligent Transport System Initiatives on the M8 between Edinburgh and Harthill
Description		Intelligent Transport Systems, priority vehicle lanes, ramp metering, variable speed limits and hard shoulder running for priority vehicles on the M8 between Harthill Services and Junction 1.
Justification		This intervention would significantly contribute to the objective 'to make better use of the available road space and better managing peak demand' and 'to contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions' by giving priority to targeted vehicle classes and reducing congestion. Giving priority to buses and other priority vehicles would encourage people to car share or take the bus, thereby enabling the trunk road network to carry more people. Ramp metering and variable speed limits reduce congestion, improve journey time reliability and maximise capacity by ensuring that the flow of traffic onto the trunk road network is smooth. There area number of well developed and cost effective measures that can be applied where appropriate, however physical constraints may impact on the configuration of any hard shoulder running.

Objectives addressed in this corridor:	
Objective Addressed	*To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.*
Objective Addressed	*To make best use of the available road space and better manage peak demand.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	172	New connection between the M74 and M8
Description		New dual-carriageway link road between the M74 at Junction 12 to the M8 at Junction 4.
Justification		This intervention would significantly contribute to objectives 'to promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2' by reducing journey time between the M74 and the east of Scotland and reducing congestion on the M8 motorway. The intervention would also ease congestion on the M8 so would ' contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions' as well as contributing to a reduction in 'journey times between Edinburgh and Glasgow'. This intervention is deliverable under existing best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.*
Objective Addressed	*To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.*

Objectives addressed in Corridor 18:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

STPR Interventions

14 Edinburgh to Dundee

Intervention	69	Cross Forth Ferry Facilities
Description		Provision of facilities at Newhaven (for Leith) and at Burntisland and Kirkcaldy in Fife for a fast ferry or hovercraft service across the Firth of Forth.
Justification		This intervention would significantly contribute to the objective of 'increasing public transport capacity and frequency between Fife and Edinburgh', by facilitating the operation of ferry services across the Firth of Forth. This intervention would also provide new interchange opportunities as the ferry services would allow commuters to continue journeys on bus and tram services at Newhaven. Within Scotland there are currently already many ferry services operating within the transport network. This service would be delivered by a commercial operator.

Objectives addressed in this corridor:

Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	93	Rail Service Enhancements Between Edinburgh and Dundee
Description		Enhanced service provision and both line speed and infrastructure improvements. More powerful rolling stock may also be required.
Justification		This intervention would significantly contribute to the objectives 'to reduce public transport journey time between Edinburgh and Dundee' and 'to promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow businesses to achieve an effective working day when travelling between these centres' through the provision of an enhanced rail service between the two cities. Journey time reduction would be obtained through line speed improvements and more powerful rolling stock. Increased capacity and additional loops would augment existing services and reduce longer distance journey times between the central belt and Aberdeen/Inverness. This intervention would be implemented in line with current best practice.

Objectives addressed in this corridor:	
Objective Addressed	*To reduce public transport journey time between Edinburgh and Dundee.*
Objective Addressed	*To promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Dundee:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between Aberdeen and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	95	Light Rapid Transit connections between Fife and Edinburgh
Description		Extension of Edinburgh Tram or alternative light rapid transit system from Edinburgh to Fife, using the Replacement Forth Crossing. In Fife, this could serve Dunfermline, Cowdenbeath, Glenrothes, Leven, Kirkcaldy, Burntisland and Dalgety Bay with potential connections to West Lothian.
Justification		This intervention would significantly contribute to the objectives 'to increase public transport capacity and frequency between fife and Edinburgh' and 'to promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2' by providing a new public transport link across the Firth of Forth. The new service would provide a step change in public transport capacity between Fife and Edinburgh and could serve Edinburgh Airport, providing a significant improvement in access to the site from Fife. Furthermore, by connecting with heavy rail services around Fife, it would 'enhance interchange opportunities' through the operation of additional public transport services and provide new ones which do not presently exist. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:	
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*
Objectives addressed in Corridor 12:	
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.*

Intervention	96	Fife Bus Priority Measures and Park-&-Ride Network
Description		Bus priority measures on the A92, M90 and A90 between Perth, Dundee, Dunfermline and Edinburgh to support express bus services, with Park-&-Ride facilities at Dunfermline and Rosyth, plus extension of the existing facilities at Inverkeithing. Includes measures such as a bus lane on the M90 and A92 and associated junction improvements.
Justification		This intervention would significantly contribute to the objectives 'to increase public transport capacity and frequency between Fife and Edinburgh', 'Dundee and Edinburgh', and 'to improve the efficiency of the M90/A90 during periods of peak demand' by providing priority bus measures and Park-&-Ride facilities. The intervention would significantly improve public transport connections and make efficient use of the M90/A90 and A92 between Fife, Dundee and Edinburgh. This intervention would also provide a wider impact as the measures would also improve journey times for longer distance coach journeys between Edinburgh and both Inverness and Aberdeen. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in this corridor:	
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*
Objective Addressed	*To reduce public transport journey time between Edinburgh and Dundee.*
Objective Addressed	*To promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*
Objectives addressed in Dundee:	
Objective Addressed	*To promote journey time reductions, particularly by public transport, between Aberdeen and the central belt primarily to allow business to achieve an effective working day when travelling between these centres.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objectives addressed in Corridor 12:	

Objective Addressed	*To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.*
Objective Addressed	*To promote journey time reductions between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*
Objective Addressed	*To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*

Intervention	97	Rail Service Frequency Enhancements between Edinburgh and Fife
Description		Enhanced rail service on the Fife Circle and route to Dundee incorporating semi-fast services via Kirkcaldy and all stops and semi-fast services via Dunfermline. This would require capacity enhancements between Edinburgh and Inverkeithing and may require further capacity enhancements and passing loops on the Fife Circle. Additional capacity at Edinburgh Waverley would be required, or alternatively more efficient use of Haymarket would have to be developed.
Justification		This intervention would significantly contribute to the objective 'to increase public transport capacity and frequency between Fife and Edinburgh' by providing service enhancements and line improvements. Faster and more frequent services around the Fife Circle to Edinburgh would significantly improve travel by public transport and interchange opportunities by reducing the average wait time when changing to or from these services. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:	
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*
Objectives addressed in Edinburgh:	
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*
Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	108	New Rail Connections in Fife
Description		New passenger (rail) lines to serve St Andrews, Levenmouth, and Glenrothes town centre, including new track, signalling, rolling stock and construction of stations.
Justification		This intervention would significantly contribute to the objective 'to increase public transport capacity and frequency between Fife and Edinburgh' by providing new services to communities not currently served by rail. The provision of new lines and stations would provide a step change in the capacity of public transport services between Fife and Edinburgh. This intervention would be deliverable under current best practice through the ScotRail franchise, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objective Addressed	*To increase public transport capacity and frequency between Fife and Edinburgh.*

Intervention	180	Online Trunk Road Improvements on the A92
Description		Measures to increase safe overtaking opportunities and reduce journey time variability on the A92, including the introduction of climbing lanes, sections of WS2+1 carriageway, hard strips for agricultural vehicles, junction improvements and the provision of additional lay-bys to permit safer overtaking.
Justification		This intervention would contribute to the objective of 'promoting continuing reduction in accident rates and severity rates across the strategic transport network' by improvements targeted at providing a consistent carriageway standard and junction improvements adjacent to identified road accident clusters. Safer overtaking opportunities would also have a significant impact on improving overall safety on the route. This intervention would be deliverable in line with current best practice, however there are potential environmental issues which would need to be mitigated during the planning and construction phases.

Objectives addressed in this corridor:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

STPR Interventions

15 Glasgow to Stranraer and South West

Intervention	91	Rail Service Frequency Enhancement between Glasgow and Kilmarnock
Description		Measures to double the number of trains between Glasgow and Kilmarnock. This would require infrastructure improvements including doubling of the line between Kilmarnock and Barrhead, capacity enhancements between Busby Junction and Glasgow Central and additional rolling stock.
Justification		This intervention would significantly contribute to the objective 'to increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line' by doubling the number of services between Kilmarnock and Glasgow Central. This increase in capacity would provide a step change in public transport provision on this route into Glasgow and therefore would encourage a shift from car to public transport for trips to and from Glasgow city centre. This intervention would be deliverable under current best practice through the ScotRail franchise, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Objectives addressed in Glasgow:

Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	92	Rail Service Frequency Enhancement between Glasgow and the Ayrshire Coast
Description		Double the number of trains between Glasgow and Ayr, Glasgow and Ardrossan, and between Glasgow and Largs. This would require track layout changes north of Ardrossan, signalling upgrades between Kilwinning and Paisley, the provision of four tracks between Paisley and Glasgow Central or reopening of the railway line from Elderslie to Paisley Canal, platform capacity increases at Glasgow Central and additional rolling stock.
Justification		This intervention would significantly contribute to the objective 'to increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line' by doubling the number of services between the Ayrshire Coast (Ayr, Ardrossan and Largs) and Glasgow Central. This increase in capacity would provide a step change in public transport provision on this route into Glasgow city centre and to Glasgow Airport. This intervention would be deliverable under current best practice through the ScotRail franchise, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Objectives addressed in Glasgow:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	112	Lengthen Trains and Platforms between Glasgow and the Ayrshire Coast
Description		Lengthen trains and platforms between Glasgow and Ayr, Ardrossan and Largs.
Justification		This intervention would significantly contribute to the objective 'to increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line' by increasing the length of trains on services between the Ayrshire Coast (Ayr, Ardrossan and Largs) and Glasgow Central. This increase in capacity, and required lengthening of platforms, would provide a step change in public transport provision on this route into Glasgow city centre and to Glasgow Airport. This intervention would be deliverable under current best practice through the ScotRail franchise, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Objectives addressed in Glasgow:

Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*

Intervention	113	Lengthen Trains and Platforms between Glasgow and Kilmarnock
Description		Lengthen trains between Glasgow and Kilmarnock from two and four coach trains to three and six coach trains. This would also require platform lengthening across the route, capacity enhancements between Busby Junction and Glasgow Central and additional rolling stock.
Justification		This intervention would significantly contribute to the objective 'to increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line' by increasing the length of trains on services between Glasgow Central and Kilmarnock. This increase in capacity, and required lengthening of platforms, would provide a step change in public transport provision on this route into Glasgow city centre and to Glasgow Airport. This intervention would be deliverable under current best practice through the ScotRail franchise, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Objectives addressed in Glasgow:

Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*

Intervention	158	Selective Upgrades to the A77
Description		Upgrade the A77 from single to dual carriageway between Whittlets Roundabout and Bankfield. Grade separation of Dutchhouse, Whittlets and Holmston Roundabouts and bypasses around Maybole and Girvan. Measures on the A77 south of Ayr aimed at providing safe overtaking opportunities, such as realignment, widening of carriageway and also junction improvements at specific locations.
Justification		This intervention would significantly contribute to the objectives to 'reduce the conflict between long distance and local traffic with a focus on identified key constraint points' and 'to ensure efficient and effective freight access to the port facilities at Loch Ryan' by ensuring that local traffic that is travelling across or onto the A77 can do so without delaying traffic already travelling along the A77 and by removing long distance traffic from Maybole and Girvan town centres. The measures would also result in reduced journey times and improved reliability for passenger and freight traffic to and from the Loch Ryan ports and enhance safety along the route. This intervention would be deliverable under current best practice, however there are potential environmental issues which would need to be mitigated during the planning and construction of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*
Objective Addressed	*To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.*
Objective Addressed	*To ensure efficient and effective freight access to the port facilities at Loch Ryan.*

Intervention	159	Selective Upgrades to the A737
Description		Bypasses on the A737 around Dalry and Kilwinning.
Justification		This intervention would significantly contribute to the objective 'to reduce the conflict between long distance and local traffic with a focus on identified key constraint points' by removing long distance traffic away from Dalry and Kilwinning and onto new bypass routes around the towns, relieving two points of constraint on the A737. This intervention would be deliverable under current best practice, however there are potential environmental issues which would need to be mitigated during the planning and construction of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.*
Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

Intervention	165	Double-deck Trains between Glasgow and the Ayrshire Coast
Description		Upgrading of rail infrastructure to support double-deck trains operating between Glasgow and the Ayrshire Coast.
Justification		This intervention would significantly contribute to the objective 'to increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line' by providing a step change in the number of seats available on rail services on this route into Glasgow. The measures would also provide a more effective public transport link to Glasgow Airport by reducing overcrowding on services between Ayrshire and the airport. This intervention would be deliverable under current best practice, however there are potential operational and environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Objectives addressed in Glasgow:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	166	Double-deck Trains between Glasgow and Kilmarnock
Description		Upgrading of rail infrastructure to support double-deck trains operating between Glasgow and Kilmarnock.
Justification		This intervention would significantly contribute to the objective 'to increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line' by providing a step change in the number of seats available on rail services on this route into Glasgow. This intervention would be deliverable under current best practice, however there are potential operational and environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Objectives addressed in Glasgow:

Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	173	Extension of Glasgow Southern Orbital from East Kilbride to M73/M74
Description		New dual-carriageway link road between the M74 at Junction 4 and the A726 Glasgow Southern Orbital at Philipshill.
Justification		This intervention would significantly contribute to the objective 'to reduce conflict between long distance and local traffic with a focus on identifying key constraint points' by providing an alternative route for passenger and freight traffic between east and central Scotland and Ayrshire. The new link would remove long distance traffic from East Kilbride, thereby reducing the impact of this constraint on strategic trips travelling to and from the ports in Loch Ryan and at Hunterston. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To ensure efficient and effective freight access to the port facilities at Loch Ryan.*
Objective Addressed	*To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.*

STPR Interventions

16 Stranraer to North West England and beyond

Intervention	171	Online Trunk Road Improvements on the A75
Description		Increased safe overtaking opportunities on the A75, including measures such as the introduction of climbing lanes, sections of WS2+1 carriageway, hard strips for agricultural vehicles and the provision of additional lay-bys to permit safer overtaking.
Justification		This intervention would significantly contribute to the objective 'to promote continual reduction in accident rates and severity rates across the strategic transport network' by improving the standard of road provision to allow safer overtaking opportunities. The measures would have a significant impact on reducing accidents and accident severity along the A75. There is unlikely to be any deliverability issues with this intervention as it would be implemented in line with current best practice.

Objectives addressed in this corridor:

Objective Addressed	*To ensure efficient and effective freight access to the port facilities at Loch Ryan.*
Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

Intervention	174	Roll-On Roll-Off Rail Freight Enhancements between Stranraer, Kilmarnock and the Border
Description		Significant infrastructure upgrade of the rail route between Stranraer, Kilmarnock and the Border to allow roll-on/roll-off freight trains to operate. Measures would including gauge improvements, increased route availability, signalling improvements and electrification to allow services to be operated by electric locomotives. New facilities would be provided in Stranraer, Kilmarnock and near the Border to allow goods vehicles to drive on and off trains and also new trains to carry goods vehicles.
Justification		This intervention would significantly contribute to the objective 'to ensure efficient and effective freight access to the port facilities at Loch Ryan' by allowing freight to be transferred from road to rail, avoiding the A77 south of Ayr and the A75. This would reduce the conflict between long distance and local traffic by removing some long distance freight traffic from the A77. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention. This intervention would interact with any similar proposals developed by the Department for Transport on the West Coast Mainline South of Carlisle.

Objectives addressed in this corridor:

Objective Addressed	*To ensure efficient and effective freight access to the port facilities at Loch Ryan.*

Objectives addressed in Corridor 15:

Objective Addressed	*To ensure efficient and effective freight access to the port facilities at Loch Ryan.*
Objective Addressed	*To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.*

Intervention	176	Intelligent Transport System Initiatives on the A75
Description		Intelligent Transport Systems (ITS) and variable message signs on the A75 between the Border and Stranraer.
Justification		This intervention would significantly contribute to the objective 'to ensure efficient and effective freight access to the port facilities at Loch Ryan' by providing information for drivers, allowing them to make better informed decisions about their journey. The A75 is part of the Trans-European Network, and the measures could interact with ITS run by the Highway Agency on the M6 south of the Border. There area number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To ensure efficient and effective freight access to the port facilities at Loch Ryan.*

STPR Interventions

17 Glasgow to Inverclyde and Islands

Intervention	39	M8 Bus Priority Measures and Park-&-Ride Network between Glasgow City Centre, Glasgow Airport and Areas to the West
Description		Bus priority measures, including hard shoulder bus lanes or guided busways, to serve Hillington, Glasgow Airport and Glasgow city centre, plus Park-&-Ride facilities accessible from the motorway.
Justification		This intervention would significantly contribute to the objectives 'to increase capacity and reduce journey time, particularly by public transport between Glasgow and Inverclyde' and 'to promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport as identified in NPF2' by improving the efficiency and reliability of the western sections of the M8, through the introduction of bus priority measures and Park-&-Ride facilities. These measures will enhance public transport by reducing journey time and improving journey time reliability, particularly to and from Glasgow city centre and the Airport. The proposed Park-&-Ride facilities would improve access to enhanced bus services for people living in a wide area to the west of the city. Delivery of this interventions should be straightforward as Park-&-Ride facilities are currently operating successfully in several areas. The intervention will be dependent on the provision by third parties of adequate bus services from the Park-&-Ride facilities.

Objectives addressed in this corridor:

Objective Addressed	*To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*

Objectives addressed in Glasgow:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*
Objective Addressed	*To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.*
Objective Addressed	*To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.*
Objective Addressed	*To promote journey time reductions, particularly by public transport, between the central belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.*

Intervention	87	Lengthen Trains and Platforms and Reduce Journey Times between Glasgow and Inverclyde
Description		Increase train lengths on railway services between Glasgow, Gourock and Wemyss Bay. Increase track speeds or revise stopping patterns to reduce journey times. Further enhancements to allow journey time improvements to be made. Increase capacity at station car parks. Additional rolling stock would be required.
Justification		This intervention would significantly contribute to the objective 'to increase capacity and reduce journey times by public transport between Glasgow and Inverclyde by increasing the number of coaches on services between Glasgow and Inverclyde, thereby providing additional seating capacity, without having to run any additional services. This would improve rail capacity and connectivity in Glasgow and encourage a shift in mode from road to rail. This intervention would be deliverable through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.*

Objectives addressed in Glasgow:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	88	Rail Service Frequency Enhancements and Reduce Journey Times between Glasgow and Inverclyde
Description		Increase capacity between Glasgow Central and Gourock and Wemyss Bay to permit service frequencies to be doubled. Further enhancements to allow journey time improvements to be made. Increase capacity at station car parks. Additional rolling stock would be required.
Justification		This intervention would significantly contribute to the objective 'to increase capacity and reduce journey times by public transport between Glasgow and Inverclyde' by doubling the number of services between the two locations. The additional capacity provided is expected improve rail capacity and connectivity in Glasgow and encourage a shift in mode from road to rail. This intervention would be deliverable through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.*

Objectives addressed in Glasgow:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*
Objective Addressed	*To address rail capacity and connectivity issues in central Glasgow.*

Intervention	89	Speed Enforcement Measures on the M8 and A8 between Glasgow and Inverclyde
Description		Speed Enforcement Measures on the M8 and A8 between Glasgow and Inverclyde at locations where vehicle speed is a contributing factor to accidents.
Justification		This intervention would signifiicantly contribute towards the objective 'to reduce accident rate to the national road type average on the M8 and the A8', by ensuring greater compliance with speed limits. The measures are expected to make a significant impact on accident rates. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident rate to the national road type average on the M8 and A8.*

Intervention	90	New Bypass Around Greenock
Description		A new bypass around Greenock and Port Glasgow.
Justification		This intervention would significantly contribute to the objectives 'to reduce accident rates to the national road type average on the M8 and the A8' and 'to facilitate freight access to Greenock port', by providing a bypass that would improve freight access to the port by road. Journey times would also be reduced by avoiding currently congested areas in Greenock. Additionally, it would improve the accident rate on the A8 by removing long distance traffic from the local road network through Greenock. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident rate to the national road type average on the M8 and A8.*
Objective Addressed	*To facilitate freight access to Greenock port.*

Intervention	111	Reopen Rail Freight Connection to Greenock Port
Description		Reopen the closed branch line between Container base Junction (on the Wemyss Bay branch) and Greenock Container Base. Additional capacity requirements between Paisley and Shields Junction is dependent on the volume of rail freight that would use the container base.
Justification		This intervention would significantly contribute to the objective 'to facilitate freight access to Greenock Port' by providing direct rail freight access into Greenock Port from the national rail network, allowing the freight to be transferred direct to rail without having to transfer to a loading terminal by road. The reopening of the Greenock Container Base Branch could have a significant impact on reducing freight congestion to and from Greenock Port. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To facilitate freight access to Greenock port.*

Intervention	127	New Rail Line between Kilmacolm and Paisley Canal
Description		Reopening of the line from Kilmacolm to Paisley Canal via Bridge of Weir and Linwood. Double track the existing Paisley Canal branch, electrify and increase service frequency to four trains per hour. Option to extend line towards Port Glasgow and Greenock. Additional capacity improvements may be required at Shields Junction.
Justification		This intervention would significantly contribute to the objective 'to increase capacity and reduce journey times by public transport between Glasgow and Inverclyde' by providing significant rail improvements between Glasgow and Inverclyde, including the construction of a new rail link serving communities in Inverclyde, many of which do not currently have a rail service. This line would also connect to the rail line between Paisley Gilmour Street and Kilwinning, allowing additional services between Glasgow and the Ayrshire coast by providing a new link, avoiding the heavily congested line between Glasgow and Paisley Gilmour Street. This intervention would be deliverable as it would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.*

Objectives addressed in Corridor 15:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Intervention	132	Grade Separation of Junctions on the A8 between Langbank and Greenock
Description		Grade separation of junctions on the A8 through Inverclyde.
Justification		This intervention would significantly contribute to the objectives 'to improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between long distance and local traffic', 'to reduce the accident rate to the national road type average on the M8 and A8' and 'to facilitate freight to the Greenock port' by grade separating junctions on the A8 between Langbank and Greenock. This intervention would significantly improve the efficiency of the A8 by reducing the impact of local traffic joining the main carriageway, which would provide safety benefits along the route and improve access between Greenock Port and the trunk road network. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To reduce the accident rate to the national road type average on the M8 and A8.*
Objective Addressed	*To facilitate freight access to Greenock port.*
Objective Addressed	*To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*

Intervention	135	New Rail Line between Wemyss Bay and Largs
Description		Construction of a new direct rail link between Wemyss Bay and Largs. This new connection would permit two trains per hour to run from Glasgow to Largs and Ardrossan via Wemyss Bay,
Justification		This intervention would significantly contribute to the objective 'to increase capacity and reduce journey times by public transport between Glasgow and Inverclyde' by constructing a new rail line between Wemyss Bay and Largs that would provide a shorter route for services between Largs and Glasgow, reducing the journey time between the two locations. This intervention would be implemented in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.*

Objectives addressed in Corridor 15:

Objective Addressed	*To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.*

Intervention	139	Intelligent Transport System Initiatives on the M8 between Glasgow and Inverclyde
Description		Intelligent Transport Systems, priority vehicle lanes, ramp metering, variable speed limits and hard shoulder running for priority vehicles on the M8 between Junction 31 and the Kingston Bridge.
Justification		This intervention would significantly contribute to the objectives 'to promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2', and 'to improve the A8/M8 during period of peak demand with a focus on reducing the conflict between long distance and local traffic' by giving priority to targeted vehicle classes and helping to ensure smooth traffic flows. Giving priority to buses and other priority vehicles means that the motorway can carry more people and goods and encourages people to car share or take the bus, both of which make more efficient use of available road space. There area number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*
Objective Addressed	*To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*

Objectives addressed in Glasgow:

Objective Addressed	*To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.*
Objective Addressed	*To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.*

STPR Interventions

18 Glasgow to North West England and beyond

Intervention	85	Intelligent Transport System Initiatives on the M74
Description		Intelligent Transport Systems, priority vehicle lanes, ramp metering, variable speed limits and hard shoulder running for priority vehicles on the M74 between Hamilton and Glasgow.
Justification		This intervention would significantly contribute to the objective 'to make better use of the available road space and better managing peak demand' by giving priority to targeted vehicle classes and helping to ensure smooth traffic flows. Giving priority to buses and priority vehicles means that the motorway can carry more people and goods and encourages people to car share or take the bus, both of which make more efficient use of available road space. Furthermore reduction of congestion and delays will help to meet the objective 'to contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions'. There are a number of well developed and cost effective measures that can be applied where appropriate.

Objectives addressed in this corridor:

Objective Addressed	*To make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction.*

Intervention	86	Enhancements to Rail Freight Infrastructure between Glasgow and the Border via West Coast Main Line
Description		Increase terminal capacity at Coatbridge and Mossend, increase the number of available paths for freight trains on the West Coast Mainline, increase the length of loops, removal of speed limits that are below 75mph for freight trains and increase the loading gauge on the West Coast Mainline to permit larger containers to be carried.
Justification		This intervention would significantly contribute to the objective 'to contribute to emissions reduction by facilitating the increase in the proportion of freight passing through the corridor that is carried by rail'. Increasing the number of available paths on the West Coast Mainline would allow more freight trains to run and at more flexible times. Increasing the length of loops would allow longer freight trains to run as their length is limited by where they have to stop and allow faster passenger trains to pass. Increasing the loading gauge across the route would allow larger containers to be carried. This intervention would significantly increase the attractiveness of rail freight to hauliers and help increase the proportion of freight carried by rail. This intervention could interact with any similar proposals developed by the Department for Transport on the West Coast Mainline South of Carlisle. This intervention would be deliverable under current best practice, however there are potential environmental issues due to size and scale of this intervention which would almost certainly require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.*

Intervention	130	Enhancements to Rail Freight Infrastructure between Glasgow and the Border via Dumfries
Description		Increase the number of available paths for freight trains on the Glasgow & South Western line from Glasgow to Carlisle via Dumfries. Infrastructure enhancements could include lengthening of loops, removal of speed limits that are below 75mph and increasing the loading gauge on the route.
Justification		This intervention would significantly contribute to reductions in emissions 'by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail' by significantly improving the route to allow more freight trains to run and at more flexible times. Increasing the length of loops and gauge improvements would allow longer freight trains to run that can carry larger containers. This intervention would increase the attractiveness of rail freight to hauliers and help increase the proportion of freight carried by rail, which in turn would lead to a decrease in freight movement by road, thereby contributing to reductions in emissions. This intervention could interact with any similar proposals developed by the Department for Transport on the West Coast Mainline South of Carlisle. This intervention would be deliverable under current best practice, however due to the size and scale there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.*

Intervention	131	New Motorway Link between the M73 and Coatbridge
Description		M73 Gartcosh link road to Coatbridge Freightliner terminal (Gartsherrie).
Justification		This intervention would significantly contribute to the objective 'to contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail', by providing a new link road from the M73 to Coatbridge Freightliner terminal. This would significantly reduce delays and distance travelled by goods vehicles thereby contributing to reductions in emissions. This intervention would be deliverable under current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.*

Intervention	150	Roll-On Roll-Off Rail Freight Enhancements between Glasgow and the Border via Lockerbie/Dumfries
Description		A full upgrade of the route between the central belt and the Border via Lockerbie/Dumfries including roll-on/roll-off facilitates for freight trains to operate. Extensive works to increase the loading gauge, increase the route availability and allow for an increase in the number of trains operating. Signalling improvements to allow for bi-directional running and 24 hour access to the route, new trains to carry goods vehicles and electrification to allow services to be operated by electric locomotives.
Justification		This intervention would significantly contribute to the objective 'to contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail' by providing new facilities that would encourage a transfer of freight movement from road to rail, thereby contributing to a reduction in emissions produced by goods vehicles. The intervention includes a roll-on/roll-off service for heavy goods vehicles which would speed-up interchange at either end of the rail journey. This intervention could interact with any similar proposals developed by the Department for Transport on the West Coast Mainline South of Carlisle. This intervention would be deliverable under current best practice, however there are potential operational and environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.*

Intervention	168	Priority Vehicle Lane on the M74 between Hamilton and Glasgow
Description		Widen the M74 motorway between Hamilton and Glasgow to provide an additional lane dedicated to priority vehicles.
Justification		This intervention would significantly contribute to the objective of 'improving the efficiency and reliability of the operation of the southern sections of the M74 on approach to Glasgow, particularly for priority vehicles' by making more efficient use of the available road space. Giving priority to buses and other priority vehicles would encourage people to car share or take the bus, thereby enabling the trunk road network to carry more people. The measures would significantly improve journey time reliability and maximise capacity by providing a dedicated lane for priority vehicles, including goods vehicles if permitted. This intervention would be deliverable under current best practice, however physical constraints may impact on the configuration of any hard shoulder running.

Objectives addressed in this corridor:

Objective Addressed	*To make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction.*

Intervention	181	Online Trunk Road Improvements on the A76
Description		Measures to increase safe overtaking opportunities and reduce journey time variability on the A76 including the introduction of climbing lanes, sections of WS2+1 carriageway, hard strips for agricultural vehicles and the provision of additional lay-bys to permit safer overtaking.
Justification		This intervention would significantly contribute to the objective 'to promote continuing reduction in accident rates and severity rates across the strategic transport network' by improving the standard of road provision and safer overtaking opportunities, which will reduce accident numbers and severity. This intervention would be deliverable in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

STPR Interventions

19 Edinburgh to North West England and beyond

Intervention	169	Online Trunk Road Improvements on the A68, A7 and A702
Description		Measures to increase safe overtaking opportunities and reduce journey time variability on the A68, A7 and A702. Including measures such as the introduction of climbing lanes, sections of WS2+1 carriageway, hard strips for agricultural vehicles and the provision of additional lay-bys to permit safer overtaking.
Justification		This intervention would significantly contribute to the objective 'to promote continuing reduction in accident rates and severity rates across the strategic transport network' by improving the standard of road provision and safer overtaking opportunities, which would reduce accident numbers and severity. This intervention as it would be deliverable in line with current best practice. However there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

Objectives addressed in Corridor 13:

Objective Addressed	*To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.*
Objective Addressed	*To make best use of the available road space and better manage peak demand.*

Objectives addressed in Corridor 17:

Objective Addressed	*To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.*
Objective Addressed	*To reduce the accident rate to the national road type average on the M8 and A8.*

STPR Interventions

20 Edinburgh to North East England and beyond

Intervention	80	New Light Rapid Transit Line between Edinburgh and Haddington
Description		Extension of Edinburgh Tram or alternative light rapid transit system from Edinburgh to Haddington via Portobello, Musselburgh and Tranent. Construction of light rail infrastructure, additional rolling stock and station enhancements,
Justification		This intervention would significantly contribute to the objective 'to increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion' by providing a new high quality public transport link into the city. The Light Rapid Transit (LRT) line would provide a step change in the number of public transport services and seating capacity within Edinburgh. There would be some risks associated with the delivery of this intervention due to the likelihood for some sections of on-street running, however through the experience currently being gained in the delivery of the Edinburgh Tram it is expected that this intervention could be delivered effectively.

Objectives addressed in this corridor:

Objective Addressed	*To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*

Intervention	82	Rail Service Enhancements between Edinburgh and Dunbar
Description		Local rail service between Dunbar and Edinburgh Park or South Gyle (and beyond to Glasgow, Stirling or Fife), with stations at East Linton and Musselburgh Parkway. Additional rolling stock, line speed improvements and new stations to be constructed. Dunbar station to be remodelled to increase capacity and additional works at the east of end of Waverley to allow more trains to run.
Justification		This intervention would significantly contribute to the objective 'to increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion' by providing a more frequent rail service from Dunbar. The new services would provide a step change in seating capacity on public transport services towards Edinburgh and would also link Dunbar to the economic growth areas to the west of the city centre. This intervention would be deliverable under current best practice through the ScotRail franchise.

Objectives addressed in this corridor:

Objective Addressed	*To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.*

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	83	New Rail Line from the East Coast Mainline between Longniddry and Haddington
Description		Reopened branch line from Longniddry to Haddington, with a service to west of Edinburgh (e.g., Edinburgh Park or South Gyle and beyond to Livingston, Glasgow, Stirling or Fife). Capacity enhancements at the east end of Waverley. To the west of Waverley, these services could be extensions of existing services.
Justification		This intervention would significantly contribute to the objective 'to increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion' by providing a new high quality public transport link into the city which would have improved journey times compared with existing bus services. This intervention would be deliverable under current best practice, however there are potential environmental issues which may require mitigation during the planning and construction phases of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.*

Objectives addressed in Edinburgh:

Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*
Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*

Intervention	119	New Light Rapid Transit Line from Edinburgh to Dalkeith and Penicuik
Description		Extension of Edinburgh Tram or alternative light rapid transit system from Edinburgh city centre to the Edinburgh Royal Infirmary, Shawfair and Dalkeith, with a branch to Loanhead and Penicuik. Construction of light rapid transit infrastructure, rolling stock, stations and car parking.
Justification		This intervention would significantly contribute to the objective 'to increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion' by providing a new public transport link between Edinburgh city centre and the economic growth area in South East Edinburgh . The new system would provide a step change in seating capacity on public transport and significantly improve connections between these two areas of economic activity to a number of towns south and south east of Edinburgh. The light rapid transit system would be able to connect with rail services between Edinburgh and Tweedbank which would 'enhance public transport interchange'. This intervention would be deliverable in line with current best practice.

Objectives addressed in this corridor:

Objective Addressed	*To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.*

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	120	New Rail Line from the Borders Rail Link at Eskbank to Penicuik
Description		Heavy rail branch line from the Borders Rail Link at Eskbank to Penicuik, using the existing alignment past Rosewell and Auchendinny where possible.
Justification		This intervention would significantly contribute to the objective 'to increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion' by providing a new public transport link between Edinburgh city centre and the economic growth area in the South East Edinburgh. The new link would also significantly improve connections between these two areas of economic activity and a number of towns south and south east of Edinburgh. This intervention would be deliverable in line with current best practice, however there are potential environmental issues which may need to be mitigated during the construction phase of this intervention.

Objectives addressed in this corridor:

Objective Addressed	*To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.*

Objectives addressed in Edinburgh:

Objective Addressed	*To enhance public transport interchange opportunities, where feasible to do so.*
Objective Addressed	*To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.*

Intervention	177	Online Trunk Road Improvements on the A1
Description		An intervention to increase safe overtaking opportunities and reduce journey time variability on the A1. This would include measures such as the introduction of climbing lanes, sections of WS2+1 carriageway, hard strips for agricultural vehicles and the provision of additional lay-bys to permit safer overtaking.
Justification		This intervention would significantly contribute to the objective 'to promote continuing reductions in accident and severity rates across the strategic transport network' and could make a significant impact by improving the standard of road provision by increasing the opportunities for safe overtaking and reducing the conflict between private vehicles and agricultural vehicles. The improved standard for road would also reduce journey times and improve journey time reliability on the A1. There is unlikely to be any deliverability issues with this intervention as it would be implemented in line with current best practice.

Objectives addressed in this corridor:

Objective Addressed	*To promote continuing reduction in accident rates and severity rates across the strategic transport network.*

Appendix B

Existing Proposals

National

Intervention	981	Transport planning and provision for the Commonwealth Games 2014, and Connections for Tourism and Major Events Plan and provide improved access for Commonwealth Games venues, other tourist sites and major events. Improved linkages to National Park, tourist sites and major events by all modes. Development and delivery of emerging Commonwealth Games transport projects.
Sift assessment		In general, the provision of transport improvements for the Commonwealth Games does not fall within the scope of this study. However, several of the interventions identified by the study are in line with the objectives of the Commonwealth Games transport improvement measures, notably, those which improve public transport access to Glasgow. The same is true in the wider context of major events and tourist attractions which are likely to benefits from other proposed improvements to tourist routes such as the A9 and A82 and the Highland Main line.
Intervention	1611	Reduced public transport fares for all Provide suitable incentive measures to public transport operators and/or the travelling public in an attempt to encourage more use of the public transport modes.
Sift assessment		Whilst fare levels do not fall within the scope of this study, the complementary influence that such measures may have is being considered by other parts of Scottish Government in addressing the delivery the National Transport Strategy's Key Strategic Outcomes.
Intervention	1612	Reduced public transport fares for students Provide suitable incentive measures to students in an attempt to encourage more use of the public transport modes.
Sift assessment		Whilst fare levels do not fall within the scope of this study, the complementary influence that such measures may have is being considered by other parts of Scottish Government in addressing the delivery the National Transport Strategy's Key Strategic Outcomes.
Intervention	1613	Reduced public transport fares for commuters Provide suitable incentive measures to encourage more commuters into using public transport.
Sift assessment		Whilst fare levels do not fall within the scope of this study, the complementary influence that such measures may have is being considered by other parts of Scottish Government in addressing the delivery the National Transport Strategy's Key Strategic Outcomes.
Intervention	1623	Link all major freight transfer centres to the rail network Link all major freight transfer centres, which are not currently connected, to the rail network.
Sift assessment		Potential improvements to the rail network to facilitate increased movement of freight are being considered on specific corridors, where objectives have been set to address concerns over forecasts of significant growth in heavy goods vehicles.
Intervention	1642	Public Transport Developments - Trial new or amended bus service patterns, including evening and late night services Develop and trial new or amended bus service patterns, including evening and late night services to encourage wider opportunities to travel by public transport.
Sift assessment		Whilst operation of bus services does not fall within the scope of this study, the complementary influence that such measures may have is explored in the context of other interventions proposed.
Intervention	1643	Public Transport Developments - Integrated provision for offshore islands Maintain and enhance linkage between ferry and land-based public transport (bus) modes to allow easy connections between modes.
Sift assessment		Whilst operation of bus services does not fall within the scope of this study, the complementary influence that such measures may have is explored in the context of other interventions proposed.

Intervention	2800	High speed rail connections from north east Scotland to London High speed rail connections from north east Scotland to London.
Sift assessment		Any intervention to provide a high speed connection to London from the north east would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	2922	DDA and car parking improvements at stations close to airports and other major areas of economic activity (i.e. Dyce which allows access to Aberdeen Airport) Upgrade and improvements to stations in Aberdeen and Aberdeenshire close to the airport or major trip generators.
Sift assessment		This is a wide ranging intervention that does not specifically address national objectives. However, car park improvements have been included within a number of interventions being considered under the STPR to accompany other works. Access and DDA compliance at existing rail stations is generally considered at a local level as part of the continuing management of the facilities.

Existing Proposals

Regional

Intervention	138	Travel plans for all colleges and universities (public transport) The creation of travel plans for all colleges and universities, focusing on reducing the level of car journeys to/from the main campus sites.
Sift assessment		This intervention does not make a significant contribution to any specific national objectives. It may however address local and regional issues and could therefore be taken forward by relevant local authorities and Regional Transport Partnerships.
Intervention	273	Improved bus links to stations and parking at stations in the SEStran area Improvement to bus services such as: Bo'ness to Linlithgow, Grangemouth to Falkirk High and Polmont to result in improved access to rail services to Glasgow and Edinburgh.
Sift assessment		This intervention does not make a significant contribution to any specific national objectives. It may however address local and regional issues and could therefore be taken forward the by relevant local authorities and Regional Transport Partnerships.
Intervention	1441	Region-wide specialist provision for powered two wheelers The development of special provision for powered two-wheelers to offer them some degree of priority over the private car.
Sift assessment		This intervention does not make a significant contribution to a specific objective and powered two wheel vehicles are not considered priority vehicles. Future provision could be considered by local authorities and Regional Transport Partnerships.
Intervention	1467	Promote regional car sharing schemes Develop a region-wide car-share scheme.
Sift assessment		Car sharing initiatives in isolation are considered to impact at a local level. However, Park-&-Ride/Share interventions on the strategic network are being considered by other parts of Scottish Government who will be addressing these issues in delivering the National Transport Strategy's Key Strategic Outcomes.
Intervention	1481	Regional rail freight facilities Liaise with relevant stakeholders to investigate early delivery opportunities for regional rail freight facilities, building on existing proposals at Dundee, Montrose and Perth for inter-modal transfer between road, rail and sea-borne freight.
Sift assessment		Regional rail freight facilities at Perth, Dundee and Montrose would not contribute to the objectives for these corridors and the Dundee urban network.
Intervention	1631	Regional rail concessions scheme Provide a suitable regional concessionary fares scheme to encourage more use of the rail network, particularly during peak hours.
Sift assessment		There are no objectives which this intervention makes a significant contribution towards, however there are other interventions within the STPR that consider changes to the cost of public transport fares.
Intervention	1634	Alternative fuels Support the development and implementation of alternative fuels.
Sift assessment		Interventions aimed at considering alternative fuel technologies are not within the scope of the STPR.
Intervention	1719	Active Travel Clearer policy to promote land use planning and development control processes across the region, including Active Travel audits on all RTS and LTS measures.
Sift assessment		This is not considered to be within the scope of the STPR but other parts of Scottish Government will be addressing these issues in delivering the National Transport Strategy's Key Strategic Outcomes.

Existing Proposals

Aberdeen

Intervention	322	Aberdeen Harbour - Port access strategy Support continued rail freight access to the port and improve connections between the ferry passenger terminal and bus and rail stations and city centre.
Sift assessment		Improving access to Aberdeen Harbour would not contribute to the objectives for Aberdeen, which are focused on improving access to the areas of economic activity in the city centre, Dyce and the south east of the city. Any localised improvements to the port access could be taken forward by the local authority and Regional Transport Partnership.
Intervention	823	Third crossing of the River Don The provision of a third road crossing of the River Don.
Sift assessment		A third crossing of the River Don would not contribute to the objectives for Aberdeen, which are focused 'on improving access to the areas of economic activity in the city centre, Dyce and the south east of the city'. T This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	1078	Improve port access at Aberdeen and Fraserburgh Improve port access at Aberdeen and Fraserburgh.
Sift assessment		Improved port access at Aberdeen and Fraserburgh would not contribute to the objective for either Corridor 8 or the Aberdeen urban network. Any future improvements could be considered by the port operator, local authority and the Regional Transport Partnership.
Intervention	3028	A90 fully dualled north of Aberdeen Full dualling of the A90 between Tipperty and Peterhead.
Sift assessment		Analysis of this corridor did not identify any strategic performance issues that merit this level of improvement to the A90.

Existing Proposals

Dundee

Intervention	894	Improved road links to Dundee port for freight transfer Improved road links to Dundee port for freight transfer.
Sift assessment		Whilst freight priority, access and journey times are an important consideration nationally, freight accessibility has not been highlighted as a specific constraint in this urban network. This intervention does not therefore make a significant contribution towards any of the objectives that have been set for this location. Further improvements could be considered by the port operator, local authority or the Regional Transport Partnership.
Intervention	1368	Improved rail connections to Dundee port for freight transfer Proposed provision of direct rail link to Dundee port for freight transfer.
Sift assessment		Whilst freight priority, access and journey times are an important consideration nationally, freight accessibility has not been highlighted as a specific constraint in this urban network. This intervention does not therefore make a significant contribution towards any of the objectives that have been set for this location. Further improvements could be considered by the port operator, local authority or the Regional Transport Partnership.
Intervention	2882	Additional freight facilities (building on existing proposals) at Dundee Inter-modal transfer facilities between road, rail, sea-borne freight.
Sift assessment		Access to freight facilities is within the scope of the STPR, but the facilities themselves are not.

Existing Proposals

Edinburgh

Intervention	241	Edinburgh Tram: Roseburn-Granton, Granton-Newhaven Links Edinburgh west and north via Roseburn or Haymarket.
Sift assessment		Construction of the Roseburn to Granton and Granton to Newhaven sections would make a small contribution to some of the objectives for Edinburgh. However, the impact of the intervention remains at a largely local level and therefore could be taken forward by the local authority and Regional Transport Partnership.
Intervention	260	Access Leith Docks Provision of improved road and rail links to Leith Docks.
Sift assessment		Improved access to Leith docks would not contribute to the objectives for Edinburgh. No specific problems of a strategic nature regarding access to Leith have been identified, therefore any issues are considered to be of a local nature. Strategic port access in the Forth area is focussed on Grangemouth and Rosyth, consistent with the draft NPF2. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	1255	A71 Upgrade Capacity improvements and upgrades to the existing A71.
Sift assessment		This intervention does not make a significant contribution to objectives which are focussed on the ‘increasing public transport capacity and interchange’ and ‘maintaining the labour catchment area’. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	3014	Passenger Rail Services on the Powderhall Branch Use of Powderhall branch for passenger heavy or light rail services following the proposed relocation of the waste transfer station to Portobello.
Sift assessment		This intervention is unlikely to have a significant impact on contributing to the objectives 'to maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' or 'to promote continuing reduction in accident rates and severity rates across the strategic transport network'. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

Glasgow

Intervention	496	Clyde Ferries - Services Improvements to existing services and investigation of potential new services on the River Clyde and the upgrading of port infrastructure to support these.
Sift assessment		It is outside the scope of STPR to consider enhancements to the infrastructure within the ports used by Clyde ferries or to the vessels using them. The focus of STPR in relation to ferry services is on the strategic land-based access to ports, however this intervention could be considered further by the port authority, local authority and the regional transport partnership.
Intervention	2767	Parkhead Forge rail station/interchange Construction Parkhead Forge rail station/interchange.
Sift assessment		The provision of a rail station at Parkhead Forge would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2768	Jordanhill West rail station Construct a new Jordanhill West rail station.
Sift assessment		The provision of a rail station at Jordanhill West would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2776	Dalmuir rail station interchange Construct a new Dalmuir multi-mode interchange, to replace the existing station.
Sift assessment		The provision of a new interchange at Dalmuir would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2781	Allander rail station Construct a new Allander rail station.
Sift assessment		The provision of a rail station at Allander would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2787	New station at Cambuslang Investment Park Construct a new rail station at Cambuslang Investment Park.
Sift assessment		The provision of a rail station at Cambuslang Investment Park would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are not considered to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2793	Clydebank Interchange improvements (rail station) Construct a new Clydebank Interchange improvements (rail station).
Sift assessment		This intervention would not contribute to the objectives identified for this corridor. Interventions aimed at improving individual stations are not considered to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Intervention	2796	Milton (West Dunbartonshire) rail station Construct a new Milton (West Dunbartonshire) rail station.
Sift assessment		The provision of a rail station at Milton (West Dunbartonshire) would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	3018	Glasgow Queen Street High Level Second Tunnel A second tunnel from Glasgow Queen Street High Level, surfacing by the railway works at Springburn and providing a link to Stepps and onwards to Cumbernauld.
Sift assessment		This intervention would be extremely challenging to construct due to the technical and operational constraints of building such a tunnel in a physically constrained location adjacent to a busy rail station. The anticipated steep gradient that the tunnel would have would also have an impact on the operation of trains using it. On balance this intervention would not provide an effective deliverable solution to the objectives.
Intervention	3022	Double Deck Trains in Strathclyde This involves the introduction of double deck trains across the Strathclyde rail network. This would see the loading gauge of the network increased to accept double deck trains and would require significant infrastructure works and new rolling stock.
Sift assessment		The scale of the works required to implement this intervention would not provide a cost effective solution to achieving objectives. There are more specific double-deck interventions proposed for the corridor between Glasgow and South West Scotland which would contribute to objectives more significantly.

Existing Proposals

Perth

Intervention	1088	New crossing of the Tay linking the A9 to the A94 north of Scone New crossing of the Tay, linking the A9 and the A94, including a intervention of associated bus priority, cycle and pedestrian measures locking in the benefits to Perth city centre.
Sift assessment		This intervention would not significantly contribute to the objectives for this strategic node which is focussed on 'reducing emissions' and 'improving journey times between Aberdeen/Inverness and the central belt. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2880	Improved road links to Perth Harbour This intervention includes a combination of access and road safety improvements, removal of restrictions on heavy goods vehicle access, including junctions and weight-restricted bridges, and improvements to links to the strategic road network.
Sift assessment		Whilst freight priority, access and journey times are an important consideration in this study, freight access into Perth Harbour has not been highlighted as a constraint and there are no objectives which this intervention contributes towards. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2883	Additional freight facilities (building on existing proposals) at Perth Inter-modal transfer facilities between road, rail, sea-borne freight.
Sift assessment		Access to freight facilities is considered to be within the scope of the STPR, but the facilities themselves are not. Enhancements to the freight facilities could therefore be taken forward by the port operator, local authority and Regional Transport Partnership.

Existing Proposals

1 Inverness to Wick / Thurso and Northern Isles

Intervention	602	A9 Bypass settlements on route (Inverness to Thurso) The provision of bypasses at selected locations on the A9 between Inverness and Thurso.
Sift assessment		Bypassing settlements on the A9 between Inverness and Thurso would not contribute significantly to the objectives for this corridor, which are focussed on 'improving public transport journey time and accessibility' and 'reducing fatal and severe accident rates'. Due to the low traffic levels on this route there would be little benefit at a strategic level, however the intervention could be considered further by the local authority and Regional Transport Partnerships.
Intervention	605	A9 dualling from Inverness to Thurso The provision of a full dual carriageway standard road on the A9 between Inverness and Thurso.
Sift assessment		Dualling the A9 from Inverness to Thurso would not provide a cost effective solution to meeting the objective of 'reducing the accident rate', due to the scale of the works required and the relatively low traffic flows which use the A9 north of Inverness. Also this intervention would not contribute to the objective 'to enhance public transport accessibility'.
Intervention	635	Extend rail line from Thurso to Scrabster Extension of the existing Far North rail line from Thurso to Scrabster to allow better interchange with ferry services to the Orkneys.
Sift assessment		The cost of this intervention is likely to be high, especially when compared with the likely benefits of the intervention due to the low patronage levels on this rail line. This intervention could be considered further by the local authority or Regional Transport Partnership.
Intervention	2831	Far North Railway Line: Construction of a chord at Georgemas A new chord at Georgemas to save 3 minutes between Thurso and Inverness for passenger trains.
Sift assessment		The time saving anticipated from this intervention is unlikely to provide a cost effective solution to the corridor objective 'to reduce public transport journey time and enhance accessibility'. Other public transport interventions in this corridor are being taken forward in the STPR study which potentially offer a greater contribution towards objectives.
Intervention	3019	New Rail Line between Helmsdale and Wick Build a new railway line between Helmsdale and Wick with one intermediate station. Heavy rail to Wick (due to faster journey times and favourable gradients) with luxury coach services between Wick, Thurso and Scrabster. Existing line from Helmsdale to Wick and Thurso closed to services or converted to single carriageway road with passing places.
Sift assessment		The time saving anticipated from this intervention is unlikely to provide a cost effective solution to the corridor objective 'to reduce public transport journey time and enhance accessibility'. Other public transport focussed interventions in this corridor are being taken forward in the STPR study which potentially offers a greater contribution to objectives.
Intervention	3020	New Rail Crossing of the Dornoch Firth and Associated Improvements A new crossing over the Dornoch Firth to provide a shorter route between Tain and Golspie. Additional infrastructure improvements between Inverness and Wick/Thurso to improve line speeds reduce journey times and increase service frequencies.
Sift assessment		The time saving anticipated from this intervention is unlikely to provide a cost effective solution to the corridor objective 'to reduce public transport journey time and enhance accessibility'. Other public transport focussed interventions in this corridor are being taken forward in the STPR study which potentially offers a greater contribution to objectives.
Intervention	3023	Road Improvements in Shetland A variety of road improvement interventions in Shetland.
Sift assessment		The road network on Shetland has not been identified as part of the Strategic Transport Network, as defined in STPR - Report 1. However, this intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

3 Inverness to Fort William and Western Isles

Intervention	746	Kyle Rail Line Commuter service to Inverness Introduce a new timetable on the Kyle line to allow potential commuting to/from Inverness from the corridor.
Sift assessment		The introduction of a commuter service to Inverness on the Kyle Rail Line would not contribute to the objective for the corridor which is focussed on 'reducing accident rates and severity'. Public transport accessibility has not been highlighted as a strategic constraint for this corridor.
Intervention	747	Kyle Rail Line Commuter service to Inverness – timetable enhancements and work towards fourth daily train Introduce a new timetable on the Kyle line to allow potential commuting to/from Inverness from the corridor.
Sift assessment		The reconfiguration of the timetable for services to Inverness on the Kyle Rail Line would not contribute to the objective for the corridor which is focussed 'on reducing accident rates and severity'. Public transport accessibility has not been highlighted as a strategic constraint for this corridor, however it could be considered further outside of the STPR.
Intervention	749	Rolling stock upgrade on Kyle Line Upgrade the existing rolling stock using the Kyle line.
Sift assessment		A rolling stock upgrade on the Kyle Line would not contribute to the objective for this corridor which is focussed 'on reducing accident rates and severity'. Rolling stock on the Kyle Line has not been highlighted as a strategic constraint for this corridor.,
Intervention	751	Barra Airport and flights Barra fixed landing strip and surface access strategy to deliver better integration.
Sift assessment		No significant constraints have been identified in relation to the airport at Barra. Therefore improving access to the airport would not contribute towards the objective for this corridor. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	949	A82 Fort William Bypass Provision of a new bypass of Fort William.
Sift assessment		The A82 Fort William Bypass would be unlikely to contribute to the objective of 'reducing the accident rate and severity' in the corridor, as there are no identified accident clusters within Fort William.
Intervention	2816	Kyle Rail Link business days and commuting services Revised timetable on the Kyle Rail Link to allow a business day and commuting services.
Sift assessment		The reconfiguration of the timetable for services to Inverness on the Kyle Rail Line would not contribute to the objective for this corridor. Public transport accessibility has not been highlighted as a strategic constraint for this corridor.
Intervention	2835	Upgrading of routes on Dingwall to Kyle of Lochalsh to allow heavier locomotive access Upgrading of rail track and structures on the Dingwall to Kyle of Lochalsh line to allow heavier locomotive access.
Sift assessment		Upgrading of routes on the Dingwall to Kyle of Lochalsh line to allow heavier locomotives access would not contribute to the objective for this corridor, which is focussed 'on reducing accident rates and severity'. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2836	Reinstatement of former loops at Stromeferry to increase line capacity Reinstatement of former loops at Stromeferry to increase line capacity.
Sift assessment		The reinstatement of former loops at Stromeferry would not contribute to the objective for this corridor, which is focussed 'on reducing accident rates and severity'. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Intervention	2940	West Highland Line improvements Modern signalling, more loops (all loops to be dynamic), higher speed level crossings, 100 mph line speeds.
Sift assessment		Improved operational infrastructure would not contribute to the objective for this corridor, which is focussed 'on reducing accident rates and severity'. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

4 Aberdeen to Inverness

Intervention	24	Demand management in Elgin, Nairn and Keith The Regional Transport Strategy identifies demand management at Elgin, Nairn and Keith in the short term delivery plan. This involves soft measures to tackle congestion by travel planning in schools and workplaces, flexible working, car sharing, and improving the public transport and active travel offers.
Sift assessment		This intervention does not contribute in any significant way to the strategic objectives identified within this corridor to 'reduce accident rate and severity' or 'improve journey time and increase opportunities to travel'. This intervention could be considered further by local authorities and Regional Transport Partnerships.
Intervention	779	A95 Improvements Possible on / off line improvement on the A95.
Sift assessment		The A95 has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for Corridors 4 or 6. Local improvements on this route should be considered further by Transport Scotland outside the scope of STPR.
Intervention	786	A941 Elgin to Craigellachie Upgrading the A941 to trunk road quality.
Sift assessment		The A941 has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by local authorities and the Regional Transport Partnership.
Intervention	787	A941 Dufftown to A95 road improvements Addressing pinch points and providing overtaking opportunities.
Sift assessment		The A941 has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by local authorities and the Regional Transport Partnership.
Intervention	841	Inverness to Elgin loading gauge enhancement Increase the rail loading gauge between Inverness and Elgin to permit larger containers to be carried by train.
Sift assessment		Increasing the rail loading gauge between Inverness and Elgin would not contribute to the objectives for this corridor, which include 'improving public transport journey times' between Inverness and Aberdeen.
Intervention	859	Enhanced travel initiatives through concessionary travel (Aberdeen to Inverness) Enhanced travel initiatives through concessionary travel to encourage more public transport journeys to be made between Aberdeen and Inverness.
Sift assessment		Whilst enhanced travel initiatives through concessionary travel does not fall within the scope of this study, the complementary influence that such measures may have is being considered.
Intervention	866	Environmental enhancement of town centres (Aberdeen to Inverness) Environmental enhancement of town centres (Aberdeen to Inverness).
Sift assessment		While improving the environment within town centres is supported by Transport Scotland, within the context of the STPR, this is being addressed by considering transport interventions that minimise the conflict between local and strategic trips at particular locations.
Intervention	927	A939 Nairn and Tomintoul to A95 Road improvements between Nairn and Tomintoul.
Sift assessment		The A939 has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by local authorities and the Regional Transport Partnership.

Existing Proposals

5 Dundee to Aberdeen

Intervention	892	A90 Grade Separation of Laurencekirk/Marykirk junction Local grade separation of the Laurence/Marykirk junction.
Sift assessment		Accident rates along the corridor are already below the national average and therefore the grade separation of the Laurencekirk / Marykirk junction would not address or make a significant contribution to objectives. Local accident cluster issues have been identified and remedial works have been introduced at this location. In order to assess the impact of the remedial works the accident patterns will continue to be closely monitored.
Intervention	2878	Improved road links to the Port of Montrose This intervention includes a combination of access and road safety improvements, removal of restrictions on heavy goods vehicle access, including junctions and weight-restricted bridges and improvements to links to the strategic road network.
Sift assessment		Whilst freight priority, access and journey times are an important consideration in this study, freight access into the Port of Montrose has not been highlighted as a constraint. Therefore this intervention does not address any of the objectives set for this corridor. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2881	Additional freight facilities (building on existing proposals) at Montrose Inter-modal transfer facilities between road, rail, sea-borne freight.
Sift assessment		Access to freight facilities is within the scope of the STPR, but the facilities themselves are not.

Existing Proposals

6 Inverness to Perth

Intervention	779	A95 Improvements Possible on / off line improvement on the A95.
Sift assessment		The A95 has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for Corridors 4 or 6. Local improvements on this route should be considered further by Transport Scotland outside the scope of STPR.
Intervention	2758	Additional Car Parking provision at Carrbridge and Aviemore rail stations Construction of additional car parking provision at Carrbridge and Aviemore rail stations.
Sift assessment		Construction of additional parking at Carrbridge and Aviemore stations would encourage more use of the rail network. However, the objectives for the corridor are focused on 'reducing end to end journey times' and 'improving safety' which this intervention would not contribute to in a significant manner. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2937	Highland Mainline: Improved car parking and DDA access along the route. Highland Mainline: Improved car parking and DDA access along the route.
Sift assessment		Improved car parking and DDA access on the Highland mainline would encourage more use of the rail network. However, the objectives for the corridor are focused on 'reducing end to end journey times' and 'improving safety' which this intervention would not contribute to in a significant manner. Access and DDA compliance at existing rail stations is generally considered at a local level as part of the continuing management of the facilities. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

7 Glasgow to Oban / Fort William and Western Isles

Intervention	496	Clyde Ferries - Services Improvements to existing services and investigation of potential new services on the River Clyde and the upgrading of port infrastructure to support these.
Sift assessment		It is outside the scope of STPR to consider enhancements to the infrastructure within the ports used by Clyde ferries or to the vessels using them. The focus of STPR in relation to ferry services is on the strategic land-based access to ports, however this intervention could be considered further by the port authority, local authority and the regional transport partnership.
Intervention	949	A82 Fort William Bypass Provision of a new bypass of Fort William.
Sift assessment		The A82 Fort William Bypass would be unlikely to contribute to the objective of 'reducing the accident rate and severity' in the corridor, as there are no identified accident clusters within Fort William.
Intervention	958	A848 and A849 route enhancements Road improvements on the A848 and A849 between Tobermory and Fionnphort.
Sift assessment		The A848 and A849 have not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by local authorities and the Regional Transport Partnership.
Intervention	979	Improve timetable connection between bus/ ferry services (Corridor 7) Improve timetable connection between bus/ ferry services on services operating between Glasgow - Oban/Fort William and Mallaig.
Sift assessment		Improving timetable connection between bus and ferry services would not contribute to the objectives for this corridor, which are focussed on 'reducing accident rates and severity'. This intervention could be considered further by bus operators, the local authority and the Regional Transport Partnership.
Intervention	2939	West Highland Line: Additional capacity for timber Improvements to infrastructure and timetabling to allow additional capacity for timber on the West Highland Line.
Sift assessment		This intervention does not make a significant contribution towards the corridor objective 'to reduce the accident rate and severity'. Additional capacity enhancements on the West Highland Line could be considered further by the local authority and Regional Transport Partnership.
Intervention	2940	West Highland Line improvements Modern signalling, more loops (all loops to be dynamic), higher speed level crossings, 100 mph line speeds.
Sift assessment		Improved operational infrastructure would not contribute to the objective for this corridor, which is focussed 'on reducing accident rates and severity'. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	3024	Clyde Ferries - Vessels and Infrastructure (including pier upgrades) Improvements, new vessels and infrastructure and pier upgrades. Ensure that ferries and piers meet standards and are DDA compliant at Helensburgh, Kilcreggan and Gourock.
Sift assessment		It is outside the scope of STPR to consider enhancements to the infrastructure within the ports used by Clyde ferries or to the vessels using them. The focus of STPR in relation to ferry services is on the strategic land-based access to ports, however this intervention could be considered further by the port authority, local authority and the regional transport partnership.

Existing Proposals

8 Aberdeen to North East Scotland

Intervention	982	A90 2 + 1 Ellon to Peterhead Provision of new 2 + 1 sections of carriageway on the A90 between Ellon and Peterhead.
Sift assessment		Upgrading the A90 to 2 + 1 from Ellon to Peterhead would be unlikely to contribute significantly to the objective for this corridor 'to reduce accident rates and severity'. Journey time reliability and lack of overtaking opportunities have not been identified as constraints in this corridor.
Intervention	1073	Re-open rail to Peterhead Re-opening of a branch line from Dyce to Peterhead.
Sift assessment		Re-opening the rail line between Aberdeen and Peterhead would not contribute to the objective for this corridor 'to reduce accident rates and severity'. Public transport access to the north of Aberdeen has not been highlighted as a strategic issue and as such no specific public transport objectives have been identified for this corridor.
Intervention	1078	Improve port access at Aberdeen and Fraserburgh Improve port access at Aberdeen and Fraserburgh.
Sift assessment		Improved port access at Aberdeen and Fraserburgh would not contribute to the objective for either Corridor 8 or the Aberdeen urban network. Any future improvements could be considered by the port operator, local authority and the Regional Transport Partnership.
Intervention	2941	Reinstate railway to serve Peterhead and Fraserburgh, using some former and some new alignments Reinstate railway to serve Peterhead and Fraserburgh, using some former and some new alignments.
Sift assessment		Re-opening the rail line between Aberdeen, Peterhead and Fraserburgh would not contribute to the objective for this corridor 'to reduce accident rates and severity'. Public transport access to the north of Aberdeen has not been highlighted as a strategic issue and as such no specific public transport objectives have been identified for this corridor.
Intervention	3028	A90 fully dualled north of Aberdeen Full dualling of the A90 between Tipperty and Peterhead.
Sift assessment		Analysis of this corridor did not identify any strategic performance issues that merit this level of improvement to the A90.

Existing Proposals

9 Glasgow to Perth

Intervention	1089	New link road between A84 Kildean and A9 University, and a new M9/A811 interchange, completing Stirling's outer ring road. Including a intervention of associated bus priority, cycle and pedestrian measures, locking in the benefits to Stirling city centre.
Sift assessment		The A84, A9 (Stirling University) and A811 were not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	1112	Upgrading of Stirling bus station to provide full integration with the rail station. Rail based Park and Ride, enhanced car parking and passenger facilities at key rail stations, integrated ticketing schemes.
Sift assessment		Providing full integration between Stirling bus and rail stations would not contribute to the objectives for this corridor. Public transport interchange in Stirling has not been identified as a strategic constraint, however this intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2739	Motherwell to Stirling rail service Introduction of direct rail services between Motherwell and Stirling.
Sift assessment		The provision of a Motherwell to Stirling rail service would not contribute to the objectives for this corridor. The objectives identified focus on the need to improve connections to and between the main urban areas and to reduce overcrowding on services to Glasgow.
Intervention	2947	New rail freight facility to serve Highland Spring at Blackford New rail freight facility to serve Highland Spring at Blackford.
Sift assessment		A new rail freight facility at Blackford would not make a significant contribution towards the objectives for this corridor. The facility would not improve public transport capacity or road safety, however this intervention could be taken forward by the freight operator, local authority and Regional Transport Partnership.

Existing Proposals

10 Edinburgh to Stirling

Intervention	1089	New link road between A84 Kildean and A9 University, and a new M9/A811 interchange, completing Stirling's outer ring road. Including a intervention of associated bus priority, cycle and pedestrian measures, locking in the benefits to Stirling city centre.
Sift assessment		The A84, A9 (Stirling University) and A811 were not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	1112	Upgrading of Stirling bus station to provide full integration with the rail station. Rail based Park and Ride, enhanced car parking and passenger facilities at key rail stations, integrated ticketing schemes.
Sift assessment		Providing full integration between Stirling bus and rail stations would not contribute to the objectives for this corridor. Public transport interchange in Stirling has not been identified as a strategic constraint, however this intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

11 Perth to Dundee

Intervention	2744	New rail stations at St Madoes, Errol, Newburgh and Bridge of Earn New rail stations at St Madoes, Errol, Newburgh and Bridge of Earn.
Sift assessment		The addition of these new rail stations would not contribute to the objectives for Corridors 11 and 12. There are no objectives to improve access to rail services east of Perth whilst to the south of Perth the objective is to reduce journey times to Edinburgh, which this intervention would conflict with.

Existing Proposals

12 Edinburgh to Perth

Intervention	2723	Wind deflection on Forth Road Bridge Install wind deflection system to reduce the likelihood of bridge closure to high sided vehicles during periods of high wind.
Sift assessment		The provision of wind deflection on the Forth Road Bridge is an ongoing operational issue and therefore outside the scope of the STPR study.
Intervention	2744	New rail stations at St Madoes, Errol, Newburgh and Bridge of Earn New rail stations at St Madoes, Errol, Newburgh and Bridge of Earn.
Sift assessment		The addition of these new rail stations would not contribute to the objectives for Corridors 11 and 12. There are no objectives to improve access to rail services east of Perth whilst to the south of Perth the objective is to reduce journey times to Edinburgh, which this intervention would conflict with.
Intervention	2959	Car parking and DDA improvements along the route between Edinburgh and Perth Improvements at stations between Edinburgh and Perth to comply with DDA regulations and increase current car parking capacity.
Sift assessment		Improvements to stations between Edinburgh and Perth would encourage more use of the rail network. However, the objectives for the corridor are focused on 'reducing end to end journey times' and 'improving safety' which this intervention would not contribute to in a significant manner. Access and DDA compliance at existing rail stations is generally considered at a local level as part of the continuing management of the facilities. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2961	Improved freight terminal provision between Edinburgh and Perth Improved freight terminal provision between Edinburgh and Perth.
Sift assessment		Access to freight facilities is within the scope of the STPR, but the facilities themselves are not. This intervention could be considered further by freight operators, the local authority and the Regional Transport Partnership.

Existing Proposals

13 Edinburgh to Glasgow

Intervention	2790	Lanark to Edinburgh railway link
Sift assessment		This intervention would increase public transport links between Edinburgh and Lanark but would not extend to Glasgow. This intervention would not contribute to the objectives identified for the corridor which are focussed on 'To make best use of the available road space and better manage peak demand' and also 'To promote continuing reduction in accident rates and severity rates across the strategic transport network.'
Intervention	2799	Wishaw Hospital rail station Construct a new Wishaw Hospital rail station.
Sift assessment		The provision of a rail station at Wishaw Hospital would not contribute to the objectives for this corridor. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

14 Edinburgh to Dundee

Intervention	2722	Wind deflection on Tay Road Bridge Install wind deflection system to reduce the likelihood of bridge closure to high sided vehicles during periods of high wind.
Sift assessment		The provision of wind deflection on the Tay Road Bridge is an ongoing operational issue and therefore outside the scope of the STPR study.
Intervention	2723	Wind deflection on Forth Road Bridge Install wind deflection system to reduce the likelihood of bridge closure to high sided vehicles during periods of high wind.
Sift assessment		The provision of wind deflection on the Forth Road Bridge is an ongoing operational issue and therefore outside the scope of the STPR study.

Existing Proposals

15 Glasgow to Stranraer and South West

Intervention	496	Clyde Ferries - Services Improvements to existing services and investigation of potential new services on the River Clyde and the upgrading of port infrastructure to support these.
Sift assessment		It is outside the scope of STPR to consider enhancements to the infrastructure within the ports used by Clyde ferries or to the vessels using them. The focus of STPR in relation to ferry services is on the strategic land-based access to ports, however this intervention could be considered further by the port authority, local authority and the regional transport partnership.
Intervention	543	A77 Extend dualling from Ayr to Stranraer Dual the existing section of the A77 between Ayr and Stranraer.
Sift assessment		Analysis of this corridor did not identify any strategic performance issues that merit this level of improvement to the A77 between Ayr and Stranraer.
Intervention	550	A79 Trunk Road Network Possible trunking and improvement of the A79.
Sift assessment		The A79 has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by local authorities and the Regional Transport Partnership.
Intervention	558	Glasgow & South Western Railway: Re-open Caldwell and Uplawmoor stations (on Kilmarnock line) Re-opening of Caldwell and Uplawmoor stations to offer additional access to rail network.
Sift assessment		The re-opening of Caldwell and Uplawmoor rail stations would not contribute to the objectives for this corridor. Accessibility to public transport services within this corridor has not been highlighted as a strategic issue.
Intervention	570	Improved access to ports of Ayr and Troon Improved road/rail access to the ports of Ayr and Troon.
Sift assessment		Improved access to the ports of Ayr and Troon would not contribute to the objectives for the corridor, which are focussed on ‘increasing rail passenger capacity’ and to 'ensure efficient and effective access to the ports on Loch Ryan’. This intervention could be considered further by port operators, local authorities and Regional Transport Partnership.
Intervention	582	Extend A78 dual carriageway Extend the dualling of the A78 to locations such as Hunterston to improve links to freight generating locations.
Sift assessment		Analysis of this corridor did not identify any strategic performance issues that merit this level of improvement to the A78.
Intervention	2766	Heathfield rail station Construction of a new rail station at Heathfield in Ayrshire.
Sift assessment		The provision of a rail station at Heathfield would not contribute to the objectives for this corridor. Interventions aimed at opening individual stations are unlikely to impact at a national level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2779	Ayr Hospital rail station Construct a new Ayr Hospital rail station.
Sift assessment		The provision of a rail station at Ayr Hospital would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

16 Stranraer to North West England and beyond

Intervention	183	Crichton Access Roads Improved road access to the Crichton area in Dumfries.
Sift assessment		The access to Crichton has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. This intervention could be considered further by local authorities and the Regional Transport Partnership.
Intervention	439	A701 Moffat to Dumfries upgrading Improvements to the A701 between Moffat and Dumfries.
Sift assessment		The A701 has not been identified as part of the Strategic Transport Network, as defined in Report 1, and therefore this intervention does not contribute to the objectives for this corridor. Local improvements on this route should be considered further by Transport Scotland outside the scope of STPR.
Intervention	508	A75 Dumfries Southern Bypass Construction of a new bypass south of Dumfries with a specific emphasis on improved connectivity to the Crichton area.
Sift assessment		The Dumfries Southern Bypass would not contribute to the objectives for this corridor, which are focused on reducing accident rates on the strategic network and improving freight access to the Loch Ryan ports. Strategic traffic on the A75 currently has the option of avoiding Dumfries by travelling on the northern bypass and therefore the provision of a southern bypass would benefit local traffic only.
Intervention	515	A709 Corridor Fastlink Construction of a new road between Dumfries and Lockerbie to offer enhanced connectivity to central Scotland.
Sift assessment		While the A74 (M) and A75 were identified as a part of the Strategic Transport Network the lack of a link along the route of the A709 between the two was not identified in STPR Report 1 as a constraint. This intervention would be unlikely to make a significant, cost effective contribution to the corridor objective of 'continual reduction in accident rates and severity rates across the strategic transport network' and 'ensure efficient access to the ports at Loch Ryan'.
Intervention	516	A75 Bypasses Provision of bypasses at selected locations on the A75 between the M74 and Stranraer.
Sift assessment		The interventions currently programmed along the A75 will address the majority of the road based constraints identified in STPR Report 1. In addition, any outstanding route improvements on the A75 will be reviewed as part of a Targeted Programme of Measures, which is being considered as part of the STPR. Therefore, this intervention would be unlikely to make a significant, cost effective contribution to the corridor objective of 'continual reduction in accident rates and severity rates across the strategic transport network' and 'ensure efficient access to the ports at Loch Ryan'.
Intervention	519	New rail link from Stranraer to Dumfries Provision of a new rail link between Dumfries and Stranraer to allow passenger and freight movements.
Sift assessment		The addition of a new rail link from Dumfries to Stranraer would be unlikely to make a significant, cost effective contribution to the corridor objective of 'continual reduction in accident rates and severity rates across the strategic transport network' and 'ensure efficient access to the ports at Loch Ryan'. The lack of a rail link on this route has not been identified as a strategic issue in STPR Report 1. This intervention could be considered further by local authorities and Regional Transport Partnership.
Intervention	522	Glasgow & South Western Railway: Increase rail services from Dumfries to Carlisle Provision of an increased number of rail services between Dumfries and Carlisle.
Sift assessment		This intervention would not contribute to the objectives for this corridor. Rail accessibility and overcrowding have not been identified as a strategic constraint for this corridor.

Intervention	525	New rail line from Dumfries to Lockerbie Construction of a new railway between Dumfries and Lockerbie to offer enhanced connectivity to central Scotland, via the West Coast Mainline.
Sift assessment		The addition of a new rail link from Dumfries to Lockerbie would not contribute to the objectives for this corridor. The lack of a rail link on this route has not been identified as a strategic issue in STPR Report 1. However, this intervention could be considered further by local authorities and the Regional Transport Partnership.
Intervention	526	Glasgow & South Western Railway: Dumfries town centre – rail station access Improve access arrangements to Dumfries rail station.
Sift assessment		Improved access arrangements to Dumfries rail station would not contribute to the objectives for this corridor. Car parking and access arrangements at existing rail stations are a local issue. However, this intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	534	Dumfries Bus Priority Improvements to key bus routes in Dumfries.
Sift assessment		Improvements to key bus routes in Dumfries would not contribute to the objectives for this corridor. Any improvements to bus services and facilities in Dumfries would be best delivered through the local authority and bus operators.
Intervention	535	Dumfries town centre bus interchange/ compensatory parking Development of a new bus station in Dumfries town centre, possibly at the site of an existing car park with compensatory relocated parking.
Sift assessment		The development of a new bus station in Dumfries town centre would not contribute to the objectives for this corridor. Any improvements to bus services and facilities in Dumfries would best taken forward by bus operators, the local authority and Regional Transport Partnership.
Intervention	539	Dumfries Park-&-Ride Network Development of a series of Park-&-Ride sites on the periphery of Dumfries.
Sift assessment		The development of a series of Park-&-Ride sites on the periphery of Dumfries would not contribute to the objectives for the corridor. Any of the improvements to bus services in Dumfries would be best delivered through the local authority and bus operators and the Regional Transport Partnership.
Intervention	2825	Glasgow & South Western Railway: New rail stations at Thornhill, Eastriggs, Beattock, Dunragit and accessibility improvements at Lockerbie and Kirkconnel Stations Glasgow & South Western Railway: New rail stations at Thornhill, Eastriggs, Beattock, Dunragit and accessibility improvements at Lockerbie and Kirkconnel Stations.
Sift assessment		The provision of a rail stations at Thornhill, Eastriggs, Beattock, Dunragit and accessibility improvements at Lockerbie and Kirkconnel would not contribute to the objectives for this corridor. Interventions aimed at opening individual stations are not considered to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.

Existing Proposals

17 Glasgow to Inverclyde and Islands

Intervention	474	M8 White Cart Viaduct widening Widening of the White Cart viaduct to provide additional road capacity along this section of the M8.
Sift assessment		The addition of extra capacity at the Whitecart viaduct would not provide a significant contribution or cost effective solution to the strategic objectives to 'improve the efficiency of the A8/M8 during periods of peak demand' or 'promote efficient and effective transport links to Glasgow Airport'. Other road based focussed interventions in this corridor which potentially offers a greater contribution to objectives are being taken forward in the STPR study.
Intervention	496	Clyde Ferries - Services Improvements to existing services and investigation of potential new services on the River Clyde and the upgrading of port infrastructure to support these.
Sift assessment		It is outside the scope of STPR to consider enhancements to the infrastructure within the ports used by Clyde ferries or to the vessels using them. The focus of STPR in relation to ferry services is on the strategic land-based access to ports, however this intervention could be considered further by the port authority, local authority and the regional transport partnership.
Intervention	2782	Ibrox rail station Construct a new Ibrox rail station.
Sift assessment		The provision of a rail station at Ibrox would not contribute to the objectives for this urban network. Interventions aimed at opening individual stations are not considered to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	3024	Clyde Ferries - Vessels and Infrastructure (including pier upgrades) Improvements, new vessels and infrastructure and pier upgrades. Ensure that ferries and piers meet standards and are DDA compliant at Helensburgh, Kilcreggan and Gourock.
Sift assessment		It is outside the scope of STPR to consider enhancements to the infrastructure within the ports used by Clyde ferries or to the vessels using them. The focus of STPR in relation to ferry services is on the strategic land-based access to ports, however this intervention could be considered further by the port authority, local authority and the regional transport partnership.

Existing Proposals

18 Glasgow to North West England and beyond

Intervention	435	A74(M) Guardsmill full diamond Reconfiguration of the intersection between the A74(M) and A6071 to allow direct connections in all directions.
Sift assessment		This intervention would not make a significant contribution to the corridor objectives of making 'best use of the available road space' or contributing to an 'emission reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail'.
Intervention	445	Faster rail routes from Glasgow to England Faster rail based connections between Glasgow and London using the West Coast Main Line. Glasgow to London in 4 hours by 2014, with the aspiration of under 4 hours by 2021.
Sift assessment		Any intervention to provide a high speed connection to London from Glasgow would make a significant contribution towards wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	450	West Coast Mainline: Local rail service Carlisle to Glasgow Introduction of a local rail service from Carlisle to Glasgow with stops at Lockerbie and Beattock.
Sift assessment		An improved rail service between Carlisle and Glasgow via Lockerbie would not contribute to the objectives for this corridor, which for rail are focussed on providing opportunities to shift freight from road to rail. From a strategic perspective, the intervention is unlikely to make any significant contribution to modal shift and is focussed at local/regional level.
Intervention	453	Glasgow & South Western Railway: Rail Services to Prestwick Airport via GSW Introduction of a direct service between stations in Dumfries and Galloway and Prestwick airport.
Sift assessment		Analysis has not identified a strategically significant demand for this movement or subsequent constraint issues that would require the setting of corridor objectives. The introduction of a direct rail service from Dumfries and Galloway to Prestwick Airport would not contribute to the objectives for this corridor.
Intervention	522	Glasgow & South Western Railway: Increase rail services from Dumfries to Carlisle Provision of an increased number of rail services between Dumfries and Carlisle.
Sift assessment		This intervention would not contribute to the objectives for this corridor. Rail accessibility and overcrowding have not been identified as a strategic constraint for this corridor.
Intervention	554	Glasgow & South Western Railway: Dumfries to Ayr rail link Improved rail access between Dumfries and Ayr.
Sift assessment		Rail journey times and accessibility between Ayr and Dumfries have not been identified as strategic constraints within this corridor and therefore this intervention does not address any of the STPR objectives.
Intervention	558	Glasgow & South Western Railway: Re-open Caldwell and Uplawmoor stations (on Kilmarnock line) Re-opening of Caldwell and Uplawmoor stations to offer additional access to rail network.
Sift assessment		The re-opening of Caldwell and Uplawmoor rail stations would not contribute to the objectives for this corridor. Accessibility to public transport services within this corridor has not been highlighted as a strategic issue.

Intervention	566	Glasgow & South Western Railway: Kirkconnel Station Accessibility improvements Improved access to Kirkconnel station, particularly for wheelchair users for the southbound platform.
Sift assessment		Accessibility improvements at Kirkconnel Station would not contribute to the objectives for this corridor which are focussed on 'making best use of existing roadspace to help reduce emissions; increase the amount of freight carried by rail and reduce accident rates and severity'. Access and DDA compliance at existing rail stations is generally considered at a local level as part of the continuing management of the facilities.
Intervention	2799	Wishaw Hospital rail station Construct a new Wishaw Hospital rail station.
Sift assessment		The provision of a rail station at Wishaw Hospital would not contribute to the objectives for this corridor. Interventions aimed at opening individual stations are unlikely to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2801	High speed rail link from Edinburgh and Glasgow to London, including consideration of Maglev High speed rail link from Edinburgh and Glasgow to London, including consideration of Maglev.
Sift assessment		An intervention to the provide a high speed connection to London from Edinburgh and Glasgow would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	2822	Eccelfechan – Annan railway line Construction of a Eccelfechan – Annan railway line (link between West Coast Main line and Glasgow South West route).
Sift assessment		This intervention would not contribute to the objectives identified for this corridor which are focussed on 'making best use of existing roadspace to help reduce emissions; increase the amount of freight carried by rail and reduce accident rates and severity'. Additionally, there are no significant issues identified with regard to public transport connectivity within this corridor.
Intervention	2825	Glasgow & South Western Railway: New rail stations at Thornhill, Eastriggs, Beattock, Dunragit and accessibility improvements at Lockerbie and Kirkconnel Stations Glasgow & South Western Railway: New rail stations at Thornhill, Eastriggs, Beattock, Dunragit and accessibility improvements at Lockerbie and Kirkconnel Stations.
Sift assessment		The provision of a rail stations at Thornhill, Eastriggs, Beattock, Dunragit and accessibility improvements at Lockerbie and Kirkconnel would not contribute to the objectives for this corridor. Interventions aimed at opening individual stations are not considered to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2993	Remove single line sections Motherwell - Hamilton and Larkhall branch Removal of the single line sections between Motherwell - Hamilton and on the Larkhall branch line.
Sift assessment		Constraints relating to the operation of the rail network at this location have not been identified as being of strategic significance. Therefore this intervention would not contribute to the objectives identified for this corridor which are focussed on 'making best use of existing roadspace to help reduce emissions' and also 'to increase the amount of freight carried by rail and reduce accident rates and severity'.

Intervention	2994	Extend Larkhall branch to Strathaven Extend the existing Larkhall branch line to Strathaven.
Sift assessment		Constraints relating to the operation of the rail network at this location have not been identified as being of strategic significance. Therefore this intervention would not contribute to the objectives identified for this corridor which are focussed on 'making best use of existing roadspace to help reduce emissions' and also 'to increase the amount of freight carried by rail and reduce accident rates and severity'.
Intervention	2995	Platform on Coatbridge line north of Motherwell station Construction of a new platform on Coatbridge line north of Motherwell station.
Sift assessment		The provision of a new platform at Motherwell station would not contribute to the objectives for this corridor. Interventions aimed at improving individual stations are not considered to impact at a strategic level and would be more appropriately considered at a local level. This intervention could be considered further by the local authority and the Regional Transport Partnership.
Intervention	2996	West Coast Mainline: Alignment improvements Realign sections of West Coast Mainline to allow trains to run at 125 mph, especially in Law Junction area.
Sift assessment		An intervention to the West Coast Mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	2999	West Coast Mainline: Local service Local service serving local stations, existing and new and reduce stopping by long distance trains.
Sift assessment		Introduction of a local rail service would not contribute to the objectives for this corridor which are focussed on 'making best use of existing roadspace to help reduce emissions; increase the amount of freight carried by rail and reduce accident rates and severity'. This intervention could be further considered by the local authority and the Regional Transport Partnership.
Intervention	3001	West Coast Mainline: Line speed improvements Increase line speeds to 125mph for long distance trips between Edinburgh and Carlisle.
Sift assessment		An intervention to the West Coast Mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	3025	West Coast Mainline: Improved Lockerbie to Glasgow Service Improved rail services between Lockerbie and Glasgow.
Sift assessment		An improved rail service between Lockerbie and Glasgow would not contribute to the objectives for this corridor, which for rail are focussed 'on providing opportunities to shift freight from road to rail'.

Existing Proposals

19 Edinburgh to North West England and beyond

Intervention	386	A7 Selkirk Bypass A trunk road bypass to the east of the town, aimed at removing long distance trips from the town centre.
Sift assessment		The A7 Selkirk bypass would not have a significant impact on the objective of 'continuing reduction in accident rates and severity rates across the strategic transport network'. The need for safety and operational improvements on the A7 will be kept under on-going review as part of Transport Scotland's maintenance and asset management processes for the trunk road network.
Intervention	2801	High speed rail link from Edinburgh and Glasgow to London, including consideration of Maglev High speed rail link from Edinburgh and Glasgow to London, including consideration of Maglev.
Sift assessment		An intervention to the provide a high speed connection to London from Edinburgh and Glasgow would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	2804	West Coast Mainline: Four hour and three hour (fastest) journey time from Edinburgh to London and Manchester respectively West Coast Mainline: Four hour and three hour (fastest) journey time from Edinburgh to London and Manchester respectively.
Sift assessment		An intervention to the West coast mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	2811	Improved rail services between Edinburgh and Dumfries including new rail chord allowing direct train connections Improved rail services between Edinburgh and Dumfries including new rail chord allowing direct train connections.
Sift assessment		This intervention would not contribute to the objective identified for this corridor which is focussed on 'reducing the accident rate and severity across the strategic network'.
Intervention	2824	Borders railway line extension from Tweedbank to Carlisle Construction of Borders railway line extension from Tweedbank to Carlisle.
Sift assessment		This intervention would not contribute to the objectives identified for this corridor which is focussed on 'reducing the accident rate and severity across the strategic network'.
Intervention	3005	West Coast Mainline: Improve journey times from Edinburgh to Lancashire/Manchester
Sift assessment		An intervention to the West Coast Mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	3007	West Coast Mainline: Increase freight gauge clearance between Edinburgh and Carlisle
Sift assessment		This intervention does not make a significant contribution towards any specific objective identified for the corridor which is focussed on 'reducing the accident rate and severity across the strategic network'. Interventions detailing rail freight improvements between Carlisle and the central belt have been included elsewhere within the STPR.

Intervention	3026	West Coast Mainline: Local rail service Carlisle to Edinburgh Introduction of a local rail service from Carlisle to Edinburgh with stops at Lockerbie and Beattock.
Sift assessment		The introduction of a local rail service from Carlisle to Edinburgh via Lockerbie and Beattock would not contribute to the objective for this corridor which is focussed on 'reducing the accident rate and severity on the strategic transport network'.
Intervention	3027	West Coast Mainline: Improved Lockerbie to Edinburgh rail service Improved rail services between Lockerbie and Edinburgh.
Sift assessment		An improved rail service between Lockerbie and Edinburgh would not make any significant contribution to the objective for this corridor 'to promote a continuing reduction in accident rates and severity rates on the strategic transport network'.

Existing Proposals

20 Edinburgh to North East England and beyond

Intervention	351	Project on East Coast Mainline to reduce Edinburgh (and the north) to Newcastle rail journey times Several opportunities including Dunbar bypass, Dunbar to Berwick and Morpeth bypass. Argument for considering interventions in North East England because north of Newcastle benefits accrue almost entirely to Scotland, even for projects located in England.
Sift assessment		An intervention to the East coast mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	352	East Coast Mainline: Semi-fast Edinburgh to Newcastle service Semi-fast rail services between Edinburgh to Newcastle calling at intermediate stations.
Sift assessment		An intervention to the East coast mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	383	A68 Lauder Bypass A trunk road bypass on the A68 around Lauder aimed at removing long distance trips from the centre of the build up area.
Sift assessment		The A68 Lauder bypass would not have a significant impact on the objective of 'continual reduction in accident rates and severity rates across the strategic transport network'. The need for safety and operational improvements on the A68 will be kept under on-going review as part of Transport Scotland's maintenance and asset management processes for the trunk road network.
Intervention	2801	High speed rail link from Edinburgh and Glasgow to London, including consideration of Maglev High speed rail link from Edinburgh and Glasgow to London, including consideration of Maglev.
Sift assessment		An intervention to the provide a high speed connection to London from Edinburgh and Glasgow would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	2807	East Coast Mainline: Earlier and later departures on East Coast Mainline together with faster end to end travel for business East Coast Mainline: Earlier and later departures on East Coast Mainline together with faster end to end travel for business.
Sift assessment		An intervention to the East coast mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.
Intervention	2808	East Coast Mainline: Better co-ordination of East Coast Mainline services with cross country services at key stations in England East Coast Mainline: Better co-ordination of East Coast Mainline services with cross country services at key stations in England.
Sift assessment		An intervention to the East coast mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.

Intervention	3009	Extend Borders Railway to Hawick
Sift assessment		This intervention would not significantly contribute to the objectives to 'reduce crowding and forecast road congestion' or 'reducing the accident rate and severity across the strategic network', however this intervention could be further considered by the local authority and the Regional Transport Partnership..
Intervention	3013	East Coast Mainline: Increase loading gauge Increase to the East Coast Mainline to W10 gauge clearance to improve cross border rail freight provision.
Sift assessment		An intervention to the East coast mainline within Scotland would make a significant contribution towards the wider STPR objectives. However, to achieve these benefits it would also be essential for substantial improvements to the routes within England at the same time and these are outwith the scope of STPR. Therefore, promotion of improvements to either of the mainline routes should be taken forward in partnership with the Department of Transport. This is consistent with the medium to long term aims of the 'Scotland's Railways' document to reduce cross border rail journey times.

Appendix C

Appendix C – Interventions that are not progressed following Appraisal

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
67	Aberdeen Airport Public Transport Interchange	Aberdeen	Co-locate Aberdeen Airport terminal and railway stations on the same site to create a public transport interchange.	The costs of this intervention are considered to be high, relative to the potential benefits achieved. Other interventions in this urban network and adjacent corridors are likely to contribute more significantly to objectives and provide greater value for money.	D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy
77	Edinburgh Waverley Public Transport Interchange	Edinburgh	Creation of a rail / bus / coach interchange at Edinburgh Waverley Station, requiring significant station reconstruction works.	The significant costs associated with this proposal far outweigh the benefits and as such it is not recommended for progressing. Recent improvements at Waverley have increased the capacity and ability to accommodate cross city services. While further significant enhancements would contribute towards the objectives for Edinburgh, these would require rebuilding of the station building. Given the protected status of the station building and the costs associated with a major upgrade, this intervention has not been recommended for further analysis in favour of enhancing Haymarket Interchange.	D28 - Upgrade Edinburgh Haymarket Public Transport Interchange
114	Edinburgh Suburban Line Services	Edinburgh	Cross Edinburgh service from Livingston North to Shawfair utilising the Edinburgh South Suburban Line. This would require enhancement of the infrastructure, additional rolling stock and signalling.	Recent studies have concluded that the business case for introducing passenger services on this line is poor. This intervention uses very scarce capacity through Waverley and Haymarket and uses train paths that could be deployed more effectively for use by strategically important services. Other interventions in this urban network or adjacent corridors, such as D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations), D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy) and D23 (Rail Enhancements in the East of Scotland) give similar benefits and are more cost effective.	D6 - Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy D23 - Rail Enhancements in the East of Scotland

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
51	Lengthen Trains and Platforms in Strathclyde	Glasgow	This would involve the introduction of longer trains across the Strathclyde area. The introduction of longer trains would necessitate the lengthening of platforms at stations within this area, additional rolling stock and capacity enhancements at Glasgow Queen Street and Glasgow Central.	The lengthening of platforms across the entire region would be costly and in some cases would not be required to accommodate the predicted demand for travel by rail. A more focused intervention aimed at platform lengthening on the most congested routes is considered to be more appropriate and is therefore taken forward, as part of Interventions D8 (Enhancing Rail System Capacity through Targeted Improvements) and D27 (Rail Enhancements between Inverclyde/Ayrshire and Glasgow).	D25 – Addressing Rail Terminal Capacity in Glasgow D27 - Rail Enhancements between Inverclyde/Ayrshire and Glasgow D8 - Enhancing Rail System Capacity through Targeted improvements
126	Rail Infrastructure and Service Enhancements on the Far North Line	Corridor 1	Improvements on the existing railway line between Inverness and Wick/Thurso to improve line speeds, reduce journey times and increase service frequencies. This would involve a new Dornoch Crossing, new rolling stock, better quality track, dynamic loops and improved signalling.	The costs of this intervention are excessive in comparison to the likely benefits. Although this intervention would contribute to the objectives of improving accessibility to public transport, it would not provide good value for money. Selected improvements could be taken forward as part of Intervention D8 (Enhancing Rail System Capacity through Targeted Improvements).	D8 - Enhancing Rail System Capacity through targeted Improvements
8	Upgrade the A96 to Dual Carriageway between Inverness and Aberdeen	Corridor 4	Upgrade the existing single carriageway A96 to dual carriageway along the entire length between Aberdeen and Inverness, with bypasses around the towns of Nairn, Keith and Elgin.	Partial dualling of the A96, with a series of complementary measures (Interventions D16 (Upgrade A96 to Dual Carriageway between Inverness and Nairn) and D24 (Targeted Road Congestion / Environmental Relief Schemes)), are more likely to address the strategic objectives in a cost effective manner. Based on the flow profiles and composition of traffic along the length of the corridor, the dualling of the entire route would not provide value for money. Dualling the A96 could also have significant adverse impacts on water and landscape and a slight adverse impact on noise.	D3 - Targeted Programme of Measures to Reduce Accident Severity D16 - Upgrade A96 to Dual Carriageway between Inverness and Nairn D24 - Targeted Road Congestion / Environmental Relief Schemes

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
152	Express Coach Service Facilities between Aberdeen and Inverness	Corridor 4	Facilities along the corridor to support an express coach service between Aberdeen and Inverness. This would include high quality waiting facilities, real time passenger information, integration with rail and local bus services, bus priority measures and bus lanes .	While this intervention would provide some improvements to public transport competitiveness in the corridor, more significant benefits could be delivered for longer distance trips through the alternative public transport interventions being considered by the STPR.	(D11) - Strategic Park-&-Ride/Park-&-Choose Strategy D17 - Rail Enhancements between Aberdeen and Inverness
167	Roll On-Roll Off Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness via Perth	Corridor 5	A full upgrade of the route between the Central Belt, Aberdeen and Inverness to allow roll-on/roll-off freight trains to operate. This would require; extensive works to increase the loading gauge to enable a greater number of trains to operate; signalling improvements to allow for bi-directional running and 24 hour access to the route; new facilities in the Central Belt, Perth, Aberdeen and in Inverness to allow lorries to drive on and off; and new trains to carry lorries. It may also be necessary to electrify the route to allow services to be operated by electric locomotives.	The infrastructure enhancements required to achieve the necessary clearances are likely to be significant and would require extensive station modifications. Costs are estimated to be very high and these are likely to outweigh any benefits associated with the intervention. On the Highland Mainline route, the required improvements to infrastructure could also result in an adverse environmental impact.	D18 - Rail Enhancements between Aberdeen and the Central Belt D15 - Rail Enhancements on the Highland Mainline between Perth and Inverness

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
23	Upgrade of M80 Junction 1/M8 Junction 13	Corridor 9	Upgrading the merge between the M80 and M8 in Glasgow to improve the operation of the junction. This would involve the reconfiguration of the merges to reduce conflict between vehicles on the M8 and M80 motorways.	The costs involved in this intervention far outweigh the likely economic benefits gained in reducing congestion and improving journey times. In addition, there are potentially significant technical constraints, due to the relative position of adjacent junctions and the urban form, that are likely to impact on the ability to deliver this intervention. Furthermore, the motorway network would be better managed by taking forward Intervention D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations).	D6 - Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations
17	Lengthen Trains and Platforms Between Edinburgh and Dunblane	Corridor 10	Lengthen trains and platforms to provide more capacity per train between Edinburgh and Dunblane.	While this intervention would provide some improvements to public transport competitiveness in the corridor, more significant benefits would result through Intervention D8 (Enhancing Rail System Capacity through Targeted Improvements).	D22 - Edinburgh to Glasgow Rail Improvements Programme D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy D8 - Enhancing Rail System Capacity through Targeted Improvements
32	New Light Rapid Transit Line between Edinburgh and Livingston	Corridor 13	Extension of Edinburgh Tram from Gogar to Livingston, with a loop around Livingston serving both railway stations.	The costs of this intervention are considered excessive compared to alternative interventions such as D23 (Rail Enhancements in the East of Scotland), D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations) and D11 (Strategic Park-&-Ride/Park-&-Choose Strategy).	D23 - Rail Service Enhancements in the East of Scotland D6 - Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy
172	New Road Link between M8 and M74	Corridor 13 Corridor 19	New dual carriageway link road between the M74 at Junction 12 and the M8 at Junction 4.	This new road alignment would have a major negative environmental impact as it is a largely greenfield route, extending over 40km. In addition, the cost of the intervention, estimated at £500m to £1bn, would far outweigh any benefits generated.	

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
69	Cross Forth Ferry Facilities	Corridor 14	Provision of facilities at Newhaven (for Leith) and at Burntisland and Kirkcaldy in Fife for a fast ferry or hovercraft service across the Firth of Forth.	This intervention is unlikely to provide a significant impact at a strategic level in encouraging modal shift, particularly when compared to other potential interventions. These other interventions include D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy), D18 (Rail Enhancements between Aberdeen and the Central Belt), D23 (Rail Service Enhancements in the East of Scotland) and D30 (Light Rapid Transit connections between Fife and Edinburgh). It may however address local and regional objectives.	D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy D18 - Rail Enhancements between Aberdeen and the Central Belt D23 - Rail Enhancements in the East of Scotland D30 – Light Rapid Transit connections between Fife and Edinburgh
108	New Rail Connections in Fife	Corridor 14	New passenger (rail) lines to serve St Andrews, Levenmouth and Glenrothes town centre, connecting to the existing East Coast Mainline. This would require new track, signalling, rolling stock and construction of stations.	Planned bus link improvements would provide a more cost effective and affordable alternative to a heavy rail line connection to St Andrews. Initial appraisal has indicated that benefits of the connections to Levenmouth are considered to be focused at the local and regional level. In light of further appraisal this intervention would not contribute significantly towards the strategic objectives. Improvements to Markinch Station and associated bus services to Glenrothes would provide a more effective public transport connection between Glenrothes and the strategic rail network. In summary, other Public Transport interventions in this corridor are more likely to contribute towards the strategic objective of improving connections between and to Edinburgh/Dundee, such as D23 (Rail Enhancements in the East of Scotland), D30 (Light Rapid Transit connections between Edinburgh and Fife) and D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy).	D23 - Rail Enhancements in the East of Scotland D30 - Light Rapid Transit Line connections between Edinburgh and Fife D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
165	Double-deck trains between Glasgow and the Ayrshire Coast	Corridor 15	Upgrading of rail infrastructure to support double-deck trains operating between Glasgow and the Ayrshire Coast.	This intervention would require significant infrastructure works associated with platform enhancements and bridge clearances. There would be significant operational impacts at Glasgow Central where approaches and platforms are likely to require realignment. There would be inefficiencies due to the lack of interoperability between routes across Glasgow and this could restrict the future-proofing of rail network improvements.	D27 - Rail Enhancements between Inverclyde/Ayrshire and Glasgow
166	Double-deck trains between Glasgow and Kilmarnock	Corridor 15	Upgrading of rail infrastructure to support double-deck trains operating between Glasgow and Kilmarnock.	This intervention would require significant infrastructure works associated with platform enhancements and bridge clearances. There would be significant operational impacts at Glasgow Central where approaches and platforms are likely to require realignment. There would be inefficiencies due to the lack of interoperability between routes across Glasgow and this could restrict the future-proofing of rail network improvements.	D27 - Rail Enhancements between Inverclyde/Ayrshire and Glasgow
90	New Bypass Around Greenock	Corridor 17	A new bypass around Greenock and Port Glasgow.	Although this intervention would deliver improved connections to Greenock Port, it would not contribute significantly towards the public transport objectives on this corridor when compared to other alternatives. The intervention does contribute towards some STPR objectives, however in light of further appraisal, other interventions provide similar or better benefits for a better value for money. More focused improvements to the road network at key junctions on the A8 are likely to provide greater value for money.	D27 - Rail Enhancements between Inverclyde/Ayrshire and Glasgow D6 - Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations
135	New Rail Line between Wemyss Bay and Largs	Corridor 17	Construction of a new direct rail link between Wemyss Bay and Largs.	The benefits of this intervention, at a strategic level, are considered to be relatively small as this only provides a small increase in capacity. Alternative rail-based interventions are more likely to contribute to the objective of increasing capacity and reducing journey times between	D27 - Rail Enhancements between Inverclyde/Ayrshire and Glasgow

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
				Glasgow and Inverclyde/Ayrshire and would represent a better solution in terms of value for money.	
150	Roll-On Roll-off Rail Freight Enhancements between Glasgow and the Border via Lockerbie/Dumfries	Corridor 18	A full upgrade of the route between the Central Belt and the border via Lockerbie/Dumfries to allow roll-on/roll-off freight trains to operate. This would allow standard lorries to drive on to a freight train at one end and drive off at the other, similar to the trains used in the Channel Tunnel.	This intervention would require extensive works to increase the loading gauge, increase the route availability and allow for an increase in the number of trains operating, and signalling improvements to allow for bi-directional running. In light of further appraisal, it was found that this intervention would require similar improvements and operational enhancements south of the border to have a significant impact. Other interventions aimed at providing more competitive rail freight opportunities in this corridor are considered to be a more effective alternative, providing a better value for money.	D29 - Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line
80	New Tram Line from Edinburgh to Haddington	Corridor 20	Extension of Edinburgh Tram or alternative light rapid transit system from Edinburgh to Haddington via Portobello, Musselburgh and Tranent. This would require construction of light rail infrastructure, additional rolling stock and station enhancements.	The costs of this intervention would be excessive relative to the potential benefits. Other interventions in this corridor and in Edinburgh are therefore likely to contribute more significantly to meeting the objectives and provide greater value for money.	D23 - Rail Enhancements in the East of Scotland D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
83	New Rail Line from the East Coast Mainline between Longniddry and Haddington	Corridor 20	Reopened branch line from Longniddry to Haddington, with a service to west Edinburgh (e.g., Edinburgh Park or South Gyle and beyond to Livingston, Glasgow, Stirling or Fife). This is likely to require some capacity enhancements at the east end of Waverley. This intervention may include an extension of services currently terminating at Waverley from the west.	The costs of this intervention would be excessive relative to the potential benefits. Other interventions in this corridor and in Edinburgh, such as D23 (Rail Enhancements in the East of Scotland), are therefore expected to contribute more significantly to meeting the objectives and provide greater value for money.	D23 - Rail Enhancements in the East of Scotland D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy
120	New Rail Line from the Borders Rail Link at Eskbank to Penicuik	Corridor 20	Heavy rail branch line from the Borders Rail Link at Eskbank to Penicuik, using the existing disused alignment past Rosewell and Auchendinny where possible.	The costs of this intervention would be excessive relative to the potential benefits. Other interventions in this corridor and in Edinburgh are therefore likely to contribute more significantly to the objectives and provide greater value for money.	D23 - Rail Enhancements in the East of Scotland D11 – (Strategic) Park-&-Ride/Park-&-Choose Strategy
130	Rail Freight Enhancements between Glasgow and the Border via Dumfries	Corridor 18	The intervention would include an increase in the number of freight paths on the Glasgow and South Western line between Glasgow and the border by measures such as: • lengthening of loops; • removal of speed limits that are below 75mph for freight trains; and • increasing the loading gauge on the route.	This would require extensive works to increase the loading gauge, the route availability, the number of trains operating and signalling improvements to allow for bi-directional running. In light of further appraisal, it was found that this intervention would require similar improvements and operational enhancements south of the border to have a significant impact. Other interventions aimed at providing more competitive rail freight opportunities in this corridor are considered to be a more effective alternative in terms of cost and benefits.	D29 - Enhancements to Rail freight between Glasgow and the Border via West Coast Main Line

Intervention ID	Title	Location	Intervention Description	Rationale for not progressing	Preferred Alternatives (if appropriate)
174	Roll-On Roll-Off Rail Freight Enhancements between Stranraer, Kilmarnock and the Border	Corridor 16	A full upgrade of the route between Stranraer and the border via Kilmarnock to allow roll-on/roll-off freight trains to operate. This would allow standard lorries to drive on to a freight train at one end and drive off at the other, similar to the trains used in the Channel Tunnel.	This would require extensive works to increase the loading gauge, the route availability, the number of trains operating and signalling improvements to allow for full bi-directional running along the route. In light of further appraisal, it was found that this intervention would require similar improvements and operational enhancements south of the border to have a significant impact. Low floor wagons should be considered as a possible option, however this would require operation from the ScotRail Franchise. Intervention D29 (Enhancements to Rail freight between Glasgow and the Border via West Coast Main Line), aimed at providing more competitive rail freight opportunities in this corridor are considered to be more effective alternatives.	D4 – Targeted Programme of Measures to improve the Trans European Network linkage to Loch Ryan port facilities D29 - Enhancements to Rail freight between Glasgow and the Border via West Coast Main Line

Appendix D

Appendix D – Interventions retained after Detailed Appraisal

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
Level 1: Maintaining and Safely Operating the Network				
D1	**Strategic Road Safety Plan**	The Scottish Government is prioritising road safety, through funding for Road Safety Scotland, Safety Camera Partnerships and other initiatives. A strategic direction to road safety has been developed through Transport Scotland's recently published ten year Strategic Road Safety Plan. In addition, the Government intends to publish its Road Safety Strategy. This intervention relates to a key objective of the STPR which is to continue the delivery of the Strategic Road Safety Plan, through the period 2012-2022. Building on this, the relevant proposed measures would be implemented on the strategic road network in order to reduce the rate and severity of road accidents on Scotland's trunk roads.	£10m - £50m	The intervention is specifically aimed at reducing accident rates and achieving the national targets for casualty reductions in the UK. These targets envisage, by 2010: a 40 per cent reduction in the number of people killed or seriously injured; a 50 per cent reduction in child deaths and serious injuries, when compared with the 1994-8 average, and a 10 per cent reduction in the slight casualty rate.
D2	**Maintaining and Safely Operating Scotland's Rail Network**	This intervention represents the day-to-day management and maintenance of the rail network, carried out by Network Rail in line with the requirements of the Scottish Ministers.	£3bn (over 10 years)	The total rail assets in Scotland are valued at approximately £5 billion. Network Rail receives more than £300million of direct grant every year to manage the rail network and to maximise its capacity. The funding allocated to Network Rail is for the operation, maintenance and renewal of the rail infrastructure network. This work links directly to this first level of requirement for the STPR in maintaining and safely operating the network.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D3 Part 1	**Targeted Programme of Measures to Reduce Accident Severity on the A9 North of Inverness**	This intervention supports the objective to reduce the fatal and severe accident rates on the A9 north of Inverness. The intervention would include measures such as: • Physical works at locations such as Tore Roundabout; It is envisaged that bespoke measures would be delivered in a targeted programme to address identified high severity accident clusters along the route. In addition, speed enforcement measures could be considered at appropriate locations.	<£10m	Local realignment on the A9 north of Inverness and junction improvements are expected to improve road safety. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes. The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to greater compliance with speed limits. Evidence from trials indicates that a reduction in average speed results in significant reductions in accidents and accident severity. The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.
D3 Part 2	**Targeted Programme of Measures to Reduce Accident Severity on the A9 and A835 between Inverness and Ullapool**	This intervention supports the objective to reduce fatal and severe accident rates on these routes. This intervention would include measures such as: • Physical works on the A835 aimed at providing safer overtaking opportunities, local realignments and localised widening of the carriageway. It is envisaged that individual measures would be delivered in a targeted programme to address identified high severity accident clusters along the routes. In addition, speed enforcement measures could be considered at appropriate locations.	£10m - £50m	The local carriageway realignments and junction improvements are expected to improve road safety on the A835. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes. The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to a greater compliance with speed limits. Evidence from trials indicates that a reduction in average speed results in significant reductions in accidents and accident severity. The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D3 Part 3	**Targeted Programme of Measures to Reduce Accident Severity between Inverness, Fort William, Mallaig and Skye (A82, A87, A830, A887)**	This intervention supports the objective to reduce the accident rate on these routes. This intervention would include measures such as: • Physical works aimed at providing safer overtaking opportunities, hard strip provision for agricultural vehicles, local realignments and junction improvements. It is envisaged that individual elements would be delivered in a targeted programme to address identified accident clusters. In addition, speed enforcement measures could be considered at appropriate locations.	£50m - £100m	Local carriageway realignments and junction improvements are expected to improve road safety on the routes. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes. The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to a greater compliance with speed limits. Evidence from trials elsewhere indicates that a reduction in average speed results in significant reductions in accidents and accident severity. The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.
D3 Part 4	**Targeted Programme of Measures to Reduce Accident Severity on the A96 between Aberdeen and Inverness**	This intervention supports the objective to reduce the accident and severity rates on this route. This intervention would include measures such as: • Physical works aimed at providing safer overtaking opportunities such as: 2+1 sections; climbing lanes and overtaking lay-bys; hard strip provision for agricultural vehicles; local realignments and junction improvements. It is envisaged that individual elements would be delivered in a targeted programme to address identified accident clusters and locations of accident severity. In addition, speed enforcement measures could be considered at appropriate locations.	£50m - £100m	The local realignment of the A96 and junction improvements are expected to improve safety. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes. The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to a greater compliance with speed limits. Evidence from trials elsewhere indicates that a reduction in average speed results in significant reductions in accidents and accident severity. The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D3 Part 5	**Route Management between: Aberdeen and North East Scotland (A90), Edinburgh and Dundee (A92), Ayrshire and Dumfries (A76) Edinburgh and North West England (A68/A7/A702), Edinburgh and North East England (A1), the A83, A85, A828**	These routes generally perform well, and as such no objectives have been established to address corridor specific issues. However, there is a need to maintain and operate these safely in the context of a route management strategy. This intervention would include a variety of localised improvements that would be undertaken in tandem with, and driven by, the trunk road maintenance contracts.	£100m - £250m	There are a number of corridors where no strategic issues relating to network performance have been identified, however there is an ongoing need to maintain and operate the network safely. These route action plans would perform this role. These interventions would therefore address isolated constraints, and although the immediate benefits would be felt at a more local level, for example through isolated junction improvements, the programme of works would contribute towards the need to maintain and safely operate the network.
D4	**Implement Targeted Programme of Measures to improve links to the Loch Ryan port facilities from the Trans European Network**	This intervention supports the objective to have efficient and effective linkage to the port facilities at Loch Ryan. This intervention would include measures such as: • Physical works aimed at providing safer overtaking opportunities such as 2+1 sections, climbing lanes, overtaking lay-bys and improvements to the operation of junctions around Dumfries; • Improvements to the strategic access around Stranraer (A751); and • Driver information System It is envisaged that individual elements would be delivered in a targeted programme to improve journey time reliability for travel to the port facilities at Loch Ryan.	£10m - £50m	The physical aspects of this intervention would improve journey time reliability, by addressing additional constraints along the route. This would result in efficiency gains for freight traffic travelling to and from the Loch Ryan ports. In addition the physical aspects would be complemented by the introduction of intelligent transport systems on the A75, to provide driver information; which would provide a significant contribution towards the objective of efficient and effective links to the ports.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D5	**Targeted Programme of Measures to improve road standards between Glasgow and Oban/Fort William(A82)**	This intervention supports the objectives to provide a significant improvement in road standard along the A82 and to reduce the accident severity rates on various routes. In addition to a general upgrade of the route, the intervention would include measures such as: • Carriageway widening at selected locations between Tarbet and Inverarnan; • Carriageway widening at selected locations between Corran Ferry and Fort William; and • Physical works such as climbing lanes at Loch Tulla, overtaking lay-bys aimed at providing safer overtaking opportunities and improving journey time reliability and safely targeted measures such as hard strips, junction improvements and local realignment. It is envisaged that individual elements would be delivered in a targeted programme to address identified accident clusters and points where the routes have significant constraints on achieving consistent journey times. In addition, speed enforcement measures could be considered at appropriate locations.	£100m - £250m	This is a key route for tourism and as such has a high proportion of infrequent users; the provision of a consistently high standard of carriageway would be of particular significance to the improvement of road safety. The introduction of physical works to provide safer overtaking opportunities, in conjunction with speed enforcement measures, is expected to improve road safety along the route, and reduce both the accident and fatal accident rates closer to the national levels. The environmental impacts this intervention has on designated sites, valued habitats, protected species and water quality have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
Level 2: Making Better use of Existing Capacity				
D6	**Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations**	This intervention supports the objectives of improving journey time reliability and journey times for prioritised users. It would involve the introduction of enhanced Intelligent Transport Systems (ITS), principally Active Traffic Management (ATM), on the motorway and trunk road network in Central Scotland: • The M8; • The M90 and A90 approaching Edinburgh; • The A720 around Edinburgh; and • The M74, M77 and M80 approaching Glasgow. Phase 1 would consist of variable speed limits, variable message signs, ramp metering at key junctions and average speed enforcement measures as appropriate. Phase 2 would consist of additional functionality through further provision of ramp metering and hard shoulder running within the existing road space. Phase 3 would consist of improved functionality through targeted use of the hard shoulder as an additional 'managed lane' for priority vehicles – e.g. High-Occupancy Vehicles (HOVs), buses and, HGVs. In some cases, road widening could be used to generate an additional lane for this purpose.	Phase 1 £250m - £500m Phase 2 £100m - £250m Phase 3 £100m - 250m	The implementation of an Intelligent Transport System (ITS), based on an expansion of the existing capabilities of the Traffic Scotland system, would have significant benefits for the movement of people and goods. This would contribute to objectives on a number of corridors that link into the urban networks of Edinburgh and Glasgow, and in particular would contribute to the objective to improve the operation of the urban Glasgow motorway network. This intervention would have moderate environmental benefits by minimising congestion and stationary traffic and safety benefits by reducing the potential for collisions. This system would also be able to support the operation of the strategic Park-&-Ride / Park-&-Choose intervention by providing opportunities to use the hard shoulder on approach to the urban networks for priority vehicles.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D7	**Further Electrification of the Strategic Rail Network**	Rail electrification can contribute to emissions reduction by allowing train power to come from more environmentally friendly sources. There are operational benefits compared with diesel powered trains both in terms of reduced journey times and operating costs. It also gives the opportunity for interoperability and more efficient use of rolling stock, particularly in the West of Scotland where running through low level stations is generally restricted to electric rolling stock. It is envisaged that electrification would be delivered on a phased basis. In the short term, this would include: • Phase 1 - Committed improvements as part of the Edinburgh to Glasgow improvements, comprising Edinburgh to Glasgow via Falkirk route, Diversion Routes 1 (Haymarket) and 2 (Falkirk Grahamston), and electrification on the route via Cumbernauld and to Dunblane / Alloa; and • Phase 2 - Electrification of the remaining routes in the Central Belt (Shotts, Whifflet, Paisley Canal, Glasgow North Suburban, East Kilbride and Kilmarnock). In the longer term, extending into the period beyond STPR, this would include: • Phase 3 - Electrification of routes between Edinburgh, Perth and Dundee including the Fife Circle; • Phase 4 - Electrification from Dunblane to Aberdeen; and • Phase 5 - Electrification from Perth to Inverness.	Phase 1: £250m - £500m Phase 2: £250m - £500m Phase 3: £250m - £500m Phase 4: £250m - £500m Phase 5: £250m - £500m	This intervention supports the Key Strategic Outcome to reduce emissions in pursuit of a Greener Scotland by providing cleaner, more efficient traction for rail services. Currently 23 per cent of the Scottish rail network is electrified and this intervention would see the expansion of this over the greater part of the network. Electrified services would reduce energy consumption by 15 per cent for inter-urban and 20 per cent for stopping services. There are a number of areas where objectives to reduce emissions would be supported by this intervention. This intervention would also allow greater flexibility and benefits for the operation of services while electrification would support other rail interventions as part of an overall strategy for 'step-change' performance across parts of the system, particularly in Fife.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D8	**Enhancing Rail System Capacity through Targeted Improvements**	This intervention is over and above the day-to-day maintenance of the rail network which is the responsibility of Network Rail. There are parts of the rail network that are operating close to or at capacity during peak periods, with limited or no opportunity for additional services. Much of the existing signalling infrastructure is not fit-for-purpose. This intervention would cover operational and relatively small scale infrastructure measures such as: • Replacement of Radio Electronic Token Block signalling in the Highland region; • Provision of additional signal blocks in heavily used parts of the network; • Replacement of two-aspect signals with three or four aspect signals in heavily used parts of the network; • Replacement of single lead junctions with double lead junctions as appropriate to improve efficiency; and • Replacement of low speed junctions and crossovers as appropriate to improve efficiency. This intervention provides upgrades for rail signalling, as well as track and junction layouts to reduce headways and allow more trains to use the network.	£100m - £250m	This intervention would have the effect of improving operational performance and would also lead to reduced journey times where trains times are currently constrained by limited capacity and a mix of train speeds. These benefits by themselves would encourage some modal shift from car to rail, hence reducing traffic emissions. In many areas of Scotland, additional rail services could contribute towards objectives where localised rail constraints have been identified. This intervention would provide a strategy to systematically address these constraints. The main benefits of this intervention include: • Reducing conflict between services; • Improving efficiency; • Reducing journey time variability; • Improving reliability and resilience; and • Providing room for growth.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D9	**Integrated Ticketing**	This intervention involves the development of a national, integrated ticketing system for all modes of public transport and would support the objectives to promote seamless travel, improve the competitiveness of public transport and improve overall perception of public transport. It is likely that this would be delivered through smartcard technology, similar to schemes operating in London and other European cities, but probably using the ITSO standard (Integrated Transport Smartcard Organisation). The card would allow interoperability across different public transport services over all of Scotland, and would provide a robust, secure system for revenue allocation to operators. Such a system would require investment in fixed validation equipment at terminals and on buses/trams, sales facilities and smartcards and back office systems to undertake revenue allocation and provide management information. Further detailed consideration would be required to determine the type of product used.	£50m - £100m	Integrated ticketing is not an end in itself but a means of achieving the wider policy objectives of the Scottish Government. This intervention would provide greater integration and use of public transport as a real alternative to the car, in line with Scottish Government Key Strategic Outcomes. This intervention also offers the potential to reduce boarding times on bus services, since there would be a reduced requirement for drivers to sell tickets. Evidence suggests that upwards of 80 per cent of bus journeys in London are now made using a smartcard; this may be largely due to significant cost savings to the users of the card. From an environmental stand point, this intervention is expected to have a small positive impact. However, taken together with other proposed interventions there is the potential to reduce the overall level of emissions by encouraging car drivers to use public transport. This intervention could be taken forward in conjunction with those addressing service enhancements and the provision of strategic Park-&-Ride facilities.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D10	**Reconfiguration of the National Rail Timetable**	Several objectives have been identified to reduce journey times by public transport, particularly between Aberdeen/Inverness and the central belt. At present, the Scottish Rail Network has no significant hierarchy, with many services performing multiple roles in linking cities and intermediate stops, resulting in some cases of uncompetitive journey times. This intervention would address these issues by re-casting the rail service timetable to provide fast, limited-stop trains which would serve longer distance journeys between the cities and replace some of the existing semi-fast services. Intermediate destinations would be catered for by stopping services. It is likely that this intervention would be undertaken on a phased basis, in conjunction with other interventions, particularly any programme of network-wide minor improvements. There would, of course, be a requirement to ensure that an adequate number of fill-in semi-fast or stopping services remained in place for the intermediate locations. These may be supplemented by additional local bus services. This intervention is predicated on the basis of no requirement for new infrastructure or rolling stock.	<£10m	This intervention supports the objective to reduce inter-urban journey times on public transport by reducing journey times between Aberdeen/Inverness and the Central Belt by up to 20 minutes. Forecasts show a relatively small overall increase in rail passengers, however, the majority of this increase is related to a transfer from longer distance car traffic, resulting in reduced emissions from road based vehicles. While the benefits in terms of growth in passenger-kilometres are relatively modest, there are significant benefits to those already using the services through a reduction in journey time, for example a reduction of around 20 minutes to journeys between Aberdeen/Inverness and the Central Belt. The costs of providing this intervention are low with the largest benefits accruing to longer distance travellers. However, there could be an adverse impact on shorter distance trips that currently use main line services, although these could be addressed through the provision of local bus services.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D11	**(Strategic) Park-&-Ride/Park-&-Choose Strategy**	This intervention supports the objectives to make public transport more competitive against the car. Located on major commuting routes, these sites would also assist in maintaining and enhancing the labour catchment areas in the city regions and reducing CO_2e emissions. It would deliver a series of strategic Park-&-Ride / Park-&-Choose sites using common branding / marketing across Scotland. The sites would be served by either rail services or express bus links to and from the city centres and areas of economic activity, including appropriate bus priority measures at congested locations. These would interface with existing urban bus priority systems. Proposed sites for this strategy include creation of new facilities: • Serving Aberdeen from Dyce (A96) and Charleston; • Serving Dundee: Invergowrie, Forfar Road, A92 and Forgan; • Serving Edinburgh: Halbeath, Lothianburn, Pitreavie, and Tranent; • Serving Glasgow: Bargeddie (M8), St James (M8), Glasgow Southern Orbital (M77), Fullarton (M74) Robroyston (M80) and outside Ayr (M77); • At Bannockburn, serving Edinburgh, Glasgow and Stirling; and • A new station at Dalcross with Park-&-Ride facilities and interchange facilities with Inverness Airport. In addition, this could incorporate expansion and complementary branding at existing sites at Bridge of Don, Hermiston, Ingliston and Todhill (Sheriffhall), with increased frequency for current bus services from these sites.	£50m - £100m	This intervention would help to keep the city centres moving by reducing road congestion in the peak periods. It would also assist in maintaining the labour catchment and reducing emissions. In the case of Edinburgh, where this is a key objective, the proposed measures would increase the number of people able to commute to areas of economic activity, particularly central Edinburgh. It is a similar picture for Glasgow where sites are proposed on all major radial roads. This could be taken forward in conjunction with interventions aimed at providing priority vehicle lanes on sections of the strategic road network (D6 - Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations).

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
Level 3: Targeted Infrastructure Improvements				
D14	**A9 Upgrading from Dunblane to Inverness**	The Government is committed to the dualling of the A9 between Dunblane and Inverness. This intervention considers the full dualling of the A9 between Dunblane and Inverness within the STPR period. This intervention supports the objectives to promote journey time reductions between Inverness and the central belt, improve the operational effectiveness of the A9, reduce the severity of accidents and address driver frustration. **The first phase** of this intervention would consist of : • Grade separation of all junctions on the A9 from Keir Roundabout to south of Broxden Roundabout; • Dualling the A9 between Perth and Blair Atholl; • Grade separation of Broxden Roundabout and Inveralmond Roundabout; and • Implementation of climbing lanes, 2+1 sections and junction improvements between Blair Atholl and Inverness. **The subsequent phases** of this intervention would consist of : • Dualling the A9 between Aviemore and Inverness; and • Dualling the A9 between Blair Atholl and Aviemore.	First Phase - £500m-£1bn Subsequent Phases - £1.5bn-£3bn	Many of the accidents on the A9 between Dunblane and Perth in recent years have occurred at the at-grade junctions. These accidents are often serious or fatal and removal of these would significantly reduce the accident rate and accident severity on this route. The grade separation of Broxden and Inveralmond Roundabouts would remove the congestion at these locations contributing to reduced journey times, improved journey time reliability and improved road safety. The A9 between Perth and Blair Atholl is the most heavily trafficked stretch of the A9 north of Perth. Dualling this section would have the most significant impact on reducing journey times and improving journey time reliability. This would also contribute to a consistent carriageway standard along this section of the A9. The introduction of climbing lanes is also expected to improve safety since evidence elsewhere suggests that the introduction of climbing lanes can result in a significant reduction in accidents, of up to 50 per cent, on single carriageway routes. Dualling the A9 between Blair Atholl and Inverness would further reduce journey times and improve journey time reliability between Perth and Inverness, as well as provide a consistent carriageway standard along the whole of A9 between Perth and Inverness. This is a lightly trafficked section of the A9 and is therefore considered in subsequent phases. Aviemore to Inverness is more heavily trafficked than Blair Atholl to Aviemore and would therefore take priority in future phases. This intervention is expected to provide a significant contribution to the Government's Purpose of increasing sustainable economic growth. In addition to this, the national objectives of promoting

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
				journey time reductions between the Central Belt and Inverness and the reduction in accident rates are contributed to by this intervention. This intervention also addresses the corridor specific objectives of improving the operational effectiveness of the A9, on approaches to Perth, and addressing issues of driver frustration. The environmental impacts this intervention has on several biodiversity sites and designated landscapes have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.
D15	**Rail Enhancements on the Highland Mainline between Perth and Inverness**	This intervention supports the objectives to reduce journey time, increase travel opportunities between Inverness and Perth and more effectively link Inverness to the central belt. Improvements to the Highland Mainline are proposed: • An increase in service frequency (minimum of hourly between Inverness and Perth with additional peak express services); and • A reduction in journey times of approximately 35 minutes, resulting in Edinburgh to Inverness journeys of under three hours, with similar reductions for services to Glasgow. Journey time reductions to benefit passenger services would be delivered through line speed improvements, additional loops, dynamic loops or lengthening of double track sections, signalling improvements and more powerful traction. It is envisaged that this could be delivered in two phases. Phase 1 would comprise the recognised Highland Mainline improvements as proposed in the Highland Room for Growth Study. Phase 2 would comprise a more significant enhancement to	Passenger improvements Phase 1: £50m - £100m Phase 2: £100m -£250m Additional freight improvements £50m - £100m	This intervention would provide journey time improvements between Inverness and Perth and onwards to the Central Belt, contributing to objectives relating to these issues. Increasing the frequency of services would provide further benefits through additional opportunities to travel. The reduction in journey time of around 20 per cent is significant and would make the rail service more competitive with the current car journey. The environmental impacts this intervention has on designated biodiversity and landscape sites have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward. The freight improvements would make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
		allow faster services to operate. Additional freight improvements: The passenger enhancements could be optimised to also benefit freight operations. It is envisaged that this would include: • Provision of bi-directional signalling to reduce the impact of engineering works on the route (permitting the route to remain open for freight throughout the day and week); • Increased length of freight loops (allowing longer freight trains); and • Removal of speed limits below 75mph Permanent Speed Reductions (PSRs) for freight trains. Included within this intervention is the capability to operate low floor wagons that are currently becoming available for use on the network. These would allow standard containers to be carried on existing infrastructure with minimal physical works, such as targeted gauge enhancements at appropriate structures.		

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D16	**Upgrade A96 to Dual Carriageway between Inverness and Nairn**	This intervention supports the objectives to reduce the accident rate and severity rate on this route and improve connectivity between Inverness and communities to the east. It would include a new dual carriageway on the A96 corridor between Inverness and Nairn, giving improved access to Inverness Airport and the future growth areas in the A96 corridor. A new link connecting the A96 and the A9 (south of Inverness) would provide relief for Raigmore Interchange.	£250m - £500m	Upgrading the A96 to dual carriageway between Nairn and Inverness is expected to reduce accident rates (around 40 per cent) by providing a higher standard of road. It would also reduce journey times along this section of the corridor, improving connectivity between Inverness and communities to the east (including the planned developments in this corridor at Tornagrain), and helping to increase the labour catchment area for Inverness. Improvements would also be felt on longer distance road journeys between Aberdeen and Inverness. The link between the A9 and A96 would further reduce congestion by allowing traffic between the A9 and A96 to avoid local traffic congestion at Raigmore Interchange. These benefits are reflected in the economic analysis, which suggests that the intervention offers good value for money. The environmental impacts this intervention has on the surrounding natural and historical features have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D17	**Rail Service Enhancements between Aberdeen and Inverness**	This intervention supports the objectives to reduce journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness. The improvements to the railway between Aberdeen and Inverness would allow: • An increase in service frequency (minimum of hourly service over the full route); • A reduction in journey time by about 20 minutes between Aberdeen and Inverness; • Extra rail services between Nairn and Inverness to provide two trains per hour over this section; and • A new station at Dalcross with Park-&-Ride facilities and interchange facilities with Inverness Airport. Phase 1 would involve the introduction of new loops in the area and line speed improvements. Phase 2 would involve more comprehensive improvements to line speed, journey times and the provision of some double tracking on approaches to Inverness and Aberdeen.	Total Cost: £250m - £500m Phase 1 £50m - £100m Phase 2: £100m - £250m	This intervention would reduce journey times between Aberdeen and Inverness and improve connectivity between the cities and the communities along the corridor. It would also increase opportunities to travel by providing a more frequent service at regular intervals throughout the day. At the Inverness end of the route, this intervention would improve connectivity by public transport between Inverness City Centre and the growth area to the east, including Inverness Airport. Within Aberdeen, this intervention would improve access to the Dyce area and, if combined with improvements to the connections between Aberdeen and the Central Belt (D18 Rail Enhancements between Aberdeen and the Central Belt), would also provide greater opportunity for cross city travel by rail. The journey time savings of approximately 20 minutes are significant and this, coupled with an increased frequency, would make rail travel a genuine alternative to car travel. There would also be benefits from emissions reduction resulting from the ability to capture a higher share of inter-city travel. The cost of this intervention is driven by the need to provide double track on the approach to Aberdeen. However, the improvements to journey time of around 20 per cent would be significant both for existing users and for those transferring from car and it is therefore considered to offer value-for-money.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D18	**Rail Enhancements between Aberdeen and the Central Belt**	This intervention supports the objectives to improve public transport competitiveness between Aberdeen and the Central Belt and provide enhanced opportunities to move freight by rail. It would involve: • Recasting of the passenger timetable on the Aberdeen – Dundee – Edinburgh / Glasgow corridors to provide express and stopping services; • Providing one express train per hour to Glasgow (two hour fifteen minute journey time); • Providing one express train per hour to Edinburgh (two hour journey time); and • No stops at intermediate settlements (except Dundee) for express services. Phase 1 would include line speed improvements, additional loops to allow passing of freight trains and upgraded signalling along the entire length of the line to reduce headway times. Phase 2 would involve the removal of the single track at Usan, including a new bridge over Montrose Basin. Additional freight improvements: The passenger enhancements could be optimised to benefit freight operations. It is envisaged that this would include: • Provision of bi-directional signalling to reduce the impact of engineering works (permitting the route to remain open for freight throughout the day and week); • Increased length of freight loops (allowing longer freight trains); and • Removal of speed limits that are below 75mph for freight trains. Included within this intervention is the capability to operate low	Total Cost: £250m - £500m Passenger improvements Phase 1: £100m - £250m Phase 2: £100m -£250m Additional freight improvements £50m - £100m	This intervention would help to reduce journey times between Aberdeen and the Central Belt by around 20 minutes, the majority of which would be delivered under Phase 1. This intervention would assist in allowing travellers to achieve an effective working day when travelling between Scotland's four largest cities. These improvements would lead to an increase in demand for rail travel, and modal shift from private car use. The freight improvements would make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times. The improvements required to facilitate the improved passenger services are relatively modest compared with the works required for freight. This gives the passenger service improvements a good performance in terms of value for money, with the freight improvements being more marginal. However, the potential benefit from this in terms of reduced emissions control would make the overall improvement worthwhile. The environmental impact this intervention is forecast to have on biodiversity and water quality have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
		floor wagons that are currently becoming available for use on the network. These would allow standard containers to be carried on existing infrastructure with minimal physical works, such as targeted gauge enhancements at appropriate structures.		
D19	**Dundee Northern Relief Road**	This intervention supports the objectives to reduce conflict between strategic and local traffic in Dundee, and to improve the connectivity of Aberdeen to the Central Belt. Improvement to the A90 at Dundee could take the form of: 1. A new Northern Peripheral Bypass road around Dundee from the A90 west of Invergowrie to the A90 north of Dundee; or 2. Upgrading of roundabouts and associated junctions on the A90 Kingsway. Both options could incorporate a package of associated bus priority, cycle lanes and pedestrian measures on or across the Kingsway.	£100m - £250m	A new outer bypass would contribute significantly to the objective of reducing journey times between the Central Belt and Aberdeen, with an approximate reduction of 10-15 minutes, by reducing the conflict between long distance and local traffic through removing up to 50 per cent of traffic from the Kingsway. This would have consequential environmental benefits to those living and working adjacent to the A90, and would enable the Kingsway to perform a role as a regional distributor road with potential for the introduction of bus priority measures. The outer bypass would have a potentially moderate benefit to Air Quality in Dundee's Air Quality Management Area (AQMA) by moving 50 per cent of the traffic away from the A90. Alternatively, grade separation of all or some of the at-grade roundabouts on the A90 Kingsway would contribute to the two objectives above, albeit to a lesser extent. Although this option would avoid any environmental impact north of the city, provision of grade separated junctions in an urban area would have adverse impacts on the communities adjacent to the A90. The bypass route is expected to provide more value for money than the on-line upgrade.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D21	**Grangemouth Road and Rail Access Upgrades**	This intervention supports the objective to improve access to Grangemouth port and the freight hub, by improving access for both road and rail freight. Improved road access from Grangemouth onto the motorway network would be provided through upgrades to Junction 6 on the M9. The A801 would be upgraded between Grangemouth and the M8 (including carriageway improvements and a new viaduct) to serve developing industrial and distribution facilities along the M8 corridor. Improved rail access would be provided through capacity enhancements at and around Grangemouth Junction, to allow more trains to access the freight facilities at Grangemouth, such as: • Committed improvements to the Edinburgh and Glasgow route; • Electrification between Coatbridge and Grangemouth; • Increased loading gauge to W12 to allow larger containers to be carried; • Improved access from the west; and • A new curve to permit direct access from the east.	£100m - £250m	Improving the direct road link from Grangemouth to the developing industrial and distribution facilities along the M8 via an upgraded A801, would make it more suitable for the role that it is currently performing and allow for increased economic growth on this corridor. In addition, it would offer significant journey time improvements and a reduction in the accident rate of around a third on the A801. Provision of this high quality route would also offer the opportunity for existing HGVs which use the M8 and M9 to reduce their current journey times by a minimum of 20 minutes. This intervention would deliver a small positive impact on the environment as a result of the removal of some HGVs from parts of Grangemouth and rail improvements that include electrification, both of which are envisaged to contribute to reduced emissions. This intervention would, however, impact on the designated environmental sites along the route and this would need to be considered further in the development of any proposed alignment of a new road crossing of the Avon Gorge. The economic analysis of this intervention would suggest that overall the intervention offers value for money. The rail element would allow more freight trains to run into Grangemouth freight terminal without conflicting with passenger services, which in turn would improve journey time reliability. Electrification would allow freight trains to be operated from the West Coast Mainline by faster electric locomotives. Increasing the loading gauge would allow larger containers to be carried to and from Grangemouth. All of these improvements would also help make rail freight more attractive for hauliers.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D22	**Edinburgh to Glasgow Rail Improvements Programme**	This intervention was identified early in the STPR and brought forward in a study which considered improvements to the capacity, frequency and journey time of rail services between Edinburgh and Glasgow. This intervention supports a number of objectives relating to access to jobs from the perspective of both employers and employees, emissions and public transport capacity on the corridor between Edinburgh and Glasgow. A number of potential packages of infrastructure and service enhancements were examined. The Minister announced to Parliament in Autumn 2007 that the preferred strategy would be to provide: • An electrified railway between Edinburgh and Glasgow Queen Street (including diversion routes), the line via Cumbernauld and lines to Dunblane and Alloa; • A new station at Gogar to serve Edinburgh Airport (via tram) and a new curve at Dalmeny to allow Edinburgh to Glasgow services to access the new station; • Six trains per hour between Edinburgh and Queen Street with the fastest journey time of around 35 minutes and a mixture of stopping patterns to serve intermediate stations; • Access to Edinburgh Park station for Edinburgh to Glasgow services; and • Three trains per hour between Edinburgh and Glasgow Central (one stopping service and two semi-fast services) serving both the Shotts and Carstairs routes.	£500m - £1bn	This intervention would provide an increase in capacity between Edinburgh and Glasgow as well as reducing the journey time between the two cities. These combined would help maintain, and in some cases enhance, the labour market catchment area that can commute into the two cities within 60-minutes, counteracting the forecast decrease in labour market catchment caused by forecast increases in congestion and journey times on the road network. The improvements would encourage travellers to choose to travel by rail instead of private car. Electrification of the lines would also further help to reduce emissions within the corridor between Edinburgh and Glasgow. The intervention also provides a key linkage from the rail network to Edinburgh Airport, through the provision of a new station at Gogar and interchange with the tram. The enhancement to services between Edinburgh and Glasgow via Shotts or Carstairs would improve public transport capacity between Edinburgh and Livingston / Glasgow. It would also improve connectivity and interchange opportunities (via Glasgow Central) between Edinburgh and Inverclyde / Ayrshire, further helping to maintain the labour market catchment area for the two cities, and encouraging rail use in place of private car. This intervention, as a committed scheme, has a strong business case, offering value for money.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D23	**Rail Enhancements in the East of Scotland**	This intervention includes an increase in service frequency on rail services across the east of Scotland. This intervention would include services such as: • West Calder to Haymarket (in addition to the committed service improvements as part of the Edinburgh to Glasgow Rail Improvements Programme, D22); • Edinburgh to Newcraighall (two trains per hour as an extension to existing Dunblane services and two trains per hour to Glasgow and the west of Scotland via the committed Airdrie to Bathgate line. This would replace the existing two trains per hour from Newcraighall to Dunblane and from Bathgate to Newcraighall); • Edinburgh to Dunbar (as an extension of services from Glasgow and the west of Scotland via the committed Airdrie to Bathgate line); • Edinburgh to Cowdenbeath semi-fast (as an extension of services from Tweedbank via the committed Borders Rail Link); and • Haymarket to Kirkcaldy semi-fast (additional service on top of existing services). This intervention would include additional rolling stock and facilities to support and maintain these services. There is limited capacity available at Waverley Station and therefore capacity improvements would be required or alternatively, more efficient use of Waverley would have to be developed (which may include terminating some trains at Haymarket north platform or an equivalent on the south side provided as part of the committed Edinburgh to Glasgow improvements). This intervention would include remodelling of various parts of the network to enhance capacity for these services, such as	£250m - £500m	This intervention would contribute towards the objectives for Edinburgh and the corridors serving the city, particularly in providing access to areas of economic activity. The increased provision would increase the labour market catchment that can commute into Edinburgh within 60-minutes by 5-10 per cent This intervention would contribute towards the objectives for Edinburgh and the corridors serving the city, particularly in providing access to areas of economic activity. The increased provision would increase the labour market catchment that can commute into Edinburgh within 60-minutes by 5-10 per cent. This intervention would provide additional rail capacity on some of the busiest rail lines in Scotland, resulting in a transfer of up to 5 per cent modal shift from car to rail. The reduction in car journeys could positively contribute towards improved air quality within air quality management areas. This intervention is forecast to capture trips from car travel, with an increase of over 1,100 new rail passengers during each peak hour period, approximately half of whom are expected to transfer from car.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
		Portobello Junction to Newcraighall and Dunbar station. Additional capacity enhancements such as resignalling and loops would also be included where necessary.		
D24	**Targeted Road Congestion / Environmental Relief Schemes**	On a number of corridors throughout Scotland, objectives have been identified to reduce conflicts between strategic and local traffic. Reducing these conflicts would support road safety, journey time reliability, reducing emissions and reducing severance. This intervention targets specific locations on the road network where improvements would address these issues and includes measures such as: • Upgrade of the A77 from single to dual carriageway around Ayr, grade separation of key junctions and enhancements south of Ayr (part 1); • Enhancements on the A737 such as a bypass around Dalry (part 2); • Junction improvements for the A720 Edinburgh City Bypass such as at Sheriffhall Roundabout (part 3); and • Enhancements to the A96 such as a bypass at Nairn (part 4).	Part 1: £100m - £250m Part 2: £10m - £50m Part 3: £10m - £50m Part 4: £10m - £50m	The grade separations on the A77 between Whitletts Roundabout and Bankfield Roundabout, would remove the conflict between local and strategic traffic, as well as reducing journey times by approximately 10 minutes. Upgrading the A77 to the east of Ayr would also provide additional capacity for traffic that is likely to be generated as Ayr expands to the south east. These interventions would also improve access to the ports at Loch Ryan with benefits for freight and passenger traffic. Providing improvements on the A737 such as a bypass of Dalry would help to reduce the conflict between local and strategic traffic that occurs along this route, thus improving road safety and journey time reliability on the A737. The A720 improvements would help to maintain the 60-minute commutable labour market area around Edinburgh, and would provide benefits for journeys to or between two of Edinburgh's areas of economic activity, West Edinburgh and the Shawfair development. Journey time reductions of approximately 5 minutes are forecast with this improvement for all elements. Enhancements to the A96 such as a bypass around Nairn would reduce the conflict between local and strategic traffic and improve journey times and journey time reliability along the route. The environmental impacts this intervention has on cultural heritage and landscape have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D25	**West of Scotland Strategic Rail Enhancements**	This intervention supports the terminal capacity issues in Glasgow, which significantly constrain the future ability of the rail network in the West of Scotland to respond to challenges and facilitate change. This intervention supports the objectives to address rail capacity issues in central Glasgow and increase public transport access to areas of economic activity. It also assists in contributing to objectives within corridors that serve Glasgow. The detail of the strategy to address this includes some or all of the following components, recognising the opportunity for early wins and an incremental and scalable solution: • The provision of a new city centre surface station to the east of Glasgow Central linking the rail network to the south and east of the city; • The provision of a new city centre sub-surface station as part of a tunnel below the city centre linking the north and south rail networks; and/or • The development of a Metro network across Glasgow comprising a mixture of conversion of heavy rail (e.g. part or all of the Cathcart Circle), lines on existing redundant infrastructure (e.g. Great Western Road / Botanic Gardens), new lines (e.g. Clyde Waterfront) and some on-road or next-to-road sections. Both of the new city centre station options would provide additional platform capacity in the city centre and permit cross-city services to be provided. A Metro system could include new stations, improved service frequencies and improved access to and across central Glasgow. The system would be rolled out on a phased basis. The operational concept for the system using proven technology could be expanded to include a new crossing of the Clyde to around the Southern General Hospital and other lines to link areas not currently served by the heavy rail network.	£1.5bn – £3bn	Existing Glasgow rail terminal capacity will be at capacity within the timeframe of STPR. The lack of future rail terminal capacity places a significant constraint on the provision of additional rail services to meet future growth. The analysis has identified that previous development of the rail network in the West of Scotland has been successful in making best use of the network by implementing small scale interventions and targeting individual constraints. The issue of terminal capacity cannot be addressed in this way, meaning that a 'step-change' is required in order to meet predicted future demand. This 'step-change' will be supported by some smaller scale interventions and enabling works. Some of these may be deliverable earlier than the major component(s) and allow some interim relief to be gained. Detailed analysis of the problems has been undertaken to understand the function of the terminal capacity issues within the wider West of Scotland context. This analysis in conjunction with the objectives has allowed the identification of three broad core elements, each of which could form the basis of the strategy to address the objectives: • New surface station east of Glasgow Central; • New sub-surface station between Glasgow Central and Glasgow Queen Street; and • Development of a Metro network. Development of these core elements has been undertaken to a level to confirm that each could provide a workable solution. This has included consideration of phasing and interaction both within and beyond the STPR period to deliver a meaningful solution. The elements identified vary in terms of cost, risk, phasing, potential benefits, delivery timescale and in the way that they address the objectives. The elements are also not exclusive, so the strategy could for example include a new city centre station and the development of certain Metro lines.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
				The strategy will provide a level of 'step-change' that permits a fundamental restructuring and realignment of services across the West of Scotland and potentially beyond. The details of this are undefined, meaning that the potential benefits that could be gained are not yet fully understood. Similarly, the extent to which the Metro network would be developed is not a fixed proposal, but a number of phases have been identified and considered. It is however understood that the additional capacity provided by the overall strategy would be such that it would provide for a variety of potential service enhancements, including other interventions identified within STPR. This intervention would complement the development of Intercity rail operations, giving an expanded public transport hierarchy. Metro could provide for inner suburban movements, leaving heavy rail to cater principally for outer suburban and links to surrounding towns. By providing cross-city routes, the Metro network could connect across Glasgow and also take pressure off the existing interchange facilities focused in the city centre.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
D27	**Rail Enhancements between Inverclyde/Ayrshire and Glasgow**	This intervention would provide four trains per hour each between Glasgow and Ayr, Glasgow and Kilmarnock and Glasgow and Gourock, with each route served by two semi-fast services and two stopping services. The Paisley Canal line would be reconnected to the Ayrshire line with four trains-per-hour between Glasgow and Johnstone. This would also provide an alternative route for passenger and freight services to and from Ayrshire. The intervention would also provide two trains-per-hour between Glasgow and Wemyss Bay. As well as additional rolling stock, this is likely to require the following infrastructure enhancements: • Signalling upgrades between Kilwinning and Paisley; • Reinstatement of the line from Elderslie to Paisley Canal, provision of double track and electrification on the existing Paisley Canal branch and increased track capacity between Paisley and Glasgow; • Provision of turnback facilities at Johnstone; • Extension to the Lugton loop and a new loop between Kilmaurs and Stewarton; • Additional platform capacity at Glasgow Central as described in Intervention D25 (West of Scotland Strategic Rail Enhancements); and • Improvements to stations to enhance the environment for passengers and increase car park capacity (e.g. Prestwick, Ayr, Troon, Glengarnock, Kilwinning).	£250m - £500m	This intervention would provide a 'step-change' in rail service provision to the west and southwest. This would result in a significant contribution to the objectives to increase rail capacity to Ayrshire and capacity and journey time to Inverclyde. The feasibility of this intervention is dependent on being able to provide more platform capacity in central Glasgow to accommodate the services, as proposed in Intervention D25 (West of Scotland Strategic Rail Enhancements). The improved services provide relief for the identified overcrowding issue on the southwest electric services and give an opportunity for modal shift from road to rail particularly from Kilmarnock where the increased service frequency is high. This intervention is expected to have a moderate positive environmental impact on air quality as modal shift from road to rail is envisaged to reduce congestion and subsequently reduce emissions.
D28	**Upgrade Edinburgh Haymarket Public**	This intervention is targeted at a number of objectives for Edinburgh relating to improvements in public transport	£50m - £100m	This intervention would provide a significant contribution towards two of the objectives for Edinburgh, 'to maintain the 60-minute

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
	Transport Interchange	interchange, connections to the airport and providing for enhanced rail capacity. This intervention would consist of: • Improvements to platform level access; and • New at-grade concourse.		commutable labour market area at the current level, with a particular focus on linking areas of economic activity' and 'to enhance public transport interchange opportunities, where feasible to do so', by providing a step change in interchange facilities in Edinburgh. There is a forecast 50 per cent increase in rail demand between 2005 and 2022, as well as the growth in bus and tram passengers. By providing the opportunity for transfer between heavy rail, light rail and bus, opportunities for travel to areas in West Edinburgh, including the airport, would be greatly enhanced. This intervention would complement measures to maximise the use of the station and reduce pressure on Waverley Station and the link between the two, such as the additional bay platform.
D29	**Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line**	This intervention would allow an increase in the number of freight paths on the West Coast Main Line (WCML) between Glasgow and the Border by enhancing the rail infrastructure. This would include measures such as: • Lengthening of loops; • Removal of speed limits that are below 75mph for freight trains; • Increasing the loading gauge on the route; and • Increasing freight terminal capacity. This intervention may also include a new line between Mossend and Coatbridge, which would involve providing an overbridge across the A8 and M8 when works are complete. Widening of the track may require land take or the construction of earth retaining structures where space is limited.	£250m - £500m	This intervention would improve capacity for rail freight between Scotland and England by providing enhanced facilities on the WCML. This would contribute to the freight objective identified on Corridor 18 (Glasgow to North West England and the Border) to transfer freight from road to rail. There would be environmental benefits, as rail would be expected to capture a greater proportion of cross-border freight traffic, thereby reducing road-related emissions. New rail infrastructure could adversely affect the environment; however, it is possible that any such impacts could be mitigated at project design level. This intervention could interact with similar proposals developed by the Department for Transport on the WCML south of Carlisle.
D30	**Light Rapid Transit connections between**	This intervention supports the objectives to increase public transport capacity between Fife and Edinburgh and supports	£10m - £50m	This intervention would ease congestion by offsetting the forecast decrease in capacity for road users and would result in a slight

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Summary: Rationale for selection
	Fife and Edinburgh	connections to the proposed national developments at Rosyth, the Forth Replacement Crossing and Edinburgh Airport identified in the NPF2. It would consist of a bus based rapid transit service over the replacement Forth Crossing, providing improved connections across the Forth Estuary. In particular, it would connect the communities in Fife with the business and commercial opportunities in Edinburgh and West Lothian.		increase in the 60-minute commutable market area for Edinburgh. This intervention could provide an efficient means to access West Edinburgh, including Edinburgh Airport, from Fife complementing the heavy rail connections via the new committed interchange at Gogar (as part of D22 – Edinburgh to Glasgow Rail Improvements Programme). Overall, the proposed intervention performs strongly against the stated objectives and could be implemented in conjunction with D11 ((Strategic) Park-&-Ride / Park-&-Choose Strategy) and the provision of priority vehicle lanes.
D31	**Inverkeithing to Halbeath Rail Line**	This intervention supports the objective to maintain the 60-minute commutable labour market within Edinburgh at the current level and improve access to the port of Rosyth national development. It would also support the objective of promoting public transport journey time reductions between Aberdeen Inverness, Perth and Edinburgh by reducing journey times between Inverkeithing and Ladybank. This intervention would consist of a direct double track rail link between Halbeath and Inverkeithing, including new junctions at Inverkeithing and Halbeath.	£100m - £250m	This intervention would reduce journey times between Edinburgh and Perth, and Inverness, Aberdeen and the central belt, although the reduction is unlikely to be significant. The greater journey time saving would be for freight, by providing a more effective link to Rosyth Port from the south, helping to support future development there. This would provide the ability to run more direct services to Edinburgh in conjunction with a strategic Park-&-Ride facility at Halbeath. It would also enable the segregation of local and intercity services and provide more efficient freight access to the port of Rosyth.

Appendix E

Appendix E – Interventions not retained after Detailed Appraisal

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E1	**Suburban Rail Services Across Dundee**	This intervention supports the objective to improve public transport accessibility and competitiveness to the west of Dundee. It includes: • A 30 minute frequency service from Arbroath to Perth; • A new station at Dundee West and services calling at all intermediate stations; • Additional suburban rolling stock; and • Changes to track layout and signalling to allow for the increased service frequency and construction of the new station.	£50m - £100m	Analysis shows that providing suburban rail services across Dundee would result in a negligible modal shift from car and therefore the intervention would not have a strategic impact. The potential for improved public transport service provision for Dundee is better captured within the Interventions D10 (Reconfiguration of the National Timetable) and D18 (Rail Enhancements between Aberdeen and the Central Belt).
E2	**Co-locate Dundee Bus Station with Rail Station**	This intervention supports the objective to improve bus/rail interchange opportunities in Dundee. It consists of re-locating the existing bus station adjacent to the existing rail station, with associated improved pedestrian access to the city centre.	<£10m	Moving the bus station would improve the interchange between these strategic bus and rail services. However, there is unlikely to be a significant number of people making this interchange. The more frequent bus to rail interchange would be between local buses and rail services. These bus services would be expected to continue using the on street bus stops and would not be expected to use the proposed bus station. Critically, many strategic bus journeys currently integrate well with local bus services on the existing site. The proposed re-siting of the bus station would make it difficult to make this transfer as some local bus services would not connect with the proposed station.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E3	**Construction of Glasgow Crossrail**	This intervention supports the objectives to address rail capacity issues in central Glasgow and increase public transport access to areas of economic activity. Glasgow Crossrail consists of a range of infrastructure measures that could be implemented in phases over time. For the purposes of this assessment, the intervention consists of the reopening of the Glasgow City Union Line over the Clyde to passenger trains, with two new spurs: • The Strathbungo Link from Muirhouse to the City Union Line allowing trains from East Kilbride and Kilmarnock to access the City Union Line; and • The High Street curve from the City Union Line to the North Electric Line heading west at High Street. Additional services would be provided, such as Ayr to Edinburgh and Croy to Barrhead, with a new turnback facility at Croy. Some services that currently operate into Central High Level would be diverted to Charing Cross via Queen Street Low Level, such as East Kilbride services, with a new turnback facility at Kelvinhaugh.	£100m - £250m	On balance, as a 'stand alone' intervention, Glasgow Crossrail performs reasonably well, however, it does not make best use of the rail network or integrate well with the menu of schemes required to satisfy the objectives of the STPR. The interventions set out in D25 (West of Scotland Strategic Rail Enhancements) offer better opportunities to enhance connectivity for the heaviest rail demand patterns in and around Glasgow, and could use elements of this intervention. The committed improvements on the rail network between Edinburgh and Glasgow also provide a 'step change' in the connectivity of Glasgow Central to Edinburgh, resulting in enhanced connections for those travelling to and from the south and south west of Glasgow. This is likely to negate much of the potential benefit of Glasgow Crossrail.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E5	**New Busway between Glasgow City Centre, Clydebank and Glasgow Airport**	This intervention supports the objective to directly connect areas of economic activity and provide links to Glasgow Airport. It would provide a busway system along the River Clyde corridor, connecting to the Clyde Fastlink scheme and continuing west to serve Clydebank, Renfrew and Glasgow Airport. The system would generally run on a segregated alignment although some on-street operation is likely to be required at key pinch points on the route.	£100m - £250m	The introduction of a busway along the River Clyde corridor, west of the city centre, would link areas of economic activity with the urban network and would bring local benefits, but not of a scale that could be considered nationally significant. The reduction in emissions would be limited, both in terms of scale of impact and the area of impact within the urban network. The intervention relies on connectivity in the city centre, which is likely to result in additional trips to connection points, such as Glasgow Central Station. This would exacerbate an existing problem. It does not contribute effectively to resolving the issues with cross-Glasgow trips. This intervention largely impacts at a local and regional level and does not contribute as effectively as other interventions such as D25 (West of Scotland Strategic Rail Enhancements). It is also noted that the Glasgow Airport Rail Link will provide a high frequency public transport service between the airport and Central Station, which would reduce the business case for connecting this intervention to the airport.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E6	**Inverness Southern Bypass from the A9 to A82**	This intervention supports the objective to reduce the conflict between longer distance and local traffic in Inverness, by allowing long distance traffic to bypass the city. It consists of an Inverness bypass from the A9 to the A82, building on the suggested link road from the A96 at Smithton to the A9 at Inshes proposed as part of the upgrade of the A96 between Inverness and Nairn (Intervention D16). The extension to the A96-A9 link road would comprise: • Upgrade to dual carriageway of the existing B8082 between Inshes and Dores Roundabout; and • New crossing of the Caledonian Canal and the River Ness (by bridge over the River Ness and either a high level opening bridge over the canal or a tunnel / aqueduct crossing of the Caledonian Canal) between Dores Roundabout and the A82 at Torvean.	£100m to £250m	This intervention generally performs well against the set of defined objectives but is a high cost, road based intervention which largely provides local benefits for local traffic. The environmental impacts this intervention has on designated sites, valued habitats, protected species and water quality have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. The bypass would affect the landscape of the urban fringe of Inverness and may intersect with the Torvean landform which is noted for its landscape value. There are also potential adverse effects on noise and biodiversity. The most technically challenging aspect of this proposal is the crossing of the River Ness and Caledonian Canal which is likely to have a potential major adverse impact on cultural heritage, soils and geology. High capital costs and relatively low benefits represent poor value for money.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E7	**Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness**	This intervention supports the objectives to reduce emissions and improve operations on the road network. It would provide enhancements to the existing rail network between Mossend, Grangemouth and Aberdeen/Inverness to allow more freight services to operate. Quality improvements would include measures such as: • Increased length of freight loops (allowing longer freight trains); • Removal of speed limits that are below 75mph for freight trains; • Increased loading gauge to permit larger containers to be carried; and • Provision of bi-directional signalling along the route to reduce the impact of engineering works (permitting the route to remain open for freight throughout the day and week).	£1.5bn - £3bn	The intervention would provide a step change in the provision of rail freight, encouraging modal shift from road to rail thereby reducing the volume of longer distance goods vehicles and the related CO_2e emissions. However, the costs of providing the enhancements are high compared with the benefits, particularly as the proposed improvements to the line to Aberdeen via Dundee would include bi-directional signalling to provide system resilience, thereby limiting the need for an alternative route via Inverness. Depending on the form and location of works required, this intervention has the potential for moderate adverse effects on the natural environment, including biodiversity, cultural heritage, soils and geology and the landscape.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E8	**New Rail Line between Perth and Inverkeithing**	This intervention supports the objective of promoting public transport journey time reductions between Inverness, Perth and Edinburgh. The intervention would consist of a direct dual-track rail link between Perth and Inverkeithing, providing a more direct rail service to Edinburgh.	£500m - £1bn	A direct line between Perth and Inverkeithing would reduce the distance between Edinburgh, Perth and Inverness by approximately 25 per cent resulting in a journey time saving of 35 minutes. However, forecasts show a limited transfer of trips from road to rail in this corridor. There are potential adverse effects on the water environment, biodiversity, and notably cultural heritage, where there could be a major adverse impact to the setting or integrity of nationally important sites such as Scheduled Monuments and Historic Gardens and Designed Landscapes. The cost of this intervention is relatively high compared to the benefits. This intervention would therefore not provide value for money. In addition, there are significant technical and environmental constraints which would impact on the delivery of this intervention. Intervention D31 (Inverkeithing to Halbeath Rail Line) represents greater value for money through improved access to Rosyth and journey time reductions between Inverkeithing and Halbeath, north Fife and beyond.
E9	**Rail Freight connections to Rosyth Port**	This intervention supports the objective to promote efficient and effective transport links to support the development and implementation of developments at Rosyth, identified in NPF2. The proposed improvement in rail access to Rosyth, would consist of: • A direct freight line (together with associated infrastructure enhancements) between the Dunfermline to Longannet line and Rosyth, allowing services from Stirling and the West Coast Main Line to access Rosyth directly, by-passing Inverkeithing station and junctions.	£50m - £100m	The proposed option performs only moderately well against planning objectives and has a potential major adverse environmental impact on biodiversity. This is in part due to the need for new rail track and the impact that this may have on the environmentally sensitive shoreline of the Firth of Forth. This intervention is also anticipated to have potential moderate adverse effects on cultural heritage and landscape. Although this intervention would provide a direct freight line to Rosyth, Intervention D31 (Inverkeithing to Halbeath Rail Line) has the added advantage of providing benefits to rail passengers, as well as making better use of the existing rail connections to the port.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E10	**Improved Road Links to Edinburgh Airport**	This intervention supports the objective to promote efficient and effective links to Edinburgh Airport, one of the proposed national developments identified in the draft NPF2. The intervention would consist of: • A new road link from the M8 between Junction 1 and 2 directly into Edinburgh Airport.	£50 - £100m	Many of the objectives of the STPR for the Edinburgh Urban Network and surrounding corridors are better addressed in a more sustainable manner by the other interventions such as the new rail interchange serving Edinburgh Airport and the tram links to the airport. There is a potential major adverse effect on cultural heritage, as the intervention could impact on a Scheduled Monument. Any road based interventions necessary to support the West Edinburgh Planning Framework should be taken forward by the planning authority as part of the infrastructure intervention required to serve the land use developments in the area.
E11	**Inverclyde Road Improvements**	This intervention supports the objectives to improve the operation of the A8/M8, improve road safety and improve access to Greenock Port. The intervention would include measures such as: • Average speed enforcement cameras on the M8/A8; and • Grade separation of junctions at Langbank, Woodhall and Port Glasgow.	£100m - £250m	The proposed intervention would contribute to the objectives to improve the operational efficiency of the A8/M8, improve safety on the A8 and enhance access to Greenock Port. However, the ability of the intervention to resolve these objectives fully is limited by the number of junctions that can feasibly be grade separated, given the constraints of the current road alignment and the urban areas through which it passes. Due to the constrained nature of the junction locations, the proximity of the Inverclyde railway line and the need to maintain traffic flow during construction, this intervention has a high cost relative to the level of benefits that would be achieved. The intervention would provide poor value for money. There is a potential major adverse impact on cultural heritage, namely the Grade A listed Ropeworks in the vicinity of Port Glasgow Roundabout. Improvements to the operation of the trunk road through Intervention D6 (Using Intelligent Transport System to Enhance Capacity and Operations) could more effectively contribute to the relevant objectives for this corridor.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E13	**New Light Rapid Transit Line to Southeast Edinburgh**	This intervention supports the objective to maintain the 60 minute commutable labour market within Edinburgh at the current level, with a particular focus on linking areas of economic activity by extending the Edinburgh Light Rapid Transit network to the south east of the city. The proposed scheme would follow the previously identified "Line 3" route from Edinburgh City Centre to the New Royal Infirmary of Edinburgh, and then east to Newcraighall Station. The scheme would require construction of the tram route, as well as new rolling stock, stations and car parking. The scheme could be extended to serve Queen Margaret University and Musselburgh.	£100m - £250m	Although this intervention performs well against some of the planning objectives, the benefits would be largely at local and regional level. There are potential moderate adverse environmental impacts associated with cultural heritage and landscape. The other interventions considered, particularly D23 (Rail Enhancements in the East of Scotland) and D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy) would provide a greater benefit to the communities to the east of Edinburgh.
E14	**Augment Far North Line Rail Services with Express Coach Facilities**	This intervention supports the objective of enhancing public transport accessibility and reducing journey time to and from Inverness. The intervention would consist of: • Coach stop facilities to augment railway stations on the Far North Line, with additional stops to serve the Black Isle and Dornoch; and • Targeted infrastructure improvements to address constraints on the A9 (in conjunction with D3 (Targeted Programme of Measures to Reduce Accident Severity on the A9 north of Inverness)).	<£10m	Currently the rail services north of Inverness carry the lowest levels of passengers on the Scottish rail network. Consequently a high level of subsidy is required. Provision of infrastructure to facilitate express coaches would adversely impact on the already low rail patronage levels and could affect the viability of this section of the rail network as an increase in the level of subsidy would be required. This intervention would not have any measurable modal shift from car to public transport. Therefore the costs of this scheme far outweigh any benefits that may be accrued.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E15	**Rail Freight Access Enhancements to Greenock Port**	This intervention supports the objectives to improve access to Greenock Port and improve the operation of the A8/M8 by transferring freight from road to rail. It would re-open the closed branch line between Container Base Junction (on the Wemyss Bay branch) and Greenock Container Base. Additional capacity may be required between Paisley and Shields Junction depending on the volume of rail freight that would serve the container base, although the provision of improvements associated with Ayrshire/Inverclyde may provide alternatives for freight services on the western approaches to Glasgow.	£100m - £250m	The level of expenditure required to re-open the rail access to Greenock Port is high in comparison to the potential benefits. Intervention D27 (Rail Enhancements between Inverclyde, Ayrshire and Glasgow) is likely to limit the movement of freight trains through the Paisley to Shields section of route, thus limiting the benefits of this intervention. These rail constraints, in addition to the significant costs, mean that this intervention provides poor value for money and limited impact on the wider objectives.
E16	**Extension of Glasgow Southern Orbital from East Kilbride to M73/M74**	This intervention supports the objectives to improve the efficiency of the M8 in Glasgow. It would provide a new dual carriageway link between the current eastern end of the Glasgow Southern Orbital at East Kilbride with the M73/M74 junction at Maryville. Intermediate junctions would be provided with the A749 (East Kilbride to Glasgow) and the A724 (Hamilton to Rutherglen).	£250m - £500m	This intervention duplicates much of the provision and has the potential to undermine the benefits being brought forward under the M74 extension project. This intervention would require substantial new land take from the urban fringe. There are likely to be adverse effects on cultural heritage resources, the water environment and air quality. There are also likely to be adverse effects on local biodiversity, local landscape and visual setting and local noise levels. It is considered that the potentially substantial adverse environmental impacts outweigh the benefits of this intervention.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E18	**Suburban Rail Services Across Aberdeen**	This intervention targets the objective to improve accessibility along the corridor linking the areas of economic activity at Dyce (including Aberdeen Airport), Aberdeen City Centre and South East Aberdeen. It would consist of: • A regular cross-Aberdeen service, generally at half-hourly frequency, between Inverurie and Stonehaven, which would require additional rolling stock and track layout changes; • New stations on the route (e.g. Cove, Kittybrewster and Kintore); and • Provision at each station on the route for Park-&-Ride car park facilities, bus stops and access for cyclists and pedestrians.	£250m - £500m	This intervention would provide local and regional benefits through more frequent and direct cross-city rail services. However, a combination of Intervention D17 (Rail Service Enhancements between Aberdeen and Inverness) and D18 (Rail Service Enhancements between Aberdeen and the Central Belt) would greater enhance cross-city services, as well as providing significant additional benefits at the national level in terms of improving better connections between the cities.
E19	**Glasgow Subway Upgrade and Modernisation**	This intervention targets the objectives in Glasgow to increase rail capacity and improve connectivity between economic growth areas and areas of regeneration. The intervention would consist of: • Upgrading and modernisation of rolling stock to permit driverless operations; • Additional rolling stock to allow for an increase in frequency; and • Station upgrades.	£250m - £500m	This intervention consists of improvements to rolling stock, frequency of service and station facilities and would therefore not provide a step change in benefit to existing users. In addition it is anticipated that any transfer from road to rail as a result of this intervention would be negligible.

Ref No	Title of Intervention	Description of Intervention	Approximate Cost of Intervention	Rationale for not recommending
E20	**New Motorway Link between the M73 and Coatbridge**	This intervention targets the objective to facilitate a reduction in road based freight and to promote a reduction in accident rates. This intervention consists of a new link road from the M73 to the Freightliner terminal at Coatbridge (Gartsherrie).	£10m - £50m	While this intervention would improve road access to the Freightliner terminal at Coatbridge, thereby reducing delays for road freight using the terminal, the benefits would be felt largely at the local level. In addition, although improved access would result in modal shift from road to rail for longer distance trips, the impact would not be significant at a national level. A combination of D15 (Rail Enhancements on the Highland Mainline between Perth and Inverness), D18 (Rail Enhancements between Aberdeen and the Central Belt) and D29 (Enhancements to Rail freight between Glasgow and the Border via West Coast Mainline) would better facilitate freight movement and greatly improve accessibility of the freight network.

Annex 1

Initial Appraisal	**Intervention 8: Upgrade the A96 to Dual Carriageway between Inverness and Aberdeen**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	>£500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Upgrade the existing single carriageway A96 to dual carriageway along the entire length between Aberdeen and Inverness, with bypasses around the towns of Nairn, Keith and Elgin.

Summary: Rationale for Not Progressing

Partial dualling of the A96, with a series of complementary measures (Interventions D16 (Upgrade A96 to Dual Carriageway between Inverness and Nairn) and D24 (Targeted Road Congestion / Environmental Relief Schemes)) are more likely to address the strategic objectives in a cost effective manner.

Based on the flow profiles and composition of traffic along the length of the corridor, the dualling of the entire route would not provide value for money. Dualling the A96 could also have significant adverse impacts on water and landscape and a slight adverse impact on noise.

Table C8.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To improve connectivity, particularly by public transport between Inverness City Centre and the growth area to the east including Inverness Airport.	**1: Positive –** The A96 to the east of Inverness is largely made up of single carriageway and suffers congestion in peak periods, especially on the approaches to Raigmore Interchange. This congestion is forecast to increase to Inverness Airport and beyond. Provision of a dual carriageway along this stretch and improvements to Raigmore Interchange will increase capacity and provide capacity for growth to the east of Inverness.
STPR Objective 2: To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.	**2: Slightly Positive –** Upgrading the A96 to Dual Carriageway between Aberdeen and Inverness is likely to improve journey times between the two cities, as it will allow overtaking of slower moving vehicles on this section of the A96. City to city bus services are also likely to benefit from road improvements on the route.
STPR Objective 3: To reduce the accident rate and severity rate to current national average.	**3: Slightly Positive –** Upgrading the A96 to Dual Carriageway between Aberdeen and Inverness is likely to improve safety levels, as it will provide safer overtaking opportunities than the existing single carriageway sections. Bypassing each of the main towns on the route is also likely to reduce the accident rate on these sections of the A96.

This intervention also addresses an objective in another strategic node.

STPR Objective	Corridor, Urban Network or Strategic Node
To improve connectivity, particularly by public transport between Inverness City Centre and the growth area to the east including Inverness Airport.	Inverness

Table C8.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention would provide improvements in journey times and road safety between Aberdeen and Inverness with increased capacity, especially on the currently congested approaches to Raigmore Interchange.
Reduce Emissions:	**Minor Benefit**	The intervention would result in a slight reduction in emissions as a result of reduced congestion and reduced traffic levels within the towns of Nairn, Keith and Elgin; however, this reduction is forecast to be marginal.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Dualling of the carriageway and constructing bypasses of the main towns is likely to reduce journey times, which will benefit bus users. This intervention would also benefit the residents within the towns, as it would increase accessibility and community linkages and reduces severance in the towns.

Table C8.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical risks associated with this intervention. The Moray Firth Special Area of Conservation (SAC) is located 1.2km from the A96 at its nearest point. There are a number of Special Protection Areas (SPA) at Moray Basin Firths and Bays, Highland and Grampian, Moray and Nairn Coast and the Inner Moray Firth. SSSI's between Inverness and Nairn are located at Longman & Castle Stuart Bays and Kildrummie Kames. There are also a number of category B & C listed buildings located directly adjacent to the A96, a large number of scheduled ancient monuments and pockets of ancient woodlands including Tornagrain Wood and Delnies Woodland located within this area.
Operational:	Construction of the dual carriageway sections and other improvements along the route is likely to have significant effects on existing users, as the alternative routes between Inverness and Aberdeen are circuitous. During construction work access to a number of rural communities along the corridor may be affected. Limiting the effects on tourist traffic during the construction phase also provides technical challenges to the construction plan. It is unlikely that any adverse factors will affect the operation of this intervention during its projected life.
Public:	This is an important intervention to the economies of Inverness and Aberdeen and the surrounding area, with significant public interest at both local and regional levels.

Table C8.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This is a Level 3 intervention involving significant dual carriageway construction.
Interaction:	This intervention would complement interventions 55 (Inverness Southern Bypass from the A96 to A82) and 56 (Inverness Bus Prioirity Measures and Park-&-Ride).
Mutually Exclusive:	This intervention and intervention 3 (A96 dual to Nairn) are mutually exclusive.

Table C8.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	The intervention has the potential to contribute towards an improvement in air quality and a reduction in CO_2e emissions as a result of more freely moving traffic and a reduction in congestion, especially around Keith, Elgin and Nairn. The intervention however does have the potential to severely impact on biodiversity and the assessment presented here should be considered in conjunction with the Appropriate Assessment being prepared for the STPR. There is also the potential for impacts on noise, water, soils and geology, landscape and cultural heritage. However the extent of these impacts are uncertain at this stage of the decision-making process.

Initial Appraisal	**Intervention 17: Lengthen Trains and Platforms Between Edinburgh and Dunblane**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£10m - £50m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Lengthen trains and platforms to provide more capacity per train between Edinburgh and Dunblane.

Summary: Rationale for Not Progressing

While this intervention would provide some improvements to public transport competitiveness in the corridor, more significant benefits would result through Intervention D8 (Enhancing Rail System Capacity through Targeted Improvements).

Table C17.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To improve access to Grangemouth port and freight hub.	**1: Neutral –** This intervention concentrates on improving passenger trains and is not expected to improve freight accessibility to Grangemouth.
STPR Objective 2: To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.	**2: Positive –** Longer trains (including replacement of existing two coach DMUs by three coach DMUs) and longer platforms would improve capacity between Edinburgh and Dunblane.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Slightly Positive –** Improvements on the rail network between Edinburgh and Dunblane would encourage modal transfer. However the scale of the transfer would not result in any meaningful reduction in road safety rates on this corridor.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.	**4: Slightly Positive –** Increased capacity between Edinburgh and Dunblane would potentially increase public transport accessibility of Grangemouth and Edinburgh Airport, thereby supporting the development of Grangemouth and Edinburgh Airport area.

This intervention also addresses an objective in an urban network

STPR Objective	Corridor, Urban Network or Strategic Node
To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	Edinburgh

Table C17.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	Rail service capacity enhancement would not result in any significant impact on journey time and connections.
Reduce Emissions:	**Minor Benefit**	Provision of longer trains and longer platforms would improve capacity and quality of travel on the rail route, which could result in reduced emissions by encouraging potential modal transfer.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Lengthened trains and platforms would improve quality of travel along the route and accessibility between Edinburgh and Dunblane.

Table C17.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are no significant technical issues.
Operational:	Construction impacts would be kept to a minimum. However, the lengthening of platforms would impact on the operation of particular stations during the construction period. Following construction it is unlikely that there will be any factors that will adversely affect the operation of the intervention during its projected life.
Public:	This intervention is likely to receive public support.

Table C17.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The lengthening of trains between Edinburgh and Dunblane contains Level 1, 2 and 3 interventions.
Interaction:	Intervention 18 (Increased service frequency and reduced journey time between Edinburgh and Dunblane) combined with this intervention of train and platform lengthening would bring significant benefits to this corridor.
Mutually Exclusive:	It is likely that capacity enhancement through increased service frequency between Edinburgh and Dunblane would produce similar benefits to this intervention and therefore would remove the need for lengthening of trains.

Table C17.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	This intervention has potential to facilitate modal shift. Consequent reduction in car use has potential minor benefits to air quality and CO_2e emissions.

Initial Appraisal	**Intervention 23: Upgrade of M80 Junction 1/M8 Junction 13**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£20m -100m		
Summary Impact on Key Strategic Outcomes	**Improve Journey Times and Connections**	- - -	- -	-	*0*	+	++	+++
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Upgrading the merge between the M80 and M8 in Glasgow to improve the operation of the junction. This would involve the reconfiguration of the merges to reduce conflict between vehicles on the M8 and M80 motorways.

Summary: Rationale for Not Progressing

The costs involved in this intervention far outweigh the likely economic benefits gained in reducing congestion and improving journey times. In addition, there are potentially significant technical constraints, due to the relative position of adjacent junctions and the urban form, that are likely to impact on the ability to deliver this intervention. Furthermore, the motorway network would be better managed by taking forward Intervention D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations).

Table C23.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To address current and forecast rail overcrowding into Glasgow.	**1: Neutral –** This corridor currently suffers from rail overcrowding issues. Upgrade of the existing M8/M80 is concentrated on the road network and it would not have an impact on the rail network.
STPR Objective 2: To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.	**2: Positive -** This intervention would increase capacity and reduce peak time tailbacks on the M8 network. This would lead to increased journey time reliability both for car and public transport users.
STPR Objective 3: To reduce the severity of accidents occurring to the national average.	**3: Neutral –** This intervention would not have an impact on accident severity in the corridor.
STPR Objective 4: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**4: Slightly Positive -** This intervention is likely to increase capacity on the M8, and reduce peak time tailbacks on approach to Glasgow. It is likely that removal of this constraint will slightly improve road based public transport strategic trips between Glasgow and all other major Scottish cities.

Table C23.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Journey time reliability would be improved for car, HGV and bus travel on approach to Glasgow.
Reduce Emissions:	**Minor Benefit**	Improvements to the road network could result in reduced congestion, resulting in a slight reduction in emissions. However, it is considered that the impact would be minimal.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Junction improvements will improve the quality of car and public transport travel into Glasgow. Potential minor reduction in fuel and vehicle operating costs. This intervention would not directly decrease the costs of bus travel for commuters.

Table C23.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	Increasing capacity would involve major roadworks, including possible widening and realignment of the existing carriageway and new road markings.
Operational:	Construction works for this intervention are likely to result in delays on the road network. In addition to the presence of the roadworks reducing capacity and increasing tailbacks, it is likely that a 40mph limit would be implemented (possibly through the use of average speed cameras). However, following construction it is unlikely that any factors will adversely affect the operation of the intervention during its projected life.
Public:	This is a high profile intervention with interest at national level.

Table C23.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The M80 Stepps Bypass to M8 J13 capacity enhancement contains Level 3 intervention.
Interaction:	There are other interventions that need to be considered in combination with this intervention, such as intervention 140 (Intelligent Transport System initiatives on the M8 between Glasgow and Harthill), 141 (Intelligent Transport System initiatives on the M8 between Edinburgh and Harthill) and Intervention 85 (Intelligent Transport System Initiatives on the M74). Intervention 42 (M80/A80 Corridor Bus Priority Measures and Park-&-Ride Network) would also complement this intervention.
Mutually Exclusive:	There is no mutually exclusive intervention within Corridor 9.

Table C23.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	The intervention has the potential for minor positive benefits to air quality and CO_2e emissions due to reduced congestion.

Initial Appraisal	**Intervention 32: New Light Rapid Transit Line between Edinburgh and Livingston**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£100m - £500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							
		(Judgement based on available information against a 7pt. scale.)						

Intervention Description:

Extension of Edinburgh Tram from Gogar to Livingston, with a loop around Livingston serving both railway stations.

Summary: Rationale for Not Progressing

The costs of this intervention are considered excessive compared to alternative interventions such as D23 (Rail Enhancements in the East of Scotland), D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations) and D11 (Strategic Park-&-Ride/Park-&-Choose Strategy).

Table C32.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.	**1: Slightly Positive –** This intervention would help alleviate some of the existing capacity problems on the rail network between Glasgow and Edinburgh by offering an alternative to commuters between Livingston and Edinburgh.
STPR Objective 2: To make best use of the available road space and better manage peak demand.	**2: Neutral –** This intervention makes no use of existing road space and will not manage peak demand on road.
STPR Objective 3: To increase public transport capacity and frequency between Livingston and Edinburgh.	**3: Strongly Positive –** This intervention allows increased public transport options between Livingston and Edinburgh and increases capacity by offering an additional public transport option to train and bus travel.
STPR Objective 4: To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.	**4: Slightly Positive** – The provisions made as part of this intervention will encourage modal shift by making travelling by public transport (i.e. tram) more attractive. This will encourage a shift away from the private car, slightly reducing emissions.
STPR Objective 5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**5: Neutral** - This intervention is unlikely to have any significant effect upon accident incidence and severity rates across the strategic transport network. The impact of any modal shift on accident rates is forecast to be minimal.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.	**6: Neutral** - The interventions highlighted in this intervention are unlikely to have any significant effect on promoting efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.

This intervention also addresses objectives in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	Edinburgh
To enhance public transport interchange opportunities, where feasible to do so.	Edinburgh

Table C32.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	This intervention would provide improved journey time reliability and better connections both between Livingston and Edinburgh and within Livingston itself. The impact of this intervention would be on a local/regional scale.
Reduce Emissions:	**Minor Benefit**	The tram extension promotes modal shift away from car use, potentially reducing the number of cars on the road and thereby slightly reducing emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would improve the quality of journeys into Edinburgh and improve accessibility and affordability to travel between Livingston and Edinburgh.

Table C32.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	Extension of the proposed Edinburgh Tram Line from Edinburgh to Livingston would require a tram loop between both Livingston stations.
Operational:	Construction of the intervention may cause delays to traffic if the tram passes or uses existing roads. Following construction, it is unlikely that any factors will adversely affect the operation of the intervention. Additional rolling stock will be required.
Public:	This intervention has not been made public; however this would be a high profile intervention with interest at national level.

Table C32.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The Edinburgh to Livingston Tram intervention is a Level 3 intervention.
Interaction:	In order to obtain full benefit from this intervention, other interventions such as intervention 114 (Suburban Rail Services across Edinburgh) and intervention 33 (Rail Service Frequency Enhancements between Edinburgh and Livingston South) need to be considered in relation to this intervention.
Mutually Exclusive:	This intervention is mutually exclusive with Edinburgh suburban line services and Livingston south rail service improvements.

Table C32.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	A potential shift away from car use to tram may have slight benefits for air quality and CO_2e emissions. There is the possibility that cultural heritage could be adversely affected depending on the location of the new line.

Initial Appraisal	**Intervention 51 – Lengthen Trains and Platforms in Strathclyde**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£20m - £100m		
Summary Impact on Key Strategic Outcomes	**Improve Journey Times and Connections** **Reduce Emissions** **Improve Quality, Accessibility and Affordability**	- - -	- -	-	*0*	+	++	+++

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This would involve the introduction of longer trains across the Strathclyde area. The introduction of longer trains would necessitate the lengthening of platforms at stations within this area, additional rolling stock and capacity enhancements at Glasgow Central and Glasgow Queen Street.

Summary: Rationale for Not Progressing

The lengthening of platforms across the entire region would be costly and in some cases would not be required to accommodate the predicted demand for travel by rail. A more focused intervention aimed at platform lengthening on the most congested routes is considered to be more appropriate and is therefore taken forward, as part of Interventions D8 (Enhancing Rail System Capacity through Targeted Improvements) and D27 (Rail Enhancements between Inverclyde/Ayrshire and Glasgow).

Table C51.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**1: Slightly Positive -** Whilst this intervention does not improve connectivity it does improve accessibility to areas of economic activity by providing an increase in passenger carrying capacity on the existing network of services. This will allow more passengers to access the city centre than current levels and would provide a better quality service for those currently travelling on overcrowded services.
STPR Objective 2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road and demand management.	**2: Slightly Positive -** This intervention enhances the carrying capacity of rail services, which would support modal shift but would not address demand from areas unserved by existing infrastructure. Benefits are expected to be less sustainable than with other methods.
STPR Objective 3: To address rail capacity and connectivity issues in central Glasgow.	**3: Slightly Positive -** This intervention increases rail carrying capacity but it also brings more passengers into the main stations which require infrastructure improvements to concourse areas at main stations to cope with increased demand. It does not release any rail capacity at stations because it uses existing network. It would also have limited impact on connectivity.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral –** Minimal benefits due to minimal modal shift resulting in less road traffic.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Neutral -** This intervention does not contribute towards improving journey times between the Central Belt and Aberdeen/Inverness.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**6: Slightly Positive -** The increased capacity would have benefits across the wider city region, but these would be focussed on existing rail lines. The potential to support development over the longer term is questionable.

Table C51.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	The intervention would produce no significant change in journey times or connections.
Reduce Emissions:	**Minor Benefit**	The intervention would encourage minimal modal shift from road to rail, potentially reducing road vehicle-related emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The intervention would provide a limited benefit by providing more capacity for commuter access to jobs. If station platforms are extended, passengers will be required to walk further and concourse areas at stations may require to be increased.

Table C51.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There is expected to be considerable disruption to existing services during construction work to extend platforms. There may be some technical difficulties in extending platforms at terminal stations and other stations depending upon their location. For example, stations on embankments, in cuttings or in tunnels may not have room for extending without significant ground works. A move to 9-car trains would require works having a significant level of cost for Glasgow Queen Street and Glasgow Central as well as other stations.
Operational:	Platform extensions would allow for an increase in capacity on existing routes and services, but would not allow for an increase in service frequencies or new routes without additional capacity enhancements. This may adversely affect the operation of the scheme in the future. Additional rolling stock and potentially train crew, is likely to be required.
Public:	No public consultation has been undertaken on this intervention within this process.

Table C51.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This intervention would be defined as a Level 2 intervention as it will require infrastructure enhancements, but is focused on the existing rail network.
Interaction:	This intervention could be considered as a supporting intervention for other interventions.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table C51.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Potential for minor positive benefits on air quality and CO_2e emissions by encouraging modal shift from road to rail and a reduction in road vehicle related emissions.

Initial Appraisal	**Intervention 67: Aberdeen Airport Public Transport Interchange**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£20m -100m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Co-locate Aberdeen Airport terminal and railway stations on the same site to create a public transport interchange.

Summary: Rationale for Not Progressing

The costs of this intervention are considered to be high, relative to the potential benefits achieved. Other interventions in this urban network and adjacent corridors are likely to contribute more significantly to objectives and provide greater value for money.

Table C67.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To improve accessibility, primarily by public transport, to and between the city centre, Dyce, the airport and southeast Aberdeen. STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network. STPR Objective 3: To promote journey time reductions, particularly by public transport, between Aberdeen and the Central Belt primarily to allow business to achieve an effective working day when travelling between these centres.	**1: Positive –** Constructing a railway station at Aberdeen Airport would improve public transport accessibility to the Dyce area, although access to Altens would not improve in this intervention. The new rail link would open up new markets for rail and potentially increase its modal share of journeys in Aberdeen. **2: Neutral–** Provision of a new railway interchange at Aberdeen Airport would not improve accident incidence and severity rates across the transport network. **3: Slightly Positive –** Co-locating the Aberdeen Airport terminal and the rail station would result in a better integration of these transport modes, reducing interchange time and hence rendering public transport more attractive and easy to use.

Table C67.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Train journey times to Aberdeen Airport are expected to be shorter than travel by bus. Connectivity between the airport and Aberdeen City Centre may be improved as a result of the rail link, however the benefits are considered to be largely local/regional.
Reduce Emissions:	**Minor Benefit**	Construction of a rail link to Aberdeen Airport has the potential to encourage modal shift from private car to rail thereby reducing vehicle emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Aberdeen Airport would potentially become more accessible to the public if a rail link is constructed. Any new rail link would provide improved quality for passengers.

Table C67.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	A rail link to Aberdeen Airport would require significant infrastructure works including new track, signalling and the construction of a new station.
Operational:	To operate the new services, additional rolling stock and train crew would be required and timetable amendments made. It is unlikely that any adverse factors will affect the operation of this intervention during its projected life.
Public:	Public interest in this intervention is likely to be significant and it is likely to have public acceptability due to the improvements in links to the airport.

Table C67.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This is a Level 3 intervention as it would require major infrastructure change.
Interaction:	This intervention would complement interventions 115 (Aberdeen Bus Priority Measures and Park-&-Ride Network) and intervention 162 (Suburban Light/Heavy Rail Services Across Aberdeen).
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table C67.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Air quality and CO_2e emissions are forecasted to benefit slightly from modal shift towards public transport as a result of this intervention. There are uncertain impacts on noise at this stage.

Initial Appraisal	**Intervention 69: Cross Forth Ferry Facilities**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	<£20 m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections					■		
	Reduce Emissions						■	
	Improve Quality, Accessibility and Affordability					■		
		(Judgement based on available information against a 7pt. scale.)						

Intervention Description:

Provision of facilities at Newhaven (for Leith) and at Burntisland and Kirkcaldy in Fife for a fast ferry or hovercraft service across the Firth of Forth.

Summary: Rationale for Not Progressing

This intervention is unlikely to provide a significant impact at a strategic level in encouraging modal shift, particularly when compared to other potential interventions. These other interventions include D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy), D18 (Rail Enhancements between Aberdeen and the Central Belt), D23 (Rail Service Enhancements in the East of Scotland) and D30 (Light Rapid Transit connections between Fife and Edinburgh). It may however address local and regional objectives.

Table C69.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce public transport journey time between Edinburgh and Dundee.	**1: Slightly Positive –** Provision of fast ferry service would provide an effective alternative to road travel. Provision of bus services at each terminal would also improve journey time and travel quality between Edinburgh and Dundee.
STPR Objective 2: To increase public transport capacity and frequency between Fife and Edinburgh.	**2: Slightly Positive –** The Forth Road Bridge currently suffers from congestion in peak periods. This congestion is forecast to increase. Introduction of a fast ferry or hovercraft service would increase capacity and frequency of public transport services between Fife and Edinburgh and encourage further modal shift to public transport. However, previous studies have shown that there would not be any significant reduction in traffic on the Forth Road Bridge as a result of this intervention.
STPR Objective 3: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**3: Neutral -** This intervention would not have any significant effect on promoting journey time reductions between the Central Belt and Aberdeen/Inverness to allow business to achieve an effective working day when travelling between these centres.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**4: Slightly Positive –** Provision of fast ferry or hovercraft services would provide an alternative efficient and effective transport link to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport. The services would increase capacity and frequency of public transport and encourage further modal shift to public transport.
STPR Objective 5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**5: Neutral -** This intervention would not have any significant effect on this objective.
STPR Objective 6: To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**6: Neutral -** This Intervention would not have a significant effect on this objective.

This intervention also addresses objectives in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	Edinburgh
To enhance public transport interchange opportunities, where feasible to do so.	Edinburgh
To increase public transport capacity and frequency between Fife and Edinburgh.	Edinburgh

Table C69.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	The new cross-Forth ferry service would provide a competitive journey time against private vehicles. A journey time of approximately 26 minutes is assumed (Edinburgh City Council) including loading, unloading and manoeuvring in harbour. This intervention provides an attractive alternative form of public transport and would improve connections between Edinburgh and Dundee.
Reduce Emissions:	**Moderate Benefit**	Introduction of a cross-Forth ferry service would provide an effective alternative to road travel between Fife and Edinburgh, helping to ease congestion and potentially resulting in a moderate reduction in emissions as a result of a significant modal shift.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The cross-Forth ferry service would provide an attractive means of public transport which would improve travel quality and accessibility within this corridor. The assumed cost of a single fare is <£5 (Edinburgh City Council), which is competitive with bus travel and affordable for users.

Table C69.1.3 Implementability Appraisal

Summary	
Technical:	The main technical issues associated with this intervention are related to the need to construct ferry terminals and shuttle bus stops at Burntisland and Kirkcaldy on the shores of the Firth of Forth. It would be expected that the supply of vessels and operation of these would be undertaken by a commercial operator.
Operational:	There are no major operational issues anticipated during or after construction except that Kirkcaldy terminal will be located near the A921 and construction activities may cause delays for current road users.
Public:	This intervention has been made public, with significant public interest at local level.

Table C69.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The cross-Forth ferry facilities intervention contains a Level 3 intervention.
Interaction:	This intervention does not specifically compliment any other interventions.
Mutually Exclusive:	There are other interventions, such as Fife bus priority and Edinburgh to Fife tram that will also improve the capacity of public transport and reduce journey times, and are therefore mutually exclusive with this intervention.

Table C69.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	There would be the promotion of modal shift away from the car that could improve air quality and climatic factors. However, there are potential effects regarding biodiversity and water quality depending on the form of works required.

Initial Appraisal	**Intervention 77 – Edinburgh Waverley Public Transport Interchange**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	> £100m		
Summary Impact on Key Strategic Outcomes	**Improve Journey Times and Connections**	- - -	- -	-	*0*	+	++	+++
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							
		(Judgement based on available information against a 7pt. scale.)						
Intervention Description:								
Creation of a rail / bus / coach interchange at Edinburgh Waverley Station, requiring significant station reconstruction works.								

Summary: Rationale for Not Progressing

The significant costs associated with this proposal far outweigh the benefits and as such it is not recommended for progressing.

Recent improvements at Waverley have increased the capacity and ability to accommodate cross city services. While further significant enhancements would contribute towards the objectives for Edinburgh, these would require rebuilding of the station building. Given the protected status of the station building and the costs associated with a major upgrade, this intervention has not been recommended for further analysis in favour of enhancing Haymarket Interchange.

Table C77.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	**1: Positive -** This intervention is effectively a full station redevelopment, which is likely to adversely impact services to the commuter markets during construction phase. However, the accessibility and interchange improvements are likely to be of significant benefit in the longer term and may even facilitate the further reduction of journey times for services into and out of the city.
STPR Objective 2: To enhance public transport interchange opportunities, where feasible to do so.	**2: Strongly Positive -** This intervention would significantly enhance the interchange opportunities currently available at Waverley by separating the local and long distance rail services. It will better facilitate bus services and improve linkages for those that require mode change, including interchange with the tram network.
STPR Objective 3: To increase public transport capacity and frequency between Fife and Edinburgh.	**3. Neutral –** This intervention would help to improve public transport interchange opportunities at Edinburgh Waverley station. However, it is unlikely this intervention would increase public transport capacity and frequency between Fife and Edinburgh.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Slightly Positive -** This option improves personal safety and security by providing a multi-modal interchange at Waverley, which should contribute towards reduction of overall accident rates.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Slightly Positive -** This intervention does not include direct service improvements to Aberdeen/Inverness. However the improved interchange facility is likely to facilitate improved services to those areas.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.	**6: Neutral -** This intervention has no impact upon the development and implementation aims of the emerging national development interventions.

Table C77.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	The intervention would provide improved connections with resultant benefits to journey times.
Reduce Emissions:	**Moderate Benefit**	Integration of public transport promotes modal shift and the intervention has the potential to contribute to a reduction in road vehicle emissions.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	The intervention would improve accessibility to and from Edinburgh Waverley and areas beyond.

Table C77.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	The scheme has some inherent implementability risks, and will require careful attention in the design stages to ensure easy fit and avoid complications regarding operations/construction. Through platforms will greatly benefit services and platform lengthening will require additional passenger circulation space to be made available.
Operational:	Care and consideration needs to be given to the operational use of the station before and after construction whilst any station concourse decking is being constructed.
Public:	Provided the effect on the station and overall disruption is kept to a minimum, the public are likely to support this intervention.

Table C77.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This is considered a Level 3 intervention as it would require major investment and infrastructure change.
Interaction:	This intervention does not specifically complement any other interventions however it would improve the transport hub significantly and would facilitate improved rail services. The intervention does not include the additional/improved rail or bus services at this stage.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention in this urban network.

Table C77.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	There is the potential for an improvement in air quality and CO_2e emissions through a reduction in emissions due to the encouragement of modal shift. There is however the potential to effect noise and cultural heritage sites depending on the location of the new interchange, effects are uncertain at this stage.

Initial Appraisal	**Intervention 80: New Tram Line from Edinburgh to Haddington**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	>£100m		
Summary Impact on Key Strategic Outcomes	**Improve Journey Times and Connections**	- - -	- -	-	*0*	+	++	+++
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Extension of Edinburgh Tram or alternative light rapid transit system from Edinburgh to Haddington via Portobello, Musselburgh and Tranent. This would require construction of light rail infrastructure, additional rolling stock and station enhancements.

Summary: Rationale for Not Progressing

The costs of this intervention would be excessive relative to the potential benefits. Other interventions in this corridor and in Edinburgh are therefore likely to contribute more significantly to meeting the objectives and provide greater value for money.

Table C80.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion. STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**1: Positive –** This intervention will help to minimise delays and congestion on this route by increasing public transport capacity and reducing private car travel. This intervention will help to make travel by public transport easier and quicker for passengers travelling to and from Edinburgh City Centre. **2: Neutral -** This intervention would not have any significant effect on this objective. However, if more people use public transport (i.e. Tram) instead of their car this may help to reduce road accidents and severity rates.

This intervention also addresses objectives in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	Edinburgh
To enhance public transport interchange opportunities, where feasible to do so.	Edinburgh

Table C80.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	Extension of Edinburgh Tram or alternative light rapid transit system will help improve public transport journey times. Public transport connections between Edinburgh and Haddington, including settlements on the tram route such as Portobello, Musselburgh and Tranent to the east, will be improved significantly offering a real public transport alternative to the car.
Reduce Emissions:	**Minor Benefit**	Extension of Edinburgh Tram or alternative light rapid transit system will contribute towards modal transfer from private car and potentially from bus to tram. The intervention has the potential to contribute to an overall reduction in emissions.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	Extension of Edinburgh Tram or alternative light rapid transit system will provide a brand new public transport hierarchy in the area with better journey quality and choice for existing and new users of public transport. Accessibility will be greatly improved for those travelling to/from Haddington or those travelling between the two areas. The cost of tram travel is normally akin to bus travel so this provides a more affordable alternative to say, heavy rail for some passengers.

Table C80.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are anticipated technical issues for the implementation stage of this intervention. This intervention will require considerable work to implement. Existing roadway and new land will be required to create the tram routes. Overhead wires will power the trams, which will require the construction of gantries and pylons in the street. Signposts and other measures must be put in place to segregate tramways from other traffic and pedestrians. New trams will be required.
Operational:	Implementation of the intervention may cause delays to road traffic if trams use existing roads. The construction period could also be lengthy, and would have a considerable impact on existing road and public transport users. Following construction it is unlikely that any factors will adversely affect the operation of the intervention during its projected life.
Public:	This is an important intervention to the economy of Edinburgh with significant public interest at both local and regional levels.

Table C80.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The provision of an extension of the Edinburgh Tram or alternative light rapid transit system is classed as a Level 3 intervention as significant infrastructure changes are required to implement the intervention interventions.
Interaction:	Extension of Edinburgh Tram or alternative light rapid transit system between Edinburgh and Haddington and settlements on the tram route like Portobello, Musselburgh and Tranent would affect the Edinburgh Urban network as the measures detailed in the intervention would benefit trips into and out of Edinburgh City Centre and to and from corridor 20. This intervention could be combined with intervention 119 (New Light Rapid Transit from Edinburgh to Dalkeith and Penicuik).
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table C80.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	There are moderate positive benefits through the promotion of modal shift away from the car therefore improving emissions, with possible slight benefits also to CO_2e emissions. However there is a possibility of several cultural heritage sites being affected depending on the location of the new line, impacts are uncertain at this stage.

Initial Appraisal	**Intervention 83: New Rail Line from the East Coast Mainline between Longniddry and Haddington**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£20m - £100m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections					■		
	Reduce Emissions				■			
	Improve Quality, Accessibility and Affordability						■	
		(Judgement based on available information against a 7pt. scale.)						

Intervention Description:

Reopened branch line from Longniddry to Haddington, with a service to west Edinburgh (e.g., Edinburgh Park or South Gyle and beyond to Livingston, Glasgow, Stirling or Fife). This is likely to require some capacity enhancements at the east end of Waverley. This intervention may include an extension of services currently terminating at Waverley from the west.

Summary: Rationale for Not Progressing

The costs of this intervention would be excessive relative to the potential benefits. Other interventions in this corridor and in Edinburgh, such as D23 (Rail Enhancements in the East of Scotland), are therefore expected to contribute more significantly to meeting the objectives and providing greater value for money.

Table C83.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion. STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**1: Positive -** This intervention would improve the frequency and journey time reliability of rail travel into Edinburgh, making rail travel a more attractive option, and thereby potentially reducing car use on the congested road network to and from Edinburgh. This intervention would also help to provide a frequent service to the west of Edinburgh, and address rail capacity issues. **2: Neutral -** This intervention is unlikely to have any significant effect on this objective.

This intervention also addresses objectives in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	Edinburgh
To enhance public transport interchange opportunities, where feasible to do so.	Edinburgh

Table C83.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Reopening the branch line from Longniddry to Haddington, with a half-hourly service to the west of Edinburgh (e.g. Edinburgh Park or South Gyle and beyond to Livingston, Glasgow, Stirling or Fife) would improve journey times by public transport to Edinburgh and beyond.
Reduce Emissions:	**Neutral**	Reopening the branch line would provide a more competitive public transport service with the resulting impact being a reduction in the number of trips by private car on the corridor. This is turn could lead to a reduction in emissions, however the level of impact is expected to be minimal.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	Previously unserved areas would have access to a frequent and reliable rail service into Edinburgh, and have a competitive alternative to car use. This intervention would also provide a more affordable and quality public transport option. This intervention would likely see a transfer of some people currently using the North Berwick services, thereby freeing up car parking at various stations along the route.

Table C83.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would make use of a reopened line, requiring considerable technical input but using existing rolling stock. This intervention may require modifications to the east end of Edinburgh Waverley.
Operational:	There is likely to be some disruption to services in carrying out works at Waverley Station during and after the implementation of this intervention and consideration should be given to the access strategy to minimise this. New train crew and timetable amendments will also be required.
Public:	This intervention has a strong element of local support.

Table C83.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The provision of a new branchline with service and capacity enhancements is classed as a Level 3 intervention as significant infrastructure changes are required to implement the intervention.
Interaction:	This intervention does not specifically complement any other interventions. However provision of a new branchline with service and capacity enhancements between Longniddry and Haddington, as well as to the west of Edinburgh (e.g. Edinburgh Park or South Gyle and beyond to Livingston, Glasgow, Stirling or Fife), would affect the Edinburgh Urban rail network. The measures detailed in this intervention would benefit rail trips into and out of Edinburgh City Centre and to and from Corridor 20.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention specified for this corridor route.

Table C83.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	A potential modal shift away from the private car could result in improved air quality and CO_2e emissions. There is however the potential for impacts to cultural heritage sites and to noise depending on location details of the line; impacts are uncertain at this stage.

Initial Appraisal	**Intervention 90: New Bypass Around Greenock**						
Estimated total Public Sector Funding Requirement:			***Capital Costs/grant***	£20m - £50m			
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							
		(Judgement based on available information against a 7pt. scale.)						
Intervention Description:								
A new bypass around Greenock and Port Glasgow.								

Summary: Rationale for Not Progressing
Although this intervention would deliver improved connections to Greenock Port, it would not contribute significantly towards the public transport objectives on this corridor when compared to other alternatives. The intervention does contribute towards some STPR objectives, however in light of further appraisal, other interventions provide similar or better benefits and offer better value for money. More focused improvements to the road network at key junctions on the A8 are likely to provide greater value for money.

Table C90.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To Increase capacity and reduce journey times by public transport between Glasgow and Inverclyde. STPR Objective 2: To facilitate freight access to Greenock port. STPR Objective 3: To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic. STPR Objective 4 To reduce the accident rate to the national road type average on the M8 and A8. STPR Objective 5 To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**1: Neutral -** This intervention is unlikely to have any significant effect on increasing capacity and reducing journey times by rail between Glasgow and Inverclyde. Journey times by bus are likely to be slightly improved as services west of Greenock would use the new bypass rather than travelling through the town, and services to Greenock town centre would benefit from fewer private cars along that section of the route. **2: Slightly Positive –** Constructing a bypass would enable through traffic to avoid the centre of Greenock. This would reduce the number of cars around the port and facilitate freight access to the port. **3: Positive –** Constructing a bypass would enable through traffic to avoid the centre of Greenock. This would improve the efficiency of the A8 / M8 during peak periods by reducing congestion and conflict between longer distance and local traffic and by providing a straight through route along the corridor. **4: Neutral –** Accidents are likely to be reduced if a bypass was constructed due to the improved standard of road although, severity rates are likely to increase. **5: Slightly Positive –** This intervention would help to reduce congestion and conflict on the A8/M8 thus providing a more efficient and effective transport link to Glasgow Airport from the Inverclyde region.

Table C90.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor benefit**	Construction of a bypass would reduce journey times by enabling motorists making strategic trips to avoid driving through built-up areas of Greenock.
Reduce Emissions:	**Neutral/Minor benefit**	This intervention could improve congestion within the town centre and therefore help to improve air quality. There would be no significant impacts on emissions.
Improve Quality, Accessibility and Affordability:	**Minor benefit**	Improving the road standard between Glasgow and Inverclyde would improve the quality of travel throughout the corridor. Access to Greenock port would also be improved.

Table C90.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	In general no new/untried technologies should be required, however at present the intervention is at a very early stage and technical issues may arise as the design process continues to a more detailed stage.
Operational:	It is unlikely that any operational issues would arise during the projected life of this intervention.
Public:	The construction of a bypass can be controversial in certain situations. Residents in the centre of Greenock are likely to be relieved at the reduction in traffic, whereas businesses may be unhappy at the prospect of losing passing trade.

Table C90.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This intervention is Level 3 as it would require major infrastructure change and investment.
Interaction:	Intervention 89 (Speed Enforcement Measures on the M8 and A8 between Glasgow and Inverclyde) would interact with this intervention and potentially reduce the accident rate.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table C90.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Benefits of this intervention include positive effects on noise, as the bypass could reduce noise levels in the town centre, and air quality, as the intervention is likely to improve congestion in the town centre. The intervention could potentially affect biodiversity, landscape, soils/geology and cultural heritage depending on the route of the bypass and so impacts are uncertain at this stage of the decision-making process.

Initial Appraisal	**Intervention 108: New rail connections in Fife**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£100m - £500m		
Summary Impact on Key Strategic Outcomes	**Improve Journey Times and Connections**	- - -	- -	-	*0*	+	++	+++
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							
		(Judgement based on available information against a 7pt. scale.)						

Intervention Description:

New passenger (rail) lines to serve St Andrews, Levenmouth and Glenrothes town centre, connecting to the existing East Coast Mainline. This would require new track, signalling, rolling stock and construction of stations.

Summary: Rationale for Not Progressing

Planned bus link improvements would provide a more cost effective and affordable alternative to a heavy rail line connection to St Andrews.

Initial appraisal has indicated that benefits of the connections to Levenmouth are considered to be focused at the local and regional level. In light of further appraisal this intervention would not contribute significantly towards the strategic objectives

Improvements to Markinch Station and associated bus services to Glenrothes would provide a more effective public transport connection between Glenrothes and the strategic rail network.

In summary, other Public Transport interventions in this corridor are more likely to contribute towards the strategic objective of improving connections between and to Edinburgh/Dundee, such as D23 (Rail Enhancements in the East of Scotland), D30 (Light Rapid Transit connections between Edinburgh and Fife) and D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy).

Table C108.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce public transport journey time between Edinburgh and Dundee.	**1: Neutral** – The provision of new rail connections in Fife would not result in a reduction in public transport journey times between Edinburgh and Dundee. It would however reduce journey times between settlements in Fife and Edinburgh/Dundee.
STPR Objective 2: To increase public transport capacity and frequency between Fife and Edinburgh.	**2: Positive -** The provision of new rail connections in Fife would help to increase public transport capacity and frequency between Fife and Edinburgh by providing more services within Fife and freeing up more capacity on various rail lines traveling between Fife and Edinburgh. The schemes detailed within the intervention could also help to make public transport (i.e. rail) a more attractive alternative to the car.
STPR Objective 3: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**3. Neutral -** This intervention is unlikely to have any significant effect on this objective. It may result in a minor negative impact due to the need to accommodate local and longer distance services over the most congested sections of the East Coast Mainline on the approaches to Edinburgh, however the scale of impact would depend upon the various service schedules.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**4 Slightly Positive -** The proposals highlighted in this intervention would help to promote efficient and effective transport links to Rosyth and over the Forth Crossing.
STPR Objective 5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**5: Neutral -** This intervention is unlikely to have any significant effect on accident incidence and severity rates across the strategic transport network.
STPR Objective 6: To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**6: Minor Positive –** The provision of new rail connections in Fife would potentially result in a slight reduction in vehicles on the M90/A90 during the peak periods.

This intervention could also address objectives in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	Edinburgh
To increase public transport capacity and frequency between Fife and Edinburgh.	Edinburgh

Table C108.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	This intervention could provide improved journey times and connections to Edinburgh from St Andrews, Leven, Methil and Glenrothes.
Reduce Emissions:	**Minor Benefit / Moderate Benefit**	This intervention could encourage use of public transport due to new rail service provision, reducing car use and therefore has the potential to contribute to reduce emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention could provide improved accessibility to Edinburgh and cities beyond. However, it is considered that the impact would be greater on a more local level within communities such as St Andrews, Levenmouth and Glenrothes.

Table C108.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	The Levenmouth and Methill branch remains as a freight line and would be relatively straight forward to upgrade for passenger use depending on the state of the existing infrastructure. Other options would require more significant investment in track and stations. Further research into disused formations should be undertaken before committing to a new greenfield build.
Operational:	The new line and services would need to be carefully coordinated during and after this intervention is implemented to optimise the limited number of paths available over the Forth Bridge. This could result in existing opportunities needing to be sacrificed for new ones. Improvements to Markinch Station and associated bus services to Glenrothes would provide a more effective public transport connection between Glenrothes and the strategic rail network. Planned bus link improvements would provide a more cost effective and affordable alternative to a heavy rail line connection to St Andrews.
Public:	The line should receive public support although no consultation has been undertaken. However the environmental impacts associated with the construction of the route could attract some negative public opinion.

Table C108.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This is a Level 3 (Targeted Infrastructure Investment) intervention.
Interaction:	This intervention would potentially interact with and complement intervention 97 (Rail Service Frequency Enhancements between Edinburgh and Fife) and provide an improved rail service throughout the Fife region.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table C108.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Environmental benefits are gained through improved public transport promoting modal shift and therefore potentially improving air and CO_2e emissions. The intervention may impact on landscape, geology and soils, noise, water quality, biodiversity and cultural heritage sites unless mitigated through the design process, however exact impacts on these are uncertain at this stage of the decision-making process.

Initial Appraisal	**Intervention 114: Edinburgh Suburban Line Services**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£20m - £50m		
Summary Impact on Key Strategic Outcomes	**Improve Journey Times and Connections** **Reduce Emissions** **Improve Quality, Accessibility and Affordability**	- - -	- -	-	*0*	+	++	+++

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Cross Edinburgh service from Livingston North to Shawfair utilising the Edinburgh South Suburban Line. This would require enhancement of the infrastructure, additional rolling stock and signalling.

Summary: Rationale for Not Progressing

Recent studies have concluded that the business case for introducing passenger services on this line is poor. This intervention uses very scarce capacity through Waverly and Haymarket and uses train paths that could be deployed more effectively for use by strategically important services.

Other interventions in this urban network or adjacent corridors, such as D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations), D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy) and D23 (Rail Enhancements in the East of Scotland) give similar benefits and are more cost effective.

Table C114.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	**1: Positive -** This work would enhance the 60 minute commutable labour market by providing direct services to Edinburgh, improving access to jobs and other facilities.
STPR Objective 2: To enhance public transport interchange opportunities, where feasible to do so.	**2: Slightly Positive -** The provision of these services would provide direct interchange opportunities that do not currently exist, improving connections and journey times.
STPR Objective 3: To increase public transport capacity and frequency between Fife and Edinburgh.	**3: Neutral –** This Intervention is not expected to have a resultant impact on services travelling between Fife and Edinburgh other than improving connections in general terms.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral –** This intervention is unlikely to have a significant impact on addressing this objective.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Neutral -** This intervention may add additional movements to and from the east end of Waverley station. This should not restrict the arrival of services from the north (which arrive from the west) but would do nothing to enhance their arrival.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.	**6: Neutral –** This intervention is unlikely to have a significant impact on addressing this objective.

This intervention also addresses an objective in another corridor.

STPR Objective	Corridor, Urban Network or Strategic Node
To increase public transport capacity and frequency between Livingston and Edinburgh.	Corridor 13

Table C114.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	Provision of a rail service between Livingston and Shawfair is likely to improve journey time and enhance connections between Edinburgh and Livingston; however impacts are forecast for some long distance strategic services.
Reduce Emissions:	**Minor/Moderate Benefit**	Rail service improvement is likely to encourage use of public transport and potentially reduce car travel and associated road vehicle emissions, as well as bring an improvement to air quality. The resultant reduction in emissions is forecast to be minimal.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention is likely to increase rail capacity, improving journey quality and making rail a more attractive and affordable alternative to journeys by car for the Edinburgh suburban area. Rail travel between Edinburgh and Livingston would be accessible to more communities.

Table C114.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	Infrastructure enhancements will be required including track and nearby structures where appropriate. Some resignalling may also be required, as well as the procurement of rolling stock.
Operational:	Significant problems could arise if this intervention were to be implemented, as there is little spare capacity at Haymarket and Waverley. Also, a report by Halcrow (March 2008) highlighted the fact that substantial subsidies would be required were this intervention to be implemented, as demand is unlikely to be enough to cover operational costs now and in the future. Timetable amendments will be required to ensure no adverse impacts on existing freight traffic along the route.
Public:	No consultation has been undertaken on this option.

Table C114.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This is a Level 3 intervention as it would require significant investment and infrastructure change.
Interaction:	There is the possibility of interaction between this intervention and others in this urban network which aim to improve public transport accessibility across the city.
Mutually Exclusive:	This intervention is mutually exclusive with intervention 84 (Rail Service Frequency Enhancements between Edinburgh and Newcraighall).

Table C114.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	This intervention will encourage the use of rail, potentially resulting in an improvement to air quality and CO_2e emissions as a result of modal shift.

Initial Appraisal	**Intervention 120: New Rail Line from the Borders Rail Link at Eskbank to Penicuik**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£100m - £500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							
		(Judgement based on available information against a 7pt. scale.)						

Intervention Description:

Heavy rail branch line from the Borders Rail Link at Eskbank to Penicuik, using the existing disused alignment past Rosewell and Auchendinny where possible.

Summary: Rationale for Not Progressing

The costs of this intervention would be excessive relative to the potential benefits. Other interventions in this corridor and in Edinburgh are therefore likely to contribute more significantly to meeting the objectives and provide greater value for money.

Table C120.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion. .STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**1: Slightly Positive-** This intervention would allow additional mode choice to commuters in Penicuik, and provide rail links to Edinburgh City Centre and the Borders, which are presently only readily accessible by car. This intervention may also help to alleviate road congestion build up in Edinburgh City Centre by providing a new rail service. However this route is only going to serve Penicuik limiting the amount of passengers using the service. **2: Neutral -** If more people use public transport (i.e. rail) instead of their car this may help to reduce road accidents and severity rates. However, this intervention is unlikely to have any significant effect on this objective.

This intervention also addresses objectives in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	Edinburgh
To enhance public transport interchange opportunities, where feasible to do so.	Edinburgh

Table C120.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Public transport journey times would improve, as would connections. However, these times may only be marginally better than car journey times to the Borders. If this route is only going to serve Penicuik, limiting the potential number of passengers using the service, these benefits will be limited.
Reduce Emissions:	**Minor Benefit**	The new branch line potentially would result in a slight reduction in emissions due to modal shift from travel by car.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Commuters would have access to a frequent service providing an alternative to car use. At present, road travel is the most accessible means of travel to Edinburgh and the Borders, so this intervention would provide a competitive alternative. Although if this route is only going to serve Penicuik, limiting the potential number of passengers using the service, these benefits will be limited.

Table C120.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would utilise the old Penicuik branch line as much as possible. However, this would still be a major engineering intervention, with some sections of new track, and new rolling stock required. A new station, possibly with Park-&-Ride facilities, would be required in Penicuik, and it is possible that the route will be electrified. This intervention should not impact on existing traffic or public transport, so disruption should be minimal.
Operational:	Careful consideration of the interaction with future services on the Borders Rail Line and on the east approaches to Waverly would be required to allow effective operation over the life of the project.
Public:	This intervention would have public interest at both local and regional levels.

Table C120.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The provision of a new branch line is classed as a Level 3 intervention as significant infrastructure changes are required to implement the intervention.
Interaction:	This intervention would potentially interact with and complement intervention 119 (New Light Rapid Transit Line from Edinburgh to Dalkeith and Penicuik) and provide an improved public transport service along this route.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention specified for this corridor route.

Table C120.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	This intervention has the potential for modal shift resulting in a slight improvement to air quality and mitigation of adverse climatic factors. The new rail line would have a slight adverse impact on noise levels and landscape with the potential for further impacts on biodiversity, water, soils / geology and cultural heritage depending on the location of the new line.

Initial Appraisal	**Intervention 126: Rail Infrastructure and Service Enhancements on the Far North Line**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£20m - £100m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Improvements on the existing railway line between Inverness and Wick/Thurso to improve line speeds, reduce journey times and increase service frequencies. This would involve new rolling stock, better quality track, dynamic loops and improved signalling.

Summary: Rationale for Not Progressing

The costs of this intervention are excessive in comparison to the likely benefits. Although this intervention would contribute to the objectives of improving accessibility to public transport, it would not provide good value for money.

Selected improvements could be taken forward as part of Intervention D8 (Enhancing Rail System Capacity through Targeted Improvements).

Table C126.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To enhance public transport accessibility and reduce public transport journey times to and from Inverness. STPR Objective 2: To reduce the fatal and severe accident rates to the national average or lower.	**1: Positive -** This intervention would reduce rail journey times between Inverness and Wick / Thurso and provide a better quality and more frequent service. **2: Neutral –** Rail improvements within this intervention may result in a degree modal shift from private car to rail. However the scale of the transfer would not result in any meaningful reduction in severity rates on this corridor.

Table C126.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention would lead to a reduction in rail journey times across the corridor.
Reduce Emissions:	**Minor Benefit**	Line improvements would result in a slight reduction in emissions due to the potential modal shift from road to rail.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention would improve quality and frequency of service. Residents north of Inverness would have access to a faster service and a competitive alternative to road use.

Table C126.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are no major technical issues related to this intervention.
Operational:	During the improvement works there would be operational issues relating to the existing sections of rail network in the corridor, as there are no rail diversion routes between Inverness and Thurso. It is unlikely that any factors will adversely affect the operation of this intervention during its projected life.
Public:	Reduction in the rail journey times between Inverness and Wick/Thurso is likely to be acceptable to the public in the area. Friends of the Far North Line, the Highland Rail Partnership, and Hitrans are all supportive of this intervention.

Table C126.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This intervention consists of Level 1, 2 and 3 interventions.
Interaction:	This intervention would potentially interact with and complement intervention 126 (Rail Infrastructure and Service Enhancements on the Far North Line) and provide an improved public transport service along this route.
Mutually Exclusive:	Rail improvements between Inverness and Wick/Thurso are considered mutually exclusive to other improvements on this section identified in the Far North Line Improvements, Helmsdale to Wick Rail Improvements, and the Dornoch Rail Bridge interventions.

Table C126.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	The promotion of modal shift to rail would potentially improve air quality and mitigate against adverse climatic factors. The intervention has the potential to affect biodiversity, the water quality of several rivers, soils / geology and cultural heritage sites depending on the location of the additional loops and lengthening double track.

Initial Appraisal	**Intervention 130: Rail Freight Enhancements between Glasgow and the Border via Dumfries**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** >£500m

Summary Impact on Key Strategic Outcomes

Improve Journey Times and Connections
Reduce Emissions
Improve Quality, Accessibility and Affordability

- - -	- -	-	*0*	+	++	+++

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

The intervention would include an increase in the number of freight paths on the Glasgow and South Western line between Glasgow and the border by measures such as:

- lengthening of loops;
- removal of speed limits that are below 75mph for freight trains; and
- increasing the loading gauge on the route.

Summary: Rational for Not Progressing

This would require extensive works to increase the loading gauge, the route availability, the number of trains operating and signalling improvements to allow for bi-directional running. In light of further appraisal, it was found that this intervention would require improvements and operational enhancements south of the border to have a significant impact.

Other interventions aimed at providing more competitive rail freight opportunities in this corridor are considered to be a more effective alternative in terms of cost and benefits.

Table C130.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction. STPR Objective 2: To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail. STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**1: Neutral –** This corridor currently suffers from congestion in peak hours on the M74 and other approaches to Glasgow. This congestion is likely to increase due to forecast traffic increases. Provision of an enhanced GSW rail freight service would not be anticipated to address congestion issues on the M74. **2: Slightly Positive –** Increasing the number of available paths on the Glasgow & South Western line would allow more freight trains to run and at more flexible times. Increasing the length of loops would allow longer freight trains to run as their length is limited by where they have to stop and allow faster passenger trains to pass. Increasing the loading gauge across the route would allow larger containers to be carried. All of these improvements would provide an attractive alternative for road freight and could be expected to encourage a mode shift from road to rail. This potential modal shift could lead to emission reductions in this corridor; however it will be limited by path availability further south in the network. **3: Neutral -** The intervention is unlikely to have any significant impact on this objective.

Table C130.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	This intervention will act as a diversionary route for occasions when the WCML is closed; this is likely to help to improve connections between Glasgow and Carlisle. It is also likely to allow improved journey times for passenger services.
Reduce Emissions:	**Minor Benefit**	This intervention could encourage modal shift for freight transport and so there is the potential to reduce congestion and improve air quality. Reductions in congestion could also reduce CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Providing loading gauge enhancements on GSW would improve the quality of the rail freight service. The enhancement on GSW would improve accessibility of service and allow more loads to be carried by rail without disruption when the WCML is closed.

Table C130.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with this intervention. Infrastructure works will be required in order to implement electrification and the loading gauge enhancements. More powerful locomotives may be required. This intervention also involves the need to cross the A71. During construction, the enhancement of GSW is likely to affect current rail freight trains on this route and may increase journey times. Works to the crossing of the A71 may also cause delays for current road users.
Operational:	It is unlikely that any adverse factors will affect the operation of this intervention during its projected life.
Public:	This intervention has not been made public.

Table C130.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The GSW rail freight facilities enhancement contains Level 1 and 3 interventions.
Interaction:	Intervention 86 (Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line) would interact with this intervention and by combining these improvements with improvements on the West Coast Mainline, they would permit at least one of the routes to be open at all times, allowing freight to run during engineering works on the other routes. This intervention would also interact with intervention 150 (Roll-On Roll-Off Rail Freight Enhancements between Glasgow and the Border via Lockerbie/Dumfries) providing a transfer of freight traffic from road to rail by providing a roll-on/roll-off service for HGV's.
Mutually Exclusive:	The West Coast Main Line rail freight enhancement is likely to improve capacity and speed of the rail freight service between Glasgow and Carlisle, which will bring similar benefits as this intervention, and would be likely to remove the need for GSW rail freight enhancement.

Table C130.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	This intervention will have potential slight minor benefits to air quality and CO_2e emissions through reduced congestion. There is also the potential for impacts on biodiversity and noise, the exact impacts are uncertain at this stage of the decision-making process.

Initial Appraisal	**Intervention 135: New Rail Line between Wemyss Bay and Largs**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£100m - £500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							
		(Judgement based on available information against a 7pt. scale.)						

Intervention Description:

Construction of a new direct rail link between Wemyss Bay and Largs.

Summary: Rationale for Not Progressing

The benefits of this intervention, at a strategic level, are considered to be relatively small as this only provides a small increase in capacity. Alternative rail-based interventions are more likely to contribute to the objective of increasing capacity and reducing journey times between Glasgow and Inverclyde/Ayrshire and would represent a better solution in terms of value for money.

Table C135.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To Increase capacity and reduce journey times by public transport between Glasgow and Inverclyde. STPR Objective 2: To facilitate freight access to Greenock port. STPR Objective 3: To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic. STPR Objective 4 To reduce the accident rate to the national road type average on the M8 and A8. STPR Objective 5 To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**1: Positive -** The construction of new direct rail link between Wemyss Bay and Largs would facilitate more efficient use of the railway network through Inverclyde and Ayrshire, by permitting two trains per hour to run from Glasgow to Largs and Ardrossan via Wemyss Bay. This would help to increase capacity and reduce journey times by public transport. **2: Neutral** – A direct rail link between Wemyss Bay and Largs would not have any significant impact on facilitating freight access to Greenock port. **3: Neutral** – The construction of new direct rail link between Wemyss Bay and Largs may encourage modal transfer and lessen congestion on M8/A8; however this would not make a significant impact on this objective. **4: Slightly Positive –** Provision of a direct rail link with frequent rail services between Wemyss Bay and Largs would make public transport more attractive, which would encourage modal transfer and potentially reduce the accident rate on the M8 and A8. **5. Neutral –** This intervention would potentially reduce journey times and increase capacity between Largs and Glasgow. Commuters would still have to interchange at Paisley Gilmour Street in order to reach Glasgow Airport by rail which means this intervention would have limited impact on supporting the national development at this airport.

This intervention also addresses an objective in another corridor.

STPR Objective	Corridor, Urban Network or Strategic Node
To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.	Corridor 15

Table C135.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Constructing a new railway line between Wemyss Bay and Largs would provide a shorter route for services between Largs and Glasgow, which is expected to improve journey times between these two locations.
Reduce Emissions:	**Minor Benefit**	Provision of a direct rail service between Wemyss Bay and Largs would make rail services more efficient and effective, thereby attracting more people to use public transport and potentially reducing emissions from road vehicles.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	An enhanced rail service between Wemyss Bay and Largs is likely to improve quality of travel throughout the corridor and increase accessibility of the rail service between Glasgow to Largs.

Table C135.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would require the laying of new track, the building of new stations and signal upgrades as well as the procurement of additional electric rolling stock. Station locations will depend upon availability of land. Sufficient car parking will be required, as would DDA compliance.
Operational:	The new line would effectively merge with the existing infrastructure. This may cause disruption to existing services. It is unlikely that any adverse factors will result in operational issues during its projected life. The provision of additional services along the new line may impact on the timetabling of other services in the area, requiring careful consideration of timetable conflicts.
Public:	An increased number of services from Wemyss Bay and Largs would likely be well received by current commuters as this would give them more choice of trains, and trains would also be less crowded.

Table C135.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This is a Level 3 intervention as its implementation would require major infrastructure changes.
Interaction:	This intervention would interact with interventions 87 (Lengthen Trains and Platforms and Reduce Journey Times between Glasgow and Inverclyde) and 88 (Rail Service Frequency Enhancements and Reduce Journey Times between Glasgow and Inverclyde) in helping to increase capacity and reduce journey times on rail services between Glasgow and Inverclyde.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table 135.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Benefits of this intervention include improvements to air and CO_2e emissions as a result of the promotion of modal shift. Adverse impacts to noise as the result of a new rail line. Impacts on biodiversity, water, soils/geology, cultural heritage and landscape are uncertain at this stage of the decision making process.

Initial Appraisal	**Intervention 150: Roll-On Roll-Off Rail Freight Enhancements between Glasgow and the Border via Lockerbie/Dumfries**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£100m - £500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

A full upgrade of the route between the Central Belt and the border via Lockerbie/Dumfries to allow roll-on/roll-off freight trains to operate. This would allow standard lorries to drive on to a freight train at one end and drive off at the other, similar to the trains used in the Channel Tunnel.

Summary: Rationale for Not Progressing

This intervention would require extensive works to increase the loading gauge, increase the route availability and allow for an increase in the number of trains operating, and signalling improvements to allow for bi-directional running. In light of further appraisal, it was found that this intervention would require similar improvements and operational enhancements south of the border to have a significant impact.

Other interventions aimed at providing more competitive rail freight opportunities in this corridor are considered to be a more effective alternative, providing a better value for money.

Table C150.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction.	**1: Neutral –** This intervention is concentrated on improving rail freight services between Glasgow and the Border. It is unlikely to make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction.
STPR Objective 2: To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.	**2: Slightly Positive –** This intervention would allow lorries to drive on to a freight train at one end and drive off at the other, as on the trains used in the Channel Tunnel. This would discourage lorries from using the M74, which would lessen congestion on the road and contribute to emission reduction.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Neutral –** Rail freight enhancements are unlikely to promote continuing reduction in accident rates and severity rates across the strategic transport network. Improvements on rail freight would discourage lorries from using the M74, which would lessen congestion and may reduce accident rates.

Table C150.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	A full upgrade of the rail freight route is unlikely to have any significant effects on journey times; however, the enhancements would improve rail freight connections between Glasgow and the Border.
Reduce Emissions:	**Minor Benefit**	This intervention would make it possible to remove some HGV's from the trunk road network that travel between the Central Belt and northwest England. This would have a positive impact on reducing emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Rail freight enhancements including the enlarged loading gauge would improve rail access for lorries and would improve the quality of the rail freight service.

Table C150.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with this intervention. Infrastructure works would be required for the extensive electrification and loading gauge enhancements. Route alignment may need to be upgraded to suit larger loads travelling more quickly and frequently than present levels. Clearance assessments will need to be undertaken to ensure that OHLE can be accommodated. Roll-on and roll-off facilities will need to be provided along the route. Signalling improvements will be required to ensure that the increase in services can be accommodated and make the most efficient use of available capacity. New rolling stock will be required to carry lorries along the route.
Operational:	It is likely that there would be some disruptions to normal operations were these improvements to be carried out. In the future there could potentially be less disruption to passenger services. With more trains operating on the network, there would be a need to restructure timetables to allow optimum performance. It is unlikely that any adverse factors will affect the operation of this intervention during its projected life.
Public:	This intervention has not been made public.

Table C150.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This is a Level 2 intervention as it would require some improvements to existing infrastructure.
Interaction:	This intervention would complement interventions 86 (Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line) and 130 (Enhancements to Rail Freight between Glasgow and the Border via Dumfries).
Mutually Exclusive:	There is no mutually exclusive intervention for this intervention within corridor 18.

Table C150.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Potential benefits to air quality and CO_2e emissions as a result of a freight modal shift from HGV to rail. There is the potential for impacts on biodiversity, noise, water, cultural heritage, landscape and geology/soils depending on the location of the new infrastructure; however this is uncertain at this stage.

`Initial Appraisal	Intervention 152: Express Coach Service Facilities between Aberdeen and Inverness						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£20m - 100m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							
		(Judgement based on available information against a 7pt. scale.)						

Intervention Description:

Facilities along the corridor to support an express coach service between Aberdeen and Inverness. This would include high quality waiting facilities, real time passenger information, integration with rail and local bus services, bus priority measures and bus lanes.

Summary: Rationale for Not Progressing

While this intervention would provide some improvements to public transport competitiveness in the corridor, more significant benefits could be delivered for longer distance trips through the alternative public transport interventions being considered by the STPR.

Table C152.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To improve connectivity, particularly by public transport between Inverness City Centre and the growth area to the east including Inverness Airport.	**1: Slightly Positive –** The implementation of this intervention would improve bus service provision along the corridor length, encompassing the growth area to the east of Inverness and could therefore improve connectivity to and from Inverness City Centre.
STPR Objective 2: To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.	**2: Slightly Positive –** The implementation of bus priority measures and bus lanes could improve journey times for buses by providing priority over other vehicles and reducing the impact of increased congestion on this corridor.
STPR Objective 3: To reduce the accident rate and severity rate to current national average.	**3: Slightly Positive** – An express coach service and bus priority measures could potentially encourage modal shift and so there could be a reduction in the number of cars on the A96, which may help reduce accident and severity rates.

Table C152.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Journey times would be improved for bus users as the use of bus lanes would reduce the impacts of congestion.
Reduce Emissions:	**Minor Benefit**	This intervention would encourage private vehicle users to change to public transport, potentially reducing transport related emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The quality of public transport provision would be improved through the implementation of high quality waiting facilities, real time information, and better integration between rail and local bus services.

Table C152.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	The intervention works include standard construction techniques and no new or untried technology.
Operational:	There is expected to be some disruption to road users whilst the bus lane markings are made. The other interventions made within this intervention will not cause significant operational difficulties to the existing network.
Public:	The public are aware of improvements of this nature and there would be an interest at both a local and regional level.

Table C152.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This intervention contains Level 1 and 2 aspects.
Interaction:	The improvements proposed under this intervention would work in combination with on intervention 56 (Inverness Bus Priority Measures and Park-&-Ride).
Mutually Exclusive:	This intervention is not mutually exclusive to any other intervention.

Table C152.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	There are minor positive benefits of this intervention through the promotion of modal shift from car to coach, reducing congestion and potentially improving air quality and CO_2e emissions.

Initial Appraisal	**Intervention 165: Double-deck Trains between Glasgow and the Ayrshire Coast**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	>£500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Upgrading of rail infrastructure to support double-deck trains operating between Glasgow and the Ayrshire Coast.

Summary: Rationale for Not Progressing

This intervention would require significant infrastructure works associated with platform enhancements and bridge clearances. There would be significant operational impacts at Glasgow Central where approaches and platforms are likely to require realignment. There would be inefficiencies due to the lack of interoperability between routes across Glasgow and this could restrict the future-proofing of rail network improvements.

Table C165.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.	**1: Positive** – Upgrading the rail infrastructure to support double-deck trains operating between Glasgow and Ayrshire Coast would provide an increase in rail capacity on this route into Glasgow. As well as increasing capacity along the route, this intervention would help to make public transport more attractive. It would also provide a more effective public transport link to Glasgow Airport by reducing overcrowding on services used on trips between Ayrshire and the airport.
STPR Objective 2: To ensure efficient and effective freight access to the port facilities at Loch Ryan.	**2: Neutral -** This intervention would not have any significant effect on ensuring efficient and effective freight access to the port facilities at Loch Ryan.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Neutral -** This intervention may encourage modal shift from cars to trains and this may help to reduce road accidents and severity rates. However, this effect would not be significant.
STPR Objective 4: To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.	**4: Neutral -** If more people as a result of this intervention use public transport (i.e. train) instead of their car, this may help to reduce the conflict between longer distance and local traffic, due to less traffic being on the road, however the effect would not be significant.

This intervention also addresses objectives in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To address rail capacity and connectivity issues in central Glasgow.	Glasgow
To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	Glasgow

Table C165.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	This intervention would help to provide more rail capacity, however this would not improve journey times and connections along this route.
Reduce Emissions:	**Minor Benefit**	The upgrading of rail infrastructure to support double-deck trains promotes modal shift away from car use, potentially reducing the number of cars on the road and thereby slightly reducing emissions.
Improve Quality, Accessibility and Affordability:	**Neutral**	This intervention would help to provide more rail capacity and in turn reduce overcrowding along the route offering a better quality of journey for rail passengers, however this intervention would not improve accessibility or affordability.

Table C165.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would require significant infrastructure works associated with platform enhancements and other gauge related works. It would have significant operational impacts at Glasgow Central where approaches and platforms are likely to require to be realigned. There would also be some technical difficulties involved in increasing the loading gauge e.g. tunnel bores may need to be enlarged or track relayed to lower the track level. There is likely to be disruption when this work is carried out.
Operational:	Increasing the loading gauge and operating double-deck trains would allow the railways to increase capacity on existing routes and services, but would not allow them to increase service frequencies or serve new routes without additional infrastructure enhancements. This intervention would have significant operational impacts at Glasgow Central during its projected life where approaches and platforms are likely to require realignment.
Public:	This intervention has not been made public.

Table C165.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	Upgrading of rail infrastructure to support double-deck trains is classed as a Level 3 intervention, as significant infrastructure changes are required to implement the intervention.
Interaction:	This intervention would potentially interact with and complement intervention 92 (Rail Service Frequency Enhancement between Glasgow and the Ayrshire Coast) helping to increase rail capacity on this route into Glasgow.
Mutually Exclusive:	This intervention and Intervention 166 (Double-deck Trains between Glasgow and Kilmarnock) are mutually exclusive.

Table C165.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Potential for slight positive benefits on air quality and CO_2e emissions by encouraging modal shift from road to rail and a reduction in road vehicle related emissions.

Initial Appraisal	**Intervention 166: Double-deck Trains between Glasgow and Kilmarnock**						
Estimated total Public Sector Funding Requirement:			***Capital Costs/grant***	£100m - £500m			
Summary Impact on Key Strategic Outcomes	**Improve Journey Times and Connections** **Reduce Emissions** **Improve Quality, Accessibility and Affordability**	- - -	- -	-	*0*	+	++	+++

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Upgrading of rail infrastructure to support double-deck trains operating between Glasgow and Kilmarnock.

Summary: Rationale for Not Progressing

This intervention would require significant infrastructure works associated with platform enhancements and bridge clearances. There would be significant operational impacts at Glasgow Central where approaches and platforms are likely to require realignment. There would be inefficiencies due to the lack of interoperability between routes across Glasgow and this could restrict the future-proofing of rail network improvements.

Table C166.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.	**1: Positive** – Upgrading of rail infrastructure to support double-deck trains operating between Glasgow and Kilmarnock would provide an increase in rail capacity on this route into Glasgow. This intervention, as well as increasing capacity along the route, would help to make public transport more attractive, encouraging a shift from car to public transport for trips to and from Glasgow City Centre.
STPR Objective 2: To ensure efficient and effective freight access to the port facilities at Loch Ryan.	**2: Neutral -** This intervention is unlikely to have any significant effect on ensuring efficient and effective freight access to the port facilities at Loch Ryan.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Neutral -** this intervention may encourage modal shift from cars to trains and this may help to reduce road accident and severity rates. However, this effect would not be significant.
STPR Objective 4: To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.	**4: Neutral -** If more people as a result of this intervention use public transport (i.e. train) instead of their car, this may help to reduce the conflict between longer distance and local traffic, due to less traffic being on the road, however the effect would not be significant.

This intervention also addresses an objective in another urban network.

STPR Objective	Corridor, Urban Network or Strategic Node
To address rail capacity and connectivity issues in central Glasgow.	Glasgow

Table C166.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	This intervention would help to provide more rail capacity, however this is unlikely to improve journey times and connections along this route.
Reduce Emissions:	**Minor Benefit**	The upgrading of rail infrastructure to support double-deck trains promotes modal shift away from car use, potentially reducing the number of cars on the road and thereby slightly reducing emissions.
Improve Quality, Accessibility and Affordability:	**Neutral**	This intervention would help to provide more rail capacity and in turn reduce overcrowding along the route offering a better quality of journey for rail passengers. However, this intervention would not improve accessibility or affordability.

Table C166.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would require significant infrastructure works associated with platform enhancements and other gauge related works. It would have significant operational impacts at Glasgow Central where approaches and platforms are likely to require realignment. There will also be some technical difficulties involved in increasing the loading gauge e.g. tunnel bores may need to be enlarged or track relayed to lower the track level. There is likely to be disruption when this work is carried out.
Operational:	Increasing the loading gauge and operating double-deck trains would allow for increased capacity on existing routes and services, but would not allow for increased service frequencies, or new routes, without additional infrastructure enhancements. This intervention would have significant operational impacts at Glasgow Central during its projected life where approaches and platforms are likely to require realignment.
Public:	While increasing rail capacity is likely to be supported the construction and operational impacts is like to be met with public opposition by regular rail users and communities in the area.

Table C166.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	Upgrading of rail infrastructure to support double-deck trains is classed as a Level 3 intervention as significant infrastructure changes are required to implement the intervention.
Interaction:	This intervention would potentially interact with and complement intervention 91 (Rail Service Frequency Enhancement between Glasgow and Kilmarnock) helping to increase rail capacity on this route into Glasgow.
Mutually Exclusive:	This intervention and Intervention 165 (Double-deck Trains between Glasgow and the Ayrshire Coast) are mutually exclusive.

Table C166.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	The intervention is likely to benefit local air quality and contribute towards a reduction in CO_2e emissions through potential modal shift to rail.

Initial Appraisal	**Intervention 167: Roll-On Roll-Off Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness via Perth**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	>£500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

A full upgrade of the route between the Central Belt, Aberdeen and Inverness to allow roll-on/roll-off freight trains to operate. This would require; extensive works to increase the loading gauge to enable a greater number of trains to operate; signalling improvements to allow for bi-directional running and 24 hour access to the route; new facilities in the Central Belt, Perth, Aberdeen and in Inverness to allow lorries to drive on and off; and new trains to carry lorries. It may also be necessary to electrify the route to allow services to be operated by electric locomotives.

Summary: - Rationale for Not Progressing

The infrastructure enhancements required to achieve the necessary clearances are likely to be significant and would require extensive station modifications. Costs are estimated to be very high and these are likely to outweigh any benefits associated with the intervention.

On the Highland Mainline route, the required improvements to infrastructure could also result in an adverse environmental impact.

Table C167.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To improve the public transport competitiveness between Aberdeen and Dundee (and hence onwards to the Central Belt).	**1: Neutral** - This intervention would not have any significant effect in improving the public transport competitiveness between Aberdeen and Dundee (and hence onwards to the Central Belt).
STPR Objective 2: To contribute to reducing both overall emissions and emissions per person kilometre through providing for alternatives to road freight movement on the corridor.	**2: Slightly Positive –** These improvements would make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times, allowing freight to arrive at times suitable for the final receiver and allowing standard 9' 6" deep sea containers to be carried. This would provide an attractive alternative for road freight and could be expected to encourage a mode shift from road to rail. This potential modal shift could lead to emission reductions in this corridor.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Slightly Positive –** Freight enhancements that could lead to modal shift from road to rail would potentially reduce the accident rate by removing HGVs from the road network.
STPR Objective 4: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres.	**4: Neutral -** This intervention would not have any significant effect in promoting journey time reductions, particularly by public transport, between the Central Belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres.

This intervention also addresses an objective in another corridor

STPR Objective	Corridor, Urban Network or Strategic Node
To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity.	Corridor 6

Table C167.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	This intervention would not have an impact on improving journey times and connections.
Reduce Emissions:	**Minor Benefit**	By making freight transfer by rail more attractive, there is the potential for modal shift from road to rail which could have an impact on reducing emissions. This impact would be minimal.
Improve Quality, Accessibility and Affordability:	**Neutral**	This intervention would not have a significant impact on improving the quality, accessibility and affordability of transport in this corridor.

Table C167.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with this intervention. There will be infrastructure works needed for the extensive electrification and loading gauge enhancements. Clearance assessments will need to be undertaken to ensure that OHLE can be accommodated. Roll-on and roll-off facilities would need to be provided along the route. Signalling improvements (i.e. for bi-directional running and 24 hour access to the route) would be required to permit the increase in services to be accommodated and make the most efficient use of available capacity. New rolling stock will be required to carry lorries along the route.
Operational:	During construction, the enhancement of the route is likely to affect current rail freight trains and may increase journey times. In the future there could potentially be less disruption to passenger services. With more trains operating on the network, there would be a need to restructure timetables to allow optimum performance. It is unlikely that any adverse factors will affect the operation of this intervention during its projected life.
Public:	There is some support for this intervention from rail freight campaigners.

Table C167.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This intervention includes Level 1, 2 and 3 interventions.
Interaction:	This intervention does not interact or complement any other interventions.
Mutually Exclusive:	This intervention is mutually exclusive with intervention 145 (Rail Freight Enhancements between Mossend, Grangemouth and Inverness).

Table C167.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	This intervention is likely to provide benefits to the local air quality and a reduction in CO_2e emissions through the potential for modal shift of freight from road to rail. Impacts on biodiversity, noise, water, soils / geology, cultural heritage and landscape are uncertain at this stage until more information is available.

Initial Appraisal	**Intervention 172: New Road Link between the M8 and M74**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	£500m - £1bn		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

New dual carriageway link road between the M74 at Junction 12 to the M8 at Junction 4.

Summary: Rationale for Not Progressing

This new road alignment would have a major negative environmental impact as it is a largely greenfield route, extending over 40km. In addition, the cost of the intervention, estimated at £500m to £1bn, would far outweigh any benefits generated.

Table C172.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.	**1: Slightly Negative –** This intervention would impact negatively on the competitiveness of rail journeys compared to the private car
STPR Objective 2: To make best use of the available road space and better manage peak demand.	**2: Slightly Positive –** This intervention would provide relief to congested sections of the M8 Motorway but involves new road space provision.
STPR Objective 3: To increase public transport capacity and frequency between Livingston and Edinburgh.	**3: Neutral –** This intervention is unlikely to have any impact on increasing public transport capacity and frequency between Livingston and Edinburgh.
STPR Objective 4: To contribute to both a reduction in emissions per person kilometer and a reduction in overall emissions.	**4: Slightly Negative –** This intervention is likely to encourage greater use of the private car on this part of the strategic road network and therefore increase the levels of emissions. These impacts are considered to outweigh any benefits associated with reductions in levels of congestion.
STPR Objective 5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**5: Neutral –** This intervention would remove traffic from congested sections of the motorway network with consequential reductions in accident numbers. However it would also likely encourage greater use of the private car, thereby resulting in an increase in the total number of vehicles on the strategic road network.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.	**6: Positive –** The provision of a new dual carriageway link road between the M74 and M8 would help to improve access to Grangemouth from the south by allowing traffic to avoid congestion on the M74 and M80. It would also provide an alternative route for longer distance passenger and freight traffic travelling to and from the south of the country.

Table C172.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	The provision of a new dual carriageway link road between the M74 and M8 would help to improve access and journey times to Grangemouth from the south by allowing traffic to avoid congestion on the M74 and M80. It would also provide more direct connections between parts of the Central Belt and the national border.
Reduce Emissions:	**Minor negative impact**	This Intervention would encourage greater car use and therefore would likely have a negative impact on emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The provision of a new dual carriageway link road between the M74 and M8 could result in secondary benefits for bus users on the M74, A8/M8 and M80. This would potentially increase journey quality but is unlikely to affect accessibility or affordability.

Table C172.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with this intervention. This new road alignment is largely a greenfield route, extending over 40km, through areas where terrain is likely to require a significant level of engineering.
Operational:	The construction work could have adverse environmental effects during and after construction on the surrounding areas.
Public:	This intervention would likely be met with significant opposition due to the potential impacts on the cultural heritage and landscape and the likely increase in levels of emissions. The high costs associated with this intervention may also raise significant opposition.

Table C172.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	The provision of a new dual carriageway link road between the M74 and M8 is classed as a Level 3 intervention as significant infrastructure changes are required to implement the intervention.
Interaction:	This intervention does not interact or complement any other interventions.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table C172.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	This intervention could affect landscape, noise, geology and soils, water quality, biodiversity and cultural heritage sites depending on the location of the new infrastructure.

Initial Appraisal	**Intervention 174: Roll-On Roll-Off Rail Freight Enhancements between Stranraer, Kilmarnock and the Border**						
Estimated total Public Sector Funding Requirement:				***Capital Costs/grant***	>£500m		
Summary Impact on Key Strategic Outcomes		- - -	- -	-	*0*	+	++	+++
	Improve Journey Times and Connections							
	Reduce Emissions							
	Improve Quality, Accessibility and Affordability							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

A full upgrade of the route between Stranraer and the border via Kilmarnock to allow roll-on/roll-off freight trains to operate. This would allow standard lorries to drive on to a freight train at one end and drive off at the other, similar to the trains used in the Channel Tunnel.

Summary: Rationale for Not Progressing

This would require extensive works to increase the loading gauge, the route availability, the number of trains operating and signalling improvements to allow for full bi-directional running along the route. In light of further appraisal, it was found that this intervention would require similar improvements and operational enhancements south of the border to have a significant impact.

Low floor wagons should be considered as a possible option, however this would require operation from the ScotRail Franchise.

Intervention D29 (Enhancements to Rail freight between Glasgow and the Border via West Coast Main Line), aimed at providing more competitive rail freight opportunities in this corridor are considered to be more effective alternatives.

Table C174.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To ensure efficient and effective freight access to the port facilities at Loch Ryan STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**1: Positive** - This intervention would provide efficient and effective freight access to the port facilities at Loch Ryan for freight from England or Glasgow by allowing freight to be transferred from road to rail and avoid the A77 south of Ayr and the A75. This would also help to reduce the conflict between strategic and local traffic by removing some strategic traffic from the single carriageway A77. **2: Neutral –** This intervention would not have any significant effect promoting continuing reduction in accident rates and severity rates across the strategic transport network.

This intervention also addresses objectives in another corridor

STPR Objective	Corridor, Urban Network or Strategic Node
To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.	Corridor 15
To ensure efficient and effective freight access to the port facilities at Loch Ryan.	Corridor 15

Table C174.1.2 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	This intervention would not have a significant impact on improving journey times and connections in this corridor.
Reduce Emissions:	**Minor Benefit**	By making freight transfer by rail more attractive, there is the potential for modal shift from road to rail which could have an impact on reducing emissions.
Improve Quality, Accessibility and Affordability:	**Neutral**	This intervention would not have a significant impact on improving the quality, accessibility and affordability of transport in this corridor.

Table C174.1.3 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with this intervention. There would be infrastructure works needed for the extensive electrification and loading gauge enhancements. Clearance assessments would need to be undertaken to ensure that OHLE can be accommodated. Roll-on and roll-off facilities would need to be provided along the route. Signalling improvements would be required to ensure that the increase in services can be accommodated and make the most efficient use of available capacity. New rolling stock would be required to carry lorries along the route.
Operational:	During construction, the enhancement of the route is likely to affect current rail freight trains and may increase journey times, however in the future there could potentially be less disruption to passenger services. With potentially more trains operating on the network, there would be a need to restructure timetables to allow optimum performance.
Public:	There is some support for this intervention from rail freight campaigners.

Table C174.1.4 Comparative Appraisal

Comparative Appraisal	
Intervention Hierarchy:	This intervention includes Level 1, 2 and 3 interventions.
Interaction:	This intervention would potentially interact with and complement interventions 86 (Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line), 130 (Enhancements to Rail Freight Infrastructure between Glasgow and the Border via Dumfries) and 150 (Roll-On Roll-Off Rail Freight Enhancements between Glasgow and the Border via Lockerbie/Dumfries) by providing better freight transfer to the border.
Mutually Exclusive:	This intervention is not mutually exclusive with any other intervention.

Table C174.1.5 Environmental Appraisal

Environmental Appraisal	
Assessment Summary	Benefits comprise of minor improvements to local air quality and a possible reduction in CO_2e emissions through modal shift of freight to rail. Impacts on biodiversity, water quality, soils / geology, noise, cultural heritage and the landscape depending on the location of the new infrastructure, however this is uncertain.

Annex 2

Detailed Appraisal	**D1: Strategic Road Safety Plan**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** None ***Annual Revenue Support Present*** <£10m/yr ***Value of Cost to Gvt*** <£10m/yr ***BCR/PVB*** N/A

		- - -	- -	-	*0*	+	++	+++
Summary Impact on STAG Criteria	**Environment**							
	Safety							
	Economy							
	Integration							
	Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

The Scottish Government is prioritising road safety, through funding for Road Safety Scotland, Safety Camera Partnerships and other initiatives. A strategic direction to road safety has been developed through Transport Scotland's recently published ten-year Strategic Road Safety Plan. In addition, the Government intends to publish its Road Safety Strategy.

This intervention relates to a key objective of the STPR which is to continue the delivery of the Strategic Road Safety Plan, through the period 2012-2022. Building on this, the relevant proposed measures would be implemented on the strategic road network in order to reduce the rate and severity of road accidents on Scotland's trunk roads.

Summary: Rationale for Selection

The intervention is specifically aimed at reducing accident rates and achieving the national targets for casualty reductions in the UK. These targets envisage, by 2010: a 40 per cent reduction in the number of people killed or seriously injured; a 50 per cent reduction in child deaths and serious injuries, when compared with the 1994-8 average, and a 10 per cent reduction in the slight casualty rate.

Due to the general nature of this intervention, this OST provides a qualitative review of the strategy rather than a detailed assessment of the specific road safety measures that could be delivered.

Table D1.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1: Neutral** - Whilst the planned review of speed limits could result in lower speed limits in some locations, the Plan encourages an overall approach that takes account of the function of trunk roads in providing quick and efficient links between key centres. The immediate impact on average inter-urban journey times would therefore be negligible. The Strategic Road Safety Plan supports safe design standards that would contribute to smoother traffic flows in the long term.
National Objective 2: To reduce inter-urban journey time on public transport.	**2: Neutral -** The measures in this intervention would not impact on average inter-urban journey times for public transport vehicles.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3: Positive -** The Plan aims to reduce the risk of incidents through proactive risk removal and speed management. An assessment process to prioritise rural junctions for improvement is also proposed. Incident management through automatic queue control and lane control systems in densely trafficked sections of the network are promoted to minimise the risk of secondary incidents. Speed management at roadworks is promoted as a safety measure with the additional benefit of improving traffic flow and reducing congestion. All these measures would be effective in reducing disruption from planned and unplanned incidents across the network, resulting in enhanced journey time reliability. The measures promoted in the Strategic Road Safety Plan should be considered in combination with Targeted Programme of Measures (TPMs) (Interventions D3, D4 and D5). Together, the measures proposed in these four interventions define a strategy for managing the performance of key corridors and the wider network, and their implementation would optimise the efficient and safe operation of the network. A pro-active approach to network management could generate considerable benefits to the performance of the network in terms of journey time reliability, particularly for prioritised road users.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4: Neutral -** Road safety strategies focus on speed management promoting appropriate speeds, rather than aiming to reduce speeds throughout the network. The measures promoted in the Plan would therefore not have significant impacts on average journey times.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5: Neutral -** Although the measures proposed in this intervention reduce disruption from incidents, they would not impact on average journey times, and the overall impact on the labour catchment for all road users would be negligible. However, some of the Intelligent Transport System (ITS) infrastructure used in incident management, e.g. Variable Message Signs (VMS) and lane control systems, could assist in managing roadspace during busy hours, prioritising public transport and HOVs where appropriate.
National Objective 6: Support the development and implementation of the emerging national development interventions.	**6: Neutral -** The measures proposed in this intervention would have a negligible impact on this objective.

National Objective 7: Reduce CO_2e emissions per person km.	**7: Neutral -** The measures proposed in this intervention would have a negligible impact on this objective.
National Objective 8: Stabilise total CO_2e emissions.	**8: Neutral -** The measures proposed in this intervention would have a negligible impact on this objective.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging climate change bill.	**9: Neutral -** The measures proposed in this intervention would have a negligible impact on this objective.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10: Strongly Positive -** This intervention would include updates of the Strategic Road Safety Plan to take account of any changes in the road network. These changes include those to infrastructure, traffic regulations and restrictions and the use of the strategic road network. Updates of the plan to respond to these changes are essential to ensure the appropriateness and effectiveness of the safety measures proposed.
National Objective 11: To promote seamless travel.	**11: Neutral -** The measures proposed in this intervention would have a negligible impact on this objective.
National Objective 12: Improve the competitiveness of public transport relative to the car.	**12: Neutral -** The Plan would result in safety benefits for all road users, including public transport and the private car. The measures promoted in the Strategic Road Safety Plan would not impact on the competitiveness of public transport relative to the private car.
National Objective 13: To improve overall perceptions of public transport.	**13: Neutral -** The measures proposed in this intervention would not affect the overall perception of public transport.

Table D1.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	Minor improvements such as widening or realignment of routes could have environmental impacts depending on their location. This will need further consideration at design stage to minimise any impact.
Safety:	**Major Benefit**	The intervention is specifically aimed at reducing accident rates and achieving the national targets for casualty reductions in the UK (*Tomorrow's Roads: safer for everyone, Department for Transport*). By 2010, these targets envisage a 40 per cent reduction in the number of people killed or seriously injured, a 50 per cent reduction in child deaths and serious injuries, when compared with the 1994-8 average, and a 10 per cent reduction in the slight casualty rate. Regular updates of the Strategic Road Safety Plan, to take account of infrastructure changes, and changes in the usage of the network, are essential to identify current safety blackspots and to ensure the continued appropriateness and effectiveness of the Plan. These updates will ensure accident rates can be maintained at their target levels or wherever possible reduced. The overall impact of this intervention on safety is therefore expected to be major positive. The improvements achieved by the measures identified in the Strategic Road Safety Plan can be quantified in terms of the monetary cost of the accident savings compared with the baseline

		situation.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE)**: The review of speed limits would result in the introduction of lower speed limits in some locations. Overall, average journey times would be generally unaffected however; the measures proposed in this intervention could assist in minimising accidents and their associated cost. The impact in terms of transport economic efficiency is expected to be positive. **Wider Economic Benefits (WEBs)**: The Strategic Road Safety Plan promotes incident prevention through measures such as proactive risk removal and a safety review of rural junctions. Improvements to incident management are aimed at reducing response times, reducing the risk of secondary incidents and minimising disruption. Beneficial impacts on journey time reliability would ensue, allowing businesses to plan their time more reliably. **Economic Activity and Location Impacts (EALIs)**: The measures promoted in this intervention are not targeted at specific locations. The impact on the competitiveness of key areas of economic development is therefore not known.
Integration:	**Neutral**	**Transport Integration**: This intervention would have no effect on Transport Integration. **Transport and Land-Use Integration**: This intervention would not have an impact on Transport and Land-Use Integration. **Policy Integration:** By improving safety for pedestrian and cyclists, this intervention would promote active travel and would go some way towards creating healthier more inclusive communities. It would not significantly impact on aspirations to reduce road traffic.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility**: This intervention promotes safety strategies specifically targeted at vulnerable road users. Although the intervention does not promote any public transport service enhancements, it does specifically aim to improve conditions for pedestrians and cyclists. This could open opportunities to use these modes in accessing local services. With specific regard to promoting safe access to education, the Plan aims to implement 20 mph speed limits at schools. The overall impact on Accessibility and Social Inclusion would be minor positive. **Comparative Accessibility**: The Strategic Road Safety Plan contains measures specifically targeted to improve safety for vulnerable road users. Some benefits in terms of comparative accessibility would ensue.

Table D1.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	This intervention contains measures promoting effective prevention and efficient management of incidents, minimising associated disruption to traffic flow and improving journey time reliability. However, average journey times would remain unaffected. No impacts on connections are expected to arise as a result of this Intervention.
Reduce Emissions:	**Neutral**	The intervention would not have a significant affect on CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The Strategic Road Safety Plan contains measures specifically targeted at improving safety for pedestrians and cyclists. These measures would improve the quality of the experience for these user groups. Strategies to improve safety for the elderly could produce benefits in terms of comparative accessibility. Although the intervention does not contain improvements to public transport network coverage or service provision, some improvements to community accessibility would ensue from safer provision for pedestrians and cyclists. Specific measures are targeted at providing safer access to education. The measures proposed in this intervention would not impact on affordability.

Table D1.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Major Benefit**	This intervention would contribute to a Safer and Stronger Scotland by reducing accidents through investing in infrastructure, technologies and strategies to promote road safety. It would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Moderate Benefit**	This intervention would help to improve access to schools, colleges and universities. With specific regard to promoting safe access to education, the plan aims to implement 20 mph speed limits at schools.
Wealthier and Fairer:	**Minor Benefit**	The measures contained in this intervention would not result in journey time savings or improved connections across Scotland. However, the intervention would result in more reliable journey times by minimising and managing disruption of traffic due to incidents. This would allow businesses to plan effectively, resulting in some minor benefits to the economy.
Greener:	**Neutral**	The intervention would not encourage a modal shift from car to public transport, and would therefore not contribute to any improvement in emissions or air quality.
Healthier:	**Minor Benefit**	By improving safety for pedestrians and cyclists, the strategies promoted under this Intervention would increase the attractiveness of these modes and encourage a greater uptake of active travel. The measures proposed would not affect access to healthcare. Overall, the intervention would contribute to the Government's objective to promote healthier and more active communities.

Table D1.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	The implementation of the intervention is considered technically feasible. Although some new technologies may be put forward for implementation, following research and development, the Strategic Road Safety Plan promotes a structured approach to adopting these techniques, making use of Demonstration Road Safety Projects and knowledge sharing. This approach would minimise any risks associated with the implementation of new techniques. The collation of road safety statistics to inform any updates of the Plan is a well established procedure. The timing and arrangements pertaining to the delivery of Interventions D3, D4 and D5 (Enhanced Route Action Plans (RAPs), Targeted Programme of Measures (TPMs) and Managed Corridors) should be taken into account when planning the implementation of any measures proposed as part of this intervention. This will assist in maximising the effectiveness of the intervention and minimising any disruption.
Operational:	The implementation of updates to the Strategic Road Safety Plan is considered to be operationally feasible. It is expected that any data required to inform the updates can be collected without disruption to the network.
Public:	There has been no detailed consultation on this intervention.

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Detailed Appraisal	**D2 - Maintaining and Safely Operating Scotland's Rail Network**	
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	- N/A
	Annual Revenue Support Present	- Approximately £3bn over 10 years.
	Value of Cost to Gvt	- N/A
	BCR/PVB	- N/A

Summary Impact on STAG Criteria	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention represents the day-to-day management and maintenance of the rail network, carried out by Network Rail in line with the requirements of the Scottish Ministers.

Summary: Rationale for Selection

The total rail assets in Scotland are valued at approximately £5 billion. Network Rail receives more than £300million of direct grant every year to manage the rail network and to maximise its capacity. The funding allocated to Network Rail is for the operation, maintenance and renewal of the rail infrastructure network. This work links directly to this first level of requirement for the STPR in maintaining and safely operating the network.

Due to the general nature of this intervention this OST provides a qualitative review of the strategy rather than a detailed assessment of the specific measures that could be delivered.

Table D2.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1: Slightly Positive** - This intervention will support the competitiveness of rail journey times compared to journeys by car, especially as journey times by car could increase due to the forecast increase in congestion on parts of the trunk road network.
National Objective 2: To reduce inter-urban journey time on public transport.	**2: Slightly Positive -** Whilst this intervention will not provide a significant reduction in journey times by rail, the removal of temporary and minor speed restrictions as part of maintaining the network will improve journey time reliability. Measures such as the "World Class" initiative that Network Rail is trialling on the Edinburgh & Glasgow Railway will also give minor journey time improvements.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3: Neutral -** This intervention will not have any impact on journey times on the trunk road network.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4: Slightly Positive -** Whilst this intervention will not provide a significant reduction in journey times by rail, the removal of temporary and minor speed restrictions as part of maintaining the network will improve journey time reliability.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5: Neutral -** This intervention will have no significant impact on maximising the labour catchment area of the city regions.
National Objective 6: Support the development and implementation of the emerging national development interventions.	**6: Neutral -** The measures promoted in this intervention are not expected to impact on this objective.
National Objective 7: Reduce CO_2e emissions per person km.	**7: Minor Positive -** This intervention will support a safe railway in Scotland, able to provide a high standard of service, thereby maintaining current patronage and preventing an increase in the use of the car which would have implications for the environment through a potential reduction in CO_2e emissions..
National Objective 8: Stabilise total CO_2e emissions.	**8: Minor Positive -** The measures promoted in this intervention will support a safe railway in Scotland, able to provide a high standard of service, thereby maintaining current patronage and preventing an increase in the use of the car which would have implications for the environment through a potential reduction in CO_2e emissions.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging climate change bill.	**9: Minor Positive -** The measures promoted in this intervention will support a safe railway in Scotland, able to provide a high standard of service, thereby maintaining current patronage and preventing an increase in the use of the car which would have implications for the environment through a potential reduction in CO_2e emissions.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10: Slightly Positive -** This intervention will have little impact on improving safety on the rail network although maintaining and replacing infrastructure before it becomes life expired will support the continued safe operation of the network.

National Objective 11: To promote seamless travel.	**11: Neutral -** The measures promoted in this intervention would not impact on this objective.
National Objective 12: Improve the competitiveness of public transport relative to the car.	**12: Slightly Positive -** Whilst this intervention will not significantly increase the competitiveness of rail compared with car, the removal of temporary and minor speed restrictions as part of maintaining the network will improve the journey time reliability of rail which will have some benefits towards improving competitiveness. Measures such as the "World Class" initiative that Network Rail are trialling on the Edinburgh & Glasgow Railway will also give minor journey time improvements and improve reliability.
National Objective 13: To improve overall perceptions of public transport.	**13: Positive -** The measures in this intervention will help to promote rail as a safe and reliable form of public transport by maintaining its continued safe operation. In implementing this intervention the rail network will also remain well maintained and in turn the overall perceptions of public transport will be improved. If this intervention was not applied, the lack of maintenance would affect rail infrastructure which, in turn, would affect journey times and journey time reliability.

Table D2.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit**	Maintaining and safely operating Scotland's rail network is likely to support the use of public transport. Increased road congestion could encourage a subsequent modal shift to rail thus a reduction in car travel, contributing to an improvement in air quality.
Safety:	**Major Benefit**	This intervention would facilitate the maintenance and safe operation of Scotland's railways.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** .Overall, average journey times would be generally unaffected by the provision of this intervention and the impact in terms of transport economic efficiency is expected to be negligible. **Wider Economic Benefits (WEBs):** A safe operating rail network in Scotland is vital to the economy and those currently using the service. **Economic and Location Impacts (EALIs):** The measures promoted in this intervention are not targeted at specific locations. The impact on the competitiveness of key areas of economic development is therefore not known.
Integration:	**Moderate Benefit**	**Transport Integration:** This intervention would have no effect on Transport Integration. **Transport and Land-Use Integration:** This intervention would not have an impact on Transport and Land-Use Integration. **Policy Integration:** This intervention would facilitate the continued provision of Scotland's rail network for those who rely on it for work or leisure purposes.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** This intervention would not impact on community accessibility

		Comparative Accessibility: This intervention would facilitate the continued provision of Scotland's rail network for access to essential services.

Table D2.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Whilst this intervention will not provide a significant reduction in journey times by rail, the removal of temporary and minor speed restrictions as part of maintaining the network will improve journey time reliability. Measures such as the "World Class" initiative that Network Rail are trialling on the Edinburgh & Glasgow Railway will also give journey time improvements and improve reliability.
Reduce Emissions:	**Minor Benefit**	The measures promoted in this intervention will maintain safety on Scotland's railways and continue to provide a high standard of service, thereby maintaining current patronage and hoping to prevent an increase in the use of the private car.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	The measures promoted in this intervention would improve journey time reliability of rail services, improving the overall quality of them and ensuring that those people without access to a private car have access to their places of work. This intervention would not impact on affordability.

Table D2.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Major Benefit**	The measures in this intervention will help to promote a Safer and Stronger Scotland by maintaining rail's continued safe operation. It will not provide any additional improvements to the quality, accessibility and affordability of public transport or improve road safety.
Smarter:	**Neutral**	Maintaining and safely operating the rail network would not affect access to schools, colleges and universities.
Wealthier and Fairer:	**Major Benefit**	This intervention will result in more reliable journey times by reducing incidents of infrastructure failure on the network and reducing the number of temporary speed restrictions. This will allow businesses to plan effectively, resulting in benefits to the economy.
Greener:	**Minor Benefit**	Maintaining and safely operating Scotland's rail network will support the maintenance of current patronage levels and assist in attracting more people to public transport, so encouraging individuals to shift away from the car, thereby having minor reductions in CO_2e emissions.
Healthier:	**Neutral**	Safely maintaining Scotland's rail network will not directly affect health or access to health services.

Table D21.5 Implementability Appraisal

Implementability Appraisal	
Technical:	In general, no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise that require increased technical capabilities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	Public opinion is likely to be positive as delays to journeys could be reduced.

Detailed Appraisal	**D3 (Part 1): Targeted Programme of Measures to Reduce Accident Severity on the A9 North of Inverness**	
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	<£10m
	Annual Revenue Support Present	-
	Value of Cost to Gvt	<£10m
	BCR/PVB	N/A

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to reduce the fatal and severe accident rates on the A9 north of Inverness. This intervention would include measures such as:

- Physical works at locations such as Tore Roundabout

It is envisaged that bespoke measures would be delivered in a targeted programme to address identified high severity accident clusters along the route.

In addition, speed enforcement measures could be considered at appropriate locations

Summary: Rationale for Selection

Local realignment on the A9 north of Inverness and junction improvements are expected to improve road safety. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes.

The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to greater compliance with speed limits. Evidence from trials indicates that a reduction in average speed results in significant reductions in accidents and accident severity.

The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.

Table D3.1.1 STPR Objectives (Corridor 1)

STPR Objectives	
STPR Objective 1.1: To enhance public transport accessibility and reduce public transport journey time to and from Inverness.	**1.1: Slightly Positive** – General road improvements would result in a degree of journey time reductions for all road users. For journey times along the length of the corridor (around 170km), journey times by bus are around 1.5 times that of car. Public transport competitiveness against car travel would not increase as the improvements would benefit all road users more or less equally.
STPR Objective 1.2: To reduce the fatal and severe accident rates to the national average or lower.	**1.2: Positive -** The A9 is single carriageway with poor road alignment, and limited overtaking opportunities. This, combined with vehicle 'bunching' behind slow moving HGVs, can increase driver frustration, and in turn increase the likelihood that drivers would exceed the speed limit when the opportunity presents itself or take unnecessary risks. The A9, along with the A99, has a number of accident clusters containing fatal and serious accidents. Speed enforcement measures and carriageway improvements, targeted at the locations where there are safety issues could reduce the number of accidents. These measures would reduce the rate of fatal accidents, which is currently higher than the national average on both the A9 and A99.

Table D3.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Moderate Negative Impact**	Although there is potential for adverse effects on the natural environment, including cultural heritage, as a result of any new infrastructure, it is anticipated that appropriate mitigation measures can be defined as the development of specific measures progress.
Safety:	**Moderate Benefit**	The existing accident rate on the section of A9 between Inverness and Thurso is in line with the national rate for this road type. The existing fatal accident rate on the Inverness to Thurso section of the A9 (0.9 fatal accidents/100MVKm) is slightly higher than the national rate (0.76 fatal accidents/100MVKm). The A99 also has a significantly greater fatal accident rate (2.1 fatal accidents/100MVKm, based on accident data from 2001 to 2005) than the national rate for this road type. Route improvements and speed enforcement measures would reduce the rate of fatal accidents. Physical measures such as the introduction of a climbing lane could significantly reduce accidents as national statistics indicate that the difference between the UK national rate for rural single carriageway roads and rural single carriageway roads with climbing lanes is a reduction of up to 50 per cent.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE)**: The majority of trips (45 per cent) are made between origins and destinations within the corridor, therefore local improvements on the route would benefit a large proportion of trips. The targeted introduction of speed enforcement measures and physical works at locations experiencing safety issues would reduce the number of fatal accidents on those sections. This would result in an economic saving in terms of accident benefits. **Wider Economic Benefits (WEBs):** Improvements would result in more consistent and reliable journey times. This corridor provides the main route to Scrabster, and the ferry link to Orkney, therefore any improvement on this route could also have benefits for Orkney. **Economic Activity and Location Impacts (EALIs)**: Alignment improvements, 2+1 sections and the proposed targeted speed enforcement measures would support the general drive to improve the attractiveness of the A9 and A99.

Integration:	**Neutral**	**Transport Integration**: This intervention would have no effect on public transport integration or ticketing. **Transport and Land Use Integration**: This intervention would not affect the need to travel. Although a degree of journey time savings would occur it is not considered to significantly impact on development opportunities in the area. **Policy Integration:** Improved connections between the rural communities along this corridor, would affect rural affairs.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** General upgrades along the route would improve access between rural communities and employment, education and health services. **Comparative Accessibility:** This intervention would not impact on comparative accessibility.

Table D3.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Significant journey time improvements are not forecast; however accident reductions would in turn reduce delays on single carriageway sections, caused by accidents. Physical works could provide more safe overtaking opportunities that could improve journey time reliability.
Reduce Emissions:	**Neutral**	This intervention would have no significant impact on emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	A reduction in accidents would reduce delays along the A9 improving the reliability and subsequently quality of journeys. A reduction in the frequency of disruptions caused by accidents would improve accessibility for land users. This intervention would not impact on affordability.

Table D3.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	Potential road standard improvements, including widening and 2+1 sections would result in reduced safety concerns. The fatal accident rates on both the A9 and the A99 are above the national average for this road type, therefore a reduction in speeding vehicles on the route and improvements that would allow safe overtaking could help to reduce the fatal accident rates to levels closer to the national rate. This intervention would not improve the quality, accessibility And affordability of public transport.
Smarter:	**Neutral**	This intervention would have no significant impact on access to schools, colleges and universities for those living along the corridor.
Wealthier and Fairer:	**Minor Benefit**	A degree of journey time savings would occur due to improved road standards. Delays caused by accidents on the route would be reduced, thus leading to more efficient transfer of goods on the network.
Greener:	**Neutral**	This intervention would not have any impact on emissions or result in any shift from private car to public transport.
Healthier:	**Neutral**	This intervention would not have any impact on promoting healthier forms of transport

Table D3.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No major technical issues are anticipated to arise from this intervention; however design would have to account for conditions along the corridors including terrain and land issues. Ensuring speed enforcement measures do not affect the visual impact of the area would be an issue.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	It is possible that any negative visual impact on the area of natural beauty could cause public objection, however improving safety on the route would be met with a positive response.

Detailed Appraisal	**D3 (Part 2): Targeted Programme of Measures to Reduce Accident Severity on the A9 and A835 between Inverness and Ullapool**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £10m - £50m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10 - £50m ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to reduce fatal and severe accident rates on these routes. This intervention would include measures such as:

- Physical works on the A835 aimed at providing safer overtaking opportunities, local realignments and localised widening of the carriageway.

It is envisaged that individual measures would be delivered in a targeted programme to address identified high severity accident clusters along the routes.

In addition, speed enforcement measures could be considered at appropriate locations.

Summary: Rationale for Selection

The local carriageway realignments and junction improvements are expected to improve road safety on the A835. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes.

The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to a greater compliance with speed limits. Evidence from trials indicates that a reduction in average speed results in significant reductions in accidents and accident severity.

The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.

Table D3.2.1 STPR Objectives (Corridor 2)

STPR Objectives	
STPR Objective 2.1: To reduce the accident, fatal and severe rates to the national average	**2.1: Positive -** The A835 is single carriageway with poor road alignment and limited overtaking opportunities. This, combined with vehicle 'bunching' behind slow moving HGV's, can increase driver frustration, and in turn the likelihood that drivers would exceed the speed limit or take unnecessary risks. Improved road alignment would allow better visibility and overtaking opportunities for drivers, and reduce the likelihood of an accident. In addition, speed enforcement measures could force drivers to adhere to the speed limit, and reduce accident rates and severity rates on the A835, which are currently in excess of the national average for this type of road.

Table D3.2.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Moderate Negative Impact**	This intervention has the potential for impacts on biodiversity, water, geology/soils, landscape and cultural heritage, particularly where any widening of the carriageway is undertaken.
Safety:	**Moderate Benefit**	The accident rate (22.2 P.I.A./100MVKm) and fatal accident rate (1.2 fatal accidents/100MVKm) are both higher than the national accident and fatal accident rates for non built-up A class roads in Scotland of 15.5 P.I.A./100MVKm and 0.76 fatal accidents/100MVKm, respectively. A number of accident clusters were identified on the route, containing fatal and serious accidents. Potential route improvements and reducing the number of speeding drivers on these sections could reduce the number of accidents, and would reduce the severity of them if they do occur. Speed enforcement measures could force drivers to adhere to the speed limit, which may in turn reduce the rate of fatal accidents. For example national statistics indicate that the difference between the UK national rate for rural single carriageway roads and rural single carriageway roads with climbing lanes is a reduction by up to 50 per cent.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE)**: Physical measures such as realignment and 2+1 sections would provide both accident and travel time savings due to reduced delays caused by accidents. This would also result in an economic saving in terms of accident benefits. Targeted introduction of speed enforcement measures, at locations where speeding has been identified as contributing to safety issues, could reduce the number of fatal accidents on those sections. **Wider Economic Benefits (WEBs):** Improvements would result in more consistent and reliable journey times as the high accident rate contributes to substantial delays when accidents occur. This would improve links between Inverness and Ullapool (and onto Stornoway) thus benefiting a wide network. **Economic Activity and Land Use Impacts (EALIs)**: The intervention would support the general drive to improve the attractiveness of the A9 and A835 between Inverness and Ullapool.
Integration:	**Neutral**	**Transport Integration**: This intervention would have no effect on public transport integration and ticketing. **Transport and Land Use Integration**: This intervention would not affect the need to travel. A minor improvement in strategic journey times on the A835 would not significantly impact on development opportunities in the area. **Policy Integration**: Any improvement in connections between the rural communities along the corridor, would affect rural affairs.

Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** General upgrades along the route would improve access between rural communities and employment, education and health services. **Comparative Accessibility:** This intervention would not impact on comparative accessibility.

Table D3.2.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Improved alignment and overtaking opportunities, along with reduced delays caused by accidents, would improve journey times and improve connections with other modes of travel at both Ullapool and Inverness. Physical works could provide more safe overtaking opportunities which could improve journey time reliability.
Reduce Emissions:	**Neutral**	There would be little significant impacts on emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Improvements such as widening and realignment could reduce driver frustration caused by slower moving vehicles, as it would provide safer overtaking opportunities, therefore improving the quality of the journey along the corridor. Improvements to the A835 would improve access to the Ullapool ferry terminal for Western Isles. This intervention would not impact on affordability.

Table D3.2.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	Physical measures such as widened and realigned sections would result in improved safety. A reduction in speeding vehicles would also reduce the severity of accidents on the improved sections. This intervention would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no impact on access to schools, colleges and universities for those living along the corridor.
Wealthier and Fairer:	**Minor Benefit**	This intervention would not significantly improve journey times; however delays caused by accidents on the route may be reduced, thus leading to more efficient transfer of goods on the network.
Greener:	**Neutral**	This intervention would not have any impact on emissions or result in any shift from private car to public transport.
Healthier:	**Neutral**	This intervention of works would not have any impact on promoting healthier forms of transport or access to health services.

Table D3.2.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No major technical issues are anticipated to arise from this intervention; however design would have to account for conditions along the corridors including terrain and land issues. Ensuring speed enforcement measures do not affect the visual impact of the area would be an issue.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors.
Public:	It is possible that any negative visual impact on the area of natural beauty may cause public objection, however improving safety on the route would be met with a positive response.

Detailed Appraisal D3 (Part 3): Targeted Programme of Measures to Reduce Accident Severity between Inverness, Fort William, Mallaig and Skye (A82, A87, A830, A887)		
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	£50m - 100m
	Annual Revenue Support Present	-
	Value of Cost to Gvt	£10m - £50m
	BCR/PVB	N/A

Summary Impact on STAG Criteria	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to reduce the accident rate on these routes. This intervention would include measures such as:

- Physical works aimed at providing safer overtaking opportunities, hard strip provision for agricultural vehicles, local realignments and junction improvements.

It is envisaged that individual elements would be delivered in a targeted programme to address identified accident clusters.

In addition, speed enforcement measures could be considered at appropriate locations.

Summary: Rationale for Selection

Local carriageway realignments and junction improvements are expected to improve road safety on the routes. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes.

The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to a greater compliance with speed limits. Evidence from trials elsewhere indicates that a reduction in average speed results in significant reductions in accidents and accident severity.

The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.

Table D3.3.1 STPR Objectives (Corridor 3)

STPR Objectives	
STPR Objective 3.1: Reduce the accident rate to current national average without adversely impacting on accident severity.	**3.1: Positive –** Potential junction improvements would provide safer access to the trunk road and local realignment of pinch points, lay-bys, hard strips and provision of climbing lanes on the route would provide opportunities for safer overtaking of slower moving vehicles, especially agricultural vehicles and tourists. Provision of speed enforcement measures could reduce the number of speeding vehicles, which could result in a reduction in fatal and serious accidents.

Table D3.3.2 STAG Criteria

STAG Criteria		
Objective:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Moderate Negative Impact**	There is the potential for impacts on biodiversity, noise, water, soils/geology, cultural heritage and landscape. However, these impacts need to be identified and mitigated at the detailed project design stage.
Safety:	**Moderate Benefit**	Infrastructure improvements on sections of the trunk road network within this corridor would result in reductions to the accident rates. The accident rates (ranging from 21.3 to 30.4 P.I.A./100MVKm) on all trunk roads (A82, A87, A887, and A830) within the corridor are significantly higher than the national rates for the road type of 15.5 P.I.A./100MVKm. For example national statistics indicate that the difference between the UK national rate for rural single carriageway roads and rural single carriageway roads with climbing lanes is a reduction of up to 50 per cent. The fatal accident rates on the A82 between Fort William and Inverness (1.3 fatal accidents/100MVKm) and the A887 (2.36 fatal accidents/100MVKm, based on accidents between 2001 and 2005) are both significantly higher than the national fatal accident rates for these road types (0.76 fatal accidents/100MVKm). Although the short length of the A887 contributes to this high rate, the widening and realignment intervention on this corridor would contribute to reducing these rates. In addition, speed enforcement measures may in turn reduce the number of severe accidents as speed contributes to the severity of accidents. A number of accident clusters were identified on the route, containing fatal and serious accidents. Therefore, targeting the speed enforcement measures at these locations may reduce the number of accidents and could reduce their severity if they do occur.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** Around 44 per cent of trips are wholly within this corridor and 42 per cent of trips are between the corridor and elsewhere, with most of this traffic routing through Inverness. This indicates the importance of maintaining and improving sections of the A82 between Fort William and Inverness, as it impacts on the vast majority of trips in the corridor. Potential route improvements would result in a degree of travel time savings, which would benefit all road users including public transport and freight vehicles. Introduction of speed enforcement measures, at targeted safety locations, could result in economic savings in terms of accident benefits. **Wider Economic Benefits (WEBs):** Improvements would result in more consistent and reliable journey times. This corridor provides the main route to Skye and ferry links to the Western Isles, therefore any improvement, could also benefit development on the islands. **Economic Activity and Location Impacts (EALIs)**: This intervention would support the general drive to improve the attractiveness of the trunk road network with resultant economic benefits from reduced closures and casualties.
Integration:	**Neutral**	**Transport Integration**: This intervention would have no effect on public transport integration or ticketing.

		Transport and Land Use Integration: This intervention would not affect the need to travel. A minor improvement in strategic journey times on the A82 would not significantly impact on development opportunities in the area. **Policy Integration**: This intervention would not affect policies relating to disability, rural affairs or social inclusion.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** General upgrades along the route would improve access between rural communities and employment, education and health services. End to end trips between Inverness and the more remote areas, such as the Western Isles, would also be improved due to journey time and reliability improvements on the route. **Comparative Accessibility:** This intervention would not impact on comparative accessibility.

Table D3.3.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Potential junction improvements, realignment of pinch points, climbing lanes, hard strips and lay-bys would result in a reduction in travel time and therefore would improve connection between Inverness and Fort William and with other modes of travel in the corridor.
Reduce Emissions:	**Neutral**	There would be no significant impact on emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would increase the quality of road standard at a number of locations along the route. Proposed 2+1 sections would allow more opportunities for safe overtaking which would lead to a reduction in driver frustration. Accessibility would be improved as rural communities within the corridor would have improved access to the trunk road network. This intervention would not impact on affordability.

Table D3.3.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	Physical improvements such as widened, realigned and 2+1 sections of road would lead to improvements in road safety as the average accident rates for these types of road are lower than for a rural single carriageway road. A reduction in speeding vehicles would also reduce the severity of accidents on the improved sections. This intervention would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no impact on access to education and training opportunities for those living along the corridor.
Wealthier and Fairer:	**Minor Benefit**	A degree of journey time savings would occur due to improved road standards. Delays caused by accidents on the route may be reduced, thus leading to more efficient transfer of goods on the network.
Greener:	**Neutral**	This intervention would not have any impact on emissions or result in any shifts from private car to public transport.
Healthier:	**Neutral**	This intervention would not have any impact on promoting healthier forms of transport or access to health services.

Table D3.3.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No major technical issues are anticipated to arise from this intervention; however design would have to account for conditions along the corridors including terrain and land issues. Ensuring speed enforcement measures do not affect the visual impact of the area would be an issue.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors
Public:	It is possible that any negative visual impact on areas of natural beauty may cause public objection. However, improving safety on the route is likely to be met with a positive response.

Detailed Appraisal	**D3 (Part 4): Targeted Programme of Measures to Reduce Accident Severity on the A96 between Aberdeen and Inverness**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £50m - £100m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10m - £50m ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to reduce the accident and severity rates on this route. This intervention would include measures such as:

- Physical works aimed at providing safer overtaking opportunities such as: 2+1 sections; climbing lanes and overtaking lay-bys; hard strip provision for agricultural vehicles; local realignments and junction improvements.

It is envisaged that individual elements would be delivered in a targeted programme to address identified accident clusters and locations of accident severity.

In addition, speed enforcement measures could be considered at appropriate locations.

Summary: Rationale for Selection

The local realignment of the A96 and junction improvements are expected to improve safety. Evidence suggests that the introduction of climbing lanes can result in a significant reduction in accidents - of up to 50 per cent - on single carriageway routes.

The introduction of appropriate speed enforcement measures could also result in the safer operation of the road network, due to a greater compliance with speed limits. Evidence from trials elsewhere indicates that a reduction in average speed results in significant reductions in accidents and accident severity.

The introduction of these measures is likely to bring the proportion of serious and fatal accidents closer to the national rate.

Table D3.4.1 STPR Objectives

STPR Objectives	
STPR Objective 4.1: To improve connectivity, particularly by public transport between Inverness City Centre and the growth area to the east, including Inverness Airport.	**4.1: Neutral –** The A96 to the east of Inverness is currently single carriageway and suffers congestion in peak periods, especially on the approaches to Raigmore Interchange. This congestion is forecast to increase, extending back to Inverness Airport and beyond in the future, affecting all road users including public transport services. The improvements within this intervention are to the east of Nairn; therefore this intervention alone would not reduce the congestion to the east of Inverness. Provision of speed enforcement measures along the length of the A96 would not be anticipated to assist in the growth areas to the east of Inverness.
STPR Objective 4.2: To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.	**4.2: Positive –** The carriageway improvements would result in improved journey times between the two cities as the 2+1 sections would provide opportunities for overtaking slower moving vehicles. Delays and congestion currently experienced on approaches to Raigmore junction, Inverness, would not to be alleviated; however, journey times along the remainder of the corridor would be reduced due to the proposals. Although it is not considered that any significant improvement in journey times would occur due to the introduction of speed enforcement measures, a recent study indicated that traffic smoothing, due to speed limit compliance, may result in improved journey times. The journey time improvements would affect all road users, including bus services. However, this may not result in any modal shift from car to bus. Along the length of the corridor (around 160km), rail and car journey times are comparable, but bus times are not competitive with car or rail. Comparison between bus and rail would improve; however, this intervention would not provide an increased opportunity to travel by public transport between Inverness and Aberdeen, as cars would benefit from the intervention.
STPR Objective 4.3: Reduce the accident rate and severity rate to current national average.	**4.3: Positive -** All the elements of this intervention would improve the safety of the road. The provision of speed enforcement measures along sections of the A96 is anticipated to improve safety and reduce accidents, particularly those involving speeding motorists. However, the measures would not directly influence accidents which occur on at-grade junctions or as a result of factors other than speed.

Table D3.4.2 STAG Criteria

STAG Criteria		
Critical:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Moderate Negative Impact**	This intervention has the potential for impacts on biodiversity, water, landscape, soils / geology and cultural heritage (there are a number of Scheduled Monuments close to the route). However, the exact location of the road improvements are not known in detail at this stage and so impacts are uncertain. Any potential impacts would need to be considered at the project design stage.
Safety:	**Major Benefit**	Potential alignment improvements and widening, in addition to 2+1 sections, would provide safer overtaking opportunities, which would contribute to improved safety on the A96. Route improvements and speed enforcement measures could reduce the rate of accidents, which is currently higher than the national average (32.3 PIA/100MVKm compared to 15.5 PIA/100MVKm). DMRB indicates that the difference between the UK national rate for rural single carriageway roads and rural single carriageway roads with climbing lanes is a reduction of approximately 50 per cent. A number of accident clusters were identified on the route, containing fatal and serious accidents. Reducing vehicle speeds on these sections would reduce the number of accidents, and also the severity of them if they do occur.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** Around 60 per cent of trips are wholly within this corridor, highlighting the importance of routes within it. In addition, 9 per cent and 15 per cent of trips are between the corridor and Inverness and Aberdeen respectively and 16 per cent of trips are between Inverness and Aberdeen. This indicates the importance of maintaining and improving the connection between the two cities. Route improvements would result in a degree of travel time savings, which would benefit all road users including bus and freight vehicles. Introduction of speed enforcement measures, at targeted safety locations, would result in economic savings in terms of accident benefits. **Wider Economic Benefits (WEBs):** Improvements would result in more consistent and reliable journey times. This corridor links Inverness and Aberdeen, therefore any improvements would help development opportunities in each city. **Economic Activity and Location Impacts (EALIs):** This intervention would support the general drive to improve safety on the trunk road network and increase the attractiveness of this route.
Integration:	**Neutral**	**Transport Integration:** This intervention would have no effect on public transport integration or ticketing. **Transport and Land Use Integration:** This intervention would not affect the need to travel. A minor improvement in strategic journey times on the A96 is not considered to significantly impact on development opportunities in the area. It is felt that, to affect development, this intervention would need to include improvements between Nairn and Inverness and could coincide with Intervention D16 (Upgrading A96 to Dual Carriageway between Inverness and Nairn) which is targeted to aid the development of areas to the east of Inverness. **Policy Integration:** Improved connections between the rural communities along this corridor would support policies relating to rural affairs.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** General upgrades along the route would improve access between rural communities and employment, education and health services. End to end trips between Inverness and Aberdeen, would also be improved due to journey time and reliability improvements on the route.

		Comparative Accessibility: This intervention would not impact on comparative accessibility.

Table D3.4.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	This intervention would improve carriage provision and create safer opportunities for overtaking slower moving vehicles on the A96. This could result in a reduction in journey times and help to improve connections with other modes of travel in the corridor.
Reduce Emissions:	**Neutral**	This intervention would have little significant impact on emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would increase the quality of road standard at a number of locations along the route. Proposed 2+1 sections would allow more opportunities for safe overtaking which would lead to a reduction in driver frustration. Accessibility would be improved as rural communities within the corridor would have improved access to the trunk road network. This intervention would not impact on affordability.

Table D3.4.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	The widened, realigned and 2+1 sections of road would lead to improvements in road safety as the default accident rates for these types of road are lower than for a rural single carriageway road. A reduction in speeding vehicles would also reduce the severity of accidents on the improved sections. The intervention would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no impact on education and training opportunities for those living along the corridor.
Wealthier and Fairer:	**Minor Benefit**	A degree of journey time savings would occur due to improved road standards. Delays caused by accidents on the route may be reduced, thus leading to more efficient transfer of goods on the network.
Greener:	**Neutral**	This intervention would not have any impact on emissions or result in any modal shift from car to public transport.
Healthier:	**Neutral**	This intervention would not have any impact on promoting healthier forms of transport or access to health services.

Table D3.4.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No major technical issues are anticipated to arise from this intervention; however design would have to account for conditions along the corridors including terrain and land issues. Ensuring speed enforcement measures do not affect the visual impact of the area would be an issue.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors.
Public:	The safety issues and the problems with overtaking on the route are well known. This is an important intervention to the economy of Inverness and the surrounding area, with significant public interest at both local and regional levels.

Detailed Appraisal	**D3 (Part 5): Route Management between: Aberdeen and North East Scotland (A90), Edinburgh and Dundee (A92), Ayrshire and Dumfries (A76), Edinburgh and North West England (A68/A7/A702), Edinburgh and North East England (A1), the A83, A85, A828**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50m - £100m ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

These routes generally perform well, and as such no objectives have been established to address corridor specific issues.

However, there is a need to maintain and operate these safely in the context of a route management strategy. This intervention would include a variety of localised improvements that would be undertaken in tandem with, and driven by, the trunk road maintenance contracts.

Summary: Rationale for Selection

There are a number of corridors where no strategic issues relating to network performance have been identified, however there is an ongoing need to maintain and operate the network safely. These route action plans would perform this role.

These interventions would therefore address isolated constraints, and although the immediate benefits would be felt at a more local level, for example through isolated junction improvements, the programme of works would contribute towards the need to maintain and safely operate the network.

Table D3.5.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1: Slightly Positive** - A number of the managed corridors provide links for 'inter-urban' journeys. Route improvements on the corridors between Edinburgh and Dundee, and Edinburgh and the north of England could reduce 'inter-urban' journey times between the Central Belt and cities in other parts of the UK.
National Objective 2: To reduce inter-urban journey time on public transport.	**2: Slightly Positive** – Road improvements on the corridors linking Edinburgh and Dundee, and Edinburgh and the north of England would benefit public transport on each of the corridors, with reduced journey times improving bus services.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3: Slightly Positive** – The general improvements on each of the corridors would not specifically be aimed at directly promoting journey time reductions for prioritised vehicles; however road improvements on each of the corridors would result in all road users experiencing a degree of reduction in journey times.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4: Slightly Positive** – The general improvements on each of the corridors would not directly promote journey time reductions between the Central Belt and Aberdeen/Inverness; however road improvements would reduce journey times on each of the corridors.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5: Neutral** – Although journey time benefits are expected, the intervention would not significantly address this objective.
National Objective 6: Support the development and implementation of the emerging national development interventions.	**6: Neutral** – This intervention is associated with the managed corridors and is not considered to impact on supporting the development and implementation of the emerging national development interventions.
National Objective 7: Reduce CO_2e emissions per person km	**7: Neutral -** Although there would be an improvement in journey time reliability it is not considered that this would result in an increase in car usage and therefore have any impact on CO_2 e emissions.
National Objective 8: Stabilise total CO_2e emissions	**8: Neutral –** This intervention would not have any impact on stabilising CO_2e emissions.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging climate change bill.	**9: Neutral -** This intervention would not result in a reduction in CO_2e emissions.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10: Positive** – Infrastructure improvements such as 2+1, widening and realigned sections would assist in reducing accident and severity rates on the managed corridors. Provision of safer overtaking opportunities and improved access to the trunk roads via junction improvements would result in a reduction in the number of severe accidents on these sections.
National Objective 11: To promote seamless travel.	**11: Neutral** – This intervention would not have any impact on promoting seamless travel.
	12: Neutral – It is not considered that this intervention would improve the competitiveness of public transport

National Objective 12: Improve the competitiveness of public transport relative to the car. National Objective 13: To improve overall perceptions of public transport.	relative to the car as any infrastructure improvements would improve journey times for all road users. **13. Neutral** – It is possible that reductions in journey times may result in slightly improved perceptions of bus services.

Table D3.5.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	Implementation of route management on peripheral routes would not require any substantial new infrastructure or result in any physical effects. Therefore the effect on landscape, biodiversity and cultural heritage are considered to be neutral.
Safety:	**Minor Benefit**	The A90 Aberdeen to northeast Scotland (19.3 P.I.A./100MVkm), and A7 between Gretna and Galashiels (19 P.I.A./100MVkm) both have rates above the national rate of 15.5 P.I.A./100MVkm). In addition, based on accident data from 2001 to 2005, the A83, A85 and A828 all have significantly higher accident rates than the national rate. A number of improvements, such as road widening and 2+1 sections could result in accident rate reductions, as national statistics indicate that wide rural single carriageways and those with climbing lanes have a lower accident rate than standard 7.3m rural single carriageways. Fatal accident rates on the A90 Aberdeen to Fraserburgh, A83 and A85 are all significantly higher than the national rate (0.76 fatal accidents/100MVkm), with rates of 1.2, 1.1 and 2.4 fatal accidents/100MVkm respectively. Potential improvements such as widening and the introduction of speed enforcement measures at specific locations would bring these rates closer to the national rate.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** Realignment and 2+1 sections would provide journey time and safety improvements on each of the managed corridors, thus providing both travel time and accident benefits. **Wider Economic Benefits (WEBs):** Improvements would result in more consistent and reliable journey times, as accidents on each of the routes can lead to substantial delays. A number of these roads are key tourist routes with fluctuating flow and trip patterns, therefore safety improvements would benefit a wide range of users. **Economic Activity and Location Impacts (EALIs):** This intervention would support the general drive to improve safety on the trunk road network, and improve the attractiveness of each of these routes.
Integration:	**Neutral**	**Transport Integration:** This intervention would have no effect on public transport integration and ticketing. **Transport and Land Use Integration:** This intervention would not affect the need to travel. Minor improvements in strategic journey times on the various managed corridors would not significantly impact on development opportunities in the areas. **Policy Integration:** This intervention would not affect policies related to disability, however may improve connections between the rural communities along these corridors, thus affecting rural affairs.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** This intervention would improve accessibility on each of the routes as the intervention could include junction improvements which would provide easier access to the trunk road network. **Comparative Accessibility:** This intervention would not impact on comparative accessibility.

Table D3.5.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Climbing lanes and realigned sections at various locations would provide additional overtaking opportunities thus reducing the delay caused by slow moving vehicles. In addition to reduced journey times, reducing the number of accidents on the routes would result in improved reliability. Connections with other modes would be improved as a result.
Reduce Emissions:	**Neutral**	This intervention would not have a significant impact on emissions.
Improve Quality, Accessibility and Affordability:	**Neutral**	This intervention would increase the quality of road standard at a number of locations along the routes. Proposed 2+1 sections would allow safer overtaking opportunities, which would lead to a reduction in driver frustration. Accessibility would be improved as rural communities within the corridors would have improved access to the trunk road network, via any junction improvement. This intervention would not impact on affordability.

Table D3.5.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	This intervention would result in safer sections on the trunk road network, due to widened, realigned and 2+1 sections. Based on national road classification rates, typical rural single carriageway roads have a higher accident rate than widened single carriageway roads and 2+1 sections of rural roads. The improvements would help to bring those corridors with higher than average accident rates, closer to the national rates. It would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no impact on access to schools, colleges and universities for those living along the corridor.
Wealthier and Fairer:	**Minor Benefit**	The measures comprised in this intervention would result in a degree of journey time savings, but would not significantly improve connections across Scotland. However, this intervention would result in more reliable journey times by generally upgrading a number of sections of the trunk road network, thus leading to more efficient transfer of goods on the network.
Greener:	**Neutral**	This intervention would not have any impact on emissions or result in any shift from car to public transport.
Healthier:	**Neutral**	This intervention would not have any impact on promoting healthier forms of transport or access to health services.

Table D3.5.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No major technical issues are anticipated to arise from this intervention; however design would have to account for conditions along the rural corridors including terrain and land issues.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors.
Public:	It is considered that route improvements aimed at safety and improving journey times would be generally accepted by the public.

Detailed Appraisal D4: Implement Targeted Programme of Measures to improve links to the Loch Ryan port facilities from the Trans European Network		
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	£10m - £50m
	Annual Revenue Support Present	-
	Value of Cost to Gvt	£10m - £50m
	BCR/PVB	N/A

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to have efficient and effective linkage to the port facilities at Loch Ryan. This intervention would include measures such as:

- Physical works aimed at providing safer overtaking opportunities such as 2+1 sections, climbing lanes, overtaking lay-bys and improvements to the operation of junctions around Dumfries;
- Improvements to the strategic access around Stranraer (A751); and
- Driver information System

It is envisaged that individual elements would be delivered in a targeted programme to improve journey time reliability for travel to the port facilities at Loch Ryan.

Summary: Rationale for Selection

The physical aspects of this intervention would improve journey time reliability, by addressing additional constraints along the route. This would result in efficiency gains for freight traffic travelling to and from the Loch Ryan ports. In addition the physical aspects would be complemented by the introduction of intelligent transport systems on the A75, to provide driver information, which would therefore provide a significant contribution towards the objective of providing efficient and effective links to the ports.

Table D4.1.1 STPR Objectives

STPR Objectives	
STPR Objective 16.1: To ensure efficient and effective freight access to the port facilities at Loch Ryan.	**16.1: Strongly Positive** - The proposed junction improvements, realignment interventions and 2+1 provisions would increase the road standards within the corridor resulting in improved journey time reliability and efficiency gains for freight traffic. The introduction of Intelligent Transport Systems (ITS) would improve information for drivers on the route.
STPR Objective 16.2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**16.2: Positive -** The A75 is single carriageway with a number of sections containing poor road alignment and limited overtaking opportunities. Vehicle 'bunching' behind slow moving HGVs and coaches can increase driver frustration, and in turn the likelihood that drivers may make dangerous overtaking manoeuvres. This intervention would increase the safety within the corridor. Improved junction access to the trunk road network could reduce the likelihood of accidents occurring, thus reducing the accident rate on the route. Realignment and 2+1 sections would also allow safer overtaking opportunities thus reducing the likelihood of severe accidents occurring at these locations. Speed enforcement cameras would reduce the number of accidents where speeding is identified as a causation factor. This would reduce accident rates and severe accident rates on the A75.

Table D4.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Moderate Negative Impact**	This intervention has the potential to impact on biodiversity as several Special Protection Areas, Special Areas of Conservation, Sites of Specific Scientific Interest and Ramsar sites are in close proximity to the road. Further potential impacts are possible on water, geology / soils, landscape and cultural heritage, particularly where any widening of the carriageway is undertaken. These detailed impacts are uncertain at this stage and any identified will need to be mitigated for at the project design stage.
Safety:	**Minor Benefit**	The existing accident and severity rates on the A75 are in line with the national rate expected on this type of road however clusters were identified at junctions and straight sections. National statistics indicate that the difference between the UK national rate for rural single carriageway roads and rural single carriageway roads with climbing lanes is a reduction by up to 50 per cent. Therefore route improvements and a reduction in the number of speeding vehicles, by introducing speed enforcement measures, would lead to a reduction in accidents.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency:** The proposed improvements in this intervention would result in a degree of travel time savings, which would benefit all road users including the trips which remain within the corridor, which make up 60 per cent of the total trips. Trips made by public transport services and freight vehicles would also benefit. The provision of ITS systems would improve information to drivers and improve access to the ports. Introduction of speed enforcement measures, at targeted safety locations, would result in economic savings in terms of accident benefits. **Wider Economic Benefits (WEBs):** Physical Improvements would result in more consistent and reliable journey times. This corridor is part of the Trans European Network, which was created to assist economic growth and improve the movement of goods, persons and services through the various regions of Europe. Improvements along the A75 would therefore have wider benefits outwith the immediate vicinity of the corridor. **Economic Activity and Location Impacts (EALIs):** This route is important for the continuing development of the Loch Ryan ports at Stranraer and Cairnryan and therefore improvements to journey time reliability and road safety on the main access route to the ports could encourage further investment.
Integration:	**Moderate Benefit**	**Transport Integration:** Increased journey time reliability would improve integration with the ferry services from the Loch Ryan ports. **Transport and Land Use Integration:** This intervention would support the aspirations to further develop the Loch Ryan ports and regenerate Stranraer. **Policy Integration:** This intervention would support the regional economic strategy of Dumfries and Galloway which aims to develop Stranraer and Loch Ryan as a national and European Gateway.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** This intervention would improve accessibility on the route as it would include junction improvements that would provide easier access to the A75. Improved end to end trips between the Loch Ryan port facilities and the M74 would result in improved links to north west England and beyond. **Comparative Accessibility:** This intervention would not impact on comparative accessibility.

Table D4.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	Construction of climbing lane sections, providing safer overtaking opportunities of slower moving vehicles, and other improvements to the A75 would result in journey time reductions. Connections with other modes of travel would be improved as a result of the improved road standards and reduced journey times.
Reduce Emissions:	**Neutral**	This intervention would not have a significant impact on emissions.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention would increase the quality of road standard at a number of locations along the route. Proposed 2+1 sections would allow more safe overtaking opportunities, which would lead to a reduction in driver frustration. Accessibility would be improved as rural communities within the corridor would have improved access to the trunk road network. This intervention would not impact on affordability.

Table D4.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	The widened, realigned and 2+1 sections of road would lead to improvements in road safety as the default accident rates for these types of road are generally lower than for a rural single carriageway road. A reduction in speeding vehicles would also reduce the severity of accidents on the sections involved. This intervention would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no significant impact on access to schools, colleges and universities for those living along the corridor.
Wealthier and Fairer:	**Minor Benefit**	This intervention would improve journey times over the upgraded sections and delays caused by accidents on the route may be reduced, leading to a more efficient transfer of goods on the network.
Greener:	**Neutral**	This intervention would have a minor impact on emissions as vehicle speeds would be more stable. However, the improvements are forecast to be marginal. This intervention would not result in a shift to public transport.
Healthier:	**Neutral**	This intervention would not have any impact on promoting healthier forms of transport or access to healthcare.

Table D4.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with improvements along the A75. Due to the rural nature of much of the corridor, design work would have to take account of the local terrain. Issues such as isolated working would also have to be considered during the construction period. Minimising disruption to the port facilities would be important as they provide important tourist and freight links between Northern Ireland and Scotland.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	It is considered that the improvements would be welcomed by regular road users.

Detailed Appraisal	**D5: Targeted Programme of Measures to improve road standards between Glasgow and Oban/Fort William (A82)**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50m - £100m ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to provide a significant improvement in road standard along the A82 and to reduce the accident severity rates on various routes. In addition to a general upgrade of the route, the intervention would include measures such as:

- Carriageway widening at selected locations between Tarbet and Inverarnan;
- Carriageway widening at selected locations between Corran Ferry and Fort William; and
- Physical works such as climbing lanes at Loch Tulla, overtaking lay-bys aimed at providing safer overtaking opportunities and improving journey time reliability and safety targeted measures such as hard strips, junction improvements and local realignment.

It is envisaged that individual elements would be delivered in a targeted programme to address identified accident clusters and points where the routes have significant constraints on achieving consistent journey times.

In addition, speed enforcement measures could be considered at appropriate locations.

Summary: Rationale for Selection

This is a key route for tourism and as such has a high proportion of infrequent users; the provision of a consistently high standard of carriageway would be of particular significance to the improvement of road safety.

The introduction of physical works to provide safer overtaking opportunities, in conjunction with speed enforcement measures, is expected to improve road safety along the route, and reduce both the accident and fatal accident rates closer to the national levels.

The environmental impacts this intervention has on designated sites, valued habitats, protected species and water quality have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D5.1.1 STPR Objectives

STPR Objectives	
STPR Objective 7.1: To provide improved road standards and overtaking opportunities.	**7.1: Strongly Positive** - The proposed junction improvements, realignment interventions and 2+1 provisions would increase the road standards within the corridor. Realignment and 2+1 sections would also allow safer overtaking opportunities which could reduce the number of severe accidents occurring at these locations.
STPR Objective 7.2: To reduce accident severity to the national average.	**7.2: Strongly Positive -** The A82 is single carriageway with a number of sections with poor road alignment, and limited overtaking opportunities. Combined with vehicle 'bunching' behind slow moving HGVs (10 per cent of traffic is HGV on A82), coaches or tourist traffic, this can increase driver frustration, and in turn, the likelihood that drivers may make dangerous overtaking manoeuvres. The proposals would increase the safety within the corridor. Improved junction access to the trunk road network could reduce the likelihood of accidents occurring, thus reducing the accident rate on the route. Realignment and 2+1 sections would also allow safer overtaking opportunities thus reducing the likelihood of severe accidents occurring at these locations. Speed enforcement measures would reduce the number of accidents where speeding is identified as a causation factor. This would reduce accident rates and severe accident rates on the A82.

Table D5.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Moderate Negative impact**	This intervention has the potential for impacts on biodiversity, water, geology / soils, landscape and cultural heritage, particularly where any widening of the carriageway is undertaken. There are a number of Special Areas of Conservation and one. Special Protection Area in the vicinity of the road so there is potential for impacts on designated biodiversity sites. Improvements to the A82 could affect the grade A classified Loch Lomond, Loch Tulla, Loch Lubnaig and Rivers Tay and Teith although this depends on the specific location and extent of the enhancements.
Safety:	**Major Benefit**	The existing accident rate on the Glasgow to Fort William section of the A82 is 22.9 Personal Injury Accidents per 100 million vehicle kilometres (P.I.A./100MVkm), which is higher than the national rate of 15.5 P.I.A./100MVkm. This rate is expected to decrease as the road is improved to allow safer overtaking, and also reducing the number of speeding vehicles on certain sections of the route. National statistics indicate that the difference in accident rates between the UK national rate for rural single carriageway roads and rural single carriageway roads with climbing lanes is a reduction of up to 50 per cent. The fatal accident rate on this same section of the A82 is 3.8 fatal accidents per 100MVKm compared against the national rate of 0.76 fatal accidents per 100MVKm. This is expected to reduce due to both the infrastructure improvements and the reduction of speeding vehicles. A number of accident clusters were identified on straight sections of the road; however by introducing speed enforcement measures on these sections, it is expected that the number of speed related accidents would reduce. Accident clusters were also identified on bends, therefore alignment improvements and widening proposals, in addition to 2+1 sections on the A82 would provide safer overtaking opportunities, which may contribute to improved safety on this section.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** Around 38 per cent of trips on the corridor have an origin or destination in Glasgow, highlighting the importance of providing a safe and reliable road network to one of Scotland's main economic centres. Route improvements would result in a degree of travel time savings, which would benefit all road users including public transport and freight vehicles. Introduction of speed enforcement measures, at targeted safety locations, would result in economic savings in terms of accident benefits. **Wider Economic Benefits (WEBs):** Improvements would result in more consistent and reliable journey times. This corridor is a key tourist route therefore safety improvements would benefit a wide range of users. The intervention would contribute to wider economic benefits for businesses along the corridor and in providing improved links between Fort William and the Central Belt. **Economic Activity and Location Impacts (EALIs):** The proposals would support the general drive to improve safety on the trunk road network, and improve the attractiveness of the A82.
Integration:	**Minor Benefit**	**Transport Integration:** This package would have no significant effect on public transport integration and ticketing. **Transport and Land Use Integration:** This package would not affect the need to travel. Improvements to strategic journey times on the A82 would assist in the development of Fort William, with improved connections between the town and the Central Belt. Studies have indicated that local businesses along the route believe that improvements would have a positive impact on business investment, including attracting new business to the area, particularly in the retail and tourism sectors. **Policy Integration:** This package may improve connections between the rural communities along this corridor, thus affecting rural affairs.

Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** The proposals would improve accessibility on the route as it could include junction improvements which would provide easier access to the A82. End to end trips between the Central Belt and the more remote areas, such as the Western Isles would also be improved due to journey time and reliability improvements on the route. **Comparative Accessibility:** This intervention would not impact on comparative accessibility.

Table D5.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Construction of climbing lane sections would provide safer overtaking opportunities of slower moving vehicles, and other improvements to the A82 would result in journey time improvements. Connections with other modes of travel in the corridor would improve as a result.
Reduce Emissions:	**Neutral**	This intervention would not have a significant impact on emissions.
Improve Quality, Accessibility and Affordability:	**Major Benefit**	The proposals would increase the quality of road standard at a number of locations along the route. Proposed 2+1 sections would allow more safe overtaking opportunities which would lead to a reduction in driver frustration. Accessibility would be improved as rural communities within the corridor would have improved access to the trunk road network. This intervention would not impact on affordability.

Table D5.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	The widened, realigned and 2+1 sections of road would lead to improvements in road safety as the expected accident rates for these types of road are lower than for a rural single carriageway road. A reduction in speeding vehicles would also reduce the severity of accidents on the improved sections. It would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no significant impact on access to schools, colleges and universities for those living along the corridor.
Wealthier and Fairer:	**Minor Benefit**	A degree of journey time savings would occur due to improved road standards. Delays caused by accidents on the route may be reduced, leading to more efficient transfer of goods on the network.
Greener:	**Neutral**	The proposals would have a minor impact on emissions as traffic speeds would be more stable, with less speeding vehicles; however the improvements would not result in any significant shift from car to public transport.
Healthier:	**Neutral**	This intervention would not have any impact on promoting healthier forms of transport or access to health services.

Table D5.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No major technical issues are anticipated to arise from this intervention; however design would have to account for conditions along the corridor including terrain and land issues. Ensuring speed enforcement measures do not affect the visual impact of the area would be an issue. This is particularly important as tourism plays a key role in travel on this corridor.
Operational:	This intervention is considered to be operationally feasible. Although there would be operational issues during construction, there are not expected to be further issues following the completion of the works.
Public:	It is considered that the improvements would be welcomed by regular road users in this area as there has been a significant level of public interest in improvements on the A82 for some time.

Detailed Appraisal	**D6 - Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** Phase 1 £250m - £500m Phase 2 £100m - £250m Phase 3 £100m - £250m
	Annual Revenue Support Present Value of Cost to Gvt -
	BCR/PVB Phase 1 £100 - £250m Phase 1 Estimated BCR of 1.75 - 2.25

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives of improving journey time reliability and journey times for prioritised users. It would involve the introduction of enhanced Intelligent Transport Systems (ITS), principally Active Traffic Management (ATM), on the motorway and trunk road network in Central Scotland:

- The M8;
- The M90 and A90 approaching Edinburgh;
- The A720 around Edinburgh; and
- The M74, M77 and M80 approaching Glasgow.

Phase 1 would consist of variable speed limits, variable message signs, ramp metering at key junctions and average speed enforcement measures as appropriate.

Phase 2 would consist of additional functionality through further provision of ramp metering and hard shoulder running within the existing road space.

Phase 3 would consist of improved functionality through targeted use of the hard shoulder as an additional 'managed lane' for priority vehicles – e.g. High-Occupancy Vehicles (HOVs), buses and, HGVs. In some cases, road widening could be used to generate an additional lane for this purpose.

Summary: Rationale for Selection

The implementation of an Intelligent Transport System (ITS), based on an expansion of the existing capabilities of the Traffic Scotland system, would have significant benefits for the movement of people and goods.

This would contribute to objectives on a number of corridors that link into the urban networks of Edinburgh and Glasgow, and in particular would contribute to the objective to improve the operation of the urban Glasgow motorway network.

This intervention would have moderate environmental benefits by minimising congestion and stationary traffic and safety benefits by reducing the potential for collisions.

This system would also be able to support the operation of the strategic Park-&-Ride / Park-&-Choose intervention by providing opportunities to use the hard shoulder on approach to the urban networks for priority vehicles.

Table D6.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1: Positive -** Improvements to capacity would ultimately help to promote competitive journey times. Introduction of additional Variable Message Signs (VMS) displaying live journey time information would inform road user choice and improve driver confidence. This intervention could improve the efficiency of the strategic road network and at the same time improve journey time reliability.
National Objective 2: To reduce inter-urban journey time on public transport.	**2: Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising the increased road space to the benefit of public transport would further improve the attractiveness of more sustainable forms of travel. The provision of priority lanes would encourage the transfer of single occupancy car users to buses.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3: Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising this increased road space to the benefit of public transport and HOVs would further improve the attractiveness of more sustainable forms of travel, penalising those who do not wish to change. Introducing Variable Speed Limits (VSL) would also contribute towards improving the reliability of journey times by smoothing the flow of traffic at congested times.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres. *(This objective is also relevant to Edinburgh and Corridor 9)*	**4: Positive -** Improvements to capacity would ultimately contribute to reduced journey times between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres. Introduction of additional VMS displaying live journey time information would inform road user choice and improve driver confidence. This intervention of measures could improve the efficiency of the strategic road network and at the same time improve journey time reliability.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote education in need to travel).	**5: Slightly Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution helping to maximise the labour catchment area in city regions (favouring Public Transport and HOVs and balancing with other policy measures that promote reduction in need to travel). Utilising the increased road space to the benefit of public transport would further improve the attractiveness of more sustainable forms of travel, penalising those who do not wish to change. The provision of priority lanes would encourage the transfer of single occupancy car users to buses.
National Objective 6: Support the development and implementation of the emerging national development interventions. *(This objective is also relevant to Edinburgh, Corridor 10, Corridor 13 and Corridor 17).*	**6: Slightly Positive** - This intervention would support the development of national development sites such as Edinburgh and Glasgow Airports and Grangemouth which are all located close to the existing strategic transport network.
National Objective 7: Reduce CO_2e emissions per person km.	**7: Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising this increased road space to the benefit of public transport and HOVs would further improve the attractiveness of more sustainable forms of travel, penalising those who do not wish to change. The provision of priority lanes would encourage the transfer of single occupancy car users to buses and the introduction of VSL would smooth traffic flows. Both of these measures would contribute to a reduction in the CO_2e emissions per person km.
National Objective 8: Stabilise total CO_2e emissions.	**8: Positive -** It is likely that there will be reduced congestion levels on the major road network in Scotland as well as promoting a small modal shift from the car to bus, reducing CO_2e emissions.
National Objective 9: Reduce CO_2 emissions in line with expectations from the emerging	**9: Positive -** There would be reduced congestion levels on the strategic road network in Scotland as well as promoting a small modal shift from the car to bus, reducing CO_2e emissions.

climate change bill.	
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan. *(This objective is also relevant to Edinburgh, Corridor 9, Corridor 10 , Corridor 13, Corridor 15, Corridor 17 and Corridor 18)*	**10: Slightly Positive -** Running on hard shoulders could impact on safety; however this intervention would contribute towards improved road safety. Emergency refuge areas would provide safe places for road users in the event of them breaking down or requiring assistance. Responding to incidents occurring more efficiently should also reduce the potential for secondary incidents thus contributing towards improved road safety.
National Objective 11: To promote seamless travel.	**11: Neutral -** This intervention will not have any significant effect on this objective.
National Objective 12: Improve the competitiveness of public transport relative to the car.	**12: Slightly Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising this increased road space to the benefit of public transport would further improve the attractiveness of more sustainable forms of travel, penalising those who do not wish to change. The provision of priority lanes would encourage the transfer of single occupancy car users to buses thus helping to improve the competitiveness of public transport relative to the car.
National Objective 13: To improve overall perceptions of public transport.	**13: Slightly Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising this increased road space to the benefit of public transport would further improve the attractiveness of more sustainable forms of travel. The provision of priority lanes would encourage the transfer of single occupancy car users to buses thus helping to improve overall perceptions of public transport.
IN ADDITION TO THE NATIONAL OBJECTIVES ABOVE THIS INTERVENTION WOULD ALSO POSITIVELY CONTRIBUTE TO THE FOLLOWING SELECTED URBAN NETWORK AND CORRIDOR OBJECTIVES:	
STPR Objective Edinburgh 1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	**E1: Positive -** By introducing innovative measures (variable speed limits) on the Edinburgh City Bypass, it is possible that the capacity of the road would be increased so as to prevent the road from reaching saturation point. This could help maintain the 60-minute commutable labour market area around Edinburgh by reducing delays and congestion on the main route around the city.
STPR Objective Edinburgh 2: To enhance public transport interchange opportunities, where feasible to do so.	**E2: Slightly Positive -** Priority and greater road space for public transport could improve connections to public transport interchanges.
STPR Objective Edinburgh 3: To increase public transport capacity and frequency between Fife and Edinburgh.	**E3: Slightly Positive -** ITS and ATM would assist in providing opportunity to improve public transport connections between Fife and Edinburgh.
STPR Objective 9.1 (Glasgow to Perth): To address current and forecast rail overcrowding into Glasgow;	**9.1: Slightly Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising this increased road space to the benefit of public transport would further improve the attractiveness of more sustainable forms of travel. The provision of priority lanes would encourage the transfer of single occupancy car users to buses thus helping to introduce an alternative mode of transport to rail and helping to address current and forecast rail overcrowding into Glasgow**.**

STPR Objective 9.2 (Glasgow to Perth): To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.	**9.2: Positive -** This intervention would improve the efficiency of the strategic road network and at the same time improve journey time efficiency and reliability of the operation for the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles. The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising this increased road space to the benefit of priority vehicles would further improve the attractiveness of more sustainable forms of travel. The provision of priority lanes would encourage the transfer of single occupancy car users to buses and HOVs.
STPR Objective 10.1 (Edinburgh to Stirling): To improve access to Grangemouth port and freight hub.	**10.1: Neutral -** This intervention will not have any significant effect on this objective.
STPR Objective 10.2 (Edinburgh to Stirling): To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.	**10.2: Positive -** The provision of an actively managed hard shoulder improves existing capacity and lane distribution. Utilising this increased road space to the benefit of priority vehicles would further improve the attractiveness of more sustainable forms of travel. The provision of priority lanes would help buses avoid increasing delays from the forecast increase in congestion in and around Edinburgh.
STPR Objective 13.1(Glasgow to Edinburgh): To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.	**13.1: Positive -** Improvements to capacity would ultimately contribute to reduced journey times between Edinburgh and Glasgow primarily to allow business to achieve an effective working day between these centres. Introduction of additional VMS displaying live journey time information would inform road user choice and improve driver confidence. Giving priority to buses, and other priority vehicles, promotes sustainable travel by encouraging people to car share or take the bus, thus helping to promote efficient and effective transport links.
STPR Objective 13.2 (Glasgow to Edinburgh): To make best use of the available road space and better manage peak demand.	**13.2: Positive -** The provision of an actively managed hard shoulder would improve existing capacity and lane distribution. Utilising this increased road space to the benefit of priority vehicles would further improve the attractiveness of more sustainable forms of travel. Introduction of additional VMS displaying live journey time information would inform road user choice and improve driver confidence.
STPR Objective 13.3 (Glasgow to Edinburgh): To increase public transport capacity and frequency between Livingston and Edinburgh.	**13.3: Slightly Positive -** The provision of priority lanes would help buses avoid increasing delays from the forecast increase in congestion in and around Edinburgh ensuring journey times become more reliable.
STPR Objective 13.4 (Glasgow to Edinburgh): To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.	**13.4: Slightly Positive -** Utilising increased road space to the benefit of public transport and High Occupancy Vehicles would further improve the attractiveness of more sustainable forms of travel. The provision of priority lanes would encourage the transfer of single occupancy car users to buses and the introduction of VSL would smooth traffic flows. Both of these measures contribute to a reduction in the CO_2e emissions per person km.
STPR Objective 15.1 (Glasgow to Stranraer and southwest): To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.	**15.1: Neutral -** This intervention will not have any significant effect on this objective.
STPR Objective 15.2 (Glasgow to Stranraer and southwest): To ensure efficient and effective freight access to the port facilities at Loch Ryan.	**15.2: Neutral -** This intervention will not have any significant effect on this objective.
STPR Objective 15.3 Glasgow to Stranraer and southwest): To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.	**15.3: Positive -** Introduction of additional VMS displaying live journey time information and strategic incident warnings would inform road user choice, encouraging long distance travellers to reroute around the strategic transport network in adverse conditions thus reducing conflicts with local traffic.
STPR Objective 17.1 (Glasgow to Inverclyde and Islands): To increase capacity and reduce journey times by public transport	**17.1: Slightly Positive -** The provision of priority lanes on A77/M77/M80 would help buses avoid increasing delays from the forecast increase in congestion in and around Glasgow ensuring journey times become more

between Glasgow and Inverclyde. STPR Objective 17.2 (Glasgow to Inverclyde and Islands): To facilitate freight access to Greenock port. STPR Objective 17.3 (Glasgow to Inverclyde and Islands): To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic. STPR Objective 18.1 (Glasgow to northwest England and beyond): To make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction. STPR Objectives 18.2.(Glasgow to northwest England and beyond): To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.	reliable. **17.2: Neutral -** This intervention will not have any significant effect on this objective. **17.3: Positive -** Introduction of additional VMS displaying live journey time information and strategic incident warnings would inform road user choice, encouraging long distance travellers to reroute around the strategic network in adverse conditions thus reducing conflicts with local traffic. **18.1: Slightly Positive -** Utilising increased road space to the benefit of public transport and High Occupancy Vehicles would further improve the attractiveness of more sustainable forms of travel. The provision of priority lanes would encourage the transfer of single occupancy car users to buses and the introduction of VSL would smooth traffic flows. Both of these measures contribute to a reduction in the CO_2e emissions per person km. **18.2: Neutral -** This intervention will not have any significant effect on this objective.

Table D6.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit**	The implementation of a managed motorway network would contribute towards reduced congestion and would have an overall minor positive impact on CO_2e emissions as traffic flow speed is smoothed across the network with benefits to local air quality.
Safety:	**Moderate Benefit**	Implementing a managed motorway network across the Central Belt could significantly reduce the accident rate on the trunk road network. This would reduce the number of accidents occurring in and around Glasgow and Edinburgh especially.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** The implementation of a managed network across the Central Belt would result in travel time savings for those travelling between Glasgow, Edinburgh and the south, especially during peak hours. **Wider Economic Benefits (WEB's):** The implementation of a managed motorway network across the Central Belt could provide the facilities for increased and more reliable movement of goods and people between Glasgow, Edinburgh and the south. Journey times could be reduced, resulting in improved productivity. Furthermore, reduced and more reliable journey times would contribute towards an effective working day . **Economic Activity and Location Impacts (EALIs)**: The implementation of a managed motorway network across the Central Belt is likely to assist in the progression of the development areas throughout the region and improve access to the airport. This is likely to assist in developing both the local economies of Glasgow/Edinburgh as well as improving the national economy. This intervention would have no effect on transport and land-use integration.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention would have no effect on transport integration. **Transport and Land-Use Integration:** The implementation of a managed motorway network, giving priority for high occupancy vehicles and reducing congestion, will assist in the progression of development areas throughout the region. **Policy Integration:** This intervention could have a negative effect on road traffic reduction aspirations.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** This intervention would provide a minor benefit in terms of community accessibility through providing an improved, more reliable public transport system. **Comparative Accessibility:** This intervention would not affect any individual group of people. This intervention could improve public transport priority.

Table D6.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	In providing actively managed road space, journey times and their variability would be reduced. Improved roadside information would inform road user decision making. In turn, this would improve connections for public transport across the network leading to an improved, more reliable service.
Reduce Emissions:	**Moderate Benefit**	The environmental impact of introducing this intervention is minimal compared to other more traditional solutions. The benefits of introducing variable speed limits to smooth traffic flows can contribute towards a reduction in vehicle emissions.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	Improvements in road safety would contribute towards improving the quality of the trunk road network. Benefits of providing improved connectivity for public transport would offer improved accessibility and affordability thus encouraging social inclusion. Encouraging car sharing through introduction of HOV lanes would lead to improved affordability as travel costs can be spread.

Table D6.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger	**Moderate Benefit**	The provision of a Managed Motorway Network (MMN) could result in a significant reduction of the accident rate in the Central Belt. It would not affect the quality, accessibility and affordability of public transport.
Smarter	**Minor Benefit**	This intervention would result in reduced journey times and improved public transport reliability throughout the Central Belt, improving access to further education and opportunities.
Wealthier and Fairer	**Moderate Benefit**	This intervention could increase productivity by reducing the time wasted through encountering unexpected delays on the road. Reduced fuel costs should also contribute towards reduced journey costs. This intervention would support improved development of the surrounding area.
Greener	**Moderate Benefit**	This intervention would largely be delivered within the existing road space and would result in smoother traffic flows which would reduce emissions and fuel consumption. There could also be modal shift to bus travel through improved connections for public transport.
Healthier	**Neutral**	Implementation of a MMN is not considered to have any affect on access to health services. Monitoring of an actively managed hard shoulder would be required to assess the effect on emergency services etc. There could be some modal shift to bus services from cars.

Table D6.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There are some technical risks associated with this intervention. To implement hard shoulder running and variable speed limits regulations may need to be amended to make provision for their introduction. Current regulations state that gantry intervals should be no more than 500 metres apart to implement a 40mph speed limit. Alternatively the intervention for gantries at one kilometre spacing is now under consideration. Although the existing communication network of gantries covers most of the trunk road network in the Central Belt, further investigation may be required to complete the communication loop (M9/M876/M80/A80) to provide a robust system.
Operational:	Careful planning and co-ordination is required and would provide a technical challenge to the construction plan. It would be necessary to provide additional control facilities/environment to monitor the network and provide an appropriate level of resilience while supporting an efficient response to incidents i.e. closure of hard shoulder in event of accident, breakdown etc. Monitoring of an actively managed hard shoulder would be required to assess the effect on emergency services etc. The results of such monitoring could impact on the operation of part of the intervention during its projected life.
Public:	The prevailing congestion levels and safety issues are well known. This is an important intervention to the economy of Glasgow and Edinburgh and the Central Belt, with significant public interest at both local and regional levels. Previous experience in implementing these measures and the subsequent improvements show that they are well received.

Detailed Appraisal	**D7: Further Electrification of the Strategic Rail Network**	
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	Phase 1: £250m - £500m, Phase 2: £250m - £500m, Phase 3: £250m - £500m, Phase 4: £250m - £500m, Phase 5: £250m - £500m
	Annual Revenue Support Present	-
	Value of Cost to Gvt	Phases 1 – 5: Each £100m – £250m
	BCR/PVB	-

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Rail electrification can contribute to emissions reduction by allowing train power to come from more environmentally friendly sources. There are operational benefits compared with diesel powered trains both in terms of reduced journey times and operating costs. It also gives the opportunity for interoperability and more efficient use of rolling stock, particularly in the West of Scotland where running through low level stations is generally restricted to electric rolling stock.

It is envisaged that electrification would be delivered on a phased basis. In the short term, this would include:

- Phase 1 - Committed improvements as part of the Edinburgh to Glasgow improvements, comprising Edinburgh to Glasgow via Falkirk route, Diversion Routes 1 (Haymarket) and 2 (Falkirk Grahamston), and electrification on the route via Cumbernauld and to Dunblane / Alloa; and
- Phase 2 - Electrification of the remaining routes in the Central Belt (Shotts, Whifflet, Paisley Canal, Glasgow North Suburban, East Kilbride and Kilmarnock).

In the longer term, extending into the period beyond STPR, this would include:

- Phase 3 - Electrification of routes between Edinburgh, Perth and Dundee including the Fife Circle;
- Phase 4 - Electrification from Dunblane to Aberdeen; and
- Phase 5 - Electrification from Perth to Inverness

Summary: Rationale for Selection

This intervention supports the Key Strategic Outcome to reduce emissions in pursuit of a Greener Scotland by providing cleaner, more efficient traction for rail services.

Currently 23 per cent of the Scottish rail network is electrified and this intervention would see the expansion of this over the greater part of the network. Electrified services would reduce energy consumption by 15 per cent for inter-urban and 20 per cent for stopping services. There are a number of areas where objectives to reduce emissions would be supported by this intervention.

This intervention would also allow greater flexibility and benefits for the operation of services while electrification would support other rail interventions as part of an overall strategy for 'step-change' performance across parts of the system, particularly in Fife.

Table D7.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1: Positive** - Electrification of the strategic rail network is expected to aid the delivery of competitive, reliable and reduced journey times for inter-urban journeys through improved acceleration and more reliable rolling stock.
National Objective 2: To reduce inter-urban journey time on public transport.	**2: Positive -** Electrification of the strategic rail network is expected to aid the delivery of reduced journey times for inter-urban journeys through improved acceleration of electric powered rolling stock.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3: Neutral -** Rail electrification would improve journey times and journey time reliability on the rail network, which may contribute towards a mode shift from road to rail; however the impact of this on journey times on the trunk road network would be marginal.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4: Slightly Positive** - Electrification of the routes from the Central Belt to Aberdeen/Inverness is expected to have a benefit for journey times through improved acceleration of electric powered rolling stock.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5: Slightly Positive** - Electrification would benefit commuter services into the city regions by reducing journey times, which in turn would help to maximise the labour catchment areas.
National Objective 6: Support the development and implementation of the emerging national development schemes.	**6: Neutral -** This intervention is not expected to have any significant impact upon supporting the development and implementation of the emerging national development interventions.
National Objective 7: Reduce CO_2e emissions per person km.	**7: Positive** - Electrification would help to reduce emissions per person km by replacing diesel powered trains with more efficient electric powered trains.
National Objective 8: Stabilise total CO_2e emissions.	**8: Positive** - Electrification would help to stabilise emissions by replacing diesel powered trains with more efficient electric powered trains.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging climate change bill.	**9: Positive** - Electrification would help to reduce emissions by replacing diesel powered trains with more efficient electric powered trains.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10: Minor Positive -** The primary impact in terms of safety is as a result of modal shift away from road transport, which has higher accident rates. By achieving a reduction in trips on the road network it is anticipated that road accident numbers and severity are likely to decrease with a net benefit in terms of accidents anticipated as a result of the intervention.
National Objective 11: To promote seamless travel.	**11: Slightly Positive** - Electrification would improve interoperability between services as there would be a more uniform fleet of train, allowing for new cross country rail services that are currently unable to operate due to different types of rolling stock/traction.

National Objective 12: Improve the competitiveness of public transport relative to the car. National Objective 13: To improve overall perceptions of public transport.	**12: Positive** - This intervention would improve the competitiveness of public transport by improving journey times through better acceleration, especially on commuter rail services with many stops. **13: Positive** - This intervention would improve the perception of public transport as the public generally perceive electric trains to be cleaner and quieter.

Table D7.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate Benefit/Minor Negative Impact**	Rail electrification reduces NO_2 and PM_{10} emissions per person kilometre travelled by 15 to 20 percent when compared with the use of diesel engines. More efficient rail services are likely to promote modal shift from road to rail thereby reducing the number of private cars on the road and so potentially reducing CO_2e emissions further. It is possible that overhead wires could affect the settings of cultural heritage sites and sensitive landscapes; however, there is not enough detail at this stage to assess the localised impacts.
Safety:	**Minor Benefit**	The primary impact in terms of safety is as a result of modal shift away from road transport, which has higher accident rates. By achieving a reduction in trips on the road network it is anticipated that road accident numbers and severity are likely to decrease with a net benefit in terms of accidents anticipated as a result of the intervention.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** The proposal would improve public transport services across Scotland through reduced journey times and increased connectivity. **Wider Economic Benefits (WEBs):** This intervention would support wider economic benefits through improving public transport provision and accessibility. There would also be benefits for freight operations by providing opportunities to run electrically hauled freight services further into Scotland from destinations in England, and within Scotland itself. **Economic Activity and Location Impacts (EALIs):** Electrification of the rail network would bring benefits to commuter services into the city regions by reducing journey times. In turn, this would have a beneficial impact on the potential opportunities for employment and productivity in these areas.
Integration:	**Minor Benefit**	**Transport Integration**: Integration between rail services for some longer distance services may improve as it would be possible to run through services between routes that currently operate using different types of rolling stock. **Transport and Land-Use Integration**: This intervention would provide more efficient rail links to support employment development with benefits to transport and land-use integration. **Policy Integration**: There would be a positive impact on congestion from reduced car use and emissions. There would be a positive impact on accessibility and social inclusion. This intervention is in line with the policies set out in Scotland's Railways.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** Accessibility would be improved through the possibility of running through services with electric traction that are not currently possible with the current mixture of rolling stock. There are benefits for social inclusion through improved access to jobs by reducing journey times.

		Comparative Accessibility: This intervention would have a positive impact on improving accessibility and social inclusion throughout Scotland.

Table D7.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	There would be a minor benefit in journey times as electric traction tends to have a higher power to weight ratio, allowing better acceleration for journeys with a high frequency of station stops. Connections may also be improved as it would be possible to run through services between routes that currently operate using different types of rolling stock.
Reduce Emissions:	**Moderate Benefit**	Various studies have shown that while it is unclear as to the efficiencies gained in use of electric trains compared to diesel, there is a general reduction in NO_2 and PM10 emissions of around 15-20 per cent per person kilometre travelled. More efficient rail services are likely to promote a modal shift from road to rail, thereby reducing the number of private cars on the road and so potentially further reducing CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	There are operational benefits compared with diesel powered trains both in terms of reduced journey times and operating costs. It also gives the opportunity for interoperability and more efficient use of rolling stock, particularly in the West of Scotland where the low level lines through Glasgow are generally restricted to electric rolling stock. This intervention would not impact on affordability.

Table D7.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	The primary impact in terms of safety is as a result of modal shift away from road transport, which may result in a reduction in accident rates. This intervention would improve the quality of public transport. It would have no effect on accessibility or affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would have a minor benefit towards improving access to higher educational facilities through reducing journey times and improving connectivity across the rail network into the major cities.
Wealthier and Fairer:	**Moderate Benefit**	The proposal would improve journey times, service frequency and journey time reliability, sustaining and promoting economic growth in Scotland.
Greener:	**Moderate Benefit**	Rail electrification has emissions benefits compared with diesel engines and could encourage a modal shift away from the car onto the rail network thereby further reducing transport-related emissions.
Healthier:	**Neutral**	This intervention would not improve access to health services and facilities but would encourage a shift from car to public transport.

Table D7.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	In general, no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise that require increased technical capabilities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	The objective to electrify Scotland's rail network has been in the public domain for some time now through Scotland's Railways. It is generally accepted that this intervention would provide a number of positive benefits to the general public in terms of faster journey times and a reduction in emissions.

Detailed Appraisal	**D8 - Enhancing Rail System Capacity through Targeted Improvements**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m – £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m – £250m ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention is over and above the day-to-day maintenance of the rail network which is the responsibility of Network Rail.

There are parts of the rail network that are operating close to or at capacity during peak periods, with limited or no opportunity for additional services. Much of the existing signalling infrastructure is not fit-for-purpose. This intervention would cover operational and relatively small scale infrastructure measures such as:

- Replacement of Radio Electronic Token Block signalling in the Highland region;
- Provision of additional signal blocks in heavily used parts of the network;
- Replacement of two-aspect signals with three or four aspect signals in heavily used parts of the network;
- Replacement of single lead junctions with double lead junctions as appropriate to improve efficiency; and
- Replacement of low speed junctions and crossovers as appropriate to improve efficiency.

This intervention provides upgrades for rail signalling, as well as track and junction layouts, to reduce headways and allow more trains to use the network.

Summary: Rationale for Selection

This intervention would have the effect of improving operational performance and would also lead to reduced journey times where trains times are currently constrained by limited capacity and a mix of train speeds. These benefits by themselves would encourage some modal shift from car to rail, hence reducing traffic emissions. In many areas of Scotland, additional rail services could contribute towards objectives where localised rail constraints have been identified. This intervention would provide a strategy to systematically address these constraints.

The main benefits of this intervention include:

- Reducing conflict between services;
- Improving efficiency;
- Reducing journey time variability;
- Improving reliability and resilience; and
- Providing room for growth.

Table D8.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote competitive inter-urban journey times.	**1. Positive** – This intervention would address key constraint points on the rail network, particularly isolated speed restrictions, thus improving inter-urban journey times. Addressing conflict areas such as junctions to improve their efficiency would also improve the reliability of journey times.
National Objective 2: To reduce inter-urban journey time on public transport.	**2. Positive** – This intervention would address key constraint points on the rail network, particularly isolated speed restrictions, thus reducing inter-urban journey times. Addressing conflict areas such as junctions, to improve their efficiency, would also improve the reliability of journey times.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3. Neutral –** This intervention would not have any impact on promoting journey time reduction on the trunk road network for prioritised vehicles and users or provide improvements to journey time reliability.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4. Positive** – This intervention would address key constraint points on the rail network, particularly isolated speed restrictions, thus improving inter-urban journey times. Addressing conflict areas such as junctions to improve their efficiency would also improve the reliability of journey times. These measures would assist in achieving an effective working day for those needing to travel between the Central Belt and Aberdeen / Inverness.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5. Positive** – This intervention would allow existing constraints on the busiest sections of line serving urban areas to be addressed, helping to maintain and enhance performance. Of key importance is the contribution of this intervention to allowing additional services to be accommodated through the provision of new train path opportunities by increasing network efficiency. The improved rail journey times would increase the labour catchment area.
National Objective 6: Support the development and implementation of the emerging national development interventions.	**6.Slightly Positive –** By improving journey times and journey time reliability across the rail network, this intervention would help support the development and implementation of the emerging national development interventions at Edinburgh and Glasgow airport and the freight facilities at Grangemouth and Rosyth.
National Objective 7: Reduce CO_2e emissions per person km.	**7. Slightly Positive** – Though the level of impact would be limited, the enhancements would improve system efficiency and so reduce emissions per passenger currently carried. There would also be a modal shift benefit that would accrue from the ability to run improved services.
National Objective 8: Stabilise total CO_2e emissions.	**8. Slightly Positive** – Though the level of impact would be limited, the enhancements would improve system efficiency and so reduce emissions per passenger currently carried. There would also be a modal shift benefit that would accrue from the ability to run improved services.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging Climate Change Bill.	**9. Neutral –** This intervention is not expected to have any significant impact on reducing CO_2e emissions in line with expectations from the emerging Climate Change Bill.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10. Neutral –** The limited modal shift brought about by this intervention would not have a significant impact on the accident rates or severity rates on the trunk road network.

National Objective 11: To promote seamless travel. National Objective 12: Improve the competitiveness of public transport relative to the car. National Objective 13: To improve overall perceptions of public transport.	**11. Neutral –** This intervention is not expected to have any impact on the promotion of seamless travel. **12. Positive** – This intervention would provide improved journey times and greater reliability, thus making rail journeys more competitive. **13. Slightly Positive –** This intervention is expected to have a slightly positive impact on the overall perception of public transport.

Table D8.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	Proposed enhancements to rail capacity would not require substantial land-take or works outside the existing rail network and therefore no detrimental effects upon the natural environment are expected. Potential effects from construction are considered to be temporary, localised and marginal.
Safety:	**Neutral**	This intervention would not have a significant effect on modal shift from car to rail. Thus, any reduction in accidents due to a lower volume of traffic would be marginal.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention would have a positive impact on TEE through reducing journey times and by improving journey time reliability. **Wider Economic Benefits (WEBs):** This intervention would produce wider economic benefits through improved journey time reliability. This would contribute to a more effective working day where travel is required. The improvement in rail capacity and reliability would also be attractive to freight operators and to the businesses they serve. Furthermore, these rail enhancements will benefit the emerging national developments at Edinburgh and Glasgow airports and the freight facilities at Grangemouth and Rosyth, **Economic Activity and Location Impacts (EALIs):** Improvements to the rail network would bring benefits to commuter services into the city regions by reducing journey times. In turn, this would have a beneficial impact on the potential opportunities for employment and productivity in these areas.
Integration:	**Minor Benefit**	**Transport Integration:** Infrastructure improvements would allow timetables to be changed which in turn would allow improvements in the integration between services at key interchange stations. **Transport Land-Use Integration:** This intervention would provide more efficient rail links to support employment development with significant benefits to transport and land-use integration. **Policy Integration:** This intervention is consistent with the policies set out in Scotland's Railways. While it would improve travel for those for whom the car is not an option, it would not have a significant impact on policies related to disability, health, rural affairs or social inclusion.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not improve public transport network coverage; however, it would promote non-motorised trips.

		Comparative Accessibility: No impact.

Table D8.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	The benefits of targeted improvements to the transport network would be to provide minor journey time savings, but more importantly, to improve journey time reliability. Improving journey time reliability will help improve connections by reducing the likelihood of train services being delayed and connections being missed.
Reduce Emissions:	**Neutral**	This intervention would not have any significant impact on reducing emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would improve the quality of public transport by improving journey times and journey time reliability. There would not be any change in the accessibility of rail services or their affordability.

Table D8.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	While this intervention will help to encourage a modest modal shift from car to public transport, any reduction in accident numbers would be marginal. It would improve quality and accessibility of public transport but would have no effect on the affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would have a minor benefit on improving access to education facilities through improved journey times and journey time reliability.
Wealthier and Fairer:	**Moderate Benefit**	Improving journey times and journey time reliability addresses the Scottish Government's objective for a wealthier and fairer Scotland by helping to improve rail travel opportunities for business and leisure. This would also assist in achieving a more effective working day.
Greener:	**Minor Benefit**	This intervention would not have any significant impact on reducing emissions. This intervention would only encourage a modest modal shift to public transport.
Healthier:	**Minor Benefit**	Improving the quality of public transport through improved journey times and journey time reliability will have a benefit by encouraging modal shift from cars to public transport, which in turn will encourage a healthier lifestyle with people walking to and from public transport facilities rather than driving. However, this benefit would be marginal. This intervention may also improve access to healthcare.

Table D8.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	In general, no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise that require increased technical capabilities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	It is considered that the intervention would be generally supported by the public with no significant objections raised.

Detailed Appraisal	**D9: Integrated Ticketing**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £50m - £100m ***Annual Revenue Support Present*** £1m ***Value of Cost to Gvt*** - ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment					■		
Safety				■			
Economy						■	
Integration							■
Accessibility and Social Inclusion						■	

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention involves the development of a national, integrated ticketing system for all modes of public transport and would support the objectives to promote seamless travel, improve the competitiveness of public transport and improve overall perception of public transport.

It is likely that this would be delivered through smartcard technology, similar to schemes operating in London and other European cities, but probably using the ITSO standard (Integrated Transport Smartcard Organisation). The card would allow interoperability across different public transport services over all of Scotland, and would provide a robust, secure system for revenue allocation to operators.

Such a system would require investment in fixed validation equipment at terminals and on buses/trams, sales facilities and smartcards and back office systems to undertake revenue allocation and provide management information. Further detailed consideration would be required to determine the type of product used.

Summary: Rationale for selection

Integrated ticketing is not an end in itself but a means of achieving the wider policy objectives of the Scottish Government.

This intervention would provide greater integration and use of public transport as a real alternative to the car, in line with Scottish Government Key Strategic Outcomes. This intervention also offers the potential to reduce boarding times on bus services, since there would be a reduced requirement for drivers to sell tickets. Evidence suggests that upwards of 80 per cent of bus journeys in London are now made using a smartcard; this may be largely due to significant cost savings to the users of the card.

From an environmental stand point, this intervention is expected to have a small positive impact. However, taken together with other proposed interventions there is the potential to reduce the overall level of emissions by encouraging car drivers to use public transport.

This intervention could be taken forward in conjunction with those addressing service enhancements and the provision of strategic Park-&-Ride facilities.

Table D9.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1: Slightly Positive –** The provisions made within this intervention would improve interchange and provide a slight improvement in promoting competitive inter-urban journey times. An integrated ticketing intervention could therefore encourage modal shift from car to public transport thus helping to reduce traffic on major roads.
National Objective 2: To reduce inter-urban journey time on public transport.	**2: Slightly Positive –** Providing a national integrated ticketing system would help to reduce inter-urban journey time on public transport. This intervention will help to improve interchange between different modes of transport, thus helping to improve journey times by promoting more seamless travel options. It would also provide high quality data to assist in efficient service planning.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3: Slightly Positive –** The provisions made within this intervention would not have a significant effect on promoting journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus). However, there may be some improvements to journey time reliability, due to better data, assisting in more efficient scheduling of public transport. An integrated ticketing intervention could encourage modal shift from car to public transport, thus helping to reduce traffic on major roads.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4: Slightly Positive –** Providing a national integrated ticketing system could help to promote public transport journey time reductions between the Central Belt and Aberdeen/Inverness, primarily to allow business to achieve an effective working day between these centres. This intervention will help to improve interchange between different modes of transport, thus helping to improve journey times by promoting more seamless travel options. Improved journey data could also assist in more efficient scheduling of public transport.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5: Positive –** A national integrated ticketing system will help to maximise the labour catchment area in city regions by helping to improve interchange between different modes of transport across Scotland. This intervention will also help improve bus journey times by reducing dwell times at stops when passengers board. The provisions highlighted within this intervention will help to improve public transport accessibility thus making it more attractive and helping to improve travel between Scottish cities and labour catchment areas surrounding the cities.
National Objective 6: Support the development and implementation of the emerging national development schemes.	**6: Slightly Positive –** A national integrated ticketing system will help to support the development and implementation of the emerging national development schemes, by helping to improve interchange between different modes of transport across Scotland. The provisions highlighted within this intervention will help to improve public transport accessibility, thus making it more attractive to the general public.
National Objective 7: Reduce CO_2e emissions per person km.	**7: Slightly Positive** –This intervention will encourage use of public transport due to improved interchange between various modes of public transport and improved accessibility. This would reduce car use and therefore potentially reduce emissions.
National Objective 8: Stabilise total CO_2e emissions.	**8: Slightly Positive** –This intervention will encourage use of public transport due to improved interchange between various modes of public transport and improved accessibility. This would reduce car use and therefore potentially help to stabilise emissions.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging climate change bill.	**9: Slightly Positive** –This intervention will encourage use of public transport due to improved interchange between various modes of public transport and improved accessibility. This would reduce car use and therefore potentially help to reduce emissions in line with expectations from the emerging climate change bill.

National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10: Neutral –** This intervention would not have any significant effect on promoting a continuing reduction in accident rates and severity rates across the strategic transport network.
National Objective 11: To promote seamless travel.	**11: Strongly Positive –** This intervention plays a significant role in promoting seamless travel by improving interchange between different modes of transport across Scotland and reducing interchange times. It will reduce the need to purchase a new ticket when changing public transport mode. The provisions highlighted within this intervention will help to improve public transport accessibility thus making it more attractive and helping to improve travel across Scotland.
National Objective 12: Improve the competitiveness of public transport relative to the car.	**12: Positive –** The introduction of a national integrated ticketing system will help to improve the competitiveness of public transport relative to the car by improving interchange between different modes of transport across Scotland, reducing interchange times and reducing bus dwell times. High quality data on journey patterns will assist significantly in the planning of efficient and effective services. The provisions highlighted within this intervention will help to improve public transport accessibility thus promoting modal shift from car to public transport.
National Objective 13: To improve overall perceptions of public transport.	**13: Positive –** The introduction of a national integrated ticketing system will help to improve the overall perception of public transport, by improving interchange between different modes of transport across Scotland, and reducing interchange times. The provisions highlighted within this intervention will help to improve public transport accessibility, thus making it more attractive.

Table D9.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor benefit**	This intervention could encourage more people to use public transport and therefore reduce trips by car. In turn it could contribute to a minor reduction in transport-related emissions.
Safety:	**Neutral**	This intervention would encourage some people to transfer from cars to public transport. However, any reductions in accident levels are likely to be negligible.
Economy:	**Moderate benefit**	**Transport Economic Efficiency (TEE):** This intervention could provide more seamless interchange between services and therefore reduced journey times. Journey cost could also reduce for journeys using more than one service. **Wider Economic Benefits (WEBs):** Improved interchange between services could increase labour market catchments for particular areas. **Economic Activity and Location Impacts (EALIs):** This intervention could improve interchange between services, resulting in an increase in destinations available within a reasonable journey time for particular movements.
Integration:	**Major benefit**	**Transport Integration:** A smartcard based ticketing intervention will contribute towards seamless integrated travel as it will reduce the interchange time between services and provide common ticketing for all modes and services. **Transport and Land-Use Integration:** This intervention would not have any direct impact on land-use but would assist in improving links from some developments. **Policy Integration:** A strategy on integrated ticketing is currently being developed by Transport Scotland. The Regional Transport Partnerships also support the development of integrated ticketing.
Accessibility and Social Inclusion:	**Moderate benefit**	**Community Accessibility:** An integrated ticketing system would help reduce perceived barriers between transport modes and enable selected targeting of groups for discounts/concessions to facilitate social inclusion. **Comparative Accessibility:** This intervention would benefit a wide range of people, especially those who use more than one mode of transport or service on their trip.

Table D9.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	A national integrated ticketing system would help to improve connections between different public transport modes, thus helping to improve journey times by promoting more seamless travel options, reducing interchange times and reducing bus dwell times. The high quality data on journey patterns would assist in minimising delays between multi-modal public transport journeys through enabling services to be planned more efficiently.
Reduce Emissions:	**Minor Benefit**	This intervention could encourage more people to use public transport and therefore reduce the volume of trips by car. In turn it could contribute to a minor reduction in transport-related emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The provisions highlighted within this intervention will help to improve public transport accessibility by making interchange between different modes of transport quicker and more efficient. They would also help in the efficient planning of services. This intervention could improve the affordability of public transport services for some users.

Table D9.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	This intervention would encourage some people to transfer from car to public transport. However, any reductions in accident levels are likely to be negligible. It would improve the quality, accessibility and affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would enhance access to education facilities by improving journeys to these facilities where there is an interchange between modes.
Wealthier and Fairer:	**Moderate Benefit**	Transfer from car to public transport could result in increased disposable income through reduced travel costs. More efficient planning of public transport could result in reduced subsidies/increased profits. More efficient scheduling of public transport could result in more services. Integrated ticketing could enable selected targeting of groups for discount/concessions, thus providing fairer transport opportunities.
Greener:	**Minor Benefit**	This intervention would encourage the use of public transport over the private car and would also enable more efficient planning of public transport services, with consequent minor improvements to the local air quality and CO_2e emissions.
Healthier:	**Minor Benefit**	This intervention would improve accessibility to health services by improving journeys to these facilities where there is an interchange between modes. It would also encourage a shift from car to public transport.

Table D9.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is anticipated that there will be no significant technical issues with implementing this intervention.
Operational:	No adverse factors are anticipated to affect the operation of this intervention except in the early stages of implementation.
Public:	Transport Scotland is currently undertaking a consultation on an integrated ticketing strategy and it is anticipated that this would be positively received.

Detailed Appraisal	**D10 - Reconfiguration of the National Rail Timetable**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** <£10m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** <£10m ***BCR/PVB*** >3 / £10 - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

Several objectives have been identified to reduce journey times by public transport, particularly between Aberdeen/Inverness and the Central Belt. At present, the Scottish Rail Network has no significant hierarchy, with many services performing multiple roles in linking cities and intermediate stops, resulting in some cases of uncompetitive journey times.

This intervention would address these issues by re-casting the rail service timetable to provide fast, limited-stop trains which would serve longer distance journeys between the cities and replace some of the existing semi-fast services. Intermediate destinations would be catered for by stopping services.

It is likely that this intervention would be undertaken on a phased basis, in conjunction with other interventions, particularly any programme of network-wide minor improvements.

There would, of course, be a requirement to ensure that an adequate number of fill-in semi-fast or stopping services remained in place for the intermediate locations. These may be supplemented by additional local bus services. This intervention is predicated on the basis of no requirement for new infrastructure or rolling stock.

Summary: Rationale for Selection

This intervention supports the objective to reduce inter-urban journey times on public transport by reducing journey times between Aberdeen/Inverness and the Central Belt by up to 20 minutes.

Forecasts show a relatively small overall increase in rail passengers; however, the majority of this increase is related to a transfer from longer distance car traffic, resulting in reduced emissions from road based vehicles.

While the benefits in terms of growth in passenger-kilometres are relatively modest, there are significant benefits to those already using the services through a reduction in journey time, for example a reduction of around 20 minutes to journeys between Aberdeen/Inverness and the Central Belt.

The costs of providing this intervention are low with the largest benefits accruing to longer distance travellers. However, there could be an adverse impact on shorter distance trips that currently use main line services, although these could be addressed through the provision of local bus services.

Table D10.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1. Slightly Positive** – This intervention would permit journey time improvements to be made on long distance journeys by reducing the number of stops that some rail services make. A hierarchical robust timetable would also improve journey time reliability which would further improve rail's competitiveness for inter-urban journeys.
National Objective 2: To reduce inter-urban journey time on public transport.	**2. Positive –** This intervention would permit journey time improvements to be made on longer distance journeys by reducing the number of stops that some rail services make.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3. Neutral –** This intervention would not have any impact upon journey time reduction on the trunk road network or provide improvements to journey time reliability.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4. Positive –** This intervention would permit journey time improvements to be made on longer distance journeys by reducing the number of stops that some rail services make.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5. Slightly Positive –** This intervention would have a slight benefit for maximising the labour catchment area of the city regions through the reduction in journey times for longer distance journeys.
National Objective 6: Support the development and implementation of the emerging national development interventions.	**6. Positive** – This intervention is not expected to have any impact upon supporting the development and implementation of the emerging national development interventions.
National Objective 7: Reduce CO_2e emissions per person km.	**7. Slightly Positive –** This intervention could encourage more people to use public transport and therefore reduce trips by car. In turn it could contribute to a minor reduction in transport-related emissions.
National Objective 8: Stabilise total CO_2e emissions.	**8. Slightly Positive –** This intervention could encourage more people to use public transport and therefore reduce trips by car. In turn it could contribute to a minor reduction in transport-related emissions.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging climate change bill.	**9. Slightly Positive –** This intervention could encourage more people to use public transport and therefore reduce trips by car. In turn it could contribute to a minor reduction in transport-related emissions.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10. Neutral –** This intervention is not expected to have any impact upon promotion of efforts to reduce accident rates and severity rates across the strategic transport network.
National Objective 11: To promote seamless travel.	**11. Positive –** Reconfiguring the timetable would allow operators to ensure that key connections between services are timed so that people can easily interchange services and reduce the risk of missing a connection.

National Objective 12: Improve the competitiveness of public transport relative to the car.	**12. Positive –** This intervention would help to improve the competitiveness of public transport relative to the Car, as it would be possible to reduce rail journey times, improve journey time reliability and improve the interchange between services.
National Objective 13: To improve overall perceptions of public transport.	**13. Positive –** This intervention is expected to have a slightly positive impact upon the overall perception of public transport through improved journey times and a more robust timetable.

Table D10.1.2 STAG Criteria

STAG Criteria		
Objective:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	This intervention could result in a degree of modal shift from car to rail for longer journey, however some shorter distance journeys could shift from rail to car. The overall impact on transport related emissions would therefore be marginal.
Safety:	**Neutral**	This intervention could result in a degree of modal shift from car to rail for longer journey, however some shorter distance journeys could shift from rail to car. Overall, it would not significantly reduce the volume of traffic on the trunk road network and therefore impact on reducing the number of trunk road accidents that could occur in future years.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** This intervention would have a major positive impact on TEE through reducing journey times, by improving journey time reliability and by reducing interchange times. It is considered that this intervention would provide good value for money. **Wider Economic Benefits (WEBs):** This intervention would support wider economic impacts by reducing rail journey times between major urban areas and their areas of economic activity. **Economic Activity and Location Impacts (EALIs):** Service enhancements would improve journey times between major urban centres with a beneficial impact on employment and productivity in these locations.
Integration:	**Moderate Benefit**	**Transport Integration:** This intervention would improve transport integration by allowing services to be retimed to reduce connection times at key interchange locations. **Transport Land-Use Integration:** This intervention would provide more efficient rail links to support employment development with significant benefits to transport and land-use integration. **Policy Integration:** The measures within this intervention are consistent with the policies set out in Scotland's Railways.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not improve public transport network coverage; however it would promote non-motorised trips for longer distance journeys. Shorter distance rail journeys, affecting more local trips, could be replaced by bus services. **Comparative Accessibility:** This intervention would not impact on comparative accessibility.

Table D10.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention would improve journey times for longer distance journeys by removing stops on some services. This may however have a negative impact on journey times for some less well patronised trips. Journey time reliability would also improve through the development of a more robust timetable. Connections between services could be improved through the reconfiguration of the timetable by ensuring that services are timed to permit an effective interchange between them.
Reduce Emissions:	**Neutral**	This intervention could encourage more people to use public transport for longer distance journeys but may result in a reduction of public transport trips for shorter distance journeys. The overall impact on transport-related emissions may therefore be marginal.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention would improve the quality of rail services by helping to reduce journey times and ensuring a robust and reliable timetable is in place. There would not be any change to the affordability of rail services.

Table D10.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	This intervention would help to encourage a modal shift from car to public transport for longer distance journeys however, some shorter distance journeys may shift from public transport to the car. The overall safety benefits are likely to be marginal.
Smarter:	**Minor benefit**	This intervention would offer a minor improvement in accessibility to educational facilities.
Wealthier and Fairer:	**Moderate Benefit**	Improving journey times and journey time reliability addresses the Scottish Government's objective for a wealthier and fairer Scotland by helping to provide improved travel opportunities for business and leisure related journeys.
Greener:	**Neutral**	This intervention would encourage the use of public transport over the car for longer distance journeys but would reduce the availability of rail journeys for shorter distance journeys. Overall, the impact on local air quality and CO_2e emissions would be marginal.
Healthier:	**Minor benefit**	This intervention encourages a shift from car to public transport and would offer a minor improvement in accessibility to health services and facilities.

Table D10.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There would not be any significant technical constraints to implementing this intervention, although any changes to the timetable would have to be made within the current limitations within the rail network.
Operational:	This intervention would involve significant changes to the passenger timetable, which when first implemented may be affected by operational issues. It is anticipated that these would quickly resolve themselves as passengers and staff became acquainted with the new timetable.
Public:	It is considered that this intervention would be supported by the public; however any decrease in the level of service at any station could face some local opposition.

Detailed Appraisal	**Intervention D11: (Strategic) Park-&-Ride/Park-&-Choose Strategy**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £50m - £100m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10m - £50 m ***BCR/PVB*** 0.75 - 1.25

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to make public transport more competitive against the car. Located on major commuting routes, these sites would also assist in maintaining and enhancing the labour catchment areas in the city regions and reducing CO_2e emissions. It would deliver a series of strategic Park-&-Ride / Park-&-Choose sites using common branding / marketing across Scotland. The sites would be served by either rail services or express bus links to and from the city centres and areas of economic activity, including appropriate bus priority measures at congested locations. These would interface with existing urban bus priority systems. Proposed sites for this strategy include creation of new facilities:

- Serving Aberdeen from Dyce (A96) and Charleston;
- Serving Dundee: Invergowrie, Forfar Road, A92 and Forgan;
- Serving Edinburgh: Halbeath, Lothianburn, Pitreavie, and Tranent;
- Serving Glasgow: Bargeddie (M8), St James (M8), Glasgow Southern Orbital (M77), Fullarton (M74), Robroyston (M80); and outside Ayr (M77);
- At Bannockburn, serving Edinburgh, Glasgow and Stirling; and
- A new station at Dalcross with Park-&-Ride facilities and interchange facilities with Inverness Airport.

In addition, this could incorporate expansion and complementary branding at existing sites at Bridge of Don, Hermiston, Ingliston and Todhill (Sheriffhall), with increased frequency for current bus services from these sites.

Summary: Rationale for Selection

This intervention would help to keep the city centres moving by reducing road congestion in the peak periods. It would also assist in maintaining the labour catchments and reducing emissions. In the case of Edinburgh, where this is a key objective, the proposed measures would increase the number of people able to commute to areas of economic activity, particularly central Edinburgh. It is a similar picture for Glasgow where sites are proposed on all major radial roads.

This could be taken forward in conjunction with interventions aimed at providing priority vehicle lanes on sections of the strategic road network (D6 - Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations).

Table D11.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote 'competitive' inter-urban journey times.	**1: Positive -** A strategy incorporating bus priority and Park-&-Ride measures in these locations could reduce peak hour traffic along some of the most congested sections of the strategic network. These decongestion benefits would be achieved primarily through a mode shift to public transport services on journeys originating in the suburbs and surrounding areas. Travellers using the network for strategic trips, including inter-urban journeys could experience decongestion benefits.
National Objective 2: To reduce inter-urban journey time on public transport.	**2: Strongly Positive -** Congestion is forecast to increase both within the urban networks and on parts of the strategic network. The development and expansion of sites will offer car drivers a viable alternative to driving into the most congested parts of the network.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3: Positive -** Forecast journey time savings for public transport trips as a result of the creation of park and ride sites, priority measures and frequency enhancements are significant. Transport Model for Scotland (TMfS) forecasts that the improvements in the Glasgow area, where bus priority measures are proposed, would result in significant journey time savings along key corridors into the city centre. In 2017 and 2022, journey times for AM peak public transport journeys from Bargeddie, St James, M77, GSO, Fullarton and Robroyston to Glasgow City Centre are forecast to be 15 per cent-30 per cent lower with the improvements in place, compared with the reference case. Bus lanes offering opportunities for use by buses and other High Occupancy Vehicles (HOV) could be introduced through the Intelligent Transport Systems (ITS) intervention (D6) proposed elsewhere under STPR and these would complement this intervention.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres. [Any impacts identified here are relevant to similar, location specific objectives at Aberdeen, Dundee, Edinburgh and Glasgow, and corridor objectives on national Corridors 9 and 14.]	**4: Slightly Positive -** By providing Park-&-Ride sites and implementing bus priority measures on strategic approaches into key urban networks, this intervention would be effective in removing car trips from these approaches. TMfS forecasts indicate through the implementation of the intervention, that the number of Park-&-Ride trips across Scotland could be more than 40 per cent higher by 2022. Overall, the intervention is expected to generate significant journey time benefits for business trips between the Central Belt and Aberdeen, particularly during peak hours.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5: Strongly Positive -** Peak hour journey times into Glasgow, Edinburgh, Aberdeen and Dundee would reduce significantly from the measures taken forward in this intervention. Bus priority measures would generate faster bus journey times along key commuter corridors. TMfS forecasts significant journey time savings for bus passengers along routes where priority measures have been implemented, with reductions in peak hour journey times of 15 per cent-30 per cent in comparison with the reference case on some of the most congested routes. This intervention would therefore assist in maximising the size of the 60 minute commutable labour catchment accessible by public transport.
National Objective 6: Support the development and implementation of the emerging national development interventions. [Any impacts identified here are relevant to similar, location specific objectives at Edinburgh and on national corridors 10, 13	**6: Positive -** This intervention proposes the construction of Park-&-Ride sites at Halbeath and Pitreavie, serving journeys from the north into Edinburgh. These proposals could reduce the number of car trips crossing the Firth of Forth, thereby improving the operation on the Forth Crossing at the busiest times and complementing plans to construct a Replacement Forth Crossing. Public transport access to Glasgow and Edinburgh Airports could also be improved, depending on the service pattern of buses using these facilities.

and 14.]	
National Objective 7: Reduce CO_2e emissions per person km.	**7: Neutral –** This intervention is forecast to transfer some longer distance journeys from private car to public transport. However, modelling outputs indicate a slight rise in CO_2e emissions against the future 2022 baseline, if this intervention was implemented. This could be due to an increase in traffic to the specified new Park-&-Ride sites outside of city / town centres. There is likely to be a decrease in CO_2e emissions in the urban centres served by the Park-&-Ride schemes.
National Objective 8: Stabilise total CO_2e emissions.	**8: Neutral -** This intervention is forecast to transfer some longer distance journeys from private car to public transport. However, modelling outputs indicate a slight rise in CO_2e emissions against the future 2022 baseline, if this intervention was implemented. This could be due to an increase in traffic to the specified new Park-&-Ride sites outside of city / town centres. There is likely to be a decrease in CO_2e emissions in the urban centres served by the Park-&-Ride schemes.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging climate change bill.	**9: Neutral -** By the year 2050, the draft Climate Change Bill requires a reduction, in the total amount of CO_2e emitted, of 60 per cent in comparison with the 1990 baseline. By promoting smoother traffic flow and encouraging mode shift to public transport, the intervention could potentially lead to reduced CO_2e emissions per person km. This intervention would therefore promote carbon efficiency; however the potential of the measures to generate significant overall savings is doubtful.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10: Neutral -** The overall impact of the measures on accident rates and severity rates could be negligible. However, by promoting mode shift to bus, the intervention could make some contribution to accident savings.
National Objective 11: To promote seamless travel.	**11: Strongly Positive -** Park-&-Ride sites improve transport integration, by providing seamless connections between the car and bus services. This intervention comprises the provision of such facilities in key locations across the network, more specifically on key transport corridors into the key urban areas of Glasgow, Edinburgh, Aberdeen and Dundee. In addition to facilitating transfer between modes, this also facilitates transfer from strategic to urban networks. Overall, the intervention is expected to generate a strong positive impact on this objective.
National Objective 12: Improve the competitiveness of public transport relative to the car.	**12: Positive** – To complement the Park-&-Ride sites, it is a assumed that bus priority measures or priority lanes would be introduced as appropriate along the key routes serving the main urban networks. These measures would result in differential journey time savings for all buses along busy routes, generating a competitive advantage relative to the car.
National Objective 13: To improve overall perceptions of public transport.	**13: Positive –** This intervention envisages consistent branding and information at all Park-&-Ride sites and on bus services. Vehicle branding and high quality passenger information are powerful tools in raising public perception of bus services, and these benefits could extend to the overall perception of public transport.
IN ADDITION TO THE NATIONAL OBJECTIVES ABOVE, THIS INTERVENTION WOULD ALSO POSITIVELY CONTRIBUTE TO THE FOLLOWING SELECTED URBAN NETWORK AND CORRIDOR OBJECTIVES:	

STPR Objective Aberdeen 1: To improve accessibility, primarily by public transport, to and between the city centre, Dyce, the airport and south east Aberdeen.	**A1: Positive –** This intervention proposes a network of Park-&-Ride sites on the approaches to Aberdeen, supported by bus priority measures and junction improvements to benefit bus journey times. This could deliver a competitive advantage for bus services, particularly during peak hours, encouraging commuters to shift from the car to bus services, in order to avoid congestion. By 2022, bus connections and service enhancements from the proposed Park-&-Ride sites at Charleston and Dyce are forecast to reduce bus journey times by approximately 15-20 per cent in comparison with the reference case, and so would contribute to improved accessibility at these sites.
STPR Objective Dundee 1: To reduce the conflict between long distance and local traffic.	**D1: Positive** - Providing a network of Park-&-Ride sites on the key radial routes surrounding Dundee, with associated bus priority measures, could encourage a modal shift from the car to Park-&-Ride. These measures are primarily aimed at commuters and other trips into the city from the surrounding city region, and would remove local trips from the strategic network, particularly during peak hours, thus generating more reliable journey times for strategic users of the network and reducing conflict between long distance and local traffic.
STPR Objective Dundee 3: To improve the public transport accessibility and competitiveness to Dundee West.	**D3: Positive –** Provision of Park-&-Ride on key routes into Dundee would increase the competitiveness of public transport and improve accessibility throughout the urban area. Priority measures on the route to Invergowrie Park-&-Ride, in particular, would benefit public transport accessibility to Dundee West.
STPR Objective Edinburgh 1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking the areas of economic activity.	**E1: Positive –** The levels of road traffic congestion in the City of Edinburgh and on key approaches are forecast to grow without further intervention, with a resulting detrimental impact on car journey times. Providing bus priority and Park-&-Ride measures outside Edinburgh, on key radial routes into the city centre would help to maintain the 60-minute commutable labour market area at the current level.
STPR Objective Edinburgh 3: To increase public transport capacity and frequency between Fife and Edinburgh.	**E3: Positive –** This intervention would implement Park-&-Ride sites at Halbeath and Pitreavie. These measures would be complemented with additional bus services and bus priority en-route to Edinburgh, increasing public transport capacity and frequency between Fife and Edinburgh.
STPR Objective Glasgow 1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**G1: Positive –** Within Glasgow, trends indicate that there would be a redistribution of employment opportunities from the centre to the periphery. Important areas of economic activity exist and continue to emerge on the east-west corridor comprising Glasgow Airport, the airport corridor, Clyde Waterfront, the city centre and Clyde Gateway. This intervention takes account of the importance of promoting efficient access along this corridor through proposals to implement Park-&-Ride facilities and bus priority measures. These measures would be effective in reducing bus journey times and promoting public transport accessibility between areas of economic activity, with minimal need to interchange.
STPR Objective Glasgow 2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.	**G2: Strongly Positive –** The M8 currently suffers from congestion issues during peak time period and this is expected to continue to grow in the future, increasing pressure on the corridor. Complementing the Park-and-Ride sites, provision of bus priority on the M77 and M8, could be effective in promoting modal shift to public transport, and increasing the people carrying capacity of the M8. A modal shift to public transport among this target group could be effective in freeing capacity for longer-distance trips, including freight, reducing the conflict between local and strategic traffic. In comparison with the reference case, TMfS forecasts journey time savings of approximately 15-30 per cent for public transport and just under 5 per cent for car journeys along the M8, both east and west of Glasgow, indicating that the efficiency improvements associated with the intervention could be significant.

STPR Objective Glasgow 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2. *[This objective is also relevant to Corridor 18 (Glasgow to northwest England).]*	**G6: Positive –** This intervention contains Park-&-Ride and bus priority measures that could improve network efficiency along the M8 corridor. Bus journey time savings of nearly 30 per cent and car journey time savings of nearly 5 per cent in comparison with the reference case are forecast on the M8 between St James and Glasgow City Centre. This intervention could therefore generate benefits in support of this objective.
STPR Objective 4.2 (Aberdeen to Inverness): To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.	**4.2: Positive –** This intervention promotes bus priority measures on the A96, both in congested locations east of Inverness and north of Aberdeen. TMfS modelling of the Park-&-Ride measures at Dyce indicates bus journey time savings in excess of 20 per cent on the A96 approach to Aberdeen, minor car journey time savings are also forecast. This could contribute to faster bus journey times between the two centres, particularly during peak hours. In addition, the improvements west of Aberdeen would provide extended bus services and could therefore be effective in generating a significant mode shift from car to bus, with efficiency gains for all modes.
STPR Objective 9.1 (Glasgow to Perth): To address current and forecast rail overcrowding into Glasgow.	**9.1: Positive –** Together with enhancements in the service frequency this could produce a step change in bus provision into the city, and provide a competitive and convenient alternative to both rail and car travel.
STPR Objective 9.2 (Glasgow to Perth): To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.	**9.2: Positive –** Bus priority and potentially hard shoulder bus lanes would improve operation and reliability of bus travel. Moreover, these measures remove buses from the main carriageway, resulting in efficiency gains for cars. Based on TMfS forecasts, journey time savings of nearly 30 per cent for buses and approximately 5 per cent for cars are anticipated for trips between Robroyston and Glasgow City Centre, in comparison with the reference case. By giving buses the opportunity to bypass congestion and avoid parking charges in central Glasgow the implementation of Park-&-Ride measures along the corridor could be effective in promoting modal shift to public transport. These advantages would further compound the potential benefits of the intervention to the operation of the M80.
STPR Objective 10.2 (Edinburgh to Perth): To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.	**10.2: Positive –** A number of Park-&-Ride sites on key approaches to Edinburgh are proposed as part of this intervention. Bus priority measures would be implemented in connection with this intervention minimising delays and improving the reliability of bus services, which is crucial to encouraging greater use of buses. This intervention also proposes significant enhancements in service frequency and should therefore be effective in increasing public transport modal share across the city.
STPR Objective 13.1 (Edinburgh to Glasgow): To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.	**13.1: Positive –** This intervention would not enhance public transport capacity for journeys between Glasgow and Edinburgh, but would improve journey time reliability for public transport via priority bus measures. Priority measures would allow bus services to avoid some congested areas near Edinburgh and Glasgow along the M8/A8 corridor, reducing bus journey times. This is reflected in TMfS bus journey time forecasts, which predict reductions of approximately 15 per cent by 2022 on the M8 between Bargeddie and Glasgow, in comparison with the reference case.
STPR Objective 14.6 (Edinburgh to Dundee): To improve the efficiency of the M90/A90 during periods of peak	**14.6: Positive** - The Park-&-Ride proposals in this intervention are aimed at removing peak hour traffic from congested sections of the network, including the strategic approaches to Dundee and the M90 near Dunfermline. These measures are primarily aimed at commuters, and could remove trips that originate in the local area. This intervention would therefore free capacity for strategic trips and reduce the conflict between local and strategic traffic.

demand with a focus on reducing the conflict between longer distance and local traffic. STPR Objective 18.1 (Glasgow to northwest England): To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde. STPR Objective 18.3 (Glasgow to northwest England): To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**18.1: Strongly Positive –** The introduction of bus priority measures along the main routes serving Hillington, Glasgow Airport and Glasgow City Centre would reduce bus journey times for trips using the M8 corridor, including journeys between Glasgow and Inverclyde. Additional high frequency services along the corridor linking Bargeddie and St James via Glasgow City Centre would increase capacity. In comparison with the reference case, TMfS indicates journey time savings of approximately 30 per cent for public transport vehicles travelling along the M8 from St James to Glasgow City Centre in the year 2022. As a consequence, this intervention would help to make bus travel easier and quicker for passengers travelling to and from Glasgow City Centre increasing the capacity and attractiveness of public transport (i.e. bus). **18.3: Positive –** The provision of bus priority measures along the main routes serving Hillington, Glasgow Airport and Glasgow City Centre would help to improve the efficiency of this section of the M8 by reducing congestion affecting buses during periods of peak demand. It could also attract some modal shift from car to bus, thus removing cars from the road. Moreover, this intervention incorporates selected priority bus lanes. This would reduce obstruction from buses on the main carriageway and improve efficiency for car users. For trips between St James and Glasgow City Centre TMfS forecasts indicate that these impacts would result in journey time reductions by 30 per cent for buses and 5 per cent for cars in comparison with the reference case, by 2022. Similarly, Park-&-Ride measures at Bargeddie are forecast to generate journey time savings of approximately 15 per cent and 4 per cent for buses and cars respectively, on the M8 east of Glasgow.

Table D11.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate Benefit/Minor Negative Impact**	Mode share modelling indicates that the intervention would result in modal shift away from private car use and could contribute to an improvement in air quality This would also improve the air quality of Air Quality Management Areas (AQMA) in the urban centres of Glasgow, Aberdeen, Edinburgh, Dundee and Perth. Further modelling indicates reduction to noise emissions through a slight decline in the number of noise sensitive receptors against the 2022 baseline. There is the potential for impacts on biodiversity, water, geology and soils, cultural heritage sites and landscape as a result of the Park-&-Ride sites, however, the exact location of the sites are uncertain, therefore there is insufficient information to undertake a full assessment.
Safety:	**Neutral**	By promoting modal shift the improvements should make some contribution to accident savings. However, the overall impact of the measures on accident rates and severity rates would be negligible.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE)**: The Park-&-Ride measures proposed in this intervention are targeted to reduce congestion on the busiest areas of the network, i.e. key commuter corridors into urban centres, and these measures therefore have a high potential to generate efficiency benefits. By implementing a range of bus priority measures, the intervention would deliver journey time savings for bus passengers. Non-Park-&-Ride drivers should experience efficiency gains, both in terms of journey time savings and journey time reliability as cars are removed from the road through modal shift to bus services. **Wider Economic Benefits (WEBs)**: This intervention could benefit strategic transport links by promoting appropriate use of these links. This would be achieved through the targeted removal of local commuter trips from busy sections of the network. TMfS forecasts indicate that, through the implementation of the intervention, the number of Park-&-Ride trips across Scotland could be more than 40% higher by 2022, in comparison with the reference case. This would reduce conflict between local trips and strategic journeys, including business travel, resulting in efficiency gains for businesses. Journey times including freight trips, would be reduced, resulting in an increase in productivity. Moreover, the intervention secures fast and efficient links to international gateways, including Glasgow and Edinburgh Airports. **Economic Activity and Location Impacts (EALIs)**: The strategic Park-&-Ride intervention includes measures that promote strong commuter links to key areas of economic development and regeneration, including development areas at Altens and Dyce in Aberdeen and at Dundee West. Within Glasgow the intervention would facilitate travel to and between existing and emerging areas of economic activity on the east-west corridor comprising Glasgow Airport, Clyde Waterfront, the city centre and Clyde Gateway. More generally, the intervention promotes efficient commuter links into urban areas, maximising the 60-minute commutable labour area to these centres. This intervention would have beneficial impacts on employment and productivity in these areas, and would increase the attractiveness of strategic investment locations.
Integration:	**Moderate Benefit**	**Transport Integration**: This intervention promotes integration between bus and car by providing seamless interchange between the two modes in convenient locations. By providing Park-&-Ride sites on urban peripheries for travel into urban areas, the intervention achieves a combination of the strengths of the two modes, i.e. use the car to maximise the coverage of urban catchments and use bus to provide a sustainable and efficient alternative on busy areas of the network where economies of scale support a good service. **Transport and Land-use Integration**: Park-&-Ride and bus service improvements promoted as part of this intervention serve some key areas of economic development and integration across Scotland. Some benefits to transport and land-use integration should arise.

		Policy Integration: This intervention comprises bus service enhancements and could therefore generate benefits to social inclusion. This intervention would promote modal shift and would deliver beneficial impacts in relation to road traffic reduction aspirations.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility**: This intervention is not designed to improve public transport service network coverage and the benefits to community accessibility could remain limited. However, the intervention would deliver improved bus journey times and would therefore generate some benefits in terms of accessibility to services. Mode share modelling (whole of Scotland, 1 hour of AM peak, Non-Work) indicates that this intervention would result in changes in mode shares for bus (3 per cent increase), rail (4 per cent decrease), Light Rapid Transit (21 per cent increase). This intervention demonstrates a mode share shift to bus of over 3 per cent, and a significant increase in Light Rapid Transit patronage resulting from the increase in capacity at the Edinburgh Ingliston site. **Comparative Accessibility**: This intervention is not targeted at any specific group of people. However, bus priority measures along key congested routes would benefit individuals who do not have access to a car but are adversely affected by congestion.

Table D11.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention contains proposals to implement bus priority, and would deliver journey time improvements for buses. Large journey time savings for public transport vehicles have been confirmed by TMfS modelling, particularly on the approaches into Glasgow and Aberdeen. This would promote modal shift along busy commuter corridors and some benefits in terms of journey time reductions and improved journey time reliability. The measures proposed in this intervention are targeted at transport corridors supporting key urban centres and economic development areas on urban peripheries, promoting good connections for businesses. Improved connections to Glasgow and Edinburgh Airports would also be delivered.
Reduce Emissions:	**Minor Benefit**	The five cities where Park-and-Ride schemes are proposed, currently experience problems from traffic congestion and associated air quality issues, reflected in the designation of Air Quality Management Areas in Glasgow, Edinburgh, Dundee and Aberdeen. The introduction and enhancement of Park-and-Ride schemes are envisaged to encourage modal shift to public transport which would reduce the number of cars on city centre roads and potentially contribute to an improvement in local air quality within these cities. The expected increase in vehicular movements travelling to the new and enhanced Park-and-Ride areas could contribute to increased CO2e emissions; however, this is likely to be offset by an associated decrease in the level of emissions from the city centres.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention would improve the quality of the journey into urban centres by reducing congestion and promoting reliable and fast journey times. The use of consistent branding and information in implementing Park-&-Ride facilities would enhance the quality and image of public transport services. Improved accessibility would be achieved through bus priority measures, and the provision of additional bus services. However, although the bus priority measures implemented as part of this intervention would benefit all buses using a particular route, the additional services would mainly benefit Park-&-Ride users, and would not directly result in accessibility improvements for those who do not own a car. Mode share modelling (whole of Scotland, one hour of AM peak, Non-Work) indicates that this intervention would result in changes in mode shares for bus (three per cent), rail (remove four per cent), Light Rapid Transit (twenty-one per cent). This intervention would not impact on affordability.

Table D11.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention would remove cars from the road by promoting modal shift and improving the quality, accessibility and affordability of public transport. It would result in some reduction in accident rates as public transport is considered to be safer than the car. However, the intervention does not contain measures specifically targeted at improving safety and these benefits would therefore remain limited. Although the intervention would not directly improve accessibility to employment opportunities for those without the use of a car, the proposed Park-&-Ride measures would open urban economic opportunities to a wider rural catchment.
Smarter:	**Minor Benefit**	This intervention would increase access to schools, colleges and universities for those living along the various strategic corridors.
Wealthier and Fairer:	**Moderate Benefit**	TMfS modelling predicts overall growth in Park-&-Ride usage amounting to more than 40 per cent by 2022, in comparison with the baseline. This intervention would reduce journey times and enhance journey time reliability for all road users, buses in particular. Measures are targeted at key commuter corridors and would result in significantly improved accessibility to employment. The use of Park-&-Ride measures could be effective in extending these benefits to wider rural areas.
Greener:	**Minor Benefit**	This intervention promotes the use of public transport across Scotland encouraging a modal shift away from the car.
Healthier:	**Neutral**	The measures promoted in this intervention would improve journey times for bus services along busy corridors, and so achieve a modal shift from the car to buses. However, the intervention is primarily focused to enhance the provision of Park-&-Ride services that are accessed by the car. This intervention would therefore not result in an increased uptake of active modes of travel, i.e. walking and cycling and the benefits to health services would remain limited.

Table D11.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is unlikely that any untried techniques would be required when implementing any aspects of this intervention, however as the design stages progress, localised issues could arise which require increased technical capabilities to overcome.
Operational:	No adverse factors would be expected to affect the operation of this intervention over its projected life.
Public:	Most measures envisaged as part of the intervention have not been presented to the public. However, in general the measures are expected to meet with public approval as they would improve public transport provision, encourage modal shift and reduce congestion along busy commuter routes.

Detailed Appraisal	**Intervention D14: A9 Upgrading from Dunblane to Inverness**	
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	First Phase: £500m - £1bn Subsequent Phases: £1.5bn - £3bn
	Annual Revenue Support	-
	Present Value of Cost to Gvt	First Phase: £250m - £500m
	BCR/PVB	First Phase: 0.75 - 1.25 / £250m - £500m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

The Government is committed to the dualling of the A9 between Dunblane and Inverness. This intervention considers the full dualling of the A9 between Dunblane and Inverness within the STPR period.

This intervention supports the objectives to promote journey time reductions between Inverness and the Central Belt, improve the operational effectiveness of the A9, reduce the severity of accidents and address driver frustration.

The first phase of this intervention would consist of :

- Grade separation of all junctions on the A9 from Keir Roundabout to south of Broxden Roundabout;
- Dualling the A9 between Perth and Blair Atholl;
- Grade separation of Broxden Roundabout and Inveralmond Roundabout; and
- Implementation of climbing lanes, 2+1 sections and junction improvements between Blair Atholl and Inverness.

The subsequent phases of this intervention would consist of :

- Dualling the A9 between Aviemore and Inverness; and
- Dualling the A9 between Blair Atholl and Aviemore.

Summary: Rationale for Selection

Many of the accidents on the A9 between Dunblane and Perth in recent years have occurred at the at-grade junctions. These accidents are often serious or fatal and removal of these would significantly reduce the accident rate and accident severity on this route.

The grade separation of Broxden and Inveralmond Roundabouts would remove the congestion at these locations contributing to reduced journey times, improved journey time reliability and improved road safety.

The A9 between Perth and Blair Atholl is the most heavily trafficked stretch of the A9 north of Perth. Dualling this section would have the most significant impact on reducing journey times and improving journey time reliability. This would also contribute to a consistent carriageway standard along this section of the A9.

The introduction of climbing lanes is also expected to improve safety since evidence elsewhere suggests that the introduction of climbing lanes can result in a significant reduction in accidents, of up to 50 per cent, on single carriageway routes.

Dualling the A9 between Blair Atholl and Inverness would further reduce journey times and improve journey time reliability between Perth and Inverness, as well as provide a consistent carriageway standard along the whole of A9 between Perth and Inverness. This is a lightly trafficked section of the A9 and is therefore considered in subsequent phases. Aviemore to Inverness is more heavily trafficked than Blair Atholl to Aviemore and would therefore take priority in future phases.

This intervention is expected to provide a significant contribution to the Government's Purpose of increasing sustainable economic growth. In addition to this, the national objectives of promoting journey time reductions between the Central Belt and Inverness and the reduction in accident rates are contributed to by this intervention. This intervention also addresses the corridor specific objectives of improving the operational effectiveness of the A9, on approaches to Perth, and addressing issues of driver frustration.

The environmental impacts this intervention has on several biodiversity sites and designated landscapes have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D14.1.1 STPR Objectives

STPR Objectives	
STPR Objective 9.1: To address current and forecast rail overcrowding into Glasgow.	**9.1: Neutral -** This intervention does not address this objective.
STPR Objective 9.2: To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.	**9.2: Neutral -** This intervention does not address this objective.
STPR Objective 9.3: To reduce the severity of accidents occurring to the national average.	**9.3: Strongly Positive –** Cross carriageway manoeuvres have been identified in a number of studies as contributing to safety issues on the section of A9 between Dunblane and Perth. The grade separation of key junctions on the A9 between Broxden and Keir roundabouts and the closure of all central reserve gaps would effectively remove conflicts, which would lead to a reduction in the number of severe accidents. Grade separation of Keir, Broxden and Inveralmond roundabouts would result in a reduction in accident numbers, by reducing incidents relating to shunting and overturning. Reducing the conflict between local and longer distance traffic would also contribute to reducing the potential for accidents at the at-grade roundabout junctions.
STPR Objective 6.3: To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity.	. **6.3: Positive** – Dualling more sections of the A9 and adding more 2+1 sections would improve the standard of parts of the route between Perth and Inverness. Accident severity rates would be improved as safer overtaking opportunities afforded by the improvements.
STPR Objective 9.4, 6.4, Perth 1: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**9.4, 6.4, Perth 1: Strongly Positive –** Grade separating Keir, Broxden and Inveralmond roundabouts would reduce the conflict between local traffic and strategic traffic, resulting in reduced journey times between the Central Belt and Aberdeen/Inverness. This journey time improvement would not allow commuters to achieve an effective working day when travelling between the Central Belt and Aberdeen/Inverness, however commuters from intermediate settlements could benefit from the improved journey time. Reduction in delays at each junction would contribute to economic benefits through improved connectivity for business between these centres. This intervention would provide significant reductions in journey times, including bus service journey times, and improved reliability on the A9 between Dunblane and Inverness, improving connectivity for business between Inverness and the Central Belt. The improvements between Dunblane and Perth would also provide significant benefits for business travel between Aberdeen and the Central Belt.
STPR Objective 6.1: To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onto the Central Belt).	**6.1: Positive –** Dualling of the A9 between Perth and Blair Atholl and further sections towards Inverness, would reduce journey times between Inverness and Perth by approximately 10-15 minutes. Removing delays caused by accidents would provide more reliable journey times along the dual sections.
STPR Objective 6.2): To improve the operational effectiveness of the A9 as it approaches Perth and Inverness.	**6.2: Positive –** Construction of 2+1, dual sections and grade separation of Inveralmond Roundabout would provide significant journey time benefits, improving journey time reliability and would result in more efficient operation of the A9.
STPR Objective Perth.1: To contribute to reducing the emissions per person kilometre.	**Perth.1: Neutral –** Grade separation of the Broxden and Inveralmond roundabouts would result in reduced levels of congestion on the A9, with a corresponding reduction in emissions at the local level. However, this reduction could be offset by a slight increase in traffic volume and higher speed on the dual carriageway, leading to increased emissions.

Table D14.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Major Negative Impact**	The upgrading of the A9 between Perth, Blair Atholl and Inverness along with junction improvements have the potential for major adverse effects, particularly with respect to biodiversity, cultural heritage and landscape interests. The A9 crosses a number of internationally designated sites for nature conservation and, as identified in the Appropriate Assessment, there is the potential for major adverse effects in the absence of mitigation. A number of nationally important sites for cultural heritage importance, and their settings, especially Scheduled Monuments and A listed buildings, could be adversely affected by the dualling or road widening due to their proximity to the A9. However, the scale of effects is unclear until the exact location and design of the engineering works are known. There are nine Special Areas of Conservation, six Special Protection Areas, one Ramsar, ten SSSIs and one National Nature Reserve that are either crossed by or are in close proximity to the A9 and would be adversely affected by the intervention. Major adverse impacts on the landscape are also likely as the A9 currently cuts through the northwest of the Cairngorms National Park and National Scenic Area and the integrity of these sites would be affected by the upgrading. Several other National Scenic Areas are also within close proximity to the intervention, including Loch Tummel and the Rivers Tay, Tummel and Garry, which may be affected. As the dualling would also require construction works across major rivers, there could be potential detrimental effects on the water environment although it is expected that all works would be undertaken in accordance with environmental regulation with particular regard to the Controlled Activities Regulations (CAR) which would mitigate the potential effects. It was envisaged that there could be an improvement in local air quality, particularly around the Inveralmond and Broxden junctions, both of which lie within the Perth Air Quality Management Area (AQMA), however, the scale of effects is not expected to be substantial. Further moderate negative effects are envisaged for CO_2e emissions as increased traffic speeds could increase levels. Noise levels are expected to increase and this could adversely affect noise sensitive receptors within the vicinity of the A9.
Safety:	**Major Benefit**	Accident rates on the section of the A9 between Dunblane and Perth are lower than the national rate for a dual carriageway road; however, the severity of accidents is an issue on this route with a number of fatal accidents attributed to manoeuvres through gaps in the central reserve. The proposed grade separation of a number of junctions along the route and the closure of all central reserve gaps would effectively result in grade separation of the route which would give a significant reduction in the number of fatal accidents on this section. Studies confirm that the number of fatal accidents in recent years has been significantly greater than expected, with 19 fatal accidents on this section of the A9 from 2000-2004 against an expected nine, based on national rates for this road type. Based on accident data provided (1996-2005), the A9 between Stirling and Perth has the highest fatal accident rate of all dual carriageways on the trunk road network. Accident statistics suggest that the grade separation of the route between Keir and Broxden Roundabouts would save approximately two fatal accidents per year and bring the severity rate down to national levels. Grade separation of this route and the proposed grade separation of Broxden and Inveralmond roundabouts would also provide road users with a consistent standard of provision on the strategic network, as both the A90 and M9 at their northern and southern extents are grade separated routes. This intervention at Broxden and Inveralmond roundabouts would reduce the conflict between through trips and trips entering and leaving at the junctions. There have been approximately 40 accidents on the trunk road network at or near Broxden from 1996-2005, and approximately 30 accidents at or near Inveralmond during the same period. This equates to approximately 15 per cent of all accidents between Keir and Inveralmond occurring at or near the two junctions. The number of accidents at the junctions would reduce, due to overturning and shunt type accidents at the roundabouts being reduced.

		Different safety concerns have been identified on the northern section of the A9, between Perth and Inverness, where an increase in safer overtaking opportunities would result in a reduction in accident and severity rates on this route. National statistics indicate that there are 50 per cent less accidents on typical rural single carriageways that have a climbing lane. Although both accident and fatal accident rates on this section of the A9 are lower than the national rate for this road type, a number of accident clusters, including fatal accidents north of Dunkeld and south of Pitlochry, have been identified. A number of these clusters would be removed and the intervention could reduce the potential for similar clusters to form on these sections in the future.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** The reduction in both the number of accidents and the number of severe accidents on the southern and northern sections would provide significant accident savings. Recent studies on the section of the A9 between Keir and Broxden roundabouts support this, with accident savings of up to £65m over 60 years. The grade separation of Keir, Broxden and Inveralmond roundabouts would result in journey time savings for trips on the A9 and M90 and also for trips using the A93 and A912 into Perth. Journey time reliability would also be improved due to reduced conflict and congestion at the junctions. Appraisal of the junction improvements at Broxden and Inveralmond indicates travel time savings of between £100m-£250m. The combined improvements of Phase 1 would provide benefits of between £250m and £500m, with a benefit cost ratio of 0.75-1.25, thus overall providing value for money. **Wider Economic Benefits (WEBs):** Significant improvements to journey time, reliability and quality would have a positive impact on the efficiency and productivity of businesses which use the route commercially between the Central Belt and Inverness/Aberdeen. Benefits will accrue from lower cost of travel for freight and business users, improved access to customers and suppliers, improvements to competitiveness by addressing issues of remoteness, improved business to business interaction and communication and widening of labour catchment areas. **Economic Activity and Location Impacts (EALIs)**: Grade separation of Broxden and Inveralmond roundabouts would encourage growth in Perth and areas to the north and east which would benefit the local, regional and national economy. Improved access to Perth and areas to the north and east would result in more efficient movement of people and goods with improved productivity. Improvements to accessibility would assist in the development of tourism industries in the region and increase the attractiveness of the region to inward investors. Other sectors which are expected to benefit significantly include manufacturing, construction, retail and distribution industries which rely on the route for movement of goods as well as sectors such as life sciences for which the proposal will improve access to international travel links and assist in the recruitment of high skilled professionals. The impacts of upgrading the A9 are potentially significant for all sectors and settlements served by the route.
Integration:	**Minor Benefit/Minor Negative Impact**	**Transport Integration:** This intervention would not have an effect on transport integration. **Transport and Land Use Integration**: This intervention would not affect the need to travel. The provision of grade separation at Broxden and Inveralmond roundabouts and the reduced journey times would enhance development opportunities in west Perth and the north of Scotland in line with local, regional and national policies. **Policy Integration:** This intervention would not support the road traffic reduction aspirations as it would improve quality of travel through the strategic network which may promote the use of car.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility**: Although a number of rural dwellings between Dunblane and Perth will have to travel further due to closures in the central reserve, access to the A9 will be via safer, grade separated junctions.

		Comparative Accessibility: This intervention would improve access to Perth and the north of Scotland from the Central Belt and further afield.

Table D14.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention would improve journey times and reliability for strategic trips between the Central Belt and Aberdeen/Inverness as grade separating the at-grade junctions at Keir, Broxden and Inveralmond would reduce the delays currently experienced by strategic trips conflicting with local trips. Previous work undertaken at Broxden Roundabout indicates that queuing levels, particularly at the M90 and A9 west arms could be at critical levels by year 2018. Reducing the conflict between the main strategic movements and local trips could provide a combined saving for both junctions of approximately 5-10 minutes in total during peak periods. Increase in dual carriageway provisions and 2+1 sections would result in increased average speeds on the A9, thus reducing journey times. Connections between the Highlands and Central Scotland would also be improved by the increased road standard provided. Journey times between Perth and Inverness are expected to decrease by approximately 10-15 minutes.
Reduce Emissions:	**Neutral/Minor Benefit**	As a reduction in congestion is forecast through junction improvements, it is envisaged that there could be an improvement in local air quality, particularly around the Inveralmond and Broxden roundabouts, both of which lie within the Perth Air Quality Management Area. While the proposed dualling would reduce congestion in some locations along the route, especially around Calvine, which could lead to a minor improvement in local air quality, an increase in the volume and speed of vehicles could give rise to an increase in CO_2e emissions. The scale of effect is not expected to be substantial.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention has the potential to improve the quality of journey between the Central Belt and Aberdeen/Inverness by reducing congestion and allowing a smoother journey with less stop-start conditions. Delays at junctions can lead to driver stress, therefore by removing such delays at Keir, Broxden and Inveralmond, the quality of travel would improve for both strategic trips travelling through and local trips accessing Perth, including local and long distance journeys made by bus. Keir Roundabout is the first at-grade junction on the principal route between the national border and the north/northeast of Scotland. Severance issues relating to accessibility to certain rural dwellings along the A9 between Keir and Broxden may be impacted by the closure of gaps in the central reserve. However, grade separation of the route would provide road users with an improved quality of journey as the route would be consistent with the grade separated trunk roads at either end of the route. Improvements to road standard between Perth and Inverness would improve the quality of travel throughout the corridor, particularly for strategic trips. This intervention is not expected to impact on affordability.

Table D14.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	Junction improvements and removal of cross carriageway manoeuvres between Keir and Broxden would reduce the potential for severe accidents. Accident clusters at Balhaldie, Auchterarder, Dalreoch and Upper Cairnie on the southern section and clusters north and south of Calvine, at Pitlochry and Dunkeld would be removed due to the proposed work. This intervention would not have an effect on the quality, accessibility and affordability of public transport. It would reduce the potential number of accidents at the at-grade roundabouts along the route. Grade separation of the junctions would effectively extend the recently completed grade separated route between Dundee and Perth. This would contribute towards a level of consistency along this strategic link between the Central Belt and the north of Scotland, thus potentially reducing safety issues on the route. The provision of a dual carriageway and 2+1 sections would result in a reduction in road accident rates. Severity rates would also be reduced at the sections which are improved from single carriageway to dual or 2+1.
Smarter:	**Minor Benefit**	This intervention would improve access to education facilities in areas between Dunblane and Inverness, as well as improving access to educational facilities in the Central Belt from the Highlands.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would improve journey times and journey reliability, improving opportunities in employment, business, leisure and tourism. Transfer of goods via road between the Central Belt and the north and north east of Scotland would be improved as delays at the at-grade junctions are effectively removed and carriageway provision is increased. Reduced delays at Keir, Broxden and Inveralmond would improve travel for both strategic and local commuters and business users in the area.
Greener:	**Neutral/Minor Benefit**	This intervention could have a possible minor benefit on local air quality. However, this intervention would not significantly promote the use of public transport.
Healthier:	**Neutral**	This intervention of works would not have any significant impact on promoting healthier forms of transport or access to health services.

Table D14.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention on the southern section of the route between Dunblane and Perth would be straightforward from a technical point of view, with no new technologies involved. Significant engineering works would be required at Broxden junction, and at Inveralmond the urban nature of the surroundings could constrain design solutions. There are a number of technical risks associated with this intervention in the section between Perth to Inverness, due to the number of environmentally important sites within close proximity to the proposed improvements. The design would need to include measures to ensure construction limits any potential impact on these sites.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors.
Public:	This is a high profile intervention, with significant public interest at both local and national levels. There could be a high degree of protests and objections from environmental groups due to the potential impact on scenic areas. Due to the closure of priority junctions between Dunblane and Perth, that would result in lack of direct access to the A9, a degree of local public opposition is a potential issue. It is possible that inhabitants of rural dwellings, which will have reduced access to their properties, may have negative feelings towards the intervention. A considerable degree of disruption to local trips during construction is anticipated, however in general the intervention is considered to be accepted by the public as it would improve journey times and safety and decrease the delay caused by congestion at junctions.

Detailed Appraisal	**D15: Rail Enhancements on the Highland Mainline between Perth and Inverness**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** Phase 1 £50m - £100m Phase 2 £100m - £250m Freight Enhancements £50m - £100m
	Annual Revenue Support Present Value of Cost to Gvt -
	BCR/PVB Phase 1 £10m - £50m Phase 1 0.75 - 1.25 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment		■			■		
Safety				■			
Economy						■	
Integration					■		
Accessibility and Social Inclusion						■	

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to reduce journey time, increase travel opportunities between Inverness and Perth and more effectively link Inverness to the Central Belt.

Improvements to the Highland Mainline are proposed;

- An increase in service frequency (minimum of hourly between Inverness and Perth with additional peak express services): and
- A reduction in journey times of approximately 35 minutes, resulting in Edinburgh to Inverness journeys of under three hours, with similar reductions for services to Glasgow.

Journey time reductions to benefit passenger services would be delivered through line speed improvements, additional loops, dynamic loops or lengthening of double track sections, signalling improvements and more powerful traction. It is envisaged that this could be delivered in two phases.

Phase 1 would comprise the recognised Highland Mainline improvements as proposed in the Highland Room for Growth Study.

Phase 2 would comprise a more significant enhancement to allow faster services to operate.

Additional freight improvements: The passenger enhancements could be optimised to also benefit freight operations. It is envisaged that this would include:

- Provision of bi-directional signalling to reduce the impact of engineering works on the route (permitting the route to remain open for freight throughout the day and week);
- Increased length of freight loops (allowing longer freight trains); and
- Removal of speed limits below 75mph Permanent Speed Reductions (PSRs) for freight trains.

Included within this intervention is the capability to operate low floor wagons that are currently becoming available for use on the network. These would allow standard containers to be carried on existing infrastructure with minimal physical works, such as targeted gauge enhancements at appropriate structures.

Summary: Rationale for Selection
This intervention would provide journey time improvements between Inverness and Perth and onwards to the Central Belt, contributing to objectives relating to these issues. Increasing the frequency would provide further benefits by providing additional opportunities to travel. The reduction in journey time of around 20 per cent is significant and would make the rail service more competitive with the current car journey. The environmental impacts this intervention has on designated biodiversity and landscape sites have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward. The freight improvements would make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times.

Table D15.1.1 STPR Objectives

STPR Objectives	
STPR Objective 6.1: To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onto the Central Belt).	**6.1: Strongly Positive –** Network Rail's Route Utilisation Strategy (RUS) incorporates the option to enhance the infrastructure between Perth and Inverness to permit an increased frequency and improved journey time. This option primarily focussed on journey time and frequency improvements through level crossing upgrades, line speed enhancements and re-doubling of sections of track. This would result in a 20 per cent reduction in journey times.
STPR Objective 6.2: To improve the operational effectiveness of the A9 as it approaches Perth and Inverness.	**6.2: Slightly Positive –** Improved rail connections along the corridor may result in a degree of modal shift to rail from cars and good vehicles, resulting in a slight reduction in congestion on approaches to Perth and Inverness.
STPR Objective 6.3: To address issues of driver frustration relating to inconsistent road standard with attention to reducing accident severity.	**6.3. Slightly Positive –** The removal of a significant number of HGVs travelling between Perth and Inverness would help address this objective.
STPR Objective 6.4: To promote journey time reductions, particularly by public transport, between the Central Belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**6.4: Strongly Positive –** This intervention would result in journey time reductions between Inverness and Perth of around 35 minutes to less than three hours. Additional peak services that arrive in Glasgow, Edinburgh or Inverness before 10am and leave after 5pm would make it possible for business travellers to spend an effective working day when travelling between the Central Belt and Inverness. Although end-to-end daily commuting is not probable, it is possible that the labour catchments for each city would increase, due to reduced journey times from the intermediate stations along the corridor.

Table D15.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/Moderate Negative Impact**	This intervention has the potential for adverse effects on the natural environment, including biodiversity, cultural heritage, landscape, soils and geology and the water environment. However, these effects are highly dependent on the location of the final works, and mitigation measures may be needed, therefore the overall effect remains uncertain at this stage. These adverse effects are slightly offset by the minor benefit to air quality gained through a modal transfer from road to rail. The local air quality should improve in settlements along the route, such as Blair Atholl, Daviot and Cartbridge as well as in the Air Quality Management Area in Perth.
Safety:	**Neutral**	The overall impact of the intervention on road safety is expected to be negligible. The security on the rail network should remain at current levels or improve with the implementation of any new facilities or rolling stock. New facilities would be designed in line with best practice and new rolling stock could incorporate Closed Circuit Television (CCTV).
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention is expected to have a positive economic impact by reducing travel times between the Central Belt and Inverness, and improving the frequency of service between Perth and Inverness on the public transport network. For example, travel times are anticipated to fall from approximately 3hours 30minutes between Edinburgh and Inverness to under 3 hours, saving 35 minutes for rail travellers between economic development sites within the two cities, supporting the concept of achieving an effective working day when travelling between the two cities. The proposed capacity enhancements would amount to up to 200 additional seats arriving at Glasgow and up to 500 additional seats arriving at Inverness over a three-hour peak period (based on four additional six carriage trains per day between Edinburgh and Inverness and between Edinburgh and Perth, six additional six carriage trains per day between Perth and Inverness and two additional six carriage trains per day between Glasgow and Perth and between Glasgow and Inverness). Additional peak services that arrive in Glasgow, Edinburgh or Inverness before 10am and leave after 5pm would make it possible for business travellers to spend an effective working day in the Central Belt or Inverness. Modal shift would result in reduced operating costs for drivers either through transfer of mode or as a secondary benefit following the removal of car trips from the road network, reducing congestion impacts. **Wider Economic Benefits (WEBs):** It is anticipated that benefits would accrue from the improved access to business and recreational trips between Perth and Inverness. This would improve the attractiveness of public transport travel between the two locations and effectively reduce the time distance between Inverness and the Central Belt. Travel time reductions and improved frequency would result in increased productivity for business travellers by allowing for a more efficient working day, improving the accessibility of customers and suppliers and improving the ability of businesses to work together. In generating these benefits, the intervention is expected to help develop sites within the Highland and Perth and Kinross Regions. Economic benefits are therefore expected along the corridor and in particular in Inverness, which is scheduled for 4,400 new houses between 2007 and 2017, and an identified requirement for 6,060 houses in Perth between 2000 and 2020. Economic development areas along the corridor should benefit from the intervention particularly the Area of Economic Activity in Inverness City Centre. The additional infrastructure to facilitate the transfer of goods from road to rail would also provide benefits to the regional economies of Perth and Inverness. A new rail freight service between Grangemouth and Inverness has the potential to remove

		over 13,000 HGV trips each year from the A9, equivalent to around 3 million HGV kilometres or approximately 5 to 6 million tonnes of freight transferred to rail. **Economic Activity and Location Impacts (EALIs):** This intervention would go some way in assisting with the progression of development areas in Inverness and Perth, and at locations on route, designated for industrial or residential investment such as Aviemore, Pitlochry, and Kingussie respectively. In particular, improved accessibility would assist in the development of tourism industries in the region and increase the attractiveness of the region to inward investors. Improvements to journey times and service frequencies would improve commuting opportunities from settlements along the route and help widen labour catchment areas for businesses in Perth and Kinross.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention would result in an upgrading of the existing rail infrastructure thereby improving the integration of the transport system. **Transport Land-use integration:** Transport improvements are expected to have a positive impact on land use integration as the proposed development is largely constrained to the rail line corridor between Perth and Inverness providing an enhanced service on the corridor, which by its nature is well integrated with existing communities along the length of the route. This would improve connectivity between important growth areas around Inverness and Perth, and on to the Central Belt, which is of key importance. **Policy Integration:** The measures within this intervention are consistent with the policies set out in Scotland's Railways. While it would improve travel for those for whom the car is not an option, it would not have a significant impact on policies related to disability, health, rural affairs or social inclusion.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** Improvements to community accessibility in terms of promoting non-motorised trips to local services would be as a result of reduced journey times and improved service frequency on the Inverness – Perth corridor improving access to jobs, training, health services, shopping and other locally significant trips. This intervention would not improve public transport network coverage as the proposed development is constrained to the existing rail corridor. **Comparative Accessibility:** It is expected that improvements to frequency and travel times between Inverness and Perth would be inclusive to all groups.

Table D15.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	Faster and more frequent services between Inverness and Perth, Edinburgh and Glasgow, would improve journey times between North and Central Scotland. This would also result in improved links between Inverness and other parts of Scotland and beyond.
Reduce Emissions:	**Minor Benefit**	Modal shift from road to rail as a result of the improvements to the Highland Mainline could result in some reductions in CO_2e emissions. Environmental modelling indicates a decline in CO_2e against the 2005 baseline data and a slight reduction against 2022 baseline forecasts for this corridor, if this intervention was to be implemented.
Improve Quality, Accessibility and Affordability :	**Moderate Benefit**	Increases in services between Inverness and Perth, and onto Edinburgh, would improve accessibility between the North and Central Scotland. New rolling stock should improve quality of service. Additional seating capacity arriving during a three-hour peak at Glasgow would increase by up to 200 and up to 500 at Inverness (based on the additional: four six-carriage trains on routes Edinburgh to Inverness and Edinburgh to Perth, six six-carriage trains between Perth and Inverness and two additional six-carriage trains on routes Glasgow to Perth and Glasgow to Inverness. .

Table D15.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	This intervention would improve the quality and accessibility of public transport on the Inverness to Perth corridor by increasing the number of services and reducing journey times. However, this intervention would not have a significant impact on road safety or affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would improve access to educational facilities such as the University of the Highlands and Islands in Inverness and to the education establishments in the Central Belt from the Highlands.
Wealthier and Fairer:	**Major Benefit**	This intervention would reduce the travel times by public transport between Perth and Inverness, thereby contributing to building and sustaining economic growths, providing travel opportunities for employment, business, leisure and tourism and linking towns, cities and rural communities throughout Scotland. This intervention would also support growth at Areas of Economic Activity in Inverness, Perth and the Central Belt.
Greener:	**Minor Benefit**	This intervention promotes the use of the rail network in the Highlands and would encourage a modal shift, contributing to an improvement in air quality and climatic factors.
Healthier:	**Minor Benefit**	This intervention would improve access to health services in Inverness from communities to the south and improve access to more specialist facilities in the Central Belt from the Highlands.

Table D15.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	There has been no specific detailed consultation on this intervention. However, a commitment to Phase 1 was made in a Scottish Government statement on the 5th August 2008.

Detailed Appraisal	**D16 – Upgrade A96 to Dual Carriageway between Inverness and Nairn**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** 1.25 - 1.75 / £100m - £250m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to reduce the accident rate and severity rate on this route and improve connectivity between Inverness and communities to the east. It would include a new dual carriageway on the A96 corridor between Inverness and Nairn, giving improved access to Inverness Airport and the future growth areas in the A96 corridor.

A new link connecting the A96 and the A9 (south of Inverness) would provide relief for Raigmore Interchange.

Summary: Rationale for Selection

Upgrading the A96 to dual carriageway between Nairn and Inverness is expected to reduce accident rates (around 40 per cent) by providing a higher standard of road. It would also reduce journey times along this section of the corridor, improving connectivity between Inverness and communities to the east (including the planned developments in this corridor at Tornagrain), and helping to increase the labour catchment area for Inverness. Improvements would also be felt on longer distance road journeys between Aberdeen and Inverness.

The link between the A9 and A96 would further reduce congestion by allowing traffic between the A9 and A96 to avoid local traffic congestion at Raigmore Interchange. These benefits are reflected in the economic analysis, which suggests that the intervention offers good value for money.

The environmental impacts this intervention has on the surrounding natural and historical features have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D16.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To improve connectivity, particularly by public transport between Inverness City Centre and the growth area to the east including Inverness Airport.	**1: Strongly Positive –** The A96 to the east of Inverness is currently single carriageway and although no existing strategic capacity problem has been identified, considerable growth is planned to the east of Inverness. Provision of a dual carriageway along this stretch and a dual carriageway link to the A9 at Inshes would provide additional capacity for growth to the east of Inverness.
STPR Objective 2: To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.	**2: Positive –** Dual carriageway provision between Inverness Retail and Business Park and Nairn would improve journey time connections between the two cities as it would allow greater opportunities for overtaking slower moving vehicles on this section of the A96. City to city bus services would also benefit from road improvements on the route. Provision of the new section of dual carriageway to the A9 at Inshes would reduce traffic volume and congestion at Raigmore Interchange, improving journey times for trips to the A9 (south) and through Raigmore Interchange. This intervention is likely to produce journey time savings of around 5-10 minutes.
STPR Objective 3: Reduce the accident rate and severity rate to current national average.	**3: Strongly Positive –** The accident and fatal accident rates on the route are currently double the national average. Dualling of the A96 between Inverness and Nairn is likely to improve accident rates by around 40 per cent and severity rates by around 10 per cent on this stretch of the road.

Table D16.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Major Negative Impact**	Dualling the A96 between Inverness and Nairn would potentially have negative impacts to cultural heritage as there are nine Scheduled Monuments situated very close to the road. There are also several A Listed buildings within 500m of the road. Mitigation measures through the design process would be required to address particular issues. Moderate negative impacts are forecast due to a potential increase in noise levels; however this could be addressed through mitigation measures. There is the potential for impacts on biodiversity as 1 Special Area of Conservation, 2 Special Protection Areas, 1 Ramsar and 2 SSSIs are located close to the A96, however it is not possible to assess the full extent or degree of impacts at this stage of the decision making process. Further adverse impacts on landscape and geology / agriculture and soils are possible due to the additional road infrastructure. The Kildrummie Kames geological SSSI is adjacent to the north side of the road to the north of Nairn and could be affected depending on which side of the road the new carriageway is constructed. This would be considered further through the design process.
Safety:	**Major Benefit**	The existing accident rate on the A96 between Aberdeen and Inverness (32.3 P.I.A./100MVKm) is significantly greater than the national rate for this road type (15.5 P.I.A./100MVKm). Rural dual carriageways generally experience around 40 per cent fewer accidents than typical rural single carriageways. This indicates that this intervention could result in significant accident reductions. As regards severity, the fatal accident rate on this route (1.45 fatal accidents/100MVKm) is also significantly greater than the national average (0.76 fatal accidents/100MVKm). There could be a reduction in accident severity on these sections if they were dualled due to the higher standard of road and greater overtaking opportunities.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** The provision of a dual carriageway between Inverness Business and Retail Park and Nairn and between the Inverness Business and Retail Park and the A9 at Inshes are likely to result in journey time savings for trips between Inverness, the A9 and the A96, especially during peak hours. This will include bus services and freight movements. Journey time reliability would improve providing a minor benefit. The average journey time on this section of the A96, is forecast to reduce by between 5 and 10 minutes in 2022 with this intervention in place. These benefits provide significant economic benefits and are reflected in a benefit to cost ratio of 1.25 – 1.75, which indicates that the intervention provides a good value for money. **Wider Economic Benefits (WEBs):** Significant improvements to journey time, reliability and quality would have a positive impact on the efficiency and productivity of businesses using the route to travel between destinations in Inverness, Nairn and Aberdeen. Benefits will accrue from a lower cost of travel for freight and business users and improved access to customers and suppliers. This intervention is also expected to have a significant impact in terms of improving the labour catchment area for employers based in Inverness, so assisting in the development of the local economy and improving the attractiveness of the area for inward investors. **Economic Activity and Location Impacts (EALIs):** The impacts of upgrading the route are potentially significant for all sectors and settlements served by the A96. The dual carriageway intervention would assist in the progression of the development areas to the east of Inverness and improve access to areas to the south and the airport. Sectors that are expected to benefit significantly include manufacturing, construction, retail and distribution industries which rely on the route for movement of goods as well as sectors such as life sciences for which the intervention will improve access to international travel links and assist in the recruitment of highly skilled professionals.

Integration:	**Minor Benefit/Minor Negative Impact**	**Transport Integration:** This intervention would not have a significant effect on Transport Integration. **Transport and Land-Use Integration:** This intervention would have a minor negative impact on the policy of reducing the need to travel. However, the development of the area to the east of Inverness is seen as important for growth of the local and regional economy and this intervention would help to facilitate this development. **Policy Integration:** This intervention is not likely to affect disability, health, rural affairs or social inclusion but is likely to have a minor negative impact on road traffic reduction aspirations.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** This intervention is not likely to have any effect on community accessibility. **Comparative Accessibility:** This intervention would improve accessibility to Inverness Airport, areas to the south of Inverness and to the potential development areas to the east of Inverness.

Table D16.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	Increased capacity on this section of the route could result in journey time savings of around 5-10 minutes and improved journey time reliability. The link between the A96 and the A9 could improve connections between areas to the south of Inverness and areas to the east of Inverness including the potential development areas and also reduce congestion and delay at Raigmore Interchange.
Reduce Emissions:	**Neutral**	Reduced congestion at Raigmore Interchange would reduce stop-start traffic, with a potential reduction in road based vehicle emissions. However, this is likely to be offset by an overall increase in traffic speeds, and therefore overall CO_2e emissions are expected to remain broadly unchanged.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would improve the quality of journeys for private and public transport users with more reliable journey times, especially during the peak hours. This intervention would not provide any additional public transport services or reduce the cost of travel by public transport.

Table D16.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	The provision of a dual carriageway between Inverness Retail and Business Park and Nairn could result in a reduction in the accident rate of around 40 per cent and the severity rate of around 10 per cent for this stretch of road. This intervention would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would offer improvements in accessibility to education facilities in Aberdeen and Inverness such as the University of Aberdeen, the Robert Gordon University and the University of the Highlands and Islands in Inverness.
Wealthier and Fairer:	**Major Benefit**	Improved journey times and journey time reliability would result in a more efficient movement of people and goods on this section of the route, providing higher levels of productivity for people and vehicles travelling on the A96. The improved link will also enhance the intervention for development of the area to the east of Inverness.
Greener:	**Neutral**	The dualling of the A96 would help to relieve congestion, which may reduce bus journey times on the local road network, potentially encouraging greater use of public transport. However, this is considered to be an indirect effect as the intervention as currently proposed does not directly improve the competitiveness of public transport against the private car. Emissions would reduce due to reduced congestion at Raigmore Interchange but would increase with increased speeds on the dual carriageway.
Healthier:	**Neutral**	The dual carriageway is likely to improve the quality of journeys for private and public transport users with more reliable journey times and therefore may encourage a small modal shift from car to public transport. There is not likely to be any direct improvement in access to health services.

Table D16.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would not involve any untried techniques during its implementation. However, as the design stages progress, localised issues may arise which require increased technical capabilities to overcome.
Operational:	The upgraded A96 dual carriageway will continue to be the responsibility of Transport Scotland after construction. It is anticipated that the A96 - A9 Eastern Link Road would also come under the responsibility of Transport Scotland as a Trunk Road. It is not anticipated that there will be any significant issues with the operation of this route.
Public:	This is an important intervention to the economy of Inverness and the surrounding area, with significant public interest at both local and regional levels.

Detailed Appraisal	**D17: Rail Service Enhancements between Aberdeen and Inverness**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m (Phase 1 £50m - £100m) (Phase 2 £100m - £250m)
	Annual Revenue Support -
	Present Value of Cost to Gvt Phase 1 £10m - £50m
	BCR/PVB Phase 1 < 0.75 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to reduce journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.

The improvements to the railway between Aberdeen and Inverness would allow:

- An increase in service frequency (minimum of hourly service over the full route);
- A reduction in journey time by about 20 minutes between Aberdeen and Inverness;
- Extra rail services between Nairn and Inverness to provide two trains per hour over this section; and
- A new station at Dalcross with Park-&-Ride facilities and interchange facilities with Inverness Airport.

Phase 1 would involve the introduction of new loops in the area and line speed improvements.

Phase 2 would involve more comprehensive improvements to line speed, journey times and the provision of some double tracking on approaches to Inverness and Aberdeen.

Summary: Rationale for Selection

This intervention would reduce journey times between Aberdeen and Inverness and improve connectivity between the cities and the communities along the corridor. It would also increase opportunities to travel by providing a more frequent service at regular intervals throughout the day.

At the Inverness end of the route, this intervention would improve connectivity by public transport between Inverness City Centre and the growth area to the east, including Inverness Airport.

Within Aberdeen, this intervention would improve access to the Dyce area and, if combined with improvements to the connections between Aberdeen and the Central Belt (D18 Rail Enhancements between Aberdeen and the Central Belt), would also provide greater opportunity for cross city travel by rail.

The journey time savings of approximately 20 minutes are significant and this, coupled with an increased frequency, would make rail travel a genuine alternative to car travel. There would also be benefits from emissions reduction resulting from the ability to capture a higher share of inter-city travel.

The cost of this intervention is driven by the need to provide double track on the approach to Aberdeen. However, the improvements to journey time of around 20 per cent would be significant both for existing users and for those transferring from car and it is therefore considered to offer value-for-money.

Table D17.1.1 STPR Objectives

STPR Objectives	
STPR Objective 4.1: To improve connectivity, particularly by public transport, between Inverness City Centre and the growth area to the east, including Inverness Airport.	4.**1: Strongly Positive –** Network Rail's Route Utilisation Strategy (RUS) incorporates the option to enhance infrastructure between Aberdeen and Inverness. This would allow an increase in service frequency between Aberdeen and Inverness and would improve connectivity to Inverness City Centre and to the east of Inverness through intermediate stations. The reduction in journey time would provide an attractive alternative to the A96. The new station at Dalcross would further improve public transport access to/from the east of Inverness. However, the catchment area which the new station serves may not fully encompass this area.
STPR Objective 4.2: To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.	**4.2: Strongly Positive –** This intervention would result in improvements in journey time and increased opportunities to travel between Aberdeen and Inverness, due to the increased frequency of rail services. During a 3-hour peak, the improvements would enable a maximum increase in seat capacity arriving in Aberdeen and Inverness of up to 600 seats and 2,000 seats respectively. A reduction in journey time of 20 minutes for end to end travel would be achieved.
STPR Objective 4.3: Reduce the accident rates and severity rates to current national average.	**4.3: Neutral –** It is expected that this intervention would have a neutral effect on accident rates and severity rates on the trunk road network.

Table D17.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/Major Negative Impact**	This intervention has the potential for major adverse effects on the natural environment, including biodiversity, cultural heritage, soils and geology and the water environment; however, these effects are highly dependent on the finalised location of the works, and mitigation could be possible. Phase 1 works around Forres, Elgin and Keith need to take particular note of potential effects on heritage resources, in terms of Historic Gardens and Designed Landscape and listed buildings.
Safety:	**Neutral**	It is expected that this intervention would have a neutral effect on accident rate and severity rate. This intervention would be designed in line with best practice standards. It is anticipated that the new station would incorporate CCTV, lighting and surveillance to maintain a high level of personal safety for users of the new station.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention would improve public transport services between Inverness and Aberdeen through increased service frequency and travel time would be reduced by up to 20 minutes between Inverness and Aberdeen. This would result in travel time savings for those travelling by public transport to the Areas of Economic Activity in Aberdeen and Inverness. **Wider Economic Benefits (WEBs):** Improved service frequency and reduced travel time between Inverness and Aberdeen is expected to strengthen the inter-city connectivity between Inverness and Aberdeen and to subsequently promote the synergy between these two economic centres. This intervention is expected to improve access to and from the major employers in the area. **Economic Activity and Location Impacts (EALIs):** The proposed new station at Dalcross is anticipated to open up access to Inverness Airport and the adjacent development sites. Improved rail services between Aberdeen and Inverness would assist in the economic development and competitiveness of these two cities.
Integration:	**Moderate Benefit**	**Transport Integration:** This measure builds on the existing heavy rail network in the north of Scotland through the addition of a station at Dalcross and through improvements to service frequency and journey time savings. The creating of a new station with Park-and-Ride facilities is anticipated to have a positive impact with regard to promotion of sustainable modes of transport, and integration between road and rail. **Transport Land-Use Integration:** The *Inverness Local Plan (Highland Council, March 2006)* proposes focusing economic development in and around Inverness Airport, with the development of a business park, freight village and transport interchange. This intervention to develop a new station at Dalcross ties in with these local development plans. **Policy Integration:** It is anticipated that there would be improved access for Inverness and Nairn residents to the more specialised health services and facilities in Aberdeen. The development of Park-&-Ride facilities and improved rail services would encourage modal shift and would assist in achieving a healthy and inclusive society. It is anticipated that the new station at Dalcross would be compliant with the Disability Discrimination Act.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** This intervention would have a positive impact on community accessibility as it improves public transport network coverage and promotes non-motorised trips to access local services. **Comparative Accessibility:** Improved access to Aberdeen may be beneficial in terms of access to the more specialised heath services and facilities not found in Inverness. Improvements in sustainable forms of transport are anticipated to promote social

		inclusion and improved access for the mobility and visually impaired, youth and elderly. This intervention may open up employment opportunities for the socially deprived areas in Nairn and central Inverness.

Table D17.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections :	**Moderate Benefit**	This intervention would improve connections and journey times for public transport travel between Inverness, Nairn and Aberdeen. In addition, the intervention would improve connectivity by public transport between Inverness City Centre and the growth area to the east, including Inverness Airport.
Reduce Emissions :	**Minor Benefit**	An increased frequency of rail services between Nairn and Inverness and the provision of a new station at Dalcross with Park-&-Ride facilities would encourage modal shift from road to rail, thereby contributing to a reduction in CO_2e emissions and an improvement in local air quality.
Improve Quality, Accessibility and Affordability :	**Moderate Benefit**	This intervention would have a positive impact in terms of improved access and quality of public transport between job seekers and employment opportunities, as rail services are improved between the socially deprived neighbourhoods of Nairn to the employment opportunities in Inverness. Additional seating capacity arriving during a three-hour peak at Aberdeen would be up to 600 seats and at Inverness would be up to 2,000 seats (based on a six-car set). It is unlikely that the intervention would impact on affordability.

Table D17.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention would improve access to essential services and economic opportunities for residents of Nairn, and supports communities in less accessible or remote parts of Scotland. This intervention is expected to have a neutral impact on safety.
Smarter:	**Minor Benefit**	This intervention would offer improvements in accessibility to education facilities, such as the University of Aberdeen and the Robert Gordon University in Aberdeen and the University of the Highlands and Islands in Inverness.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would improve journey times, service frequency and journey time reliability, sustaining and promoting economic growth in the north of Scotland between Inverness, Nairn and Aberdeen.
Greener:	**Minor Benefit**	Rail enhancements promote public transport use and have the potential to result in modal shift to rail thereby improving air quality and climatic factors.
Healthier:	**Minor Benefit**	This intervention encourages modal shift to public transport, and to healthier and physically active forms of transport with consequential health benefits. Access to health services would be enhanced through improved access to specialised health services and facilities in Aberdeen and Inverness.

Table D17.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention. .
Public:	This intervention is in the public domain and it is anticipated that it will receive general public support.

Detailed Appraisal	**D18: Rail Enhancements between Aberdeen and the Central Belt**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m (Passenger improvements: Phase 1: £100m - £250m, Phase 2: £100m - £250m Freight improvements £50m - £100m)
	Annual Revenue Support Present Value of Cost to Gvt -
	BCR/PVB Phase 1 £100m - £250m 1.75 -2.25 / Phase 1 £100m - £250m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to improve public transport competitiveness between Aberdeen and the Central Belt and provide enhanced opportunities to move freight by rail.

It would involve:

- Recasting of the passenger timetable on the Aberdeen – Dundee – Edinburgh / Glasgow corridors to provide express and stopping services;
- Providing one express train per hour to Glasgow (2¼ hour journey time);
- Providing one express train per hour to Edinburgh (2 hour journey time); and
- No stops at intermediate settlements (except Dundee) for express services.

Phase 1 would include line speed improvements, additional loops to allow passing of freight trains and upgraded signalling along the entire length of the line to reduce headway times.

Phase 2 would involve the removal of the single track at Usan, including a new bridge over Montrose Basin.

Additional freight improvements:
The passenger enhancements could be optimised to benefit freight operations. It is envisaged that this would include:

- Provision of bi-directional signalling to reduce the impact of engineering works (permitting the route to remain open for freight throughout the day and week);
- Increased length of freight loops (allowing longer freight trains); and
- Removal of speed limits that are below 75mph for freight trains.

Included within this intervention is the capability to operate low floor wagons that are currently becoming available for use on the network. These would allow standard containers to be carried on existing infrastructure with minimal physical works, such as targeted gauge enhancements at appropriate structures.

Summary: Rationale for Selection
This intervention would help to reduce journey times between Aberdeen and the Central Belt by around 20 minutes, the majority of which would be delivered under Phase 1. This intervention would assist in allowing travellers to achieve an effective working day when travelling between Scotland's four largest cities. These improvements would lead to an increase in demand for rail travel, and a modal shift from private car use. The freight improvements would make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times. The improvements required to facilitate the improved passenger services are relatively modest compared with the works required for freight. This gives the passenger service improvements a good performance in terms of value for money, with the freight improvements being more marginal. However, the potential benefit from this in terms of reduced emissions control would make the overall improvement worthwhile. The environmental impact this intervention is forecast to have on biodiversity and water quality has been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D18.1.1 STPR Objectives

STPR Objectives	
STPR Objective 5.1: To improve the public transport competitiveness between Aberdeen and Dundee (and hence onwards to the Central Belt).	**5.1: Strongly Positive –** The proposed journey times of 2 hours 15 minutes from Aberdeen to Glasgow and 2 hours from Aberdeen to Edinburgh represent a reduction of approximately 20 minutes from the existing journey times. This intervention would therefore enhance the competitiveness of rail transport for passengers travelling between Aberdeen and the Central Belt. Certain rail freight enhancements to the network in the northeast may have a direct effect on public transport competitiveness. The reason for this is that slow moving freight trains can negatively affect passenger trains; by increasing the length of loops and increasing the line speed, freight trains can be routed into the passing loops, when necessary, with a benefit to passenger trains.
STPR Objective 5.2: To contribute to reducing both overall emissions and emissions per person kilometre through providing for alternatives to road freight movement on the corridor.	**5.2: Positive –** This intervention would include the provision or extension of freight passing loops in order to reduce pathing conflicts with passenger trains. This intervention would offer the opportunity to implement further infrastructure enhancement that would significantly improve capacity and service for freight transport. These improvements would allow longer and faster freight trains which could carry standard 9'6" deep sea containers. Furthermore, bi-directional signalling would minimise disruption from engineering works, allowing rail traffic to operate throughout the day and week. Overall, these interventions could significantly improve provision for freight transport, enhancing the competitiveness of rail in comparison with road freight and facilitating modal shift in freight transport. Rail alternatives could produce significant benefits in terms of carbon efficiency. These improvements are likely to make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times, allowing freight to arrive at times suitable for the final receiver and allowing standard deep sea containers to be carried. This would provide an attractive alternative for road freight and could be expected to encourage modal shift from road to rail. This potential modal shift could lead to significant reductions in emissions in this corridor.
STPR Objective 5.3: To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period	**5.3: Slightly Positive –** The overall impact of the measures on accident rates and severity rates would be small but positive due to the anticipated reduction in freight transported by road and increased rail mode share for passenger trips.
STPR Objective 5.4: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres.	**5.4: Strongly Positive –** The proposed journey times of 2 hours 15 minutes from Aberdeen to Glasgow and 2 hours from Aberdeen to Edinburgh represent a reduction of approximately 20 minutes from the existing journey times. This intervention would therefore enhance the competitiveness of rail transport for passengers travelling between Aberdeen and the central belt. Rail freight enhancements to the network in the northeast will have a positive effect on journey times between the Central Belt and Aberdeen for existing rail freight and public transport alike. Journey time reductions also assist the train operators with operating costs and competitiveness.
STPR Objective 12.1: To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.	**12.1: Strongly Positive –** The fastest options for travel between Edinburgh and Perth are currently direct services via Stirling or Kirkcaldy that complete the journey in just over 1 hr 20 minutes. Some of the proposed improvements between Edinburgh and Dundee would generate journey time savings for trips via Kirkcaldy.

	The proposed service enhancements would significantly enhance rail capacity. During a three-hour peak period an additional 1100 seats would be provided on services arriving at Aberdeen (based on 1 additional train per hour on Edinburgh to Dundee and Edinburgh to Aberdeen services).
STPR Objective 12.4/14.4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**12.4/14.4: Positive –** The successful development of an international container terminal at Rosyth would be enhanced if supported by appropriate rail connections. Rosyth port is connected by rail to Inverkeithing on the East Coast Mainline; northbound journeys from the port would therefore benefit from the improvements proposed in this intervention. The implementation of passing loops to accommodate freight trains in particular, would help cater for any increase in rail freight as a result of development at the port. The improvements would enable carriage of standard 9'6" deep sea containers, facilitating transfer to rail of sea freight arriving at Rosyth. The existing Forth Road Bridge suffers from congestion during peak hours. The proposed rail improvements would complement the national development of the Forth Replacement Crossing by providing a more competitive public transport alternative along routes crossing the Forth.
STPR Objective 12.5: To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**12.5: Slightly Positive –** This intervention would not affect road journey times directly. However, rail service enhancements could result in some modal shift. This would improve the peak period efficiency of roads such as the M90/A90. The proposed freight improvements would be likely to encourage modal shift from road to rail in freight haulage. This would reduce disruption due to large vehicles on the M90/A90, with beneficial impacts on the efficiency of the route.
STPR Objective 14.1: To reduce public transport journey time between Edinburgh and Dundee.	**14.1: Strongly Positive –** This intervention contains measures specifically targeted to improve rail journey times between Edinburgh and Dundee.
STPR Objective 14.2: To increase public transport capacity and frequency between Fife and Edinburgh.	**14.2: Positive –** Extra rail capacity to provide express services in addition to local services is envisaged as part of the intervention of measures promoting rail journey time improvements between Edinburgh and Dundee. Measures to provide separate services would result in increased public transport capacity for both strategic journeys and local trips between Fife and Edinburgh.
STPR Objective 14.3: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**14.3: Strongly Positive -** The planned journey times of 2 hours 15 minutes from Aberdeen to Glasgow and 2 hours from Aberdeen to Edinburgh represent a reduction in public transport journey times between Aberdeen and the Central Belt by approximately 20 minutes. On a round trip, businesses would benefit from journey time savings of approximately 40 minutes. Subject to the improvements, a round trip between Aberdeen and Glasgow would take 4 hours 30 minutes and a round trip from Aberdeen to Edinburgh would take 4 hours, allowing businesses to achieve a more effective working day when travelling between these centres. These journey time improvements would also benefit freight movements.

Table D18.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/Major Negative Impact**	This intervention has the potential for moderate to major adverse effects on the natural environment, including biodiversity, cultural heritage, soils and geology and the water environment; however, these effects are highly dependent on the finalised location of the works, and avoidance or mitigation could well be possible through sensitive siting. Construction of the new bridge over the Montrose Basin is a particular issue, given the multiple national and international designations that cover the area.
Safety:	**Minor Benefit**	The overall impact of the measures on road safety would be likely to be small but positive, due to the modal shift of passengers and freight from road to rail.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE)**: The measures in this intervention would result in significant journey time savings for rail passengers, reducing journey times between Aberdeen and the Central Belt by approximately 20 minutes. Modelling suggests that patronage at the key stations along the line, i.e. Glasgow Queen Street, Edinburgh Haymarket, Aberdeen and Perth would increase. However, station usage at Dundee is forecast to decrease. The proposed rail enhancements between Edinburgh and Dundee would reduce journey times and encourage modal shift for people travelling from parts of Fife to Edinburgh, particularly commuters. The proposed service frequency enhancements would increase the seat capacity arriving at Aberdeen by 1100 over a three hour peak period (based on one six-car additional train per hour on both the Edinburgh to Aberdeen and Edinburgh to Dundee routes) open these journey time improvements to a large number of additional rail passengers. **Wider Economic Benefits (WEBs)**: The proposed improvements would give journey time reductions of approximately 40 minutes on round trips between Aberdeen and the Central Belt. The improved journey times of 4 hours and 4 hours 30 mins for a round trip from Aberdeen to Edinburgh and Glasgow respectively would enhance efficiency and productivity for business travellers, enabling them to achieve a more effective working day when travelling between these locations. Strengthening links between Scotland's cities is a key strategy in achieving competitiveness in the Scottish Government's emerging National Planning Framework 2. If the proposed rail freight enhancements are implemented, businesses would benefit from more efficient freight links both within Scotland and to overseas, via improved provision for rail freight on routes connecting to Rosyth port. The improvements would reduce journey times from Dundee, Edinburgh and Edinburgh Airport (through connection with the tram network), enhancing the efficiency and competitiveness of Scottish organisations conducting international business. **Economic Activity and Location Impacts (EALIs)**: This intervention promotes efficient commuter links into urban areas, maximising the 60-minute commutable labour area to these locations. This intervention would have beneficial impacts on employment and productivity in key urban centres, in particular, Aberdeen, Edinburgh and Dundee. The enhancements proposed also offer opportunities for improved rail accessibility to the proposed container terminal at Rosyth. This intervention also offers the potential to create jobs at the freight hubs.
Integration:	**Moderate Benefit**	**Transport Integration**: The Freight Action Plan (FAP) for Scotland (2006) encourages modal shift of freight transport from road to rail and sea as a priority for reducing vehicle kilometres and emissions. Rail freight enhancements will help in the creation of integrated road and rail transport through the requirement for freight hubs for distribution to local towns and cities. Similarly, some companies from Scandinavia and other North Sea destinations that use Aberdeen harbour could benefit from better rail

		freight integration to distribute goods across Scotland and the rest of the UK. There are plans to improve the facilities at Waterloo Sidings at the Aberdeen Port. A new terminal is being built at Raithes Farm adjacent to Aberdeen Airport and could be used for express parcels. **Transport and Land-use Integration:** The measures proposed as part of this intervention would not have a significant impact on transport and land-use integration. However, the development of Areas of Economic Activity in key urban locations including Aberdeen, Dundee, Edinburgh and Glasgow is seen as important for the growth of local and regional economies, and this intervention would be likely to help facilitate such development. **Policy Integration**: This intervention comprises rail enhancements and would therefore be likely to generate some benefits towards social inclusion. However, this intervention does not promote enhancements in network coverage and therefore remains limited in scope albeit with a potentially significant magnitude. This intervention will promote modal shift and will deliver a beneficial impact in relation to road traffic reduction aspirations.
Accessibility and Social Inclusion:	**Minor benefit**	**Community Accessibility**: This intervention is not designed to improve public transport area coverage and the benefits to community accessibility would be likely to remain limited. However, the intervention comprises measures to improve rail journey times and would therefore generate some benefits in terms of accessibility to services. Residents within the catchment area of stations along the Fife line would benefit from improved accessibility to employment opportunities in Edinburgh and Dundee as a result. Rail freight improvements and integration with lifeline ferry services from Aberdeen to Orkney and Shetland are included in the FAP as being important to the creation of jobs in remote and rural areas. Freight enhancements would build on the recent gauge enhancement to Elgin. **Comparative Accessibility**: This intervention will affect local and long distance rail passengers and freight traffic over the route.

Table D18.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	This intervention contains infrastructure improvements and service enhancements that would result in significant journey time savings (approximately 20 minutes) for trips between Aberdeen and the Central Belt. The improvements would remove the one remaining section of single track line on the East Coast Mainline, which is a recognised constraint to providing improved rail connections to the North East of Scotland. Businesses would benefit from more efficient connections between key urban centres within Scotland. Scotland's current freight network is concentrated around links from the south to the Central Belt. Improved rail freight links to the north and northeast will significantly improve journey times for consolidated train loads of freight to and from Aberdeen, and in turn provide potential rail freight access to the cities of Dundee, Perth and Stirling en-route.
Reduce Emissions:	**Minor Benefit**	This intervention would encourage some modal shift from road to rail. Passenger service improvements would encourage this transfer for some private car users whilst rail freight improvements would encourage this transfer for road freight hauliers. This could result in a slight reduction of CO2e emissions, particularly due to a reduction in the number of kilometres driven by HGVs. Modern freight, rolling stock and diesel tractive design ensures that the effect on communities affected by increased rail freight utilisation along strategic sections of the network is kept to a minimum, through reduced exhaust emissions. Furthermore, improved suspension and wagon design reduces vibration and noise emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would result in faster journeys between Aberdeen and the Central Belt and between Dundee/Fife and Edinburgh, improving the quality and competitiveness of rail connections. Faster rail services from Fife would increase the accessibility of employment opportunities in Edinburgh and Dundee. However, the proposed enhancements would not extend network coverage and the target area would therefore be restricted to the catchment of existing rail stations. This intervention is not expected to impact on affordability.

Table D18.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives

Objective:	Assessment Summary:	Supporting Information:
Safer and Stronger:	**Minor Benefit**	This intervention would go some way towards improving the quality and accessibility of rail services between Aberdeen and the Central Belt. Users of key inter-urban services on the route would benefit from significantly improved journey times. Residents in Fife would benefit from improved connectivity to economic opportunities in Fife and Dundee. Benefits to road safety are likely to be minimal although positive due to the reduction in road traffic from the anticipated modal shift from road to rail.
Smarter:	**Neutral**	This intervention would have no direct impact on access to specific schools, colleges and universities for those living along the corridor. However, reducing journey times between the major cities would result in improved overall accessibility to education services.
Wealthier and Fairer:	**Major Benefit**	This intervention would significantly improve rail journey times along key routes from Aberdeen to the Central Belt, generating significant efficiency gains for business travel between these centres. Improved provision for freight transport would benefit businesses by strengthening transport links to markets and suppliers both within Scotland and overseas, via links to a new container terminal at Rosyth port and the existing facility at Grangemouth. Journey time improvements along the Fife line would improve links to employment opportunities in Edinburgh and Dundee for residents of Fife. More efficient rail connections between Fife and Edinburgh would also help curb traffic growth on routes across the Forth Road Bridge, contributing to the efficiency of road-based travel along the route. This intervention would also boost the economy in the north of Scotland through improved connections with the Central Belt resulting in increased productivity and efficiency. There may be an increase in the labour catchment area between Dundee and Edinburgh.
Greener:	**Minor Benefit**	This intervention promotes a degree of modal shift to rail away from the private car, with improvements to air quality, reduced carbon emissions, and increased use of sustainable transport.
Healthier:	**Neutral**	The measures proposed as part of this intervention would enhance the attractiveness of rail travel along key routes and would be likely to achieve a modal shift from road to rail. However, the intervention is not specifically aimed at improving the uptake of active travel modes, i.e. walking and cycling, and the benefits to health services would therefore be likely to be negligible.

Table D18.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	In general terms, the intervention would be likely to improve service provision and modal shift and would therefore be likely to meet with public approval. The movement of freight from road to rail would be generally welcomed.

Detailed Appraisal	**D19 - Dundee Northern Relief Road**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m. ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m. ***BCR/PVB*** 1 - 3 / £100m - £250m.

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment		1	2		1 and 2		
Safety					1	2	
Economy						2	1
Integration					1 and 2		
Accessibility and Social Inclusion					1 and 2		

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to reduce conflict between strategic and local traffic in Dundee, and to improve the connectivity of Aberdeen to the Central Belt,

Improvement to the A90 at Dundee could take the form of:

1. A new Northern Peripheral Bypass road around Dundee from the A90 west of Invergowrie to the A90 north of Dundee; or
2. Upgrading of roundabouts and associated junctions on the A90 Kingsway.

Both options could incorporate a package of associated bus priority, cycle lanes and pedestrian measures on or across the Kingsway.

Summary: Rationale for Selection

A new outer bypass would contribute significantly to the objective of reducing journey times between the Central Belt and Aberdeen, with an approximate reduction of 10-15 minutes, by reducing the conflict between long distance and local traffic through removing up to 50 per cent of traffic from the Kingsway. This would have consequential environmental benefits to those living and working adjacent to the A90, and would enable the Kingsway to perform a role as a regional distributor road with potential for the introduction of bus priority measures.

The outer bypass would have a potentially moderate benefit to Air Quality in Dundee's Air Quality Management Area (AQMA) by moving 50 per cent of the traffic away from the A90.

Alternatively, grade separation of all or some of the at-grade roundabouts on the A90 Kingsway would contribute to the two objectives above, albeit to a lesser extent.

Although this option would avoid any environmental impact north of the city, provision of grade separated junctions in an urban area would have adverse impacts on the communities adjacent to the A90.

The bypass route is expected to provide more value for money than the on-line upgrade.

Table D19.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce the conflict between long distance and local traffic.	**1: Strongly Positive (1) / Positive (2) –** A new outer bypass would reduce the conflict between long distance and local traffic as it would remove up to 800 vehicles in the peak from the existing route. This equates to approximately 50 per cent of the existing flows. Grade separation of the junctions on the Kingsway would reduce the conflict between local traffic and long distance traffic. The A90 through Dundee is approaching theoretical capacity and is particularly affected by the operation of at grade junctions along the length of the route. Both scenarios would therefore meet the objective but the outer bypass would be more effective.
STPR Objective 2: To improve bus/rail interchange opportunities.	**2: Neutral –** No impact.
STPR Objective 3: To improve the public transport accessibility and competitiveness to Dundee West.	**3: Positive (1) / Slightly Positive (2) –** This intervention would improve efficiency on the approaches to and through Dundee, resulting in reduced congestion through Dundee and improved public transport accessibility. The introduction of bus priority measures would improve public transport competitiveness. Although these impacts would improve the journey times for public transport services, the impact on public transport accessibility and competitiveness to Dundee West is not likely to be significant without improvements to services. Both options would contribute to the objective, with the outer bypass being more effective.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Positive** – The accident rate on a new bypass is forecast to be approximately 80 per cent lower than on the existing network, although the severity rate is likely to rise by around 40 per cent due to higher speeds on the new route. Grade separation of the junctions on the Kingsway would reduce vehicle conflicts and therefore the number of junction related accidents. Overall, this intervention is forecast to improve road safety in Dundee.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between Aberdeen and the Central Belt primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Positive –**The provision of an outer bypass around Dundee would also improve the efficiency and reliability of the transport network in and around Dundee. The potential reduction of approximately 50 per cent of total trips on the Kingsway would reduce congestion. Journey times are expected to decrease by around 10 - 15 minutes for vehicles using the bypass. Journey time savings for public transport services between Aberdeen and the Central Belt would be lower if direct services bypassing Dundee were introduced. Grade separation of the junctions on the Kingsway in Dundee would result in journey time reductions and increased journey time reliability. These benefits would result in increased business productivity due to more efficient movement of people and goods.

Table D19.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor benefit / Moderate Negative Impact (1)** **Minor Benefit / Minor Negative Impact (2)**	The Northern Peripheral Bypass would result in beneficial environmental effects, particularly to the local environment along the A90 corridor, in terms of reducing transport related air pollution in the designated Air Quality Management Area. Noise modelling suggests that the intervention could produce increased noise effects on the local population, particularly to the north of Dundee along the proposed route. The severity and scale of this effect would depend on the final location of the route, proximity to sensitive receptors and noise attenuation incorporated within the road design. However, it is assumed that there would be a benefit to the noise profile within Dundee, particularly along the A90, due to reduced traffic volumes. The new bypass could have an adverse effect on the natural environment to the north of Dundee, including potential for effects on local watercourses, biodiversity, archaeology, landscape and visual intrusion. The degree to which the environment in this area would be affected would depend on the final route and design of the intervention. Accordingly, the intervention has been assessed as having a potentially adverse effect at this stage of the decision making process. (1) Provision of grade separated junctions on the A90 would reduce congestion and increase the speed of traffic flows, improving accessibility for traffic through Dundee. Air, climate and noise effects are considered to be largely neutral, with positive effects from reduced congestion offset by negative effects from increased traffic speed. Any adverse severance effects are likely to be offset by the proposals for new pedestrian and cycling facilities along and across the road, and these would also help encourage healthy lifestyles. However, there is potential for moderate adverse effects on cultural heritage assets, particularly the Stone Circle Scheduled Monument, and minor adverse effects on local landscape receptors, such as Caird Park and Castle, and Camperdown Country Park. Effects on biodiversity, geology and soils, and the water environment are considered to be neutral, as there is little new land-take required. There is potential for short term construction effects and disturbance to local receptors. However, it is envisaged that these could be controlled by adherence to standard best practice construction techniques. (2)
Safety:	**Minor Benefit (1) / Moderate Benefit (2)**	Both interventions would reduce the accident rate on this section of the transport network. National statistics indicate that the outer bypass option would lead to accident reductions of up to 80 per cent, depending on the level of provision. National statistics indicate that the severity rate (proportion of accidents with serious or fatal casualties) could increase by up to 40 per cent for traffic transferring onto the new outer bypass. However, although there could be a higher proportion of severe and fatal accidents, the total number of accidents would reduce. Grade separation of the remaining junctions on the A90 Kingsway could also reduce the number of accidents by removing the conflict between local and longer distance traffic.
Economy:	**Major Benefit (1) / Moderate Benefit (2) /**	**Transport Economic Efficiency (TEE):** Both options would provide journey time savings for strategic journeys passing through Dundee and for local journeys within the city. These savings are expected to be considerably greater for the outer bypass option. Congestion would be reduced on the Kingsway and other locations within Dundee, resulting in increased reliability of journey times for trips remaining on this route and for those on the new route. These options would also provide improved productivity for freight movements. Journey time savings and congestion reductions provide the majority of the economic benefits; however significant accident benefits are also forecast. The economic performance indicates that both options would provide a benefit to cost ratio of between 1 and 3.

		Wider Economic Benefits (WEBs): Significant improvements to journey time, reliability and quality would have a major positive impact on the efficiency, productivity and competitiveness of businesses using the route to travel between destinations in Aberdeen and the Central Belt. Benefits should accrue from the lower cost of travel for freight and business users, improved access to customers and suppliers and improvements to competitiveness by addressing issues of remoteness and peripherally. Similar benefits would also accrue to businesses based at key strategic sites in Dundee resulting from reduced congestion and potential reductions in traffic volumes along the Kingsway. **Economic Activity and Location Impacts (EALIs):** The improvements proposed as a part of this intervention should benefit businesses across the north east by improving connectivity to customers, suppliers and other businesses in the Central Belt and further south. Key sectors to benefit from improved accessibility would include energy, food processing and other manufacturing industries, as well as tourism. Reduced congestion on the A90 would also benefit key businesses based along the Kingsway and at sites to the west of the city centre, such as Ninewells Hospital, Dundee Technology Park and Dundee Medipark. Overall, the intervention would assist in the promotion of strategically important sites in Dundee and across the north east of Scotland for further development and economic growth.
Integration:	**Minor Benefit (1 and 2)**	**Transport Integration:** This intervention would have no significant effect on transport integration. **Transport and Land-Use Integration:** The bypass would improve access to/from the businesses located along the Kingsway by removing through traffic. Other land use integration would depend on planning policy for new developments along the bypass. **Policy Integration:** This intervention may have a minor impact on road traffic reduction aspirations.
Accessibility and Social Inclusion:	**Minor Benefit (1 and 2)**	**Community Accessibility:** The reduction of flows on routes through Dundee could result in improved opportunities to walk and cycle in the city, particularly with the outer bypass option, as the connectivity between the city centre and areas north of the Kingsway could experience significant improvements. **Comparative Accessibility:** This intervention would improve accessibility to areas of Dundee city and the north east of Scotland.

Table D19.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit (1) / Minor Benefit (2)**	The provision of an outer bypass around Dundee or grade separated junctions on the Kingsway would result in reduced journey times and improved journey time reliability, improving connections, especially between the north east and the Central Belt and from areas to the east of the Kingsway to the centre of Dundee. Benefits to public transport services would be more noticeable if direct services bypassing Dundee were introduced. The potential for new bus priority measures on the Kingsway will have a positive impact on public transport journey times within Dundee.
Reduce Emissions:	**Moderate / Minor Benefit (1)** **Neutral (2)**	Dundee has an Air Quality Management Area as a direct result of the traffic volume within the city centre, as well as the wider local authority area. Removal of 50 per cent of traffic to an outer bypass could result in a substantial improvement to air quality within the Air Quality Management Area; however, the degree of improvement is uncertain. Overall, it is expected that changes in CO_2e emissions from transport as a result of this intervention are likely to be negligible. It is not expected that this intervention would encourage modal shift to public transport. (1) This intervention does not aim to remove cars from the road or encourage a modal shift to public transport but it is accepted that it could include provision for bus and cycle lanes. (1 and 2) Any improvement in air quality due to reduced congestion could be offset by increased, less fuel efficient, vehicle speeds. Grade separation of existing junctions would make efficient use of the existing A90. (2)
Improve Quality, Accessibility and Affordability:	**Moderate Benefit (1) / Minor Benefit (2)**	Both interventions would reduce conflict between local and strategic trips, reduce congestion and enable commuters travelling to locations within Dundee to benefit from improved accessibility. The outer bypass option would provide greater benefits. Neither intervention is likely to impact on affordability.

Table D19.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit (1) / Minor Benefit (2)**	The provision of an outer bypass around Dundee would result in a reduced accident rate although accident severity could increase with increased speeds on the route. Grade separation on the Kingsway would result in reduced conflict between strategic and local trips providing a safer environment for road users, cyclists and pedestrians. The provision of bus priority could improve the quality and accessibility of public transport. There would be no effect on affordability of public transport.
Smarter:	**Neutral (1 and 2)**	This intervention would improve access to schools, colleges and universities within the corridor.
Wealthier and Fairer:	**Major Benefit (1) / Moderate benefit (2)**	Both options would result in reduced journey times and increased journey time reliability for the movement of people and goods resulting in increased accessibility to the north east of Scotland, increased opportunities and increased productivity. The benefits from the outer bypass would be higher than those of the grade separation.
Greener:	**Moderate / Minor Benefit (1)** **Neutral (2)**	The outer bypass would bring a possible moderate benefit to air quality in Dundee's Air Quality Management Area. Both options would help to relieve congestion on the Kingsway which would reduce bus journey times on the local road network, potentially encouraging greater use of public transport. However, this is considered to be an indirect effect as the intervention does not directly promote use of public transport.
Healthier:	**Minor Benefit (1/2)**	Reduced traffic flows on the A90 could make walking and cycling easier, with a positive effect on health. The outer bypass and grade separation options would also improve access to health services for some people, especially to Ninewells Hospital in the west of Dundee.

Table D19.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would be relatively straightforward in technical terms. Implementation would be easier for the outer bypass as only the existing network at either end would be affected. By comparison, the grade separation of the Kingsway would result in significant temporary disruption on existing routes. When implementing the intervention it would be critical that demand management is considered as diversionary routes during construction could have a significant impact on local and strategic trips both into and through the city. Careful planning would be necessary so as to avoid creating congestion on the rest of the road network in Dundee.
Operational:	Operation of the outer bypass would be the responsibility of Transport Scotland as the Trunk Road authority. It is possible that the Kingsway would be de-trunked with responsibility passed to the local authority. No significant operational issues are anticipated from this intervention.
Public:	The outer bypass is likely to be viewed positively by local and strategic road users, although residents local to the proposed route may have reservations about the intervention due to increased emissions and noise pollution. The environmental impact associated with the outer bypass is likely to prompt public criticism.

Detailed Appraisal	**D21 – Grangemouth Road and Rail Access Upgrades**	
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	£100m - £250m
	Annual Revenue Support Present	-
	Value of Cost to Gvt	£100m - £250m
	BCR/PVB	0.75 - 1.25

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to improve access to Grangemouth port and the freight hub, by improving access for both road and rail freight.

Improved road access from Grangemouth onto the motorway network would be provided through upgrades to Junction 6 on the M9. The A801 would be upgraded between Grangemouth and the M8 (including carriageway improvements and a new viaduct) to serve developing industrial and distribution facilities along the M8 corridor.

Improved rail access would be provided through capacity enhancements at and around Grangemouth Junction, to allow more trains to access the freight facilities at Grangemouth, such as:

- Committed improvements to the Edinburgh and Glasgow route;
- Electrification between Coatbridge and Grangemouth;
- Increased loading gauge to W12 to allow larger containers to be carried;
- Improved access from the west; and
- A new curve to permit direct access from the east.

Summary: Rationale for Selection

Improving the direct road link from Grangemouth to the developing industrial and distribution facilities along the M8 via an upgraded A801 would make it more suitable for the role that it is currently performing and allow for increased economic growth on this corridor.

In addition, it would offer significant journey time improvements and a reduction in the accident rate of around a third on the A801. Provision of this high quality route would also offer the opportunity for existing HGVs which use the M8 and M9 to reduce their current journey times by a minimum of 20 minutes.

This intervention would deliver a small positive impact on the environment as a result of the removal of some HGVs from parts of Grangemouth and rail improvements that include electrification, both of which are envisaged to contribute to reduced emissions. This intervention would; however, impact on the designated environmental sites along the route and this would need to be considered further in the development of any proposed alignment of a new road crossing of the Avon Gorge.

The economic analysis of this intervention would suggest that overall the intervention offers value for money.

The rail element would allow more freight trains to run into Grangemouth freight terminal without conflicting with passenger services, which in turn would improve journey time reliability. Electrification would allow freight trains to be operated from the West Coast Mainline by faster electric locomotives. Increasing the loading gauge would allow larger containers to be carried to and from Grangemouth. All of these improvements would also help make rail freight more attractive for hauliers.

Table D21.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: Improve access to Grangemouth port and freight hub.	**1: Strongly Positive –** Improvements to Junction 6 of the M9 and on the A801 would improve access to Grangemouth from the motorway network, providing improved links to Glasgow and the west via the A801 and M8 and to Edinburgh via the M9. Enhanced rail capacity at Grangemouth would allow more trains to access the freight facilities and allow direct access to the East Coast Mainline. Electrification would improve the train speed and efficiency and increasing the loading gauge would allow larger containers to be carried. Overall, this intervention would improve the accessibility and capacity of Grangemouth port and freight hub.
STPR Objective 2: To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.	**2: Neutral –** Currently, there are a limited number of bus services using the M9 and A801. As well as improving conditions for car users, improvements on the M9 and A801 could encourage greater provision of bus services in the areas. However, these are likely to address more localised shortfalls rather than significantly improve provision of services to Edinburgh.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period.	**3: Minor Positive –** Improvements on the M9 at Junction 6 and upgrades to the A801 would improve the accessibility of Grangemouth and have a positive impact on the reduction in accident rates and severity rates across the transport network. Upgrades to the A801 could reduce the accident rate, on this route, by around a third. Rail access enhancements to Grangemouth would improve the rail freight network, which may contribute to a modal shift from road freight to rail freight. This modal shift may be minor however; any modal shift contributes towards road based capacity improvements.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.	**4: Positive –** Enhancement of the M9 and A801 may improve the efficiency and effectiveness of transport links to/from Grangemouth which would improve accessibility and support development in the Grangemouth area in line with NPF2. Rail capacity enhancements in and around Grangemouth, coupled with electrification and an increased loading gauge to the main routes, and would improve the efficiency of the rail freight links. Overall, this intervention would support the development and implementation of proposed national developments at Grangemouth.

Table D21.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/Major Negative Impact**	This intervention has potential for major adverse effects on cultural heritage, particularly on the internationally valued Antonine Wall World Heritage Site and associated nationally designated Scheduled Monuments. It could also have possible adverse effects on material assets. However, many of these potential effects are open to mitigation, and effects would depend strongly on the final design and location of works.
Safety:	**Moderate Benefit**	Improved access to the M9 Motorway could reduce traffic flows on the surrounding local road network. The accident rate for single carriageway roads with 30mph speed limits is around 90 per cent higher than the accident rate for two lane Motorways. Therefore, reducing the journey length on the urban roads may result in reduced accidents and casualties. Upgrading the A801 to rural good single (10.0m) or rural dual carriageway could result in a reduction in accident levels as accident rates on these two types of road are around 40 per cent and 50 per cent less than on the existing road type. The improvements on the rail network would not have any significant effect on safety.

Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** The improvements to Junction 6 of the M9 could result in journey time savings by removing the need for vehicles to pass through urban areas of Grangemouth to access the freight hub. Upgrading the A801 would result in journey time savings of around two minutes however; HGVs that currently access Grangemouth via the M8 and M9 could transfer to this route with potential journey time savings of around 20 minutes. These factors have the potential to reduce the impact of increasing journey time variability on the M9. The improvements to the rail links into Grangemouth could result in journey time savings, especially to/from the east with a direct link to the East Coast Mainline potentially reducing journey times by around 30 minutes. Journey time reliability would also improve for road and rail trips. **Wider Economic Benefits (WEBs):** National Planning Framework 2 (NPF2) includes Grangemouth Freight Hub as one of nine proposed national developments. Improvements to road and rail links accessing the site would bring significant benefits to businesses based at Grangemouth and surrounding locations. Benefits would include improved efficiency and productivity, lower operating costs, improved access to customers and suppliers, improved interaction with other businesses and improved competitiveness. Providing a direct link to the East Coast Mainline would improve links from the freight hub to the east coast ports, especially those on the Tees and Humber. **Economic Activity and Location Impacts (EALIs):** The improved road and rail links would encourage growth in the Port of Grangemouth and its surrounding area. Increased accessibility may improve the attractiveness of the area to inward investors and improve the competitiveness of existing businesses. Given the status of the area as a nationally important area of economic activity, such improvements would benefit the Scottish economy as a whole in addition to significant local benefits.
Integration:	**Moderate Benefit**	**Transport Integration:** This intervention would improve the integration between sea freight movement and road/rail based freight movement. **Transport and Land Use Integration:** This intervention would not affect the need to travel, but improvements to road and rail links would enhance development opportunities in the industrial and port areas in Grangemouth in line with local, regional and national policies. **Policy Integration:** This intervention is in line with those detailed in NPF2 that proposes “improvements in road and rail infrastructure to support Grangemouth’s role as Scotland’s largest container port and main freight distribution centre”.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** Accessibility may be improved for local trips on the urban network currently used for access to the freight facilities. **Comparative Accessibility:** This intervention would specifically benefit freight movements to/from the port and freight hub in Grangemouth. It could improve access to Grangemouth from the rest of the Central Belt and further afield.

Table D21.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	Improvements to the road network would reduce journey times. This intervention would improve connections, mainly for freight, between Grangemouth and Glasgow/Edinburgh/Stirling by road and rail. Improved connections, using the upgraded A801, could result in HGVs transferring from the M8/M9 with potential journey time savings of around 20 minutes.
Reduce Emissions:	**Minor Benefit**	Environmental evaluation outputs indicate a slight decline in CO_2e from the 2022 baseline predictions. The possible removal of HGVs from Grangemouth, combined with rail improvements that include electrification, are envisaged to contribute to improvements in local air quality.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	The road and rail improvements in this intervention would improve the quality of travel and accessibility to/from Grangemouth port and freight hub. This intervention is not expected to impact on affordability.

Table D21.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	The provision of improved access to the M9 may result in a reduction in traffic flows within Grangemouth and a resultant reduction in accidents. This intervention will have no impact on the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	No impact
Wealthier and Fairer:	**Moderate Benefit**	The road and rail access improvements would increase opportunities for growth and employment within Grangemouth.
Greener:	**Minor Benefit**	This intervention would have a minor benefit to emissions with a slight decline in CO_2e emissions envisaged. This intervention does not encourage a modal shift to Public Transport.
Healthier:	**Minor Benefit**	This intervention would improve access to health facilities in the area but would not encourage modal shift from car to public transport.

Table Corridor D21.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of issues associated with this intervention. It would require modification of the M9 Junction 6 with the construction of slip roads from the motorway on three approaches. This may be difficult due to the proximity of properties and local roads. Upgrading the A801 to 10m wide carriageway road or dual carriageway standards would mostly take place using the existing road alignment but a new alignment would be required through the Avon Gorge, which would require bridging. Current road users on M9 and A801 and other adjacent roads such as A706 and A905 could be affected during construction. It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Following construction, it is unlikely that any factors would negatively affect the operation of the intervention during its projected life. The A801 is currently a non-trunk road and comes under the responsibility of the local authority. It is not clear if this would remain the case after any upgrade. Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	The upgrade to Junction 6 of the M9 and the rail improvements to Grangemouth are likely to be mainly welcomed by the public since they would reduce flows, especially HGVs, through urban areas. However, the construction and subsequent operation of the junction may impact on surrounding residential properties. The A801 upgrade is also likely to be generally welcomed; however the environmental impacts of crossing the Avon Gorge may be opposed in some communities.

Detailed Appraisal	**D22 – Edinburgh to Glasgow Rail Improvements Programme**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £500m - £1bn ***Annual Revenue Support Present*** -£8m to -£14m per annum ***Value of Cost to Gvt*** £500m - £1bn ***BCR/PVB*** 0.75 – 1.25

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention was identified early in the STPR and brought forward in a study which considered improvements to the capacity, frequency and journey time of rail services between Edinburgh and Glasgow.

This intervention supports a number of objectives relating to access to jobs from the perspective of both employers and employees, emissions and public transport capacity on the corridor between Edinburgh and Glasgow.

A number of potential packages of infrastructure and service enhancements were examined. The Minister announced to Parliament in Autumn 2007 that the preferred strategy would be to provide:

- An electrified railway between Edinburgh and Glasgow Queen Street (including diversion routes), the line via Cumbernauld and lines to Dunblane and Alloa;
- A new station at Gogar to serve Edinburgh Airport (via tram) and a new curve at Dalmeny to allow Edinburgh to Glasgow services to access the new station;
- Six trains per hour between Edinburgh and Queen Street with the fastest journey time of around 35 minutes and a mixture of stopping patterns to serve intermediate stations;
- Access to Edinburgh Park station for Edinburgh to Glasgow services; and
- Three trains per hour between Edinburgh and Glasgow Central (one stopping service and two semi-fast services) serving both the Shotts and Carstairs routes.

Summary: Rationale for Selection

This intervention would provide an increase in capacity between Edinburgh and Glasgow as well as reducing the journey time between the two cities. These combined would help maintain, and in some cases enhance, the labour market catchment area that can commute into the two cities within 60-minutes, counteracting the forecast decrease in labour market catchment caused by forecast increases in congestion and journey times on the road network. The improvements would encourage travellers to choose to travel by rail instead of private car. Electrification of the lines would also further help to reduce emissions within the corridor between Edinburgh and Glasgow. The intervention also provides a key linkage from the rail network to Edinburgh Airport, through the provision of a new station at Gogar and interchange with the tram.

The enhancement to services between Edinburgh and Glasgow via Shotts or Carstairs would improve public transport capacity between Edinburgh and Livingston / Glasgow. It would also improve connectivity and interchange opportunities (via Glasgow Central) between Edinburgh and Inverclyde / Ayrshire, further helping to maintain the labour market catchment area for the two cities, and encouraging rail use in place of private car.

This intervention, as a committed scheme, has a strong business case, offering value for money.

This intervention was an early deliverable within STPR and a more detailed analysis of the issues, options and solutions can be found within the Edinburgh – Glasgow Rail Improvements report, which has previously been published and is available on the Transport Scotland website.

Table 22.1.1 STPR Objectives

STPR Objectives	
STPR Objective E1 : To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	**E1: Strongly Positive –** This intervention would provide a key linkage between Edinburgh city centre and West Edinburgh and, by decreasing journey time along the Edinburgh to Glasgow via Falkirk (E&G) route and from key points along the Shotts line, would maintain, and in some cases increase, the rail 60-minute commutable labour market area.
STPR Objective E2 To enhance public transport interchange opportunities, where feasible to do so.	**E2: Positive –** The provision of a new station at Gogar (Edinburgh Airport), together with improvements at Haymarket, stopping some Glasgow services at Edinburgh Park and other station upgrades would all serve to increase the opportunity and quality of interchange. This would also provide the opportunity for easier interchange for trips from Fife to West Lothian and Glasgow.
STPR Objective E3 To increase public transport capacity and frequency between Fife and Edinburgh.	**E3: Neutral –** This intervention would have no significant impact on this objective.
STPR Objective E4 To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**E4: Neutral –** Although it would provide for a modal shift from road to rail, it is unlikely to have a significant impact on accident and severity rates.
STPR Objective E5 To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**E5: Neutral –** This intervention would have no significant impact on this objective.
STPR Objective E6 To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.	**E6: Strongly Positive –** This intervention would provide a new station at Gogar to serve Edinburgh Airport, via the tram connection, which would be accessible by trains on the E&G and lines north of the Forth.
STPR Objective G1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**G1: Positive –** This intervention would provide more rail capacity into Glasgow city centre and would provide more direct services through to the west of the city centre.
STPR Objective G2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.	**G2: Neutral –** This intervention would have no significant impact on this objective.

STPR Objective G3: To address rail capacity and connectivity issues in central Glasgow.	**G3: Slightly Positive –** The improvements to services on the E&G line in particular, requires new infrastructure in Glasgow to provide enhanced access to the low level system, new turnback facilities and improved platform capacity at Queen Street. These would be provided through this intervention.
STPR Objective G4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**G4: Neutral –** Although it would provide for a modal shift from road to rail, it is unlikely to have a significant impact on accident and severity rates.
STPR Objective G5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**G5: Neutral –** This intervention would have no significant impact on this objective.
STPR Objective G6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**G6: Slightly Positive –** By improving the connectivity and journey time on routes between Edinburgh and Glasgow Central, this intervention would deliver improved accessibility to the Glasgow Airport Rail Link.
STPR Objective 9.1 To address current and forecast rail overcrowding into Glasgow.	**9.1: Positive –** This intervention would deliver enhanced capacity on the route into Glasgow, in particular by providing local and regional services to augment the operation of the main E&G services.
STPR Objective 9.2 To improve the efficiency and reliability of the operation of the southern sections of the M80 on approach to Glasgow, particularly for priority vehicles.	**9.2: Neutral –** Although it would provide for a modal shift from road to rail, it is unlikely to have a significant impact on this objective.
STPR Objective 9.3 To reduce the severity of accidents to the national average.	**9.3: Neutral –** Although it would provide for a modal shift from road to rail, it is unlikely to have a significant impact on accident and severity rates
STPR Objective 9.4 To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**9.4: Neutral –** this intervention would have no significant impact on this objective.
STPR Objective 10.1 To improve access to Grangemouth port and freight hub.	**10.1: Slightly Positive –** The provision of an electrified railway on the E&G, together with various junction infrastructure works, would provide the basis for access improvements to Grangemouth. However, additional works, such as electrification, would be required within Grangemouth to take full advantage of these works.
STPR Objective 10.2 To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.	**10.2: Positive –** This intervention would provide additional capacity on the route and a shorter journey time, supporting a modal shift to rail.
STPR Objective 10.3 To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**10.3: Neutral –** Although it would provide for a modal shift from road to rail, it is unlikely to have a significant impact on accident and severity rates.

STPR Objective 10.4 To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.	**10.4: Positive –** The provision of an electrified railway on the E&G, together with various junction infrastructure works, would provide the basis for access improvements to Grangemouth. However, additional works, such as electrification, would be required within Grangemouth to take full advantage of these works. This intervention would provide a new station at Gogar to serve Edinburgh Airport, via the tram connection, which would be accessible by trains on the E&G (including Stirling and Dunblane).
STPR Objective 13.1 To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.	**13.1: Strongly Positive –** This intervention would significantly reduce the rail journey time between Edinburgh and Glasgow on both the E&G and via Shotts.
STPR Objective 13.2 To make best use of the available road space and better manage peak demand.	**13.2: Neutral –** Although it would provide for a modal shift from road to rail, it is unlikely to have a significant impact on this objective.
STPR Objective 13.3 To increase public transport capacity and frequency between Livingston and Edinburgh.	**13.3: Positive –** This intervention would provide additional capacity through the improvements to services on the Shotts line.
STPR Objective 13.4 To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.	**13.4: Slightly Positive –** The adoption of electric traction and modal shift from road to rail would help to reduce emissions.
STPR Objective 13.5 To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**13.5: Neutral –** Although it would provide for a modal shift from road to rail, it is unlikely to have a significant impact on accident and severity rates.
STPR Objective 13.6 To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.	**13.6: Positive –** The provision of an electrified railway on the E&G, together with various junction infrastructure works, would provide the basis for access improvements to Grangemouth. However, additional works, such as electrification, would be required within Grangemouth to take full advantage of these works. This intervention would provide a new station at Gogar to serve Edinburgh Airport that would be accessible by trains on the E&G and lines north of the Forth.

Table 22.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Negative Impact / Moderate Benefit**	There would be benefits due to reduced emissions from the significant level of transfer from diesel to electric traction on Edinburgh, Glasgow, Dunblane, Cumbernauld and Alloa routes. This would be enhanced by modal shift from road to rail. Increased emissions from more diesel train movements on Shotts line would be offset by a reduction in road based movements. There would be overall beneficial effects on air quality and climate. Adverse impact stems from visual impact of the overhead electric traction system and increased noise/vibration due to increased train movements. No significant impact on flora and fauna have been identified as infrastructure improvements are generally on-line rather than impacting on greenfield locations.
Safety:	**Minor Benefit**	Improvements to passenger security resulting from improvements to stations and improved infrastructure and signalling giving enhanced safety to rail operations would result in a minor positive benefit.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention would use targeted infrastructure improvements to allow more intensive use of the overall existing rail infrastructure between Edinburgh and Glasgow. It would provide a substantial increase in capacity, a 50 per cent improvement in frequency on the E&G and a reduction in journey time. There would be increased opportunities for interchange. **Wider Economic Benefits (WEBs):** The wider economic benefits of this intervention would be significant. It would provide a significant journey time saving and major capacity enhancements between Scotland's two largest cities, linking them more effectively. The provision of stops on the E&G service at Gogar (Edinburgh Airport) and Edinburgh Park would also have significant benefits. There would also be benefits to intermediate centres through enhanced access to jobs, other opportunities and services together with benefits to employers and the attraction of continued inward investment. The intervention would also benefit tourism and provide a more effective and efficient means of allowing tourists to travel between Edinburgh and Glasgow. **Economic and Location Impacts (EALIs):** Providing a 'step-change' in the service provision between Edinburgh and Glasgow Central is likely to have significant impacts at key locations on the Shotts line in particular. The additional capacity provision of up to 1,100 seats per hour arriving in each centre would support continuing development in both the commercial and retail sectors.
Integration:	**Moderate Benefit**	**Transport Integration:** Integration between heavy rail services and Edinburgh Tram would be significantly enhanced by the new station at Gogar (Edinburgh Airport), together with improvements at Haymarket and new connections at Edinburgh Park. **Transport and Land-Use Integration:** This intervention would support development at Edinburgh Airport and West Edinburgh in general (via Edinburgh Park). It would also support general development within the city centres of Edinburgh and Glasgow. **Policy Integration:** The intervention would be consistent with the aims and outcomes set out in Scotland's Railways. It would also support Sustainable Economic Growth. This would also support collaborative efforts by Edinburgh and Glasgow.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** The improvements in journey time between and among Edinburgh, Glasgow, Dunblane and Alloa and the intermediate settlements, in tandem with the provision of new services and additional capacity, would improve access

		to jobs and other opportunities by rail. In addition, the improvements to services via Shotts and Carstairs would significantly improve the accessibility of intermediate locations in terms of access to jobs and opportunities. **Comparative Accessibility:** It is unlikely that the distribution of impacts would differ by age, gender, car ownership or income group. The new infrastructure would be fully DDA compliant.

Table 22.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	The reduction in journey time on the E&G is significant and would provide a 'step change' in the rail journey time between the two main centres; providing a fastest journey time of around 35 minutes compared with the current of around 50 minutes. For some locations, the improved service via Shotts or Carstairs would result in this service becoming a viable competitor both for journeys by car, and to the current service on the E&G line. This would allow passenger loadings to be more effectively distributed, and provide a greater level of resilience to disruptions in the network. For other intermediate stations, there would be benefits to connectivity and journey time. The provision of new interchange opportunities at Gogar (Edinburgh Airport) and Edinburgh Park would provide enhanced connectivity from Fife to West Lothian and Glasgow, removing the need to travel via the centre of Edinburgh.
Reduce Emissions:	**Moderate Benefit**	The electrification of the E&G line and lines to Cumbernauld, Dunblane and Alloa would replace a significant proportion of diesel operated services in Scotland with electric traction. Together with a modal shift from car, this would result in a reduction in emissions. In addition, the electricity supply could be sourced from more environmentally friendly sources. Although increased services on the Shotts line would be operated by diesel trains, the increase in emissions would be offset by a reduction resulting from modal shift from private car to rail.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	The provision of up to 1,100 additional seats per hour arriving in both Edinburgh and Glasgow city centres would be of significant benefit in improving the quality of the rail service offering to passengers. Of additional benefit would be the splitting of local (Glasgow Outer Suburban) services and more regional focused services to better serve routes into Glasgow Queen Street. The provision of six trains per hour between Edinburgh and Glasgow, additional services to Stirling and Glasgow Outer Suburban services would all serve to increase the accessibility of the rail network by providing 'turn-up-and-go' capability for a number of key movements. No impact on affordability is forecast.

Table 22.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Major Benefit**	The provision of infrastructure and services to allow more services and increased passenger carrying capacity would fundamentally strengthen rail system operation and provide a greater degree of resilience to disruptions.
Smarter:	**Moderate Benefit**	The reduction in journey time for journeys into Glasgow and Edinburgh would reduce the overall journey time to major colleges

		and universities based within these cities and increase the potential catchment for a given overall journey time.
Wealthier and Fairer:	**Major Benefit**	The reduction in journey time, increase in frequency and increase in passenger carrying capacity between Edinburgh and Glasgow would continue to support both cities in their role as key economic drivers of the Scottish economy.
Greener:	**Minor Benefit**	Electrifying the railway network between Edinburgh and Glasgow including lines to Cumbernauld, Dunblane and Alloa, would substantially reduce the number of diesel powered services operating in Scotland which would reduce transport emissions from transport.
Healthier:	**Minor Benefit**	Reducing emissions would impact positively on human health and reduce health service costs in the long term, although the effects would be minor. There would be some benefits in terms of access to health services by improving the journey time, frequency and capacity of services into the central areas of Edinburgh and Glasgow for onward connection to major hospitals or other health care units.

Table 22.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	Proposals for improved services on the Shotts line (the Caledonian Express), have been in the public domain for some time, and have received a generally positive response. The early work within STPR relating to this particular intervention has been available and was the subject of a Ministerial announcement to Parliament.

Detailed Appraisal	**Intervention D23: Rail Enhancements in the East of Scotland**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** 0.75 - 1.25 / £100m - £250m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention includes an increase in service frequency on rail services across the east of Scotland.

This intervention would include services such as:

- West Calder to Haymarket (in addition to the committed service improvements as part of the Edinburgh to Glasgow Rail Improvements Programme, D22);
- Edinburgh to Newcraighall (two trains per hour as an extension to existing Dunblane services and two trains per hour to Glasgow and the west of Scotland via the committed Airdrie to Bathgate line. This would replace the existing two trains per hour from Newcraighall to Dunblane and from Bathgate to Newcraighall);
- Edinburgh to Dunbar (as an extension of services from Glasgow and the west of Scotland via the committed Airdrie to Bathgate line);
- Edinburgh to Cowdenbeath semi-fast (as an extension of services from Tweedbank via the committed Borders Rail Link); and
- Haymarket to Kirkcaldy semi-fast (additional service on top of existing services).

This intervention would include additional rolling stock and facilities to support and maintain these services.

There is limited capacity available at Waverley Station and therefore capacity improvements would be required or alternatively, more efficient use of Waverley would have to be developed (which may include terminating some trains at Haymarket north platform or an equivalent on the south side provided as part of the committed Edinburgh to Glasgow improvements).

This intervention would include remodelling of various parts of the network to enhance capacity for these services, such as Portobello Junction to Newcraighall and Dunbar station. Additional capacity enhancements such as resignalling and loops would also be included where necessary.

Summary:- Rationale for selection

This intervention would contribute towards the objectives for Edinburgh and the corridors serving the city, particularly in providing access to areas of economic activity. The increased provision would increase the labour market catchment that can commute into Edinburgh within 60-minutes by 5-10 per cent.

This intervention would provide additional rail capacity on some of the busiest rail lines in Scotland, resulting in a transfer of up to 5 per cent modal shift from car to rail. The reduction in car journeys could positively contribute towards improved air quality within air quality management areas.

This intervention is forecast to capture trips from car travel, with an increase of over 1,100 new rail passengers during each peak hour period, approximately half of whom are expected to transfer from car.

Table D23.1.1 STPR Objectives

STPR Objectives	
STPR Objective 13.2: To make best use of the available road space and better manage peak demand.	**13.2: Neutral –** This intervention does not make use of road space, however, it would contribute to managing peak demand by providing an alternative to travel by car through additional rail services and reduced journey time.
STPR Objective 13.3: To increase public transport capacity and frequency between Livingston and Edinburgh.	**13.3: Strongly Positive –** This intervention would help to increase capacity and frequency of rail service between Edinburgh and Livingston South by providing two additional services and up to 400 additional seats per hour in both directions on top of existing and committed services, and would enhance the overall quality of journeys.
STPR Objective 13.4: To contribute to both a reduction in emissions per person kilometer and a reduction in overall emissions.	**13.4: Slightly Positive –** Increasing capacity and service frequency is forecast to cause a modal shift from cars to rail and therefore contribute towards a marginal reduction in emissions.
STPR Objective 13.5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**13.5: Slightly Positive –** This intervention would have a small positive effect in promoting continuing reduction in accident rates and severity rates across the strategic transport network.
STPR Objective 14.2: To increase public transport capacity and frequency between Fife and Edinburgh.	**14.2: Positive –** Increased service frequencies on the Fife Circle would help to increase public transport capacity and frequency between Fife and Edinburgh. Increased frequencies of services would also help to cater for the peak demand periods where overcrowding is currently being experienced on the Fife Circle service.
STPR Objective 14.4 and E3: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**14.4 and E3: Slightly Positive -** This intervention would help to promote efficient and effective transport links to Edinburgh Airport, Rosyth and the Forth Crossing. Improved service frequencies on the Fife Circle would help to serve the proposed national developments at Rosyth and Forth Crossing better. This would also increase the number of services that are able to call at the committed station at Gogar, providing a connection to Edinburgh Airport via Edinburgh Tram.
STPR Objective 20.1: To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.	**20.1: Slightly Positive -** This intervention would increase public transport capacity into Edinburgh from areas which previously had an infrequent service. The station remodelling, new rolling stock and additional capacity would make rail travel a more attractive alternative to car, and help ease congestion.
STPR Objective E.1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking the areas of economic activity.	**E.1: Strongly Positive -** This intervention would improve the frequency and journey time reliability of rail travel into Edinburgh and as a result of this, it is expected to increase the 60-minute commutable catchment area around Edinburgh by about 5 - 10 per cent.
STPR Objective E.2: To enhance public transport interchange opportunities.	**E.2: Positive -** This intervention would increase the frequency of services across much of the east of Scotland, reducing interchange times for trips that require changing trains at Edinburgh.

Table D23.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral/Moderate Benefit**	Improving rail services in and around Scotland's capital city are considered to have long term benefits. Encouraging a modal shift from car to rail travel, especially amongst commuters could improve air quality, especially within Air Quality Management Areas covering parts of the city as well as contributing towards reduced carbon emissions from the transport sector generally. In light of the expected minimal requirement for new land-take associated with electrification and track dualling, potential effects upon biodiversity, water, landscape, geology and archaeology are considered to be negligible. Any noise effects are expected to be temporary and local in nature.
Safety:	**Minor Benefit**	Provision of additional rail services into Edinburgh would result in a degree of modal shift from the car which could contribute to a reduction in accidents on the road network. A 5 per cent mode shift to rail would be expected to contribute to a small reduction in accidents.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** The provision of additional rail services into Edinburgh from Livingston, the Fife Circle, Dunbar and Newcraighall would result in a modal shift from road to rail up to 5 per cent with approximately 1,100 new rail passengers in each peak hour. Journey times would reduce for journeys transferring from road to rail on the congested routes serving Edinburgh, such as the M8. These time saving benefits contribute towards a benefit to cost ratio in the order of 0.75 to 1.25, indicating that the intervention would provide value for money. **Wider Economic Benefits (WEBs):** This intervention would support wider economic impacts through improving public transport provision and accessibility into and across Edinburgh, increasing the labour catchment area that can commute into Edinburgh in 60 minutes by 5-10 per cent. **Economic Activity and Location Impacts (EALIs):** This intervention would support the designated areas of economic activity of West Edinburgh and South East Edinburgh by providing cross city links to these areas.
Integration:	**Major Benefit**	**Transport Integration:** This intervention would provide significantly improved links between services, due to the increased frequencies at Haymarket and Edinburgh Waverley which are recognised as important interchanges. The areas in which the proposed services would operate are all within the area of operation of the integrated One-Ticket. **Transport and Land-Use Integration:** Considerable additional housing requirements have been identified in the Edinburgh and Lothians Structure Plan 2015 at the South East Wedge, West Lothian, East Lothian and Midlothian. Travel patterns from these areas include significant commuter journeys to the areas of economic activity in Edinburgh. The increased rail services and capacity would support these journeys and reduce the need to travel by car. **Policy Integration:** The Edinburgh and Lothians Structure Plan 2015 identifies key transport investment interventions to increase rail services and capacity between West Lothian, East Lothian, Midlothian and Edinburgh. This intervention also supports national policies by encouraging modal shift to more sustainable means of travel.
Accessibility and Social Inclusion:	**Major Benefit**	**Community Accessibility:** This intervention would significantly improve the public transport network coverage and increase the availability and capacity of rail services on existing routes. New opportunities are likely to be provided for trips to the areas of economic activity in Edinburgh. **Comparative Accessibility:** The main beneficiaries of this intervention would be commuters between Fife, West Lothian, East Lothian, Midlothian and Edinburgh.

Table D23.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	Public transport connectivity from Livingston, the Fife Circle, Dunbar and Newcraighall to Edinburgh City Centre would be significantly improved through the provision of additional services. Increasing rail service frequencies across much of the east of Scotland would help to improve connections for longer distance journeys by reducing the wait time between services. For example, doubling the frequency between Edinburgh and Newcraighall would half the average wait time of fifteen minutes. Connections across Edinburgh would be further improved as services from Dunblane, Bathgate and Cowdenbeath would run across Edinburgh to Newcraighall, Tweedbank and Dunbar. Journey times on some journeys from Fife would improve significantly through the introduction of additional faster running services from Inverkeithing to Edinburgh Haymarket, saving approximately five minutes.
Reduce Emissions:	**Minor/Moderate Benefit**	This intervention would provide additional rail capacity on some of the busiest rail lines in Scotland, resulting in a transfer of up to five per cent modal shift from car to rail. The reduction in car journeys could positively contribute towards improved air quality within air quality management areas, and a reduction in CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Major Benefit**	This intervention would significantly improve the quality of service and accessibility, and would offer significant improvements in rail capacity on routes from Fife, Dunbar, Newcraighall and Livingston to the areas of economic activity in Edinburgh. Improved car parking would improve overall quality of service, and make rail a more competitive option. This intervention will not impact on affordability.

Table D23.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	This intervention would improve the quality and accessibility of public transport between Edinburgh and Fife, Dunbar, Newcraighall and Livingston. The improved public transport services could result in an increase in modal shift from road to rail for passenger traffic, resulting in reduced accidents on the roads.
Smarter:	**Minor Benefit**	This intervention would have a minor benefit towards improving access to higher educational facilities through improving service frequency on rail services across the east of Scotland.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would result in improved journey opportunities and journey time reliability for commuters and other passengers. This would result in increased productivity and increase opportunities for employment, business, leisure and tourism and would provide improved links between the towns on the routes.
Greener:	**Minor/Moderate Benefit**	Rail enhancements promote public transport use and have the potential to result in modal shift away from the car to rail providing potential marginal improvements in the air quality and reductions in CO_2e emissions.
Healthier:	**Moderate Benefit**	This intervention would encourage modal shift from road vehicles to more sustainable rail trips for passenger journeys. It would not impact on trips through specific services to health and community services; however there would be improved service frequency to and through Edinburgh therefore including access to services within the city.

Table D23.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would require significant engineering works on various parts of the rail network. Remodelling of Portobello Junction and upgrading the line to Newcraighall would significantly disrupt services on the East Coast Mainline and freight entering and departing Millerhill from the west. The works at Brunstane Station would require major realignment of the tracks. The line between Portobello and Newcraighall is underlain by limestone beds and limestone coal measures for about 1km, where there is a high risk of old mine workings. There are no major technical issues relating to the implementation of the Fife Circle service frequency enhancements. However, significant areas of Fife are underlain by coal mining, and depending on the location of loops, stabilisation measures may be required.
Operational:	Increased service frequencies across the east of Scotland would bring capacity enhancement and additional seating. However, greater disruptions would occur when things go wrong due to limited recovery times and lack of free paths in the timetable caused by this increased service frequency.
Public:	It is considered that the package of improvements would be supported by the public with no significant objections anticipated.

Detailed Appraisal	**D24 Targeted Road Congestion / Environmental Relief Schemes - (Part 1) Upgrade of the A77 from single to dual carriageway around Ayr, grade separation of key junctions and enhancements south of Ayr**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50m - £100m ***BCR/PVB*** 0.75 - 1.25 / £50m - £100m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This forms Part 1 of intervention D24 and consists of link and junction improvements including the upgrading from single to dual carriageway of the A77 between Whitletts Roundabout and Bankfield Roundabout, grade separation of Dutchhouse Roundabout, Whitletts Roundabout and Holmston Roundabout and enhancements south of Ayr.

Summary: Rationale for Selection

This intervention forms Part 1 of D24 to provide an upgrade of the A77 from single to dual carriageway around grade separation of key junctions and enhancements south of Ayr.

The grade separations on the A77 between Whitletts Roundabout and Bankfield Roundabout, would remove the conflict between local and strategic traffic, as well as reducing journey times by approximately 10 minutes. Upgrading the A77 to the east of Ayr would also provide additional capacity for traffic that is likely to be generated as Ayr expands to the southeast. These interventions would also improve access to the ports at Loch Ryan with benefits for freight and passenger traffic.

The environmental impacts this intervention has on cultural heritage and landscape have been identified at the strategic level as part of the Strategic Environmental Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D24.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.	**1: Neutral** – This intervention would not address this objective.
STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period.	**2: Strongly Positive -** Upgrading the A77 from single to dual carriageway, around Ayr, between Whittlets Roundabout and Bankfield Roundabout would reduce levels of congestion and could result in the accident rate reducing by up to 50 per cent and the severity rate reducing by up to 10 per cent. Grade separation of Dutchhouse, Whitletts and Holmston Roundabouts would reduce conflict between strategic trips on the A77 and trips on the east-west routes. Providing enhancements to the A77 south of Ayr would help to reduce accident rates and severity.
STPR Objective 3: To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.	**3: Strongly Positive –** This intervention includes a number of measures that would reduce the conflict between local and long distance traffic. The A77 around Ayr is approaching theoretical capacity and is particularly affected by the operation of at-grade junctions along the length of the route. Grade separation of the junctions on the A77 around Ayr would reduce the conflict between local and strategic trips.

Table D24.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	Supporting Information:
Environment:	**Minor Benefit / Minor Negative Impact**	This intervention involves a considerable amount of new infrastructure that is likely to result in a number of environmental impacts. There is the potential for impacts on biodiversity, water, cultural heritage and landscape as a result of dualling the A77 and through potential improvements south of Ayr. However, the scale of these is uncertain at this stage in the development process. There could be minor positive benefits associated with noise levels through reduced congestion along the route. Impacts on the water environment, soils/geology, cultural heritage and landscape are unknown at this stage. Minor negative effects are anticipated for CO_2e emissions as the road improvements could increase traffic speeds.
Safety:	**Major Benefit**	The existing route on the A77 between Whitletts Roundabout and Bankfield Roundabout is mainly rural typical single carriageway. Upgrading this route from single to dual carriageway could reduce the accident rate by up to 50 per cent, based on national rates for these road types. Accident severity is also expected to decrease by up to 10 per cent on the proposed dual carriageway section. Grade separation of Dutch House, Whitletts and Holmston Roundabouts would reduce the conflict between vehicles and could reduce the accident rates as a result. National statistics indicate that grade separation of this section of the trunk road network could reduce the accident rate by up to 40 per cent.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** Grade separation of the three junctions on the A77 would reduce journey times and improve journey time reliability on the A77 and the conflicting routes. Provision of a dual carriageway between Whitletts Roundabout and Bankfield Roundabout would reduce congestion thereby improving journey times and journey time reliability. Journey time and congestion reductions provide the majority of the economic savings of between £50m to £100m, which result in a benefit to cost ratio of between 0.75 and 1.25, indicating value for money overall. **Wider Economic Benefits (WEBs):** Improvements to journey time, reliability and quality could have a positive impact on the efficiency and productivity of businesses using the route to travel between Central Scotland, South Ayrshire and Stranraer. Benefits would accrue from lower cost of travel for freight and business users with improved access to customers and suppliers. Improvements to the A77 could also enhance the tourist industry in the southwest of Scotland and support the development of the Loch Ryan ports. **Economic Activity and Location Impacts (EALIs):** The impacts of upgrading the route are potentially significant for all sectors and settlements served by the A77. The grade separation of junctions on the A77 and upgrade to dual carriageway around Ayr could have economic benefits on the corridor due to the journey time for the transportation of goods and people being better and more reliable, resulting in increased productivity of people and vehicles. The improvements on the A77 would also support the proposed development areas to the South East of Ayr.
Integration:	**Minor Benefit/Minor Negative Impact**	**Transport Integration:** This intervention is not likely to have any significant effect on transport integration. **Transport and Land Use Integration:** Provision of a dual carriageway between Whitletts Roundabout and Bankfield Roundabout would support the proposed development at South East Ayr which would access onto the A77 to the south of Bankfield Roundabout.

		Policy Integration: This intervention would not affect policies related to disability, health services, rural affairs or social inclusion. Overall, the intervention could have a negative effect on road traffic reduction aspirations. .
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** Enhancements to the A77 south of Ayr could improve local accessibility in terms of a safer environment for walking and cycling within the towns and safer access to the A77. **Comparative Accessibility:** This intervention would mainly benefit strategic trips on the A77 but would also have benefits for the local communities of Ayr, communities south of Ayr and for trips on the routes that currently conflict with the A77 at its main junctions.

Table D24.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	This intervention would ensure that local traffic that is travelling across the A77 can do so without delaying traffic travelling along the A77, improving journey times and journey time reliability on the A77 and on the roads that cross the A77, especially at junctions and links that are approaching or are over theoretical capacity.
Reduce Emissions:	**Minor Negative Impact**	Dualling a section of the A77 could result in increased, less fuel efficient vehicle speeds. This could contribute to an increase in CO_2e emissions. However, the bypasses would reduce some congestion in the town centres and therefore may negate some of the expected CO_2e emissions increase.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Upgrading the A77 would increase capacity and lessen congestion on the road; therefore this would increase the quality and standard of road provided for drivers. This intervention would provide improved accessibility to Ayr, Stranraer and the intermediate settlements in the corridor. This intervention would not have any significant impact on affordability.

Table D24.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Major Benefit**	The provision of a dual carriageway on the A77, around Ayr, grade separated junctions at Dutchhouse, Whitletts and Holmston Roundabouts and improvements south of Ayr could result in reduced accident and severity rates. This intervention would not affect quality, accessibility and affordability of public transport.
Smarter:	**Moderate Benefit**	This intervention would increase access to schools, colleges and universities along the length of the corridor.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would result in reduced journey times and improved journey time reliability for the movement of people and goods, resulting in increased accessibility in the area, increased opportunities and productivity. This intervention could assist in the economic development of Ayrshire and the ferry ports on Loch Ryan.
Greener:	**Minor Benefit**	The enhancements south of Ayr could help relieve congestion which could reduce bus journey times on the local road network, potentially encouraging greater use of public transport. However, this is considered to be an indirect effect as the package does not directly promote use of public transport. Emissions may rise due to increased, less fuel efficient vehicle speeds.
Healthier:	**Minor Benefit**	The improvements would enhance access to health services, especially at the Ayr Hospital. It is considered that this intervention would not encourage a reduction in car journeys.

Table D24.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There are no significant technical issues associated with the grade separation of Dutchhouse, Whitletts and Holmston Roundabouts. The A77 between Whitletts Roundabout and Bankfield Roundabout would require a bridge widening over the River Ayr. It is anticipated that these issues could be tackled using existing technology.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	These interventions have not been subject to public consultation. While it is considered that the intervention would be generally welcomed, the environmental impact of the intervention could prompt some negative public response.

Detailed Appraisal	**D24 Targeted Road Congestion / Environmental Relief Schemes - (Part 2) Enhancements on the A737**		
Estimated total Public Sector Funding Requirement:		***Capital Costs/grant***	£10m - £50m
		Annual Revenue Support Present	-
		Value of Cost to Gvt	<£10m
		BCR/PVB	>3 / £10m - £50m

Summary Impact on STAG Criteria	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This forms Part 2 of Intervention D24 aimed at reducing conflicts between strategic and local traffic and impacting on road safety and journey time reliability. The specific improvements would consist of enhancements on the A737 such as a bypass around Dalry.

Summary: Rationale for Selection

This intervention forms Part 2 of D24 to provide enhancements on the A737 such as a bypass around Dalry

Providing improvements on the A737 such as a bypass of Dalry would help to reduce the conflict between local and strategic traffic that occurs along this route, thus improving road safety and journey time reliability on the A737.

The environmental impacts this intervention has on cultural heritage and landscape have been identified at the strategic level as part of the Strategic Environmental Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D24.2.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.	**1: Neutral** - This intervention would have no effect on rail capacity in the area.
STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period.	**2: Positive -** Providing a bypass on the A737 at Dalry would help to reduce traffic within this town and improve accident rates by reducing the conflict between local and strategic traffic. While severity rates could increase due to the higher vehicle speed on the bypass, overall, safety on the route would be improved.
STPR Objective 3: To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.	**3: Positive –** This intervention could include a number of measures that would reduce the conflict between local and long distance traffic at key constraint points along the route, such as at Dalry.

Table D24.2.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit**	This intervention would have minor positive effects on noise levels as it is envisaged that re-routing traffic away from Dalry would reduce the levels of noise on sensitive receptors within the town. However, there is the potential for impacts on new noise receptors in the vicinity of new road infrastructure. The bypass could also contribute to an improvement in local air quality in Dalry, if traffic is removed from this town. Impacts on biodiversity, water, soils/geology, cultural heritage and landscape are uncertain as they depend on the form and location of the new infrastructure. It is envisaged that the bypass could contribute to a reduction in CO_2e emissions if congestion through Dalry is improved. However, this may be offset by increased vehicle speeds, therefore the effect of the bypass on climatic factors is uncertain at this stage.
Safety:	**Moderate Benefit**	Accident rates for rural single carriageway are generally 55 per cent lower than the existing roads within the town of Dalry. Constructing the bypass therefore could lower the accident rate to around the current national average. However, accident severity could increase on the new bypass due to increased speeds.
Economy:	**Major Benefit**	**Transport Economic Efficiency:** This intervention would provide benefits of between £50m and £100m and a benefit to cost ratio of greater than three providing a strong economic case for promoting it. Strategic trips on the A737 through Dalry would achieve journey time savings with the new bypass in place. Congestion through Dalry would be reduced resulting in increased reliability of journeys for local and through traffic. This intervention would also benefit public transport services and freight movement from Ayrshire to the Central Belt. (A previous study by Mouchel Parkman in 2006 on the A737 Dalry Bypass indicated a potential journey time saving of £80m and vehicle operating cost saving of £1.2m). **Wider Economic Benefits (WEBs):** Reductions in journey time, reliability and quality could have a positive impact on the efficiency and productivity of businesses using the route to travel between destinations in North Ayrshire and Glasgow/Renfrewshire. Benefits would accrue from a lower cost of travel for freight and business users, with improved access

		to customers and suppliers. **Economic Activity and Location Impacts (EALIs):** This intervention would support and encourage proposed growth within Ayrshire including the port of Hunterston and the Irvine Bay Regeneration area.
Integration:	**Moderate Benefit**	**Transport Integration**: This intervention would have no effect on public transport integration. **Transport and Land Use Integration**: This intervention would not affect the need to travel. The Dalry bypass would result in improved access and reduced journey times for all trips on the A737. It would also enhance development opportunities in Ayrshire including at the port of Hunterston and in the Irvine Bay Regeneration Area, in line with local, regional and national policies. **Policy Integration**: This intervention would contribute to an improvement in health in Dalry due to the reduced emissions from reduced traffic levels in the town. The bypass could result in reductions in road traffic within the town of Dalry. Overall, the intervention could have a negative effect on road traffic reduction aspirations.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility**: A bypass would improve local accessibility, within Dalry, in terms of the opportunities to walk and cycle within the town. **Comparative Accessibility**: The main beneficiaries of this intervention would be commuters along the A737 and local residents in the town.

Table D24.2.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	The provision of a bypass around Dalry would reduce journey times on the A737 and benefit local trips within Dalry which currently conflict with strategic trips. This intervention would also improve journey time reliability.
Reduce Emissions:	**Neutral**	The reduced congestion in Dalry as a result of the provision of a bypass would allow vehicles to travel at more fuel efficient speeds, resulting in a reduction in CO_2e emissions. However, increased capacity and potential additional trips using this capacity could negate this.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention could provide a bypass of Dalry on the A737, thereby increasing capacity and reducing congestion on the route. The quality of service provided would therefore be enhanced. This intervention would benefit commuters along the A737 and local residents in the town of Dalry. This intervention does not impact on affordability.

Table D24.2.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	The provision of a bypass at Dalry would result in reduced road accident rates, although severity rates may increase due to increased speeds. Conflict between strategic and local trips in the town would be reduced resulting in an overall improvement in road safety. This intervention would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would promote improved links to education facilities, such as schools and colleges within the corridor But this would be limited.
Wealthier and Fairer:	**Moderate Benefit**	The introduction of a bypass around Dalry would reduce journey times along the A737 and also within the town resulting in increased productivity of people and goods deliveries. This intervention would assist in the economic development of Ayrshire including the Irvine Bay Regeneration Area.
Greener:	**Neutral**	The bypass would help to relieve congestion which could reduce bus journey times on the local road network, potentially encouraging greater use of public transport. Transport related emissions within the town should reduce.
Healthier:	**Minor Benefit**	The provisions would be unlikely to improve access to health services. Reduction of traffic flows through Dalry could result in improved health benefits.

Table Corridor D24.2.5 Implementability Appraisal

Implementability Appraisal	
Technical:	Provision of a bypass of Dalry on the A737 would involve major infrastructure works. The route of the bypass would cross the main Glasgow-Ayr railway line and the River Garnock. Construction work may affect the environment of surrounding areas and may cause delays to traffic. Operation of the new A737 route would be the responsibility of Transport Scotland with responsibility for the existing portions through the town passing to the local authority.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors.
Public:	The bypass around Dalry has been the subject of public consultation as part of the previous assessment. A favourable public reaction to the intervention is expected since journey times would be reduced from Glasgow to North Ayrshire and traffic within Dalry would also be reduced. The environmental impacts of the intervention may produce some adverse public reaction.

Detailed Appraisal	**D24 Targeted Road Congestion / Environmental Relief Schemes - (Part 3) Junction improvements for the A720 Edinburgh City Bypass**		
Estimated total Public Sector Funding Requirement:		**Capital Costs/grant**	£10m - £50m
		Annual Revenue Support	-
		Present Value of Cost to Govt	£10 - £50m
		BCR/PVB	>3 / £50m - £100m

Summary Impact on Key Strategic Outcomes	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention forms Part 3 of D24 and includes Junction improvements on the A720 Edinburgh City Bypass such as at Sheriffhall Roundabout.

Summary: Rationale for Selection

This intervention forms Part 3 of D24 to provide junction improvements for the A720 Edinburgh City Bypass such as at Sheriffhall Roundabout.

The A720 improvements would help to maintain the 60-minute commutable labour market area around Edinburgh, and would provide benefits for journeys to or between two of Edinburgh's areas of economic activity, West Edinburgh and the Shawfair development. Journey time reductions of approximately 5 minutes are forecast with this improvement for all elements.

The environmental impacts this intervention has on cultural heritage and landscape have been identified at the strategic level as part of the Strategic Environmental Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D24.3.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	**1: Positive –** The A720 experiences heavy congestion during peak hours. Without effective mitigation, future traffic growth will further reduce the efficiency of the route particularly during peak hours, resulting in a deterioration of Edinburgh's 60-minute commutable labour market area. The improvements would remove capacity constraints at the Sheriffhall roundabout, the only roundabout along the route which is not grade separated at present. By tackling bottlenecks, the improvements would generate significant efficiency savings for commuters travelling into Edinburgh from the west, south/south-east and east of the city via the M8, A7, A68 and A1. This would assist in reducing the impact of congestion on these users, reducing delays and helping to maintain their journey time to work.
STPR Objective 2: To enhance public transport interchange opportunities.	**2: Neutral –** This intervention would not address public transport interchange opportunities.
STPR Objective 3: To increase public transport capacity and frequency between Fife and Edinburgh.	**3: Neutral –** This intervention would not significantly address public transport capacity and frequency between Fife and Edinburgh.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Positive –** Accidents at Sheriffhall Roundabout make up a high percentage of all accidents on the A720. Grade separation of this junction would therefore result in significant accident savings.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Neutral –** This intervention would not have a significant effect on this objective.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.	**6: Positive –** Edinburgh Airport is a significant attractor of trips, and forecasts undertaken to underpin the Edinburgh Airport Masterplan indicate that the number of passengers using the airport will rise from 5.5 million passengers in 2005 to 23 million in 2030. This will result in significant additional pressure on the transport infrastructure supporting the airport, particularly during peak hours. The proposed improvement would help to promote efficient and effective transport links for all transport users approaching Edinburgh Airport from the east. The junction improvements would also complement the provision of an actively managed hard shoulder to benefit priority vehicles along the A720 as proposed in Intervention D6, which would further improve public transport links to Edinburgh Airport.

Table D24.3.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/ Moderate Negative Impact**	Moderate adverse impacts to cultural heritage and landscape are likely to occur. Minor positive effects to local air quality and climatic factors are likely as the junction improvements would result in reduced road vehicle emissions from the A720 due to the reduction in congestion.
Safety:	**Moderate Benefit**	Accidents at Sheriffhall Roundabout make up approximately 10 per cent of all accidents on the A720. Based on these figures, the improvements are forecast to generate significant benefits in terms of road safety. These positive impacts of the intervention would be maximised at Sheriffhall Roundabout where grade separation is proposed.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** The proposed junction improvements would result in travel time savings and vehicle operating cost benefits for those travelling to/from Edinburgh and along the A720. The current volume of traffic using the bypass is 40,000 vehicles per day and is forecast to rise to 50,000 vehicles per day by 2022. Latest figures for Sheriffhall Roundabout indicate that approximately 70,000 vehicles pass through the junction each day. Through a reduction of congestion along the A720, journey time savings of approximately 10 – 15 minutes over the length of the route are forecast. A STAG 1 assessment of improvement options at Sheriffhall Roundabout, undertaken in early 2008, forecast accident benefits of £3.5m over 60 years as a result of the implementation of a conventional grade separated roundabout at Sheriffhall Roundabout. Economic appraisal of the Sheriffhall Roundabout improvements indicate travel time benefits of between £50m - £100m, with a benefit cost ratio of greater than three, indicating good value for money. **Wider Economic Benefits (WEBs):** The junction improvements along the A720 would improve efficiency for journeys to Edinburgh Airport from the south and south east of the city, providing businesses with improved connectivity to international transport links. Transport capacity and journey time reliability would increase and the journey times are expected to reduce, resulting in greater productivity. **Economic and Location Impacts (EALIs):** This intervention would benefit key areas of economic activity in Shawfair (East Edinburgh), Gogarburn and Edinburgh Park (West Edinburgh) and support the development of the key national development at Edinburgh Airport, through improvements along the east-west access route to these locations via the A720. In addition, the measures would generate benefits by maintaining the 60-minute travel to work area into Edinburgh, benefiting employment sites in Edinburgh City Centre.
Integration:	**Neutral**	**Transport Integration:** This proposal would have no effect on transport integration. **Transport and Land-Use Integration:** This intervention would have a minor negative impact on the policy of reducing the need to travel. The improvements would facilitate development at key areas of economic activity in East and West Edinburgh by providing efficient road links to these areas. More specifically this would benefit strategic development at Gogarburn, Edinburgh Park and Edinburgh Airport as well as the strategic development site at Shawfair. **Policy Integration:** The proposal would not affect wider policies on disability, health services, rural affairs or social inclusion. It would have a minor negative impact on road traffic reduction aspirations.

Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This proposal would not directly improve public transport network coverage or promote non-motorised trips to access local services, but is a pre-requisite for the implementation of actively managed hard shoulders to benefit priority vehicles proposed in Intervention D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations). **Comparative Accessibility:** This intervention could improve access to employment opportunities in east and west Edinburgh, but would not provide greater accessibility for more deprived and socially excluded regeneration areas.

Table D24.3.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	This intervention would remove capacity constraints on the A720, reducing junction delay along the route and on certain radial routes connecting with the A720. This would result in improved journey times both to/from Edinburgh City Centre and cross city movements, particularly during peak periods. It is forecast that the 40,000 vehicles using the route daily would experience journey time savings of 10-15 minutes. Based on traffic forecasts for the A720, these journey time savings would benefit approximately 50,000 vehicles per day by 2022. Journey time reliability would also improve as a result of this intervention. This intervention would also complement the introduction of actively managed hard shoulders along the route, proposed under Intervention D6. This intervention would therefore enable bus priority, resulting in opportunities for journey time savings for bus users. In addition, the intervention would significantly improve links to national and international connections at Edinburgh Airport.
Reduce Emissions:	**Minor Benefit**	This intervention would improve traffic flow, avoiding higher emissions from slow moving traffic. This could result in enhanced fuel efficiency for existing traffic, contributing to a reduction in CO_2e emissions. However, any intervention comprising improvements in the provision for car trips may generate some additional traffic, thereby impacting on the level of CO_2e emissions reductions achievable.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would provide improved accessibility, especially to economic areas in East and West Edinburgh and Edinburgh City Centre. This intervention may have a small beneficial effect on quality through the improved junction provision on the A720. This intervention does not impact on affordability.

Table D24.3.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	This intervention would improve road safety on the A720. It would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Moderate Benefit**	This intervention would improve access to Herriot Watt University at Riccarton.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would improve efficiency for cross-city trips and transport users commuting to/from Edinburgh. Forecast journey time savings could contribute to maintaining Edinburgh's 60-minute commutable labour market area, maintaining the city's economic competitiveness. Moreover businesses would benefit from improved access to national and international connections at Edinburgh Airport. Reduced journey times along key transport routes into Edinburgh and between areas east and west of the city would also generate productivity gains for businesses in the city, in West Edinburgh and Shawfair (East Edinburgh).
Greener:	**Minor Benefit**	If implemented on its own, this intervention would not directly promote the use of public transport. However, the proposed junction improvements would complement the implementation of managed hard shoulders benefiting priority vehicles. These measures would significantly improve public transport competitiveness along the corridor thereby encouraging mode shift to public transport.
Healthier:	**Neutral**	This intervention would not affect access to health services or encourage the uptake of physically active forms of transport.

Table D24.3.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No untried techniques would be required when implementing any aspects of this intervention, however as the design stages progress, localised issues may arise which require increased technical capabilities to be addressed.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	This is an important intervention to the economy of Edinburgh and the surrounding area, with significant public interest at both local and regional levels.

Detailed Appraisal	**D24 Targeted Road Congestion / Environmental Relief Schemes - (Part 4) Enhancements to the A96**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £10m - £50m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10m - £50m ***BCR/PVB*** 2.25 - 3 / £50m - £100m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention forms Part 4 of D24 aimed at reducing conflicts between strategic and local traffic and impacting on road safety and journey time reliability. The specific improvements would consist of enhancements to the A96 such as a bypass at Nairn.

Summary: Rationale for Selection

This intervention forms Part 4 of D24 to provide enhancements to the A96.

Enhancements to the A96, such as a bypass around Nairn, would reduce the conflict between local and strategic traffic and improve journey times and journey time reliability along the route.

The environmental impacts this intervention has on cultural heritage and landscape have been identified at the strategic level as part of the Strategic Environmental Assessment. Appropriate mitigation and avoidance measures have been identified and will be further refined should this intervention be taken forward.

Table D24.4.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To improve connectivity, particularly by public transport between Inverness City Centre and the growth area to the east including Inverness Airport.	**1: Neutral –** This intervention has no impact on improved connections between Inverness City Centre and Inverness Airport.
STPR Objective 2: To improve journey time and increase opportunities to travel, particularly by public transport, between Aberdeen and Inverness.	**2: Positive –** A bypass around Nairn would reduce journey times and improve reliability for journeys between Aberdeen and Inverness as it would remove the conflict between strategic and local traffic within the town. City to city bus services would benefit from the introduction of the bypass along the route.
STPR Objective 3: Reduce the accident rate and severity rate to current national average.	**3: Positive –** The Aberdeen to Inverness Transport Corridor Study STAG pre-appraisal report identified the A96 through Nairn as a location where accident levels are above the national average. This intervention should therefore provide a significant improvement in terms of safety by removing vehicles, including HGVs from the town.

Table D24.4.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate Negative Impact / Minor Benefit**	The new bypass would have a potentially moderate negative impact on soils and geology. The route of the Nairn bypass could pass through Kildrummie Kames (mixed Site of Special Scientific Interest). Water quality could have minor negative impacts as the Grade A River Nairn would be crossed. There would be minor positive impacts on noise and air quality as the bypass would reduce congestion in the town. However, there would be a slight increase in CO_2e overall due to faster moving vehicles on the bypass. There is the potential for impacts (both positive and negative) on cultural heritage, biodiversity and on the rural landscape and townscape as a result of the bypass. However, impacts are uncertain at this stage as there is insufficient information to undertake a full assessment when locational details are unknown.
Safety:	**Moderate Benefit**	Accident rates for rural single carriageway roads are generally 55 per cent lower than the existing road within Nairn town. Constructing the bypass could lower the accident rate to around the current national average, however accident severity could increase on the new bypass due to increased speeds. Overall improvements such as a bypass of Nairn would provide safety benefits.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** This intervention could improve journey times and journey time reliability for strategic trips on the A96 by removing the conflict and delays. For example local trips within Nairn would benefit from reduced traffic levels and reduced congestion as traffic flows within the town are forecast to reduce by over 70 per cent. These travel time benefits, together with accident savings would provide a benefit to cost ratio of 2.25 to 3, therefore providing very good value for money. **Wider Economic Benefits (WEBs):** Significant improvements to journey time, reliability and quality could have a positive impact on the efficiency and productivity of businesses using the route to travel between destinations in Inverness, Aberdeen and intermediate settlements. Benefits would accrue from lower cost of travel for freight and business users with improved access to customers and suppliers. **Economic Activity and Location Impacts (EALIs):** The impacts of improving the route are potentially significant for all sectors and settlements served by the A96. The provision of, for example, a bypass could have economic benefits on the corridor due to the transportation of goods being quicker and more reliable resulting in increased productivity of personnel and vehicles. Sectors which are expected to benefit significantly include manufacturing, construction, retail and distribution industries which rely on the route for movement of goods. However with a potential bypass scenario there could be a reduction in some passing trade for businesses within the town.
Integration:	**Minor Negative Impact / Moderate Benefit**	**Transport Integration**: The bypass would not have any significant impact on transport integration within this corridor. **Transport and Land Use Integration**: This intervention would have a potentially negative effect on the policy of reducing the need to travel as it could encourage longer distance commuting to Aberdeen and Inverness. However, effective links between Inverness and Aberdeen are seen as important to the economy of Inverness and the north east of Scotland and improvements on the A96 could improve these links. **Policy Integration**: The bypass of Nairn is consistent with the National Planning Framework, SPP17 (Planning for Transport),

		The Moray Structure Plan and the Emerging Moray Local Plan, 2008. Although national aspirations strive for a reduction in road traffic, it is recognised that interventions such as this one could be required to encourage economic growth.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** Provision of a bypass around Nairn would reduce the volume of traffic using the existing route through the town. This would improve access to the town where the main employment, education, health services, retail and leisure facilities are located. **Comparative Accessibility:** The bypass intervention would mainly benefit strategic through trips which would be removed from the town centre of Nairn. Local trips would also benefit from the improved access due to the reduced flows within the town.

Table D24.4.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	A reduction in traffic and congestion levels within the town of Nairn, as a result of the bypass, would improve journey times for all road users including bus services passing through the town. Journey time reliability would also improve.
Reduce Emissions:	**Neutral**	Increased vehicle speeds on the bypass could contribute to a rise in CO_2e emissions, however, this could be offset by a reduction in congestion and CO_2e emissions in the town.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The strategic bus services on the A96 would be expected to continue to serve the town. With the reduced volume of traffic within the town, access to bus services would subsequently be improved, potentially resulting in increased opportunities for public transport provision. This intervention would not impact on affordability.

Table D24.4.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	Provision of a bypass around Nairn is forecast to reduce the accident rate by approximately 55 per cent although there is likely to be an increase in the severity rate due to increased speeds on the bypass. The reduced volume of traffic within the town, and less conflict between strategic and local traffic and with pedestrians would significantly improve road safety in Nairn. Overall improvements on the A96, such as a bypass of Nairn, would provide safety benefits. It would not impact on the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention is not expected to have significant impact on access to schools, colleges and universities for those living along the corridor.
Wealthier and Fairer:	**Moderate Benefit**	The provision of a bypass around Nairn would result in reduced journey times for strategic trips along the corridor. A reduction of trips within the town would also improve the flow of public and private transport. This could provide increased travel opportunities for employment, business, leisure and tourism and would improve the links between the towns along this corridor.
Greener:	**Neutral**	The bypass would help to relieve congestion in Nairn which would reduce bus journey times on the local road network, potentially encouraging greater use of public transport, however the impact on journeys by car would be, at least, proportionally similar to that of buses. The overall impact is therefore considered neutral.
Healthier:	**Neutral**	This intervention, as currently proposed, could encourage a small modal shift to public transport services, due to improved journey time reliability and quality. There could be a slight improvement in accessibility to health services for some people. However, the overall impact would be marginal.

Table D24.4.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is unlikely that any untried techniques would be required when implementing any aspects of this intervention, although localised issues might arise during the design stages that would require increased technical capabilities to overcome. There may be some impact to road users during construction, however this could be mitigated during design to minimise any disruptions.
Operational:	The responsibility for operational issues on the proposed measures in this intervention would remain with Transport Scotland and its maintenance contractors. No factors are anticipated to adversely affect the operation of the intervention during its projected life.
Public:	Discussions regarding the bypass of Nairn have taken place for some time. The local communities in the towns and motorists making strategic trips are aware of the delays encountered when passing through the town and are likely therefore to be supportive of the intervention. However potentially negative environmental impacts from the new bypass and a potential reduction in passing trade could provoke a negative reaction from some elements of the community.

Detailed Appraisal	**D25 – West of Scotland Strategic Rail Enhancements**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £1.5bn - £3bn ***Annual Revenue Support Present*** None ***Value of Cost to Gvt*** £500m - £1bn ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the terminal capacity issues in Glasgow, which significantly constrain the future ability of the rail network in the West of Scotland to respond to challenges and facilitate change. This intervention supports the objectives to address rail capacity issues in central Glasgow and increase public transport access to areas of economic activity. It also assists in contributing to objectives within corridors that serve Glasgow. The detail of the strategy to address this includes some or all of the following components, recognising the opportunity for early wins and an incremental and scalable solution:

- The provision of a new city centre surface station to the east of Glasgow Central linking the rail network to the south and east of the city;
- The provision of a new city centre sub-surface station as part of a tunnel below the city centre linking the north and south rail networks; and/or
- The development of a Metro network across Glasgow comprising a mixture of conversion of heavy rail (e.g. part or all of the Cathcart Circle), lines on existing redundant infrastructure (e.g. Great Western Road / Botanic Gardens), new lines (e.g. Clyde Waterfront) and some on-road or next-to-road sections.

Both of the new city centre station options would provide additional platform capacity in the city centre and permit cross-city services to be provided.

A Metro system could include new stations, improved service frequencies and improved access to and across central Glasgow. The system would be rolled out on a phased basis. The operational concept for the system using proven technology could be expanded to include a new crossing of the Clyde to around the Southern General Hospital and other lines to link areas not currently served by the heavy rail network.

Summary Rationale for Selection

Existing Glasgow rail terminal capacity will be at capacity within the timeframe of STPR. The lack of future rail terminal capacity places a significant constraint on the provision of additional rail services to meet future growth.

The analysis has identified that previous development of the rail network in the West of Scotland has been successful in making best use of the network by implementing small scale interventions and targeting individual constraints. The issue of terminal capacity cannot be addressed in this way, meaning that a 'step-change' is required in order to meet predicted future demand. This 'step-change' will be supported by some smaller scale interventions and enabling works. Some of these may be deliverable earlier than the major component(s) and allow some interim relief to be gained.

Detailed analysis of the problems has been undertaken to understand the function of the terminal capacity issues within the wider West of Scotland context. This analysis in conjunction with the objectives has allowed the identification of three broad core elements, each of which could form the basis of the strategy to address the objectives:

- New surface station east of Glasgow Central;
- New sub-surface station between Glasgow Central and Glasgow Queen Street; and
- Development of a Metro network.

Development of these core elements has been undertaken to a level to confirm that each could provide a workable solution. This has included consideration of phasing and interaction both within and beyond the STPR period to deliver a meaningful solution.

The elements identified vary in terms of cost, risk, phasing, potential benefits, delivery timescale and in the way that they address the objectives. The elements are also not exclusive, so the strategy could for example include a new city centre station and the development of certain metro lines.

The strategy will provide a level of 'step-change' that permits a fundamental restructuring and realignment of services across the West of Scotland and potentially beyond. The details of this are undefined, meaning that the potential benefits that could be gained are not yet fully understood. Similarly, the extent to which the Metro network would be developed is not a fixed proposal, but a number of phases have been identified and considered. It is however understood that the additional capacity provided by the overall strategy would be such that it would provide for a variety of potential service enhancements, including other interventions identified within STPR.

This intervention would complement the development of Intercity rail operations, giving an expanded public transport hierarchy. Metro could provide for inner suburban movements, leaving heavy rail to cater principally for outer suburban and links to surrounding towns. By providing cross-city routes, the metro network could connect across Glasgow and also take pressure off the existing interchange facilities focused in the city centre.

Table 25.1.1 STPR Objectives

STPR Objectives	
STPR Objective G1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**1: Strongly Positive -** Any of the intervention options or combination of options provide for a 'step-change' in rail capacity to and across the city centre. The Metro option in particular would support public transport access along the Clyde.
STPR Objective G2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.	**2: Slightly Positive -** This intervention would allow for significant increases in public transport capacity into and across the city centre. This would provide for modal shift from car, though the level of impact on the operation of the M8 would be limited.
STPR Objective G3: To address rail capacity and connectivity issues in central Glasgow.	**3: Strongly Positive -** Any of the intervention options or combinations of options provides for a 'step-change' in rail capacity and either directly or by facilitating new rail services, provides improved connectivity.
STPR Objective G4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral** - While the intervention provides for modal shift from car to rail, the level of impact of this intervention on accident rates would not be significant.
STPR Objective G5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Slightly Positive** – This intervention would assist in relieving congestion on approaches to Glasgow and provide additional pathing options, which would increase the ability of the rail network to cope with disruption.
STPR Objective G6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**6: Strongly Positive -** Any of the intervention options or combination of options would provide the capacity for significantly improved access to the airport from a wide area of the West of Scotland and beyond.

Table 25.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Negative Impact / Minor Benefit**	This intervention would provide significant capacity for modal shift from car and would therefore have a benefit in terms of emissions reduction. There are however significant potential impacts in terms of streetscape, impact on listed buildings, visual impacts and noise/vibration.
Safety:	**Moderate Benefit**	There would be a benefit to the safety of the rail network by providing additional capacity and new infrastructure for operating services. In tandem, the ability to support modal shift from car to rail would have some benefits, although these would not be of a significant level.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** The intervention would provide significant benefits to travel time reliability across much of the rail network in the West of Scotland by providing additional capacity in and around the city centre. The provision of cross city services would also result in travel time savings by removing or reducing interchange time for current users and providing a new alternative for car trips that are currently subject to congestion. **Wider Economic Benefits (WEBs):** The consequences of not resolving the fundamental capacity constraints would be a constraint on the level of rail access to central Glasgow. This means that any subsequent growth in demand would have to be accommodated on an already congested road network. This would negatively affect the longer term economic growth of the city centre. Enhanced rail capacity provides for the support of sustainable economic growth, allowing the city centre to continue to provide an effective function as a growing area of economic activity. **Economic and Location Impacts (EALIs):** The different components would have differing impacts in terms of transport/land-use interaction. A new station to the east of Glasgow Central would provide a focus for continuing regeneration and offer new connectivity through south and east Glasgow. A tunnel linking the north and south rail networks would provide a central hub, strengthening the role of the city centre but also providing strategic connectivity where no competitive opportunity currently exists. The Metro network would be the most effective at providing rail connectivity for regeneration areas and at penetrating areas that currently have little or no rail activity. This would provide for more land availability that would support sustainable economic growth.
Integration:	**Major Benefit**	**Transport Integration:** This intervention would provide for enhanced integration either in terms of rail – rail service and facility integration, or through Metro integration with, for example, bus feeder services. **Transport and Land-Use Integration:** This intervention would support major developments in the city centre such as commercial and retail opportunities. Through the Metro option it would also provide key support for redevelopment along the Clyde Corridor. **Policy Integration:** This intervention would provide for access to jobs and open new public transport journey opportunities, supporting social inclusion. The ability, through Metro, to provide a fixed public transport connection to major health service sites such as the Southern General Hospital is a significant benefit.

Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** The intervention would provide for some improvements to accessibility as a function of enhancing capacity and connectivity. The provision of a new station to the east of Glasgow Central would significantly improve the accessibility of this part of the city centre. The Metro component would have the most significant impact on improving accessibility by penetrating non rail served areas and providing a denser station coverage in some areas. **Comparative Accessibility:** The intervention would not in general provide any differing impacts on social groups, however the provision of new station facilities would have DDA compliant access and so improved accessibility for the mobility impaired would be available.

Table 25.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	The intervention options provide for a 'step-change' in capacity and connectivity that would address delays on approach to Glasgow Central and provide for new journey opportunities.
Reduce Emissions:	**Minor Benefit**	This intervention would provide for modal shift from road to rail, leading to a reduction in emissions, however the overall impact of this would be limited.
Improve Quality, Accessibility and Affordability:	**Major Benefit**	This intervention would represent a significant improvement in the quality of public transport in the West of Scotland. The potential for new cross city service opportunities and penetration of non-rail served areas by Metro, would greatly improve accessibility and journey opportunities by rail. It is not anticipated to have a significant impact on affordability.

Table 25.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	The intervention would impact positively on this objective by providing a step change in rail services provision and a major enhancement in the overall quality of the rail network in the West of Scotland. It would not affect affordability of public transport.
Smarter:	**Moderate Benefit**	The intervention would provide for improved access to schools, colleges and universities.
Wealthier and Fairer:	**Moderate Benefit**	Supporting sustainable economic development in central Glasgow and improving accessibility to jobs across the West of Scotland through this intervention will support this object.
Greener:	**Minor Benefit**	This intervention provides for a major expansion in rail service capacity and improved connectivity across the city. This will lead to modal shift from car to rail with an associated reduction in emissions.
Healthier:	**Moderate Benefit**	This intervention, through encouraging modal shift, may help encourage greater amounts of walking or cycling to access new or improved services. There would also be benefits in terms of providing improved access to health services.

Table 25.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	Sufficient work has been undertaken on each of the components to confirm that they would provide a workable solution. Any work within the city centre would require careful design and implementation of works, though these would be employing standard civil engineering techniques. Tunnel construction in particular, while being a well used method of construction, would be passing beneath a well establish and dense urban area with major building foundations. This is viewed as a significant risk element for that particular component. There are requirements to tie-in with or divert existing services and alter existing infrastructure, which will require to maintain and operating public transport services through the period of construction.
Operational:	This intervention will drive and facilitate as fundamental change to rail operation in the West of Scotland. There will therefore be substantial changes for the operating environment compared with today. However, these changes will be overwhelmingly positive.
Public:	There has been no specific consultation on this intervention. However, previous work has suggested both a tunnel and the development of a Metro or Light Rapid Transit system have some level of public support.

Detailed Appraisal	**D27 – Rail Enhancements between Inverclyde/Ayrshire and Glasgow**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** 1.25 - 1.75 / £250m - £500m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention would provide four trains per hour each between Glasgow and Ayr, Glasgow and Kilmarnock and Glasgow and Gourock, with each route served by two semi-fast services and two stopping services.

The Paisley Canal line would be reconnected to the Ayrshire line with four trains-per-hour between Glasgow and Johnstone. This would also provide an alternative route for passenger and freight services to and from Ayrshire. The intervention would also provide two trains-per-hour between Glasgow and Wemyss Bay.

As well as additional rolling stock, this is likely to require the following infrastructure enhancements:

- Signalling upgrades between Kilwinning and Paisley;
- Reinstatement of the line from Elderslie to Paisley Canal, provision of double track and electrification on the existing Paisley Canal branch and increased track capacity between Paisley and Glasgow;
- Provision of turnback facilities at Johnstone;
- Extension to the Lugton loop and a new loop between Kilmaurs and Stewarton;
- Additional platform capacity at Glasgow Central as described in Intervention D25 (West of Scotland Strategic Rail Enhancements); and
- Improvements to stations to enhance the environment for passengers and increase car park capacity (e.g. Prestwick, Ayr, Troon, Glengarnock, Kilwinning).

Summary: Rationale for Selection
This intervention would provide a 'step-change' in rail service provision to the west and south west. This would result in a significant contribution to the objectives to increase rail capacity to Ayrshire and capacity and journey time to Inverclyde. The feasibility of this intervention is dependent on being able to provide more platform capacity in central Glasgow to accommodate the services, as proposed in Intervention D25 (West of Scotland Strategic Rail Enhancements). The improved services provide relief for the identified overcrowding issue on the southwest electric services and give an opportunity for modal shift from road to rail, particularly from Kilmarnock where the increased service frequency is high. This intervention is expected to have a moderate positive environmental impact on air quality as modal shift from road to rail is envisaged to reduce congestion and subsequently reduce emissions.

Table D27.1.1 STPR Objectives

STPR Criteria	
STPR Objective 15.1: To increase rail capacity between Ayrshire and Glasgow including the Kilmarnock line.	**15.1: Strongly Positive** – This intervention would double the service frequency between Kilmarnock and Glasgow, from the currently committed two trains per hour, to four trains per hour, providing a significant increase in capacity along this route. Rail services on the Ayrshire coast lines currently operate at two trains per hour to Ayr and one train per hour to each of Ardrossan Town and Largs, with additional services during the peaks and to Ardrossan Harbour. This intervention would provide significant additional capacity between Glasgow and Ayrshire, by providing an additional two trains per hour to Ayr. This intervention would provide up to 11,200 additional seats from Ayrshire and Inverclyde into Glasgow during the three hour AM peak.
STPR Objective 15.2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**15.2: Slightly Positive –** This intervention could encourage modal shift from cars to rail, potentially resulting in a reduction in the number of accidents due to fewer cars being on the road. However, it would not have any significant effect in promoting a continuing reduction in accident rates and severity rates across the strategic transport network.
STPR Objective 15.3: To reduce the conflict between longer distance and local traffic with a focus on identified key constraint points.	**15.3: Neutral –**This intervention could encourage modal shift resulting in less traffic on the road. This in turn would reduce the conflict between local and strategic traffic through a reduction in the number of commuters travelling by car. However, this may not be significant.
STPR Objective 17.1: To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.	**17.1: Strongly Positive –** Increasing the frequency of services on this route would increase capacity and reduce existing overcrowding problems. In addition, increasing track speeds or removing some station stops would shorten journey times between Glasgow and Inverclyde. This intervention would provide two extra trains per hour from Inverclyde to Glasgow, resulting in up to 11,200 additional seats from Ayrshire and Inverclyde into Glasgow during the three hour AM peak period.
STPR Objective 17.2: To facilitate freight access to Greenock port.	**17.2: Neutral** - This intervention would not have any impact on improving access to Greenock port.
STPR Objective 17.3: To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**17.3: Slightly Positive –** This intervention would not have any significant effect on improving the efficiency of the A8/M8 during periods of peak demand. However, the intervention is expected to encourage a modal shift of approximately four per cent from road to rail, which would result in a small decrease in traffic on the M8 and A8.
STPR Objective 17.4: To reduce the accident rate to the national road type average on the M8 and A8.	**17.4. Slightly Positive –** This intervention would not have any significant effect in promoting a continued reduction in accident rates and severity rates across the strategic transport network. However, the intervention could encourage modal shift from cars to rail and there could potentially be a reduction in the number of accidents if there are fewer cars on the road, although this impact is expected to be marginal.
STPR Objective 17.5: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**17.5: Slightly Positive –** This intervention would increase the number of services from Ayrshire and Inverclyde to Paisley Gilmour Street where there would be connections with the Glasgow Airport Rail Link. This intervention would also help to reduce overcrowding on services to Paisley Gilmour Street, making public transport access to Glasgow Airport (via the Glasgow Airport Rail Link) a more attractive proposition for the general public.

Table D27.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate Benefit/Minor Negative Impact**	It is expected that improved services would promote modal shift from road to rail. This would bring associated potential direct and indirect beneficial effects in relation to air quality, especially in light of the current air quality issues in Glasgow and Paisley. It is proposed to double track some existing sections, and extend/provide new rail loops which could require some limited land take. There is likely to be more significant land take and the demolition of properties to allow the line between Paisley Canal and Elderslie to be reinstated. Limited nature conservation and cultural heritage interests have been identified in the area required for new rail infrastructure and therefore potential effects are considered to be neutral for biodiversity and neutral to minor adverse for cultural heritage. Effects on water, geology and soils, climatic and landscape would also be neutral or very minor.
Safety:	**Minor Benefit**	Improving rail services from Inverclyde and Ayrshire to Glasgow would result in some modal shift from road to rail that could contribute to reduction in vehicle trips on the network and fewer accidents. Although this is expected to produce a minor benefit.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** Additional services and a reduction in journey times between Glasgow, Ayrshire and Inverclyde are forecast to result in modal shift from road to rail and an increase in total rail patronage in the order of five per cent, with approximately 1,800 new rail passengers travelling in the peak every day. Congestion on the M77 and M8 from Inverclyde is forecast to worsen in the future, therefore journey time savings are likely for journeys transferring from road to rail on these routes. The additional service and infrastructure improvements are likely to improve journey time reliability with reduced waiting times for trips which interchange between services at Paisley Gilmour Street or Glasgow Central. These time saving benefits compared to the present value of costs give a benefit to cost ratio in the order of 1.25 to 1.75. **Wider Economic Benefits (WEBs):** This intervention would support the wider economy through improving public transport provision and accessibility between Ayrshire, Inverclyde and Glasgow by providing up to 11,200 additional seats into Glasgow during the three hour morning peak period. **Economic Activity and Location Impacts (EALIs):** This intervention would support the designated regeneration areas of Riverside Inverclyde and Irvine Bay. The improved services on the Inverclyde lines would also support the major residential and business developments proposed for Bishopton by providing an attractive alternative to the car and therefore encouraging the use of more sustainable travel options. This would support the delivery of the development within the relative Structure Plans.
Integration:	**Moderate Benefit**	**Transport Integration:** This intervention would provide improved links between services, including those to Glasgow Airport, due to increased frequencies, especially at Paisley Gilmour Street which is recognised as an important interchange. The areas in which the proposed services are to be operated are all within the area of operation of SPT's Integrated Zonecard ticket. **Transport and Land-Use Integration:** Considerable additional housing requirements have been identified by the Glasgow and Clyde Valley and Ayrshire Joint Structure Plans in Ayrshire, Renfrewshire and Inverclyde. Travel patterns from these areas include significant commuter journeys to Glasgow. The increased rail services and capacity would support these journeys and reduce the need to travel by car. The improved services would also support the major development area at Bishopton and the regeneration areas of Riverside Inverclyde and Irvine Bay.

		Policy Integration: The Joint Ayrshire Structure Plan policy TRANS 2 – Rail Investment, highlights a desire to increase rail services and capacity between Ayrshire and Glasgow. This intervention also supports national policies of encouraging modal shift to more sustainable means of travel.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** This intervention is not likely to affect public transport network coverage or any local accessibility issues but it would increase the availability and capacity of rail services on existing routes. **Comparative Accessibility:** The main benefactors of this intervention would be commuters between Inverclyde/Ayrshire and Glasgow.

Table D27.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention would include doubling the current single track line between Barrhead and Kilmarnock. The impact of delays would be reduced with full double track provision, resulting in reduced journey times and increased journey time reliability. Increased service frequency would also result in improved connections with other services at Kilmarnock and Glasgow. Any modal shift achieved from the car could result in a slight reduction in congestion on the M77 approaching Glasgow, improving journey times on the road. The proposed timetable for services between Glasgow and Kilmarnock shows a journey time saving of about 12 minutes for the fastest services compared with the current timetable. This intervention would also include additional capacity between Glasgow and Paisley. Provision of extra capacity and additional lines would reduce the conflict between stopping trains and fast trains between Paisley and Glasgow, resulting in improved journey time reliability. Improved connections with other rail services are also likely, especially at Paisley Gilmour Street, due to the increased frequency of services. Re-opening the Elderslie to Paisley Canal line, as well as providing additional capacity between Paisley and Glasgow, would increase flexibility and journey time reliability. The increase in track speeds on the Glasgow to Inverclyde lines would shorten journey times making the train more competitive with the car. Also connections between towns in the Inverclyde area would be improved. Connections between Glasgow and Inverclyde would also be improved due to the increased service frequencies.
Reduce Emissions:	**Minor/Moderate Benefit**	Improvements to rail frequency and services from Glasgow to Inverclyde and Ayrshire would encourage modal shift from road to rail, contributions to reductions in CO_2e emissions. Appraisal outputs indicate a slight decline in CO_2e from the 2022 forecasts.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	Increasing service frequencies to Ayr, Inverclyde and Kilmarnock from Glasgow Central, along with additional improvements to stations along the routes, would significantly improve the quality of the service and increase accessibility, especially for those without access to a car. There would not be an impact on affordability.

Table D27.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	This intervention would improve the quality and accessibility of public transport between Glasgow and Renfrewshire, Inverclyde and Ayrshire, including the major development area of Bishopton and the regeneration areas of Riverside Inverclyde and Irvine Bay. Modal shift may be limited and therefore any potential impacts on safety would be negligible.
Smarter:	**Minor Benefit**	This intervention would increase access to schools, colleges and universities.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would result in improved journey times and journey time reliability for commuters, other passengers and freight traffic. This would result in increased productivity for staff and the movement of goods and increase opportunities for employment, business, leisure and tourism and would provide improved links between the towns on the routes.
Greener:	**Minor/Moderate Benefit**	This intervention would promote modal shift to rail with improvements in air quality and reduced CO_2e emissions. It would also promote the use of public transport.
Healthier:	**Moderate Benefit**	This intervention would encourage modal shift from road vehicles to more sustainable rail trips for passenger and freight journeys. It is not likely to significantly affect trips to health services and community services.

Table D27.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised. There is currently no available platform capacity for the services at Glasgow Central station and it will be necessary to relieve Central Station of some existing services in order to accommodate expansion of services in the west to Ayrshire and Inverclyde, as proposed under intervention D25.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	This intervention has not been made public. It is considered that the intervention would be generally supported by the public. However, there may be some local objections to the demolition of properties built on the alignment between Paisley Canal and Elderslie.

Detailed Appraisal	**Intervention D28 – Upgrade Edinburgh Haymarket Public Transport Interchange**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £50m - £100m. ***Annual Revenue Support Present*** £3.5m over 30 years ***Value of Cost to Gvt*** £10m - £50m ***BCR/PVB*** <0.75 / £10m – £50m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention is targeted at a number of objectives for Edinburgh relating to improvements in public transport interchange, connections to the airport and providing for enhanced rail capacity.

This intervention would consist of:

- Improvements to platform level access; and
- New at-grade concourse.

Summary: Rationale for Selection

This intervention would provide a significant contribution towards two of the objectives for Edinburgh, 'to maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity' and 'to enhance public transport interchange opportunities, where feasible to do so', by providing a step change in interchange facilities in Edinburgh. There is a forecast 50 per cent increase in rail demand between 2005 and 2022, as well as the growth in bus and tram passengers. By providing the opportunity for transfer between heavy rail, light rail and bus, opportunities for travel to areas in West Edinburgh, including the airport, would be greatly enhanced.

This intervention would complement measures to maximise the use of the station and reduce pressure on Waverley Station and the link between the two, such as the additional bay platform.

Table D28.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	**1: Strongly Positive -** This intervention would significantly improve access to and from the city centre via Haymarket. Platform and concourse improvements mean passengers can board and alight trains more efficiently with improved integration of rail, tram, bus, coach and taxi facilities providing benefits for all commuters.
STPR Objective 2: To enhance public transport interchange opportunities, where feasible to do so.	**2: Strongly Positive –** This intervention would deliver co-ordinated and integrated rail, tram, bus, coach and taxi facilities with real time information. In addition it would result in enhanced pedestrian access, compliance with the Disability Discrimination Act (DDA) and improved access to and from the city centre for all users of all modes.
STPR Objective 3: To increase public transport capacity and frequency between Fife and Edinburgh.	**3. Neutral –** This intervention would help to improve public transport interchange opportunities at Edinburgh Haymarket Station. However, it is unlikely this intervention would increase public transport capacity and frequency between Fife and Edinburgh.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral -** This intervention would improve personal safety and security by providing a multi-modal interchange at Haymarket, but is not expected to impact directly on accident rates and severity rates.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Slightly Positive –** There would be no improvements to rail journey times but better integration with other transport modes could result in reduced overall journey times for those passengers using Haymarket Station.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Edinburgh Airport identified in the NPF2.	**6: Positive –** The creation of a multi-modal interchange at Haymarket would help to enhance public transport interchange opportunities and therefore improve efficiency and effectiveness of transport links through Haymarket Station. This intervention would also help to support the development at Edinburgh Airport.

Table D28.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate Benefit/ Moderate Negative Impact**	This intervention aims to improve the transport interchange in Edinburgh with a consequential improvement to air quality. This intervention has the potential to affect Edinburgh's diverse range of internationally important cultural heritage designations. The effects it could have would depend on the exact form of works required and it should be designed to avoid or mitigate these potential adverse effects.
Safety:	**Minor Benefit**	This intervention is expected to have a minor benefit for safety. Security would be improved due to more efficient interchange facilities and safer cycle storage. The interchange facility would be safe and accessible for user groups through full compliance with the DDA, albeit the overall impact is expected to be minor benefit.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention would have a positive impact on TEE through reducing travel times for multi-modal journeys to key economic development sites and encouraging modal shift towards the more efficient public

		transport option over the car. Furthermore, modal shift would result in reduced vehicle operating costs for drivers. **Wider Economic Benefits (WEBs):** It is anticipated that a significant upgrade to the interchange at Haymarket would increase the capacity and efficiency of public transport in Edinburgh and help maintain the ability of commuters to access employment in the city centre. Reductions in travel times for multi-modal journeys and reductions in road travel time (arising from modal shift and reduced congestion) would also have a positive impact on the efficiency and productivity of businesses in the region. The upgraded interchange could provide the capacity for the increased movement of people to development sites such as Edinburgh Airport, and the areas of Economic Activity of Edinburgh City Centre and West Edinburgh. Given the current and predicted growth in West Edinburgh, it is probable that the centre of gravity for travel would move westwards, increasing the importance of Haymarket relative to Waverley Station. **Economic Activity and Location Impacts (EALIs):** This intervention would go some way to assisting in the progression of development areas in Edinburgh through enhanced transport provision and would have some impact on the continued competitiveness of the area as a strategic investment location. In particular, the intervention would benefit businesses which depend on recruiting staff commuting from areas outwith the city as well as tourism businesses. The upgraded interchange could improve access to and from Edinburgh Airport and surrounding sites and support further development in these areas.
Integration:	**Moderate Benefit**	**Transport Integration:** The integration of transport at Haymarket Station would be enhanced by this intervention. The integration of modes and interchange possibilities afforded by the measure would help provide existing users with a seamless journey and encourage new users to use public transport. The opportunity for the use of integrated ticketing would be enhanced by this development. The upgrade of the interchange at Haymarket would allow seamless integrated travel to Edinburgh Airport following the implementation of the proposed Edinburgh Tram link. There is a direct significant impact on providing a step change in interchange facilities in Edinburgh that would accommodate the forecast 50 per cent increase in rail demand between 2005 and 2022, as well as growth in bus passengers and passengers using the tram network. **Transport Land-Use Integration:** This intervention could have a positive effect on reducing the need to travel by car, a positive impact on economic growth of the city and help "support the City's… ability to compete in the global economy" (*Edinburgh and Lothians Structure Plan 2015*). An upgraded interchange at Haymarket would help maintain a prosperous and competitive city economy and promote direct investment in sustainable and accessible locations such as Edinburgh City Centre and the strategic business centres at Edinburgh Park / South Gyle, Leith and Granton. **Policy Integration:** The interchange would be designed to be fully compliant with the DDA, whilst any promotion of public transport over car use would have a positive effect on health services.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** While this intervention would not improve public transport network coverage; it would promote non-motorised trips. **Comparative Accessibility:** It is considered that the accessibility impact of the intervention would have a greater benefit to existing and potential users of the Haymarket interchange and would promote public transport use for socially excluded groups such as the elderly or mobility impaired. In addition, it would have a positive impact on regeneration areas in Edinburgh such as Edinburgh City Centre. There would be a positive impact for mobility impaired users as the new interchange would cater for all traveller groups and would be fully DDA compliant.

Table D28.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention would significantly improve connections by improving the transport hub, allowing better access to and from the city centre from the south, west and north for public transport users. Journey times would not be improved as a result of this intervention, but overall journey time benefits are likely for public transport users, due to improved connections and better integration of all modes.
Reduce Emissions:	**Moderate Benefit**	The upgrade of Haymarket Station would promote modal shift to public transport in Edinburgh as a result of the creation of an enhanced multi-modal interchange and could contribute to a reduction in CO_2e emissions and an improvement in local air quality, especially in the Air Quality Management Areas.
Improve Quality, Accessibility and Affordability:	**Major Benefit**	The quality and accessibility of the interchange would be improved through station enhancements to platform and concourse areas, resulting in full DDA compliance. This intervention would not impact on affordability.

Table D28.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This measure would improve the quality and accessibility of public transport and improve access to essential services and economic opportunities although it would not offer support to communities in less accessible parts of the country. Safety would be an integral part of the redevelopment. While road accidents could decrease as a result of the induced modal shift anticipated from this measure, the overall impact is expected to be minor.
Smarter:	**Minor Benefit**	This intervention would generally result in improved access to schools, colleges and universities in Edinburgh.
Wealthier and Fairer:	**Moderate Benefit**	While individual journey times would remain similar, improved connections resulting from the proposed measure would improve inter-modal journey times and improve reliability. This would help meet the objective of a Wealthier and Fairer Scotland by helping to sustain economic growth in Edinburgh and the surrounding area.
Greener:	**Moderate Positive**	This intervention promotes a modal shift away from the car to public transport and could result in improvements to air quality and reduced CO_2e emissions. It also promotes the use of sustainable transport.
Healthier:	**Minor Benefit**	Although this intervention would not increase access to health services, the forecast modal shift to public transport would support the development of a healthier Scotland.

Table D28.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is unlikely that any untried techniques would be required when implementing this intervention. However, as the design stages progress, localised issues could arise which require increased technical capabilities to overcome them. Given the proximity of the site to a busy railway and to the future tram route, issues related to constructability and phasing, whilst allowing continued operations, would be critical considerations to successful project delivery.
Operational:	There are no envisaged operational issues related to this intervention during its projected life.
Public:	Consultations have been undertaken with key stakeholders, local residents and businesses. The results were incorporated into to the preferred option for the existing intervention (*http://www.haymarketinterchange.com/index.php*). While there is likely to be a general positive attitude towards this intervention, there would potentially be some opposition due to the impact on the existing station building.

Detailed Appraisal	**D29 – Enhancements to Rail Freight between Glasgow and the Border via West Coast Main Line**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment		■			■		
Safety					■		
Economy							■
Integration					■		
Accessibility and Social Inclusion				■			

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention would allow an increase in the number of freight paths on the West Coast Main Line (WCML) between Glasgow and the Border by enhancing the rail infrastructure. This would include measures such as:

- Lengthening of loops;
- Removal of speed limits that are below 75mph for freight trains;
- Increasing the loading gauge on the route; and
- Increasing freight terminal capacity.

This intervention may also include a new line between Mossend and Coatbridge, which would involve providing an overbridge across the A8 and M8 when works are complete.

Widening of the track may require land take or the construction of earth retaining structures where space is limited.

Summary: Rationale for Selection

This intervention would improve capacity for rail freight between Scotland and England by providing enhanced facilities on the WCML. This would contribute to the freight objective identified on Corridor 18 (Glasgow to North West England and the Border) to transfer freight from road to rail.

There would be environmental benefits, as rail would be expected to capture a greater proportion of cross-border freight traffic, thereby reducing road-related emissions. New rail infrastructure could adversely affect the environment; however, it is possible that any such impacts could be mitigated at project design level.

This intervention could interact with similar proposals developed by the Department for Transport on the WCML south of Carlisle.

Table D29.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction.	**1: Slightly Positive –** This corridor currently suffers from congestion in peak hours on the M74 and other approaches to Glasgow. This congestion will increase due to the forecast increase in traffic on the M74. Enhancements on the WCML to improve support for rail freight, and increase the number of available paths, would encourage logistics companies to choose rail over road for Anglo-Scottish flows. This in turn would have a slight benefit to the road network, although it is unlikely that there would be a significant impact on emissions.
STPR Objective 2: To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.	**2: Slightly Positive –** Increasing the number of paths for rail freight would increase capacity and accessibility for freight and encourage a modal shift from road to rail. Increasing the loading gauge would allow larger containers to be carried and would therefore increase the proportion of freight that could be carried by rail through the corridor.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Slightly Positive -** This intervention is unlikely to have a significant effect on promoting a continuing reduction in accident rates and severity rates across the strategic transport network. If some HGV movements are removed from the road then there may be a marginal benefit.

Table D29.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/ Moderate Negative Impact**	Improvements to the WCML for rail freight have the potential for moderate adverse effects on cultural heritage, due to the multitude of designated sites in close proximity to the existing track. However, the extent of new infrastructure is small, and these effects are highly dependent on the location of the final works, with mitigation likely to be possible. These potential moderate adverse effects would be offset by beneficial effects on air quality and climate, resulting from the potential to promote modal shift from road based HGVs to rail.
Safety:	**Minor Benefit**	Increased rail freight adoption, by major freight forwarders operating to the south and England, should lead to the removal of some HGV journeys from the motorway network and M74. In Scotland, HGV accidents reduced between 2001 and 2006 by 31 per cent, and this can mainly be attributed to improved enforcement of drivers' hours and legislation, plus better vehicle design. However, improved utilisation of rail freight infrastructure is expected to lead to a reduction in growth of total road vehicle kilometres travelled and a subsequent reduction in accidents involving goods vehicles on this route.
Economy:	**Major Benefit**	**Transport Economic Efficiency:** This intervention would make provisions for increasing the speed of freight trains and the size of containers that can be carried on them on the WCML resulting in greater productivity in the movement of goods. **Wider Economic Benefits:** The creation of faster rail freight links between the Central Belt and major freight hubs in England would encourage business development and stimulate economic growth in the Central Belt. In 2005-06, 14 million tonnes of freight was lifted in Scotland by rail, 24 per cent more than the previous year and over twice the amount in 1996-97. **Economic Activity and Location Impacts:** The creation of jobs in the Coatbridge area, an area with high unemployment following the closure of traditional businesses in the area such as Ravenscraig steelworks, would help boost the local and national economy.
Integration:	**Minor Benefit**	**Transport Integration:** Existing inter-modal facilities at Mossend and Coatbridge ensure that integration with other modes of transport, predominantly road, have been accomplished. The north end of the WCML, at Mossend, is approximately 30 kilometres from the port and rail freight facilities at Grangemouth, and there would be significant benefit in ensuring that improvements on the WCML integrate with those facilities. **Transport and Land Use Integration:** Mossend's central location means that it is well placed as a marshalling point, allowing freight from across Scotland to be combined into longer trains for travelling south across the Border. **Policy Integration:** Improved freight connection is one of the policy requirements of the National Planning Framework (NPF2), a document which encourages economic growth through sustainable development.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not impact on community accessibility **Comparative Accessibility:** Rail freight improvements to the WCML are unlikely to bridge social exclusion problems.

Table D29.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	Scotland's current freight network is concentrated around links from the south and England to the Central Belt. The WCML route benefits from being electrified allowing greater tractive power which speeds up rolling stock and reduces journey times for freight trains. Increasing the number of paths available would ensure that rail freight can remain competitive with road freight by allowing more freight to be transported at times suitable for the freight logistics companies and their clients. These improvements would also help to improve journey time reliability for rail freight, ensuring that connections with onward road haulage can be met.
Reduce Emissions:	**Minor Benefit**	Increased use of rail freight would continue to contribute to reduced lorry miles and hence reduced road vehicle pollution on the congested M74 corridor. WCML electrification allows the use of electric freight locomotives, which create less noise pollution and no exhaust fumes, plus there is the option to generate electricity from renewable sources.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Rail freight enhancements are unlikely to have an effect on public transport links, accessibility issues and the affordability of public transport.

Table D29.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	Increasing terminal capacity at Mossend and Coatbridge, and upgrading the WCML for rail freight, would result in some modal shift of freight from road to rail for journeys to the south. This would improve road safety on major routes to the south. This intervention would have no impact on the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would not improve links to schools, colleges or universities.
Wealthier and Fairer:	**Minor Benefit**	Enhanced use of existing infrastructure to reduce freight transport costs and speed up rail links with connections to the south would be expected to lead to economic growth through stimulated business investment, encouraging business relocation to benefit from these improved transport links. This in turn is likely to lead to job creation.
Greener:	**Minor Benefit**	Rail freight enhancements would encourage freight transfer from road, which decreases road traffic congestion and disruption. However, public transport is not promoted nor is modal shift away from the car. Use of the WCML utilises cleaner locomotives due to electrification with consequential benefits to air quality and reductions in CO_2e emissions.
Healthier:	**Minor Benefit**	Together with the Greener objective, reducing HGV traffic and improving air quality would impact on urban areas near to major trunk roads reducing health service costs and the negative effect of respiratory disease on society. This intervention would not improve access to health services.

Table D29.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	There has been no detailed consultation specifically on this individual intervention; however, it is expected that any measure which promotes freight transfer from road to rail would achieve public support.

Detailed Appraisal	**D30 - Light Rapid Transit connections between Fife and Edinburgh**

Estimated total Public Sector Funding Requirement:

Capital Costs/grant	£10m - £50m
Annual Revenue Support Present	-
Value of Cost to Gvt	£10m - £50m
BCR/PVB	< 0.75 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to increase public transport capacity between Fife and Edinburgh and supports the proposed national developments at Rosyth, the Forth Replacement Crossing and Edinburgh Airport identified in the NPF2.

It would consist of a bus based rapid transit service over the replacement Forth Crossing, providing improved connections across the Forth Estuary.

In particular, it would connect the communities in Fife with the business and commercial opportunities in Edinburgh and West Lothian.

Summary: Rationale for Selection

This intervention would ease congestion by offsetting the forecast decrease in capacity for road users and would result in a slight increase in the 60-minute commutable market area for Edinburgh.

This intervention could provide an efficient means to access West Edinburgh, including Edinburgh Airport, from Fife complementing the heavy rail connections via the new committed interchange at Gogar (as part of D22 – Edinburgh to Glasgow Rail Improvements Programme).

Overall the proposed intervention performs strongly against the stated objectives and could be implemented in conjunction with strategic Park-&-Ride and the provision of priority vehicle lanes.

Table D30.1.1 STPR Criteria

STPR Objectives	
STPR Objective 1: To reduce public transport journey time between Edinburgh and Dundee.	**1: Slightly Positive –** M90/A90 is currently suffering from capacity issues and provision of new Light Rapid Transit line would provide public transport which is competitive with the car and would reduce journey time between Fife and Edinburgh.
STPR Objective 2: To increase public transport capacity and frequency between Fife and Edinburgh.	**2: Positive –** This intervention would enhance connections between Fife and Edinburgh. It would provide an attractive alternative public transport mode, which would improve capacity and accessibility for local communities.
STPR Objective 3: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**3: Slightly Positive -**The provision of a new Light Rapid Transit link from Edinburgh to Fife would release capacity for heavy rail between Edinburgh and Aberdeen / Inverness, resulting in some journey time reductions and improved reliability for other heavy rail services.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**4: Positive -** This new Light Rapid Transit line would help to improve transport links to and across the Forth Crossing and would support the developments at Rosyth and Edinburgh Airport by providing direct public transport access.
STPR Objective 5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**5: Neutral -** Although this intervention would attract more modal shift from car to public transport it is unlikely to have any significant effect on accident rates and severity rates across the strategic transport network.
STPR Objective 6: To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**6: Neutral -** Although this intervention would increase the number of public transport options over the Forth it is unlikely to have any significant effect on improving the efficiency of the M90/A90 during periods of peak demand.

Table D30.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit**	There is the potential for the Light Rapid Transit to encourage some modal shift away from car use, which could contribute to a reduction in road vehicle emissions thereby resulting in minor positive effects to local air quality and a contribution to the reduction in CO_2e emissions.
Safety:	**Neutral**	Although this intervention would attract a degree of modal shift from car to public transport it is not considered to have any significant effect on accident rates and severity rates across the strategic transport network. The safety implications of the intervention would be dependant on the nature of the Light Rapid Transit and the relationship with other modes. Running Light Rapid Transit on shared use roads / pedestrian footpaths could have a negative impact on safety for these sections of the route.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention is considered to have a positive economic impact through reducing travel times and increasing capacity between Fife and Edinburgh for public transport and all other road users by providing an efficient public transport network. This increase in efficiency and capacity would increase the 60-minute commutable market area for Edinburgh by approximately one per cent, by offsetting the impacts due to increased road congestion. Mode shift would result in reduced vehicle operating costs for existing drivers either as a result of changing mode to public transport or more efficient use of the road network due to released capacity. **Wider Economic Benefits (WEBs):** It is anticipated that the implementation of a Light Rapid Transit between Fife and Edinburgh would improve the attractiveness of public transport as an option for travel for both business and recreational travellers. This would have economic benefits for Fife, Edinburgh and the West Lothian locations in between. The direct link to the airport which would be afforded by this intervention would significantly enhance the modal share of public transport users between Fife and Edinburgh Airport, greatly contributing to the accessibility of Edinburgh Airport. Economic benefits would include improved efficiency and productivity for business travellers moving between Edinburgh City Centre, Edinburgh Airport and other key sites of economic activity across West Edinburgh. These benefits could arise through improved journey times and reliability resulting in better access to customers and suppliers. Public transport improvements would also help maintain labour catchment areas for employers in the region, assisting businesses in the recruitment of skilled staff. **Economic Activity and Location Impacts (EALIs):** Improved public transport provision between Fife and Edinburgh City and Airport would make the locations on route within Fife and West Lothian more economically attractive and improve economic performance on this section of the corridor. It would go some way to assisting in the progression of development areas in Fife and West Lothian through enhanced transport provision. By improving connectivity to key sites across the region (including Edinburgh airport and other developing areas in West Edinburgh), it would also have a positive impact on the continued competitiveness of the corridor as a strategic investment location.
Integration:	**Moderate Benefit**	**Transport integration:** This measure would build on the extensive public transport system in Edinburgh and therefore by its nature would integrate with the bus network in Edinburgh. The integration with the pedestrian, cycling, bus, rail and air public transport networks is also likely to be positive. This would be dependent on detailed route and station interchange designs of the intervention and achievable integration with other public transport timetables.

		Transport land-use integration: Improving transport links between Fife and Edinburgh has a positive impact on transport land use integration, by benefiting the South Fife Economic Development Zone around Dunfermline and Rosyth and Dunfermline as a strategic development area (*Fife Structure Plan 2006 – 2012, Fife Council*). This would also integrate and assist with the development of Winchburgh as a Core Development Area (*Finalised West Lothian Local Plan, West Lothian Council*). This intervention would also have a positive impact on the Area of Economic Activity identified in Edinburgh City Centre. **Policy integration:** It is anticipated that fully accessible vehicles would be used as part of the measure thereby integrating with policies on disability and compliance with DDA. Health services would be promoted through the development of a more attractive sustainable transport option progressed through this intervention. It is anticipated that through the use of fully accessible vehicles and improved public transport provision the intervention is likely to be socially inclusive.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** It is believed that the public transport network coverage would improve access to jobs, training, health services, shopping and other locally significant trips by providing a fast, efficient and direct link between the residential areas in Dunfermline and Inverkeithing and the core employment centres of Rosyth and Edinburgh, and all other stops on the route(s). Therefore, this intervention is expected to improve public transport network coverage, and promote non-motorised trips. Local accessibility is likely to increase as this intervention would provide an additional public transport link between Dunfermline, Rosyth, Winchburgh, Edinburgh and employment areas such as Edinburgh Airport and Rosyth. **Comparative Accessibility:** It is unlikely that the distribution of impacts would differ by age, gender, car ownership or income group. The new infrastructure would comply to design standards and would therefore be fully DDA compliant. As noted in the Transport Land-Use integration section, the intervention would improve accessibility for the development area of west Fife, the Core Development Area of Winchburgh, and the Area of Economic Activity identified in Edinburgh City Centre.

Table D30.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	This intervention would provide improved journey time reliability, and better connections both between Fife and Edinburgh, and within Fife between locations such as Dunfermline, Inverkeithing and Rosyth. This intervention would also run services directly into Edinburgh City Centre, removing the need for travel into the congested Waverley station.
Reduce Emissions:	**Minor Benefit**	The provision of a new Rapid Transit from Edinburgh to Fife is likely to promote modal shift car to public transport, thereby reducing the number of cars on the road, and so potentially reducing CO_2e emissions. However, environmental modelling outputs indicate that if this intervention was to be implemented, there would be an increase from the 2005 baseline, but a very slight improvement on the forecasted 2022 baseline CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Major Benefit**	This intervention would improve the quality of journeys into Edinburgh, and improve accessibility between Fife and Edinburgh and in particular West Edinburgh and Edinburgh Airport. This intervention does not impact on affordability.

Table D30.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	The quality and accessibility of public transport between Fife and Edinburgh would be improved. However, although this intervention would attract some modal shift from car to public transport, it is unlikely to have any significant effect on accident rates and severity rates across the strategic transport network. The infrastructure involved in this intervention would be designed in accordance with current good practice and standards to ensure that all aspects of passenger safety are allowed for wherever possible.
Smarter:	**Minor Benefit**	This intervention would result in improved access to schools, colleges and universities in Edinburgh and the surrounding area.
Wealthier and Fairer:	**Moderate Benefit**	The new Light Rapid Transit link between Edinburgh and Fife is likely to contribute to a Wealthier and Fairer Scotland by improving transport connections between Fife and Edinburgh, which would support sustainable economic growth, providing travel opportunities for employment, business, leisure and tourism and linking towns, cities and the rural communities in Fife and West Lothian through interchange. This intervention would also slightly increase the 60 minute commutable labour market area for Edinburgh by offsetting the forecast decrease in capacity for road users due to increasing congestion.
Greener:	**Minor Benefit**	This intervention promotes a modal shift to rail with improvements to air quality and reduced CO_2e emissions. It also promotes the use of sustainable transport.
Healthier:	**Minor Benefit**	It is anticipated that the Light Rapid Transit link between Edinburgh and Fife would encourage a shift to public transport and the use of cycling and walking as part of journeys on the corridor therefore promoting healthier and physically active forms of transport. Transport access (public and private) to health services and community services such as Queen Margaret Hospital (Dunfermline) would also be improved contributing to a Healthier Scotland.

Table D30.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There are no significant technical issues related to the implementation of this intervention. However as the design stages progress, localised issues could arise which require increased technical capabilities to overcome them.
Operational:	There are no envisaged operational issues related to this intervention during its projected life.
Public:	There has been no specific detailed consultation on this individual intervention. However, it is expected that any measure which promotes modal shift to more sustainable transport would achieve public support.

Detailed Appraisal	**D31 - Inverkeithing to Halbeath Rail Line**	
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	£100m - £250m
	Annual Revenue Support Present	-
	Value of Cost to Gvt	£50m - £100m
	BCR/PVB	0.75 - 1.25 / £50m - £100m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to maintain the 60-minute commutable labour market within Edinburgh at the current level and improve access to the port of Rosyth national development. It would also support the objective of promoting public transport journey time reductions between Aberdeen, Inverness, Perth and Edinburgh by reducing journey times between Inverkeithing and Ladybank.

This intervention would consist of a direct double track rail link between Halbeath and Inverkeithing, including a new junction at Inverkeithing and Halbeath.

Summary: Rationale for Selection

This intervention would reduce journey times between Edinburgh and Perth, and Inverness, Aberdeen and the central belt, although the reduction is unlikely to be significant. The greater journey time saving would be for freight, by providing a more effective link to Rosyth Port from the south, helping to support future development there.

This would provide the ability to run more direct services to Edinburgh in conjunction with a strategic Park-&-Ride facility at Halbeath. It would also enable the segregation of local and intercity services and provide more efficient freight access to the port of Rosyth.

Table D31.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.	**1: Positive –** The new rail line between Inverkeithing and Halbeath would provide a shorter distance between Perth and Edinburgh. In addition, the route via Halbeath would have higher line speeds than the route via Kirkcaldy, resulting in reduced journey times.
STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**2: Neutral –** This intervention is unlikely to have any significant effect in promoting continuing reduction in accident rates and severity rates across the strategic transport network.
STPR Objective 3: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**3: Slightly Positive –** The new rail line between Inverkeithing and Halbeath would provide a slightly shorter route between Aberdeen, Inverness and Edinburgh. In addition, the route via Halbeath would have higher speeds than the route via Kirkcaldy, resulting in reduced journey times. However, the benefit of this time saving on the longer journey is relatively less significant than for trips between Perth and Edinburgh.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**4: Positive –** A new rail line between Inverkeithing and Halbeath would result in a more direct connection to Rosyth for freight trains. This would help to reduce journey times and promote more effective transport links.
STPR Objective 5: To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**5: Neutral –** Although this intervention would result in an increase in the number of passengers using Perth and Inverkeithing stations, the impact on traffic flows on the M90 and Forth Replacement Crossing is likely to be negligible. It is forecast that there will be less than a one per cent change in traffic flow on the M90 between Perth and Inverkeithing in the morning peak hour.

Table D31.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor benefit/Major Negative Impact**	There are potential adverse effects on the environment, particularly biodiversity, landscape and cultural heritage. Cultural Heritage is of the greatest concern, as the indicative route of the rail line could require land-take from Fordell Castle Historic Gardens and Designed Landscapes, with the potential to affect the integrity of this site. However, it is considered likely that many of the effects could be avoided or mitigated through sensitive design and best practice construction. A transfer of some trips from car to rail would result in a slight reduction in CO_2e emissions in this corridor.
Safety:	**Neutral**	Construction of this new railway line would result in a degree of modal shift from private car which could contribute to a reduction in accidents on the road network. However, this is expected to be marginal.
Economy:	**Moderate benefit**	**Transport Economic Efficiency (TEE):** This intervention would offer a reduced rail journey from Perth to Edinburgh for existing users. Modal shift would result in reductions in vehicle operating costs for private vehicle owners.

		Wider Economic Benefits (WEBs): The improved links between Halbeath and Inverkeithing would provide enhanced links between a number of sites along the corridor, including Edinburgh, Perth and beyond. This enhanced connectivity may have wider economic benefits, as improved journey times would improve efficiency and productivity for business travellers using the route. At the same time, more efficient public transport links would be expected to help maintain labour catchment areas for businesses located along the route. Benefits for freight would also be expected, with rail freight from Rosyth, which heads towards Glasgow, Edinburgh and the south, benefiting from a journey time reduction, thus supporting future development of the port. **Economic and Location Impacts (EALIs):** The enhanced connectivity provided by this intervention would open up greater opportunities for economic development. Businesses at key areas of economic activity in Central and West Edinburgh, as well as other areas such as Rosyth and Perth, would be likely to benefit from improved connectivity and access to skilled staff.
Integration:	**Minor benefit**	**Transport Integration:** Transport integration would benefit through provision of a higher quality choice of rail service between Perth and Edinburgh. Integration with other modes would be unaffected. **Land Use Transport Integration:** Land use integration would depend on the final alignment of the route. **Policy Integration:** This intervention would integrate well with relevant policies by providing greater connectivity between Dundee, Perth and Edinburgh and improving rail journey times.
Accessibility and Social Inclusion:	**Minor benefit**	**Community Accessibility:** This intervention would provide a higher quality public transport rail link than currently exists thereby assisting accessibility. Localised severance issues may arise depending on final alignment of the route. **Comparative Accessibility:** This intervention would have no impact on Comparative Accessibility.

Table D31.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Benefit**	The new railway line will help to improve journey times for passenger journeys between Edinburgh, Perth and onwards to Inverness and between Edinburgh, Dundee and Aberdeen through a shorter route with higher line speeds. There would also be benefits for rail freight journey times into Rosyth from the south as the new link would avoid freight trains having to travel around the Fife Circle or run-round at Inverkeithing or Dunfermline, thus supporting future developments at the port.
Reduce Emissions:	**Minor Benefit**	The provision of a new rail line between Halbeath and Inverkeithing would encourage a modest modal shift from road to rail that could contribute to some reduction in to CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention would improve accessibility if linked to the construction of new Park-&-Ride facilities at Halbeath, allowing people to access the rail network from further afield. Reducing the journey times for Dundee and Perth to Edinburgh would help to improve the overall quality of services. There is unlikely to be any change in affordability.

Table D31.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives

Objective:	Assessment Summary:	Supporting Information:
Safer and Stronger:	**Minor benefit**	This intervention would be likely to have a minor benefit for the objective of the Safer and Stronger Scotland by improving the quality and accessibility of public transport between Dundee, Perth and Edinburgh. It would not significantly impact on road safety.
Smarter:	**Minor benefit**	This intervention would benefit improved access to schools, colleges or universities along the route of the intervention.
Wealthier and Fairer:	**Moderate benefit**	This intervention provides greater choice for public transport travel thereby assisting with social inclusion and accessibility issues and providing greater choice to travellers. Improved journey times between Perth and Edinburgh would also provide a benefit helping make Scotland Wealthier and Fairer.
Greener:	**Minor benefit**	The new rail line is likely to promote a modal shift away from the car to rail with associated potential improvements to road-related emissions.
Healthier:	**Minor benefit**	This intervention, through encouraging modal shift, may help encourage greater amounts of walking or cycling to access improved and new services. It is unlikely to have a significant impact on access to health services and other community services.

Table D31.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is proposed that this intervention would follow the disused railway where possible and in general n general, no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise which require increased technical capabilities to overcome. Construction of this line would also include a bridge over the M90 and there may be some disruption to road users.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	There has been no specific detailed consultation on this individual intervention. However, it is expected that any measure which promotes modal shift to more sustainable transport would achieve public support.

Annex 3

Detailed Appraisal	**E1 – Suburban Rail Services Across Dundee**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £50m - £100m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10m - £50m ***BCR/PVB*** 0.75 - 1.25 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to improve public transport accessibility and competitiveness to the west of Dundee. It includes:

- A 30 minute frequency service from Arbroath to Perth;
- A new station at Dundee West and services calling at all intermediate stations;
- Additional suburban rolling stock; and
- Changes to track layout and signalling to allow for the increased service frequency and construction of the new station.

Summary: Rationale for Not Recommending

Analysis shows that providing suburban rail services across Dundee would result in a negligible modal shift from car and therefore the intervention would not have a strategic impact.

The potential for improved public transport service provision for Dundee is better captured within the Interventions D10 (Reconfiguration of the National Timetable) and D18 (Rail Enhancements between Aberdeen and the Central Belt).

Table E1.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce the conflict between long distance and local traffic.	**1: Slightly Positive –** Forecast modal shift from car is low but the intervention is still likely to remove a small amount of local trips from the road leaving more road space for longer distance or strategic trips.
STPR Objective 2: To improve bus / rail interchange opportunities.	**2: Positive** – This intervention would improve the connectivity and accessibility between Dundee and the suburbs to the east and west of the city. The development of this intervention would be additional to existing InterCity and First ScotRail Express services. The proposed Dundee West station provides a key link to integration with existing employment centres and planned housing development areas. This intervention would improve the economic performance of Dundee West by improving access to communities, new business sectors and the city centre.
STPR Objective 3: To improve the public transport accessibility and competitiveness to Dundee West.	**3: Positive** –This intervention would improve the accessibility and competitiveness of public transport and encourage use of rail services. This would provide a more attractive public transport mode and improve connections between Dundee and surrounding towns.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral** – The overall impact of the intervention on accident rates and severity rates is likely to be negligible.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between Aberdeen and the Central Belt primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Slightly Positive** – This proposed intervention would improve the connectivity and accessibility between Dundee and its suburbs to the east and west of the city. This would result in reduced bus-rail interchange times and improved journey times, which would allow businesses to achieve an effective working day when travelling between Dundee and other cities.

Table E1.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit**	It is envisaged that this intervention will encourage a degree of modal shift from road to rail, with a potential beneficial effect on air quality, especially in relation to the Air Quality Management Areas in Perth and Dundee. There is envisaged to be little new land-take required for this intervention, and while there are some uncertain neutral to minor adverse effects on cultural heritage and water, these could easily be mitigated depending on the location and scale of the works.
Safety:	**Neutral**	The improvements would make some contribution to accident savings, by reducing car use; however, the overall impact of this intervention on road safety is likely to be negligible.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** Economic benefits are anticipated as a result of improved connection times between modes. Improved frequency of service introduces economic benefits through the potential travel time savings for trips to economic development sites, particularly during peak hours. Service frequency enhancements would provide up to 4,300 seats arriving at Dundee over a three hour peak period (based on two additional six carriage services per hour between Perth and Dundee and between Arbroath and Dundee) extending these benefits to a large number of passengers. The forecast number of passengers using stations along the line (e.g. Arbroath, Dundee, Dundee West and Perth) would increase under this intervention. However, the increase would be such that this intervention offers only marginal value for money. **Wider Economic Benefits (WEBs):** The provision of rail services to local areas not currently served by rail (Dundee West) introduces economic benefits in terms of improved access to a wider pool of employment opportunities to suburban communities in Dundee and to a larger labour pool for businesses located in centres such as Dundee, Perth, and Arbroath. Improvements to signalling and service along the rail corridor would provide economic benefit for the broader corridor between Perth and Arbroath and to suburban communities in Dundee. **Economic Activity and Location Impacts (EALIs):** The new station at Dundee West would improve access to labour markets and employment opportunities. Dundee Technology Park and the employment centre of Ninewells Hospital would benefit from improved access to labour markets. This intervention could act as a 'building block' in the continuing competitiveness of the area, and in particular Dundee West, as a strategic investment location.
Integration:	**Minor Benefit**	**Transport integration:** This measure builds on the existing heavy rail network in the east of Scotland through the addition of a station (Dundee West) and through improvements to signalling and services. The creation of a new station would increase the potential for interchange between rail and other modes. It is anticipated that any new station would be designed to promote integration with pedestrian, cycling and bus public transport networks and that the overall impact on integration would be positive. **Transport land-use integration:** Improving rail transport services in suburban Dundee promotes transport land-use integration through promotion of modal shift. It is anticipated that the design of the station would not only integrate with other modes of travel but would also be designed to complement the surrounding setting. This intervention would help facilitate the growth of economic activity in Dundee City Centre and Dundee West. **Policy integration:** This intervention is considered to integrate with existing policy. Promotion and enhancement of public transport facilities and services, particularly in the suburban areas of Dundee, supports social inclusion and rural access. This intervention encourages modal shift and would assist in achieving a healthy and inclusive society. It is anticipated that the new

		station would comply with the Disability Discrimination Act (DDA) and would improve access to the rail network for the mobility impaired. The Dundee Local Plan supports the improvement of rail services and infrastructure and the development of a new station within Dundee and its hinterland in order to promote and reflect Dundee as a major city. The Dundee and Angus Structure Plan promotes the improvement of transport links on the Perth-Dundee-Arbroath corridor, through enhancements to local rail services and dedicated local rail services operating within and beyond the Dundee and Angus Coastal Corridor.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** The public transport network coverage would improve access to jobs, training, health services, shopping and other locally significant trips by providing a fast, efficient and direct link between the residential areas in suburban Dundee and the core employment centres of central Dundee, Perth and Arbroath. This option is therefore expected to improve public transport network coverage and promote non-motorised trips. Local accessibility would increase as this intervention would provide an additional public transport link between residential, commercial and industrial areas in the settlements on route. Access to health services would be improved as the proposed new station at Dundee West is in proximity to Ninewells Hospital. **Comparative Accessibility**: It is anticipated that the new station would be designed to accommodate the mobility-impaired. This intervention would provide greater accessibility for the more deprived and socially excluded regeneration areas.

Table E1.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	Journey times may be improved as a result of improvements to the track layout and signalling. This could allow more trains to run at faster speeds on the rail network in the Dundee area. The provision of new services would significantly enhance rail connectivity and provide better access to longer distance services.
Reduce Emissions:	**Minor Benefit**	It is envisaged that this intervention would encourage a slight modal shift from road to rail, this is not considered likely to result in a substantial impact on overall CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Implementing this intervention would potentially increase access to key services locally. Approximately 4300 additional seats would be provided on services arriving at Dundee over a three-hour peak period (based on two additional six carriage services per hour between Perth and Dundee and between Arbroath and Dundee), thus improving the quality of passenger journeys. Congestion at peak times is expected to be reduced through an increase in local services.

Table E1.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention would improve the quality and accessibility of public transport and open up rail access to suburban communities in Dundee. Modal shift is forecast to be limited and any potential impacts on safety are likely to be negligible.
Smarter:	**Minor Benefit**	The improved service provision could result in enhanced access to and from Dundee University, Ninewells Teaching Hospital and related sites.

Wealthier and Fairer:	**Moderate Benefit**	This intervention would improve journey times and their reliability, sustaining and promoting economic growth in Dundee and improving access to Dundee City Centre and the areas of economic activity in Dundee.
Greener:	**Minor Benefit**	This intervention promotes a marginal modal shift to rail and therefore could contribute to improved air quality and reductions in carbon emissions. However, the impact is expected to be low. The intervention would also promote the use of sustainable transport.
Healthier:	**Moderate Benefit**	This intervention encourages the use of public transport and healthier, physically active forms of transport. Access to health services is enhanced through the development of a new station close to Ninewells Hospital.

Table E1.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	In general, no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise that require increased technical capabilities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention. .
Public:	There has been no specific detailed consultation on this individual intervention. However, it is expected that any intervention that promotes modal shift to more sustainable transport would achieve general public support.

Detailed Appraisal	**E2 - Co-locate Dundee Bus Station with Rail Station**	
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant***	<£10m
	Annual Revenue Support Present	-
	Value of Cost to Gvt	<£10m
	BCR/PVB	N/A

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to improve bus/rail interchange opportunities in Dundee.

It consists of re-locating the existing bus station adjacent to the existing rail station, with associated improved pedestrian access to the city centre.

Summary: Rationale for not recommending

Moving the bus station would improve the interchange between these strategic bus and rail services. However, there is unlikely to be a significant number of people making this interchange. The more frequent bus to rail interchange would be between local buses and rail services. These bus services would be expected to continue using the on street bus stops and would not be expected to use the proposed bus station. Critically, many strategic bus journeys currently integrate well with local bus services on the existing site. The proposed re-siting of the bus station would make it difficult to make this transfer as some local bus services would not connect with the proposed station.

Table E2.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce the conflict between long distance and local traffic.	**1: Neutral** – This intervention focuses on public transport interchanges and would not reduce the conflict between long distance and local traffic.
STPR Objective 2: To improve bus/rail interchange opportunities.	**2: Negative** – At present, Dundee's bus and rail stations are over 1km apart and separated by busy urban routes, including the inner ring road, making the connection between them difficult. The current bus station is on the eastern edge of the city centre and is used by rural, regional and long distance bus services. Moving the bus station would improve the interchange between strategic bus services and rail services. However, there is unlikely to be a significant number of people interchanging. The more frequent bus to rail interchange would be between local buses and rail services. These bus services would be expected to continue using the on street bus stops and would not be expected to use the proposed bus station. Critically, many long distance journeys made by bus currently integrate well with local bus services on the existing site. The proposed re-siting of the bus station would make it difficult to make this transfer as some local bus services would not connect with the proposed station.
STPR Objective 3: To improve the public transport accessibility and competitiveness to Dundee West.	**3: Slightly Negative** – Upgrading the existing bus and railway stations and locating them on the same site would help to improve some bus/rail interchange opportunities. However, this intervention would disconnect the local and regional bus services that are currently well integrated within the city.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral** – This intervention is not expected to impact upon reducing accident and severity rates across the strategic transport network.
STPR Objective 5: To promote journey time reductions; particularly by public transport between Aberdeen and the Central Belt, primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Neutral** – This intervention would not impact on interchange time as strategic trips between Aberdeen and the Central Belt would be likely to be completed wholly by either bus or train without the need to change modes in Dundee.

Table E2.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit**	No substantial effects on the natural environment are forecast to this intervention, given that it lies within an already built-up, urban area. The key effect that must be considered is the potential impact on numerous listed buildings in the vicinity, and for this reason, it is recommended that consideration is given to high quality design for the new building, to fit in with the historic townscape of the local area.
Safety:	**Minor Benefit**	This intervention is expected to have a minor benefit on safety. Security would be improved due to more efficient interchange facilities and safer cycle storage. The interchange facility would be safe and accessible for user groups through full compliance with the DDA.

Economy:	**Neutral**	**Transport Economic Efficiency (TEE):** This intervention could have a positive economic impact through reducing travel times for multi-modal journeys to key economic development sites and encouraging modal shift from car to public transport. However, as the proposed re-siting of the bus station would remove the current connection between local and strategic bus services, the benefits are anticipated to be minimal. **Wider Economic Benefits (WEBs):** There could be some travel time benefits for multi-modal journeys, however the proposed re-siting of the bus station would remove the current connection between local and strategic bus services and therefore the overall benefits are anticipated to be negative. **Economic Activity and Location Impacts (EALIs):** The main intervention benefits are expected to come from time savings due to the removal of delay during interchanges between modes. However, as long distance bus or rail passengers are unlikely to switch mode, the benefits are anticipated to be minimal and therefore would not offset the cost of the relocated bus station.
Integration:	**Minor Negative Impact**	**Transport Integration:** The provision of new infrastructure would provide a modern facility with up to date amenities. Additionally, it could make transfer from some local rail services to strategic bus a more feasible alternative. Alternatively longer distance bus trips would be less likely to transfer to long distance rail. Critically, the proposed re-siting of the bus station would remove the current connection between local and strategic bus services. **Transport and Land Use Integration:** Providing an effective interchange point between bus and rail services may improve access to rail services for potential development areas and encourage the use of more sustainable bus and rail services as alternatives to the car. **Policy Integration:** This intervention would be expected to increase accessibility for the disabled and improve social inclusion. The intervention could contribute to car travel reduction policies; however, this is expected to be marginal.
Accessibility and Social Inclusion:	**Minor Negative Impact**	**Community Accessibility:** This intervention could increase the network coverage of public transport for a wide range of people and trip purposes, particularly from areas around Dundee. However, this intervention would adversely impact on the current connection between local and strategic bus services. **Comparative Accessibility:** This intervention would primarily benefit those without access to a car. The proposed re-siting of the bus station would remove the current connection between local and strategic bus services.

Table E2.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Neutral**	Some local connections would improve marginally from co-location. At present, connections between the railway and bus stations are poor, with passengers travelling between the two having to walk approximately 1km. However, co-location would not have an impact on strategic bus / rail services, as interchanging between these services would be unlikely.
Reduce Emissions:	**Neutral**	It is not envisaged to result in significant modal shift away from the private car to bus or rail, with no resultant change in vehicular emissions. There could be some local, minor adverse effects as a result of dust generated during construction works.
Improve Quality, Accessibility and Affordability:	**Neutral**	Accessibility of local public transport services would remain largely unaffected by this intervention. The quality of the passenger experience may improve, as the new stations would be more modern and provide passengers with more co-ordinated information on journeys. Passengers who would benefit most from better integrated station include the elderly, disabled, young children and commuters. This intervention would not impact on affordability.

Table E2.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	Co-locating the bus and rail stations in Dundee may improve the quality and accessibility of some local public transport services; however, this is anticipated to be marginal. There may also be slight improvements in terms of security for those that currently walk between the two sites and at the station itself through improved lighting and upgraded CCTV.
Smarter:	**Neutral**	Co-locating the bus and rail stations in Dundee would not significantly impact on access to higher / further education.
Wealthier and Fairer:	**Neutral**	The co-location of the bus and rail stations in Dundee could result in faster journey times for those interchanging between some local rail and strategic bus services. Alternatively some connections between local and strategic bus services may be adversely effected.
Greener:	**Neutral**	Co-location of the bus and rail stations in Dundee would not result in significant modal shift from car to public transport. The forecast impact on emissions is minimal.
Healthier:	**Neutral**	Co-location of the bus and rail stations in Dundee is not likely to result in significant modal shift from car to public transport or improve transport access to health and community services.

Table E2.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	Relocation of the bus station to a single bus/rail interchange is expected to provide significant technical issues due to the general constraints of construction in an urban environment and the extent of engineering works required. It is envisaged that this intervention would result in a significant amount of disruption during construction of this project and may have an impact on those who currently use direct connections between local and national bus services at the existing facility.
Operational:	There would be an opportunity for new station facilities to enrich the environment for passengers. These should include Electronic Real Time Passenger Information Displays which update passengers with information regarding their journey. Clearer and better quality information at the station may attract more passengers to use public transport services. Passengers' safety would be improved with lighting and CCTV upgrading and there would be no substantial walk required as transport modes would be integrated. There may be the opportunity for an increase in the number of cycle lockers and an improvement to bus waiting areas.
Public:	This intervention is in the public domain and it is anticipated that it would in general receive support from the public. There may however be some objections due to the disruption that would be caused during construction.

Detailed Appraisal	**E3 – Construction of Glasgow Crossrail**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m – £250m ***Annual Revenue Support Present*** – ***Value of Cost to Gvt*** £50m – £100m ***BCR/PVB*** 0.75 – 1.25

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to address rail capacity issues in central Glasgow and increase public transport access to areas of economic activity.

Glasgow Crossrail consists of a range of infrastructure measures that could be implemented in phases over time. For the purposes of this assessment, the intervention consists of the reopening of the Glasgow City Union Line over the Clyde to passenger trains, with two new spurs:

- The Strathbungo Link from Muirhouse to the City Union Line allowing trains from East Kilbride and Kilmarnock to access the City Union Line; and
- The High Street curve from the City Union Line to the North Electric Line heading west at High Street.

Additional services would be provided, such as Ayr to Edinburgh and Croy to Barrhead, with a new turnback facility at Croy.

Some services that currently operate into Central High Level would be diverted to Charing Cross via Queen Street Low Level, such as East Kilbride services, with a new turnback facility at Kelvinhaugh.

Summary: Rationale for Not Recommending

On balance, as a 'stand alone' intervention, Glasgow Crossrail performs reasonably well, however, it does not make best use of the rail network or integrate well with the menu of schemes required to satisfy the objectives of the STPR. The interventions set out in D25 (West of Scotland Strategic Rail Enhancements) offer better opportunities to enhance connectivity for the heaviest rail demand patterns in and around Glasgow, and could use elements of this intervention.

The committed improvements on the rail network between Edinburgh and Glasgow also provide a 'step change' in the connectivity of Glasgow Central to Edinburgh, resulting in enhanced connections for those travelling to and from the south and south west of Glasgow. This is likely to negate much of the potential benefit of Glasgow Crossrail.

Table E3.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**1: Positive** – This intervention would contribute to the redevelopment of the Glasgow Cross area, Gorbals and the east end of the city centre. Although the intervention would provide new journey opportunities, these would have limited impact across the city region. There would be improvements to connectivity from the south of Glasgow to the north west and connecting across a wider area but the intervention would not provide a direct link between Glasgow Queen Street and Glasgow Central.
STPR Objective 2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.	**2: Slightly Positive** - There would be the opportunity to serve some movements from the south to north west that may result in modal shift, but this would be limited.
STPR Objective 3: To address rail capacity and connectivity issues in central Glasgow.	**3: Slightly Positive -** The new infrastructure would allow the diversion of some existing services from Glasgow Central High Level to Glasgow Queen Street Low Level. However, it would increase the number of services on the North Electric Line through Glasgow city centre. The level of relief that the intervention would be able to provide to Central High Level is limited and there would be no improvement for Glasgow Queen Street High Level.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral –** While the intervention provides for modal shift from car to rail, the level of impact of this intervention on accident rates would not be significant.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Neutral –** This intervention would have no significant effect on journey times from the Central Belt to Aberdeen and Inverness.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2	**6: Positive** - This intervention would improve connections to Glasgow Airport from a number of locations. From Ayr, the intervention would facilitate an increase in the number of services to Paisley Gilmour Street, which would improve connections with trains from Glasgow to Glasgow Airport. From Edinburgh and Airdrie, it would provide a new direct service calling at Paisley Gilmour Street, resulting in a direct connection with services from Glasgow to Glasgow Airport.

Table E3.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/Minor Negative Impact**	Improved services would promote modal shift from road to rail, though the overall level of impact would be limited. This would bring associated minor beneficial effects in relation to air quality, especially in light of the current air quality issues in Glasgow. However, there is the potential for impacts on several A-Listed buildings within Glasgow, however, the extent of these impacts is uncertain at this stage of the decision making process. There would also be increases in noise and vibration at some locations as a result of operating new or diverted services.
Safety:	**Minor Benefit**	The primary impact on safety would be as a result of modal shift away from road transport, which has higher accident rates. By achieving a reduction in trips on the road network it is anticipated that road accident numbers and severity are likely to decrease. The level of impact of this would, however, be limited. Providing new and improved station facilities within regeneration areas would have a positive impact on personal security.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention would remove the need for rail passengers to change between services and city centre stations when travelling on some routes between stations to the north and east of Glasgow (such as Airdrie and Croy) and to the south and west of the city (such as Barrhead and Ayr). This would result in significant efficiency benefits for passengers travelling between these stations. Passengers travelling from north and east or south and west of Glasgow would benefit from more frequent services into the east end of the city centre. **Wider Economic Benefits (WEBs):** This intervention would provide wider economic impacts through improving public transport provision and accessibility, not just within Glasgow, but across much of the Central Belt. It would be possible to make long distance journeys such as Ayr to Edinburgh without the need to transfer between Central and Queen Street stations in Glasgow. However, the level and scope of the impact would be limited to quite specific movements and corridors. **Economic Activity and Location Impacts (EALIs):** Construction of new stations at West Street, in the Gorbals and at Glasgow Cross would provide these areas with direct rail connection from stations between Ayr, Edinburgh, Barrhead and Croy. It would also support key economic regeneration areas in the East End of Glasgow. Similarly, service enhancements would improve rail accessibility to Airdrie, Barrhead, Croy and Glasgow, with a beneficial impact on employment and productivity in these locations.
Integration:	**Minor Benefit**	**Transport Integration**: A new station at West Street would integrate with Subway services. New stations at Glasgow Cross and Gorbals would integrate with other local transport facilities. Same station interchanges would also be possible at locations such as Queen Street Low Level and Bellgrove. The benefits to integration with other routes and modes in the city centre would be limited by the lack of connectivity to Central station and extended journey times for diverted services to access the city centre via Queen Street Low Level. **Transport and Land-Use Integration**: The intervention includes the construction of a new rail station at Glasgow Cross with direct access to the regeneration area in Glasgow's East End and new rail stations in the Gorbals and at West Street. This would provide efficient rail links to support development at these sites, with benefits to transport and land-use integration.

		Policy Integration: This intervention would provide new rail services, removing the need for some movements to require interchange, and encourage modal shift from car to rail. There would be some benefit to health and a positive impact on congestion and emissions from reduced car use. There would be a positive impact on accessibility and social inclusion. The new stations would be fully DDA compliant, thus having a positive effect on disability access. This intervention would also support regeneration in the east of the city centre.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility**: The proposed new stations and services represent improvements in rail network coverage. The intervention would provide improved access to employment opportunities across the routes being served, with improved access to the regeneration area in the East End of Glasgow and improved cross-Glasgow connections to cities and towns such as Edinburgh and Barrhead. **Comparative Accessibility**: The intervention would provide greater accessibility for deprived and socially excluded regeneration areas around the Gorbals and East End of Glasgow.

Table E3.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSOs)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit / Minor Negative Impact**	This intervention would have a benefit in reducing cross-Glasgow journey times by reducing the need to interchange between Glasgow Central and Glasgow Queen Street for some corridors and services. It would also provide a direct rail service connection between some areas currently requiring interchange. Journey times to access the city centre for some services would be negatively impacted by the additional time taken for trains to cross from the south side of Glasgow to Queen Street Low Level compared with accessing Central High Level.
Reduce Emissions:	**Minor Benefit**	This intervention is likely to promote a modal shift from road to rail thereby reducing the number of private cars on the road, and so contributing to reductions in CO_2e emissions. However, the overall impact of this would be limited.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention would have a benefit in terms of improved access and quality of public transport for job seekers in socially deprived areas such as the Gorbals and provide better access to employment in the regeneration area in the East End of Glasgow. It is anticipated that the intervention would have a neutral impact on affordability.

Table E3.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	The intervention would have a minor benefit for this objective by improving the quality and journey time reliability of public transport in Glasgow thereby increasing safety through promoting the use of public transport ahead of private car use. By removing traffic from roads, it is anticipated that this measure would also contribute to reducing road accidents in line with this objective.

Smarter:	**Minor Benefit**	This intervention would improve access to schools, colleges and universities.
Wealthier and Fairer:	**Minor Benefit**	This intervention would improve journey times, service frequency and journey time reliability on some routes, sustaining and promoting economic growth in Glasgow and the West of Scotland.
Greener:	**Minor Benefit**	This intervention would promote modal shift to rail, with improvements in air quality and reduced CO_2e emissions. It would also promote the use of public transport. However, the level and scope of the impact would be limited.
Healthier:	**Minor Benefit**	This intervention would encourage modal shift from road vehicles to more sustainable rail trips for passenger and freight journeys. It is not likely to significantly affect trips to health services and community services.

Table E3.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services. However, much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention. Diverting East Kilbride services from Central High Level to Queen Street Low Level would release some capacity at Central for additional services to Ayrshire, as proposed in D27. However, the benefits of this would be limited and further capacity would be required to allow D27 to be implemented.
Public:	Various proposals for a cross-Glasgow scheme have been placed into the public domain over a significant period of time and have received widespread support.

Detailed Appraisal	**E5 – New Busway between Glasgow City Centre, Clydebank and Glasgow Airport**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50m - £150m ***BCR/PVB*** < 0.75 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to directly connect areas of economic activity and provide links to Glasgow Airport.

It would provide a busway system along the River Clyde corridor, connecting to the Clyde Fastlink scheme and continuing west to serve Clydebank, Renfrew and Glasgow Airport. The system would generally run on a segregated alignment although some on-street operation is likely to be required at key pinch points on the route.

Summary: Rationale for Not Recommending

The introduction of a busway along the River Clyde corridor, west of the city centre, would link areas of economic activity with the urban network and would bring local benefits, but not of a scale that could be considered nationally significant.

The reduction in emissions would be limited, both in terms of scale of impact and the area of impact within the urban network.

The intervention relies on connectivity in the city centre, which is likely to result in additional trips to connection points, such as Glasgow Central Station. This would exacerbate an existing problem. It does not contribute effectively to resolving the issues with cross-Glasgow trips.

This intervention largely impacts at a local and regional level and does not contribute as effectively as other interventions such as D25 (West of Scotland Strategic Rail Enhancements). It is also noted that the Glasgow Airport Rail Link will provide a high frequency public transport service between the airport and Central Station, which would reduce the business case for connecting this intervention to the airport.

Table E5.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**1: Positive –** This intervention could result in reduced journey times for bus users travelling to and from the city centre and the surrounding areas of economic activity and regeneration areas. There would be no effect on strategic trips that currently require interchange.
STPR Objective 2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.	**2: Neutral –**This intervention may remove some local trips on the M8 as it would provide improved services along the Clyde corridor, however, the impact would be marginal.
STPR Objective 3: To address rail capacity and connectivity issues in central Glasgow.	**3: Slightly Positive –** This intervention would not increase the capacity of rail services, however, it could result in some modal shift to the bus, thus freeing up some capacity on rail services in the city. It may result in improved connectivity within central Glasgow as it would provide increased public transport services to and from the city centre; however, the additional trips to connection points such as Central Station may add to existing problems of congestion in these areas.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral –**This intervention may have a slightly positive impact on road safety in the corridor, as the dedicated roadways and possible modal shift from car to public transport, could result in a slight improvement to safety. However, impact would be marginal.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when traveling between these centres.	**5: Neutral –** This intervention would not have an impact on the strategic linkage between Aberdeen/Inverness and the Central Belt.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**6: Positive –** This intervention would improve accessibility along the Clyde corridor and provide general improvements between the city centre and the airport.

Table E5.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	There is the potential for benefits, as the intervention would introduce a new public transport link, improving accessibility and community linkages across Glasgow resulting in a degree of modal shift. The new vehicles would also use cleaner fuel technology. However, these benefits would be limited.
Safety:	**Neutral**	The services would run mainly on segregated busways, removing conflict with other traffic and pedestrians. The busway would provide up to date facilities to improve the safety and security of passengers. However, the overall impact on safety would be marginal.
Economy:	**Minor Negative Impact**	**Transport Economic Efficiency (TEE):** The segregated busways would provide improved journey times for existing public transport users and car users who transfer to the new services, resulting in marginal benefits. However, the present value of costs of between £50m and £100m compared to the present value of benefits indicates a poor economic performance with a benefit to cost ratio of <0.75. **Wider Economic Benefits (WEBs):** Improved connectivity would enhance the overall efficiency of the network. However, as the impacts of this intervention would predominantly be felt at a local level, this intervention would have a negligible impact on the labour catchment areas for Glasgow. **Economic Activity and Location Impacts (EALIs):** The intervention would generate a positive impact by linking the city centre with key regeneration areas along the River Clyde and with growing employment areas around Glasgow Airport. Overall, the development of a more integrated, efficient transport system within Glasgow could help make the area more attractive to inward investors.
Integration:	**Moderate Benefit**	**Transport Integration:** This intervention could be integrated with existing public transport at several locations including Glasgow Central, Partick Interchange, Braehead and Glasgow Airport. The fast, frequent, high quality service would link areas of economic activity with the urban network, and support the development of key sites such as the Southern General Hospital and Glasgow Airport. **Transport and Land Use Integration:** This intervention supports the development of the Glasgow Harbour, Clyde Waterfront and Braehead areas, providing direct links between these areas and Glasgow City Centre. This intervention also supports the development of the Southern General Hospital and Glasgow Airport. **Policy Integration:** The Glasgow City Council City Plan, 2003, established the context for the development of Fastlink.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** This intervention may increase public transport network coverage with increased links between Glasgow City Centre, the Clyde Waterfront area, Clydebank, Renfrew and Glasgow Airport. It would also include provisions for walking and cycling, to improve local accessibility. **Comparative Accessibility:** The intervention may have the greatest impact on the regeneration areas to the north of the River Clyde.

Table E5.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	The segregated busways would improve journey times for existing bus users and those transferring from car to services on the new facility. Connections may be improved as busways could provide quicker access to and from the city centre and provide interchange at several locations including Glasgow Central, Partick Interchange, Braehead and Glasgow Airport. This service would, however, impact on existing congestion around Central Station.
Reduce Emissions:	**Neutral**	The busway is not envisaged to encourage a substantial amount of modal shift from cars to buses along these routes and therefore this is assessed as neutral. The vehicles would use cleaner fuel technology.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention may improve accessibility to areas including the city centre, the Southern General Hospital, Braehead Shopping Centre and Glasgow Airport with reduced journey times and key stops on the route, but the Glasgow Airport Rail Link (GARL) would provide a faster service between the city centre and the airport. The service would be of a higher quality than existing bus services.

Table E5.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	This intervention could provide a quality public transport service that would be accessible from the main settlements and development areas on the north bank of the River Clyde and across the river to Renfrew and Glasgow Airport. Integration with existing public transport services would also be provided at several locations including Glasgow Central, Partick Interchange, Braehead and Glasgow Airport. It would not affect the affordability of public transport.
Smarter:	**Minor Benefit**	This intervention could increase access to schools, colleges and universities.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would provide a public transport service with faster and more reliable journey times and improved connections to and from the city centre and the regeneration areas to the north of the River Clyde thus improving productivity. It would also link into Glasgow Airport; however, GARL would provide a faster journey between the city centre and the airport.
Greener:	**Neutral**	The intervention could result in some modal shift to bus with improvements to air quality and reduced carbon emissions. It also promotes the use of sustainable transport and the intervention uses cleaner fuel technologies. The overall benefits however, would be limited
Healthier:	**Moderate Benefit**	This intervention may encourage modal shift from the car to public transport by providing a fast, frequent, high quality service. It could provide increased opportunities for public transport access to the Southern General Hospital.

Table E5.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is considered that there are no untried techniques that would be required during the implementation of this intervention. However, some issues may arise during the design stage due to the proximity of the Rivers Clyde and Kelvin. There may be some disruption to pedestrians and other road users during the construction of this intervention however, this could be mitigated against to minimise the impact.
Operational:	No adverse factors would impact on the operation of the intervention during its projected life. Operation and maintenance of the infrastructure could be the responsibility of the local authorities or the operator.
Public:	This intervention has been in the public domain for some time and would form part of the regeneration of the Clyde Waterfront area.

Detailed Appraisal	**E6 - Inverness Southern Bypass from the A9 to A82**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50m - £100m ***BCR/PVB*** <0.75 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to reduce the conflict between longer distance and local traffic in Inverness, by allowing long distance traffic to bypass the city. It consists of an Inverness bypass from the A9 to the A82, building on the suggested link road from the A96 at Smithton to the A9 at Inshes proposed as part of the upgrade of the A96 between Inverness and Nairn (Intervention D16). The extension to the A96-A9 link road would comprise:

- Upgrade to dual carriageway of the existing B8082 between Inshes and Dores Roundabout; and
- New crossing of the Caledonian Canal and the River Ness (by bridge over the River Ness and either a high level opening bridge over the canal or a tunnel / aqueduct crossing of the Caledonian Canal) between Dores Roundabout and the A82 at Torvean.

Summary: Rationale for not recommending

This intervention generally performs well against the set of defined objectives but is a high cost, road based intervention which largely provides local benefits for local traffic.

The environmental impacts this intervention has on designated sites, valued habitats, protected species and water quality have been identified at the strategic level as part of the Strategic Environmental Assessment and Appropriate Assessment.

The bypass would affect the landscape of the urban fringe of Inverness and may intersect with the Torvean landform which is noted for its landscape value. There are also potential adverse effects on noise and biodiversity.

The most technically challenging aspect of this proposal is the crossing of the River Ness and Caledonian Canal which is likely to have a potential major adverse impact on cultural heritage, soils and geology. High capital costs and relatively low benefits represent poor value for money.

Table E6.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce the conflict between longer distance and local traffic.	**1: Positive –** This intervention would help to reduce the conflict between long distance and local traffic by allowing long distance traffic travelling between the A9 and the A82, to avoid passing through Inverness City Centre. It would also further reduce conflict by allowing traffic between the A9 and A82 to avoid local traffic at Raigmore Interchange. Reducing this conflict and the delay at Raigmore would not only benefit trips from the south heading into Inverness or east towards Nairn, but would reduce delays for trips from Nairn and communities east of Inverness travelling to and from Inverness City Centre.
STPR Objective 2: To improve connectivity, particularly by public transport between Inverness City Centre and the growth area to the east including Inverness Airport.	**2: Slightly Positive –** An Inverness Southern Bypass from the A9 to A82 would improve access to the east of Inverness by allowing strategic traffic to avoid Raigmore Interchange. This would free up capacity at Raigmore Interchange, improving traffic flows in peak hours.
STPR Objective 3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Slightly Positive –** The provision of a Southern Bypass of Inverness would remove some strategic through trips from Inverness City Centre, which would reduce the conflict between strategic and local trips and between vehicles and pedestrians, resulting in improved accident rates.
STPR Objective 4: To promote journey time reductions, particularly by public transport, between Inverness and the Central Belt primarily to allow business to achieve an effective working day when travelling between these centres	**4: Neutral –** It is unlikely that the provision of an Inverness Southern Bypass would promote journey time reductions between Inverness and the Central Belt.

Table E6.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Major / Moderate Negative Impact**	The Inverness Southern Bypass would have adverse effects on heritage, geology and landscape (mainly the urban fringe of Inverness), particularly resulting from the new section of road, which would necessitate crossing the Torvean Landforms Site of Special Scientific Interest, the Caledonian Canal, which is also a Scheduled Monument, and the River Ness. Even with standard mitigation in place, there could be substantial effects on these sites. .
Safety:	**Minor Benefit**	Provision of the Inverness Southern Bypass would remove a degree of traffic from the centre of Inverness, resulting in a reduction in accidents. The typical accident rate for a 7.3m urban single carriageway road is over 50 per cent higher than a typical 7.3m rural single road. Although there could be over 50 per cent fewer accidents on the proposed bypass, there may be an increase in accident severity, due to higher speeds on the bypass route. Overall, an improvement in safety would be expected.
Economy:	**Minor Benefit / Minor Negative Impact**	**Transport Economic Efficiency (TEE):** The provision of the Inverness Southern Bypass would reduce journey times and improve journey time reliability for strategic trips that are currently required to pass through the centre of Inverness. This intervention could also result in reduced congestion within Inverness and improve journey time reliability for trips in the city. However, the costs are such that the benefit to cost ratio is less than 0.75 and therefore the intervention would not provide value for money. **Wider Economic Benefits (WEBs):** Improvements to journey time, reliability and quality are likely to have a positive impact on the efficiency and productivity of businesses using the route to travel between destinations to the east and west of Inverness. Benefits would accrue from the lower cost of travel for freight and business users with improved access to customers and suppliers. **Economic Impact and Location Impacts (EALIs):** This intervention could improve journey times and journey time reliability for strategic and local trips, resulting in increased productivity through faster movement of people and goods. The intervention could also open up the strategic development opportunity area to the east of Inverness to the labour catchments in the south of Inverness.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention is unlikely to have any significant effect on transport integration. **Transport and Land-Use Integration:** This intervention could support the development of areas within Inverness City Centre, however, the intervention would not reduce the need to travel. **Policy Integration:** This intervention is highlighted as a policy in Section 2 of The Highland Council's adopted Inverness Local Plan Policy 29 and within the Draft Corporate Plan of The Highland Council.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** This intervention is not likely to affect public transport network coverage. Walking and cycling accessibility within Inverness could be improved with the reduced traffic flows passing through the city. **Comparative Accessibility:** This intervention would affect those making strategic trips that currently have to pass through Inverness and would also affect people making trips within Inverness.

Table E6.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	A reduction in traffic flows on the approaches to Raigmore Interchange and through Inverness would result in improved journey times for journeys to / from and through Inverness. Journey time reliability could also improve. However, the impact of this intervention would be largely on a local scale.
Reduce Emissions:	**Neutral**	A shift of traffic away from Inverness and busy junctions within the city could reduce traffic congestion and subsequently road vehicle emissions; however, this would be offset by the increased emissions of vehicles travelling at higher speeds on the proposed bypass. There are no existing air quality concerns within the city.
Improve Quality, Accessibility and Affordability:	**Neutral**	This intervention will improve journey times for some road users, improving the quality of their journeys. It is not expected that accessibility or affordability would be affected by this intervention.

Table E6.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer & Stronger:	**Minor Benefit**	This intervention could result in reduced accidents due to traffic transferring from the city centre routes to the proposed bypass, reducing the conflict with local vehicles, pedestrians and cyclists. A reduction in the number of vehicles in the city centre could also result in a safer environment within Inverness, resulting in a better quality of life. It would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no significant impact on access to schools, colleges and universities.
Wealthier & Fairer:	**Moderate Benefit**	By 2022, the current population of Inverness is forecast to increase by 6 per cent and employment is forecast to increase by 25 per cent resulting in an increased number of trips. The Inverness Southern Bypass could result in improved journey times and journey time reliability for both strategic trips that currently have to pass through Inverness and for local trips within Inverness. The improved journey times would result in improved productivity in the movement of people and goods. The bypass would also link important tourist routes on the A82, A9 and A96.
Greener:	**Neutral**	The intervention would not affect air quality or CO_2e emissions. It would also not encourage modal shift from car to public transport.
Healthier:	**Minor Benefit**	This intervention is unlikely to encourage modal shift from the car to more healthy forms of transport. The bypass could improve private transport links to health services, especially to Raigmore Hospital from the south of Inverness.

Table E6.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	The main technical risks associated with this intervention involve the need to cross the River Ness and the Caledonian Canal. Other than this, implementing the intervention would be straightforward and would not involve any untried techniques. However, as the design stages progress, localised issues may arise which require increased technical capabilities to overcome. Construction of the Inverness Southern Bypass could have significant effects on existing users as the alternative routes involve travel through Inverness. During construction work, access for boat traffic on the canal may be limited. Limiting the effects on tourist traffic during the construction phase also provides technical challenges to the construction plan.
Operational:	Operation of the route is likely to become the responsibility of Transport Scotland and its maintenance contractors. The existing trunk routes through Inverness may be de-trunked and responsibility for them passed to The Highland Council. There are no envisaged operational issues relating to this intervention during its projected life.
Public:	There has been considerable public consultation on this intervention and there is significant public interest at both local and regional levels. The intervention could relieve traffic pressure within Inverness and improve links between the A96/A9 and A82.

Detailed Appraisal	**E7 – Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £1.5bn – £3bn ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £1bn – £1.5bn ***BCR/PVB*** Estimated BCR of <0.75

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to reduce emissions and improve operations on the road network.

It would provide enhancements to the existing rail network between Mossend, Grangemouth and Aberdeen/Inverness to allow more freight services to operate. Quality improvements would include measures such as:

- Increased length of freight loops (allowing longer freight trains);
- Removal of speed limits that are below 75mph for freight trains;
- Increased loading gauge to permit larger containers to be carried; and
- Provision of bi-directional signaling along the route to reduce the impact of engineering works (permitting the route to remain open for freight throughout the day and week).

Summary: Rationale for Not Recommending

The intervention would provide a step change in the provision of rail freight, encouraging a modal shift from road to rail thereby reducing the volume of longer distance goods vehicles and the related CO_2e emissions.

However, the costs of providing the enhancements are high compared with the benefits, particularly as the proposed improvements to the line to Aberdeen via Dundee would include bi-directional signaling to provide system resilience, thereby limiting the need for an alternative route via Inverness.

Depending on the form and location of works required, this intervention has the potential for moderate adverse effects on the natural environment, including biodiversity, cultural heritage, soils and geology and the landscape.

Table E7.1.1 STPR Objectives

STPR Objectives	
STPR Objective 5.1: To improve the public transport competitiveness between Aberdeen and Dundee (and hence onwards to the Central Belt).	**5.1: Neutral** – Rail freight enhancements to the network between the Central Belt and Aberdeen would not have any direct impact on public transport competitiveness.
STPR Objective 5.2: To contribute to reducing both overall emissions and emissions per person kilometre through providing for alternatives to road freight movement on the corridor.	**5.2: Strongly Positive –** These improvements are likely to make it considerably more attractive for freight hauliers to move containers and other goods by rail, by reducing journey times, allowing freight to arrive at times suitable for the final receiver and allowing standard 9' 6'' deep sea containers to be carried. This would provide an attractive alternative to road freight and could be expected to encourage a modal shift from road to rail. This potential modal shift could lead to significant emission reductions in this corridor.
STPR Objective 5.3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**5.3: Slightly Positive –** Freight enhancements which could lead to a modal shift from road to rail would potentially reduce the accident rate by lowering the number of HGVs on the road network.
STPR Objective 5.4: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen primarily to allow business to achieve an effective working day when travelling between these centres.	**5.4: Neutral** – This intervention is unlikely to have a significant effect on promoting journey time reductions, particularly by public transport, between the Central Belt and Aberdeen.
STPR Objective 6.1: To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onto the Central Belt).	**6.1: Slightly Positive –** This intervention would encourage some modal shift for freight from road to rail. This would result in a reduction in the anticipated growth in the number of HGVs required to carry freight between the Central Belt and Inverness. This would have a positive impact on journey times for other road users on the A9 as there would be a reduction in congestion due to fewer slow moving vehicles.
STPR Objective 6.2: To improve the operational effectiveness of the A9 as it approaches Perth and Inverness.	**6.2: Slightly Positive –** Indirectly this intervention would have the effect of reducing the growth in road traffic volume. Although it is unlikely to have a significant effect on improving the operational effectiveness of the A9 as it approaches Perth and Inverness, a reduction in HGV movements tends to have a disproportionate benefit because of the size of vehicles and slow average speeds of these vehicles in urban areas.
STPR Objective 6.3: To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity.	**6.3: Slightly Positive –** By improving the rail freight infrastructure, moving goods by rail may become a more attractive alternative to freight hauliers with potentially less HGVs on the road. The resultant reduction in HGVs between Perth and Inverness would contribute towards reducing driver frustration caused by cars having to overtake these slower vehicles on the A9.
STPR Objective 6.4: To promote journey time reductions, particularly by public transport, between the Central Belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**6.4: Neutral** - This intervention is unlikely to have a significant effect on promoting journey time reductions, particularly by public transport, between the Central Belt and Inverness.

Table E7.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate Negative Impact / Minor Benefit**	Improved rail freight facilities would ultimately reduce emissions by encouraging modal shift from road based freight haulage to rail. This reduction in HGV movements would also reduce other pollutants such as noise and vibration along the road transport corridor. This intervention has the potential for moderate adverse effects on the natural environment, including biodiversity, cultural heritage, soils and geology and the landscape. These effects will be highly dependent on the location of the final works and mitigation may well be possible, therefore the degree of impact remains uncertain at this stage.
Safety:	**Minor Benefit**	Increased rail freight adoption by major freight operators between the Central Belt, Aberdeen and Inverness should lead to the removal of some HGV journeys from the trunk road network. Rail freight enhancement should lead to a reduction in the growth of total HGV kilometres travelled and a consequential reduction in the number of accidents involving HGVs.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** The cost of this intervention is high due to the necessary physical works to allow the operation of larger standard containers. As a result, the anticipated cost benefit analysis of this intervention indicates the poor value for money of the scheme (BCR<0.75). However, it is worth noting that elements of this intervention have been developed and incorporated within other interventions which are to be taken forward under the STPR. These include D15 (Rail Enhancements to the Highland Mainline) and D18 (Rail Enhancements between Aberdeen and the Central Belt)). **Wider Economic Benefits (WEBs):** The creation of faster rail links between major freight hubs between the Central Belt and Aberdeen will encourage economic growth in key development areas in the North East of Scotland. In 2005-06, 14 million tonnes of freight were lifted in Scotland by rail, 24 per cent more than the previous year and over twice the amount in 1996-97. Improved freight connection is one of the policy requirements of the National Planning Framework (NPF2), a document which encourages economic growth through sustainable development. The North East's reliance on the oil industry for employment and trade is forecast to decline over time. The region has to diversify into new business types, with improved rail freight connection being key to continued economic success between Central and North East Scotland. The creation of faster rail freight links between the Central Belt and Inverness should encourage economic growth in the Inverness - Nairn area which has been identified by National Planning Framework (NPF2) as a spatial area of national importance. Improved freight connection is one of the policy requirements of the document which encourages economic growth through sustainable development. The creation of jobs through improved rail freight connection in one of the UK's fastest growing cities would serve to benefit Inverness and the Highland community greatly. The availability of through rail freight services can be attractive to many local businesses. **Economic Impact and Location Impacts (EALIs):** This intervention would provide improved rail freight access from the Central Belt to Inverness/Aberdeen; however this would come at a very high cost. Other potential interventions are able to deliver a change in the rail freight opportunities on the routes to Aberdeen/Inverness at a lower cost.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention would not have a significant effect on the integration of transport. **Transport and Land-Use Integration** The Freight Action Plan for Scotland (2006) encourages modal shift of freight transport from road to rail and sea as a priority for reducing vehicle kilometres and emissions. Rail freight enhancements will help in the

		creation of integrated road and rail transport through the requirement for freight hubs for distribution to local towns and cities. Similarly, supply chains from the North Atlantic and Scandinavia berthing at Aberdeen harbour will rely on good rail freight integration with key ferry and maritime based operations to distribute goods across Scotland and the rest of the UK. Freight integration with Aberdeen Airport would serve the express delivery of offshore industry equipment, therefore improved rail freight to the northeast remains a high priority. However, potential development of rail links to reach agricultural areas in Perthshire, and timber deposits further north, confirm that future road freight integration with the Inverness line are possible and integration with both Inverness harbour and airport for the movement of freight and in connection with Orkney and Shetland. **Policy Integration:** This intervention would support policies of transferring freight from road to rail.
Accessibility and Social Inclusion:	**Minor Benefit**	**Community Accessibility:** Rail freight improvements and integration with lifeline ferry services from Aberdeen to Orkney and Shetland are included in the Freight Action Plan as important to the creation of jobs in remote and rural areas. **Comparative Accessibility:** There are no comparative accessibility issues associated with this intervention.

Table E7.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	Scotland's existing freight network is concentrated around links from the south to the Central Belt. Improved rail freight links to the north would significantly improve journey times for consolidated train loads of freight going to and coming from Aberdeen and Inverness and in turn provide potential rail freight access to the cities of Dundee, Perth and Stirling on route.
Reduce Emissions:	**Minor Benefit**	It is envisaged that the rail improvements could encourage modal shift of freight from road to rail. This could relieve traffic congestion on the A9 and A96 resulting in a reduction of CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Rail freight enhancements are unlikely to directly impact on public transport links, accessibility issues and the affordability of public transport.

Table E7.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	The reduction of HGV journeys would improve road safety. Rail freight hubs could lead to the creation of jobs and increased wealth for strategic areas along the route. This intervention would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would not improve access to education facilities.
Wealthier and Fairer:	**Moderate Benefit**	This enhanced infrastructure would speed up rail links and better connect the North East of Scotland with the Central Belt. This would therefore offer opportunities to reduce freight transport costs resulting in economic growth, job creation and prosperity. Freight hubs offering intermodal facilities can promote increased investment and opportunities in strategic areas encouraging business relocation to benefit from improved transport links.
Greener:	**Neutral**	Although the reduction of HGV traffic on the roads will lead to improved air quality and emissions, this intervention will not promote modal shift away from the car nor promote public transport.
Healthier:	**Minor Benefit**	This intervention would result in reduced HGV traffic. Improved air quality would impact on urban areas near to major trunk roads reducing health service costs and the costs of respiratory disease on society. This intervention would not encourage any modal shift from the car to public transport or improve access to healthcare.

Table E7.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	In general, no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise that require increased technical capabilities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	There has been no detailed consultation specifically on this individual intervention; however it is expected that any measure which promotes modal shift to more sustainable transport would achieve public support.

Detailed Appraisal	**Intervention E8: New Rail Line between Perth and Inverkeithing**

Estimated total Public Sector Funding Requirement:

Capital Costs/grant	£500m - £1bn
Annual Revenue Support Present	-
Value of Cost to Gvt	£250m - £500m
BCR/PVB	<0.75 / £100m - £250m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective of promoting public transport journey time reductions between Inverness, Perth and Edinburgh.

The intervention would consist of a direct dual-track rail link between Perth and Inverkeithing, providing a more direct rail service to Edinburgh.

Summary: Rationale for Not Recommending

A direct line between Perth and Inverkeithing would reduce the distance between Edinburgh, Perth and Inverness by approximately 25 per cent resulting in a journey time saving of 35 minutes. However, forecasts show a limited transfer of trips from road to rail in this corridor.

There are potential adverse effects on the water environment, biodiversity, and notably cultural heritage, where there could be a major adverse impact to the setting or integrity of nationally important sites such as Scheduled Monuments and Historic Gardens and Designed Landscapes.

The cost of this intervention is relatively high compared to the benefits. This intervention would therefore not provide value for money. In addition, there are significant technical and environmental constraints which would impact on the delivery of this intervention. Intervention D31 (Inverkeithing to Halbeath Rail Line) represents greater value for money through improved access to Rosyth and journey time reductions between Inverkeithing and Halbeath, north Fife and beyond.

Table E8.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.	**1: Strongly Positive –** A new rail route between Perth and Inverkeithing would provide better public transport accessibility and partially increased capacity for passengers. The service would provide a more direct link between Perth and Fife thereby providing significant reductions in journey time from 1hour 15 minutes to 40 minutes. As a result there would be a significant increase in the volume of passengers using Perth and Inverkeithing stations, with annual patronage levels forecast to increase by 420, 000 and 150, 000 respectively in 2022. This represents an increase of approximately 25 per cent and 10 per cent respectively at these two stations.
STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**2: Neutral –** A direct rail link would provide an attractive rail service and encourage modal transfer from other modes of transport. However, due to the volume of road based traffic on this corridor the impact on accident rates is likely to be negligible.
STPR Objective 3: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**3: Positive –** The proposed direct rail link would result in a significant reduction of 35 minutes in rail journey time between Edinburgh and Perth, and would give a similar reduction in journey times between Edinburgh and Inverness.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**4: Slightly Positive –** A direct rail line between Inverkeithing and Perth would provide a more direct route and greater network flexibility thereby enhancing the efficiency and effectiveness of the transport network. This would in turn assist the development and implementation of the proposed national developments at Rosyth, and Edinburgh Airport.
STPR Objective 5: To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic	**5: Neutral –** Although this intervention would result in an increase in the number of passengers using Perth and Inverkeithing stations, the impact on traffic flows on the M90 and Replacement Forth Crossing are likely to be negligible. It is forecast that there will be less than a 1 per cent change in traffic flow on the M90 between Perth and Inverkeithing in the morning peak hour as a result of this intervention.

Table E8.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Major negative impact / Minor benefit**	This intervention is expected to result in a 1 per cent shift from car to rail along the M90, particularly in peak hours, with potential direct and indirect benefits to local air quality, on the M90 and the Perth Air Quality Management Area. Despite these minor positive effects, there are also potential major adverse effects on the water environment, biodiversity, and notably cultural heritage, where effects to the setting or integrity of nationally important sites such as Scheduled Monuments, Historic Gardens or Designed Landscapes may be impacted. However, these effects would be highly dependent on the location of the final works.
Safety:	**Neutral**	Although this intervention would help encourage modal shift, thereby removing some trips form the road network to the rail

		network, the impact on accidents rates would be negligible. Personal security would be affected.
Economy:	**Minor Negative Impact**	**Transport Economic Efficiency (TEE):** This intervention would offer a faster rail journey from Perth to Edinburgh than current routes providing significant journey time savings. Station usage at Perth is forecast to increase by approximately 420, 000 passengers and station usage at Inverkeithing is forecast to increase by 150,000 per annum in comparison with the reference case, indicating that journey time savings would benefit a significant number of passengers. However, despite these increases in patronage levels the benefit cost ratio is forecast to be <0.75, indicating poor value for money. **Wider Economic Benefits (WEBs):** The improved links between Perth and Inverkeithing would provide enhanced links between a number of locations along the corridor, including Edinburgh, Perth and Dunfermline. Improved journey times would be likely to improve efficiency and productivity for business travellers using the route. TMfS data indicates that the number of business passengers using Perth rail station would be 16 per cent higher in 2022 than in the reference case. **Economic and Location Impacts (EALIs):** This development would not have a significant impact on the location of economic activity, although the enhanced connectivity between communities would open up greater opportunities for employment and trade. Businesses located at key areas of economic activity such as Central and West Edinburgh, Rosyth and Perth are likely to benefit from improved connectivity and access to skilled staff.
Integration:	**Minor benefit**	**Transport Integration:** Transport integration would be improved through the provision of a higher quality rail service between Perth and Edinburgh. **Land Use Transport Integration:** Land use integration would depend on the final alignment of the route. **Policy Integration:** This intervention would integrate well with relevant regional policies by providing greater connectivity between Perth and Inverkeithing and improving rail journey times.
Accessibility and Social Inclusion:	**Minor benefit**	**Community Accessibility:** This intervention would provide a higher quality public transport rail link than currently exists, thereby assisting accessibility. Localised severance issues might arise depending on the final alignment of the route. Station usage at both Perth and Inverkeithing is forecast to increase, suggesting a greater level of accessibility. **Comparative Accessibility:** It is anticipated that there would be no significant impact on comparative accessibility from the measure proposed.

Table E8.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	A new rail line between Inverkeithing and Perth would provide a step change reduction in journey times between Edinburgh and Perth by providing a higher speed alignment along a shorter route, and would therefore enhance connections between Perth and Edinburgh.
Reduce Emissions:	**Minor Benefit**	This intervention is likely to encourage some modal shift from road to rail and subsequently relieve some traffic congestion on the M90. This could result in a slight reduction in CO_2e emissions. Perth has a designated Air Quality Management Area extending directly up to the ring road leading to the M90, and this intervention could therefore contribute to local air quality improvements. It is however, unlikely to have any noticeable impact on national CO_2e levels.

Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	Provision of a new rail service would improve the quality of travel between Perth and Edinburgh, with improved accessibility and capacity for passengers.

Table E8.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor benefit**	This intervention would improve the quality and accessibility of public transport between Perth and Edinburgh. However, modal shift from road to rail is unlikely to result in any noticeable reduction in road accidents.
Smarter:	**Neutral**	This intervention would have no impact on access to education centres for those living along this corridor.
Wealthier and Fairer:	**Moderate benefit**	This intervention would provide greater choice for public transport travel thereby assisting with social inclusion and accessibility issues, and providing greater choice to travellers. Improved journey times between Perth and Edinburgh would also provide a benefit.
Greener:	**Minor benefit**	A new rail line would result in a national modal shift of 1 per cent to rail along this corridor, and lead to improving local air quality and reducing emissions along the route.
Healthier:	**Neutral**	The modal shift arising from this intervention may to encourage increased walking / cycling to access the new services. It would be unlikely to have a significant impact on access to health services and other community services.

Table E8.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is proposed that this intervention would follow the disused railway where possible and in general n general, no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise which require increased technical capabilities to overcome. Construction of this line would also include a bridge over the M90 and there may be some disruption to road users.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	There has been no specific detailed consultation on this individual intervention. However, it is expected that any measure which promotes modal shift to more sustainable transport would achieve general public support.

Detailed Appraisal	**E9 - Rail Freight connections to Rosyth Port**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £50m - £100m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10m - £50m ***BCR/PVB*** Estimated BCR <0.75

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to promote efficient and effective transport links to support the development and implementation of developments at Rosyth, identified in NPF2. The proposed improvement in rail access to Rosyth, would consist of:

- A direct freight line (together with associated infrastructure enhancements) between the Dunfermline to Longannet line and Rosyth, allowing services from Stirling and the West Coast Main Line to access Rosyth directly, by-passing Inverkeithing station and junctions.

Summary:- Rationale for Not Recommending

The proposed option performs only moderately well against planning objectives and has a potential major adverse environmental impact on biodiversity. This is in part due to the need for new rail track and the impact that this may have on the environmentally sensitive shoreline of the Firth of Forth. This intervention is also anticipated to have potential moderate adverse effects on cultural heritage and landscape.

Although this intervention would provide a direct freight line to Rosyth, Intervention D31 (Inverkeithing to Halbeath Rail Line) has the added advantage of providing benefits to rail passengers, as well as making better use of the existing rail connections to the port.

Table E9.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.	**1: Neutral –** This intervention would not have any significant effect in helping to reduce Edinburgh to Perth public transport journey times and increase opportunities to travel by public transport.
STPR Objective 2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**2: Neutral –** This intervention would not have any significant effect in promoting continuing reduction in accident rates and severity rates across the strategic transport network.
STPR Objective 3: To promote journey time reductions between the Central Belt and Aberdeen / Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**3: Neutral –** This intervention would not have any significant effect in promoting journey time reductions between the Central Belt and Aberdeen / Inverness.
STPR Objective 4: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**4: Strongly Positive** –The provision of a new rail freight connection to the Port of Rosyth would promote a more efficient and effective transport link, for freight, to the nationally significant, proposed development at Rosyth identified in the NPF2. This intervention would allow more freight trains to access the Port of Rosyth by connecting to the west via Kincardine, providing a more efficient connection by reducing conflict with passenger trains at Inverkeithing.
STPR Objective 5: To improve the efficiency of the M90/A90 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic	**5: Slightly Positive –** The provision of a new rail line to the Port of Rosyth would not impact significantly on the operation of the A90/M90 however, there would be some benefit by facilitating a larger proportion of future freight traffic to be carried by rail rather than road.

Table E9.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Major Negative Impact / Minor Benefit**	This intervention is anticipated to have adverse effects on the natural environment, including water, geology and soils, landscape, biodiversity (particularly the Firth of Forth) and landscape and cultural heritage assets, where there is potential for substantial effects on nationally important sites. However, these effects would be dependent on the location of the final works. It is considered that mitigation could be possible, but the degree of effect remains uncertain at this stage. These effects would be partially offset by potential beneficial effects in air quality and noise. However, given that the benefits are largely as a result of freight rather than passenger transport, it is envisaged that these effects would be fairly minimal.
Safety:	**Minor Benefit**	Increased rail freight adoption by major freight companies operating out of Rosyth could lead to a reduction in long distance freight journeys by road. Rail freight enhancements could therefore lead to a reduction in total HGV kilometres travelled on corridors leading to and from Rosyth and contribute to a reduction in accidents involving goods vehicles in the area.
Economy:	**Minor Negative Impact / Minor Benefit**	**Transport Economic Efficiency (TEE):** With a cost in the range of £50m to £100m, it is unlikely that this intervention will represent good value for money, with a benefit to cost ratio less than 0.75. **Wider Economic Benefits (WEBs):** This intervention would facilitate the development of the proposed container facility by improving access, resulting in benefits to the wider economy. It would also improve access to and support growth in the dockyard facilities and ferry services. **Economic and Location Impacts (EALIs):** This intervention would support the proposed national development to provide a major port facility at Rosyth for containerised traffic. Improved freight connections are one of the policy requirements of the National Planning Framework (NPF2), which encourages economic growth through sustainable development.
Integration:	**Moderate Benefit**	**Transport Integration:** This intervention would improve integration between road, rail and sea. **Transport and Land Use Integration:** This intervention would support development of the port at Rosyth. **Policy Integration:** This intervention would support the national designation of Rosyth in the National Planning Framework 2.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not impact on community accessibility. **Comparative Accessibility:** While freight accessibility to the rail network would be improved, the impact on personal accessibility and social inclusion would be neutral.

Table E9.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	This intervention would reduce journey times for rail freight accessing the Port of Rosyth by avoiding the heavily congested Forth Bridge and the need to reverse at Inverkeithing. The intervention would also provide a more direct link to the rail freight distribution facilities in and around Mossend, Coatbridge and Grangemouth. However the intervention would not provide a reduction in passenger journey times between the main population centres.
Reduce Emissions:	**Minor Benefit**	This intervention will help to reduce the overall growth in HGV mileage, which will contribute to a reduction in emissions in the localised area resulting in improvements to local air quality and a reduction in CO_2e emissions. However, acting partially against this, rail freight is predominantly hauled by diesel locomotives and noise, vibration and exhaust pollution close to the new rail spur will impact on private properties in the immediate area.
Improve Quality, Accessibility and Affordability:	**Neutral**	Rail freight enhancements would not directly affect public transport links, accessibility issues and the affordability of public transport.

Table E9.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	A reduction in HGV mileage as a result of improved usage of rail freight would result in a small reduction in the number of goods vehicles serving Rosyth, with potentially small improvements in road safety in the area. This intervention would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would not affect access to education facilities.
Wealthier and Fairer:	**Minor Benefit**	The Port of Rosyth has good connections to sea and road links. Improved rail freight connections have been identified as one of the policy requirements of the National Planning Framework (NPF2), a document which encourages economic growth through sustainable development. Expansion of the freight hub at Rosyth should stimulate investment in the area, leading to the creation of jobs both in primary and secondary employment and therefore a rise in wealth of the local community which has suffered from high unemployment due to the decline of the former Royal Navy facilities at Rosyth and decline in coal mining in Fife. Realising the full potential of the container hub will rely on having good access by road, rail and sea.
Greener:	**Minor Benefit**	It is envisaged that this intervention could encourage modal shift for freight from road to rail. This could relieve traffic congestion to provide an improvement in local air quality and emissions through a reduction in road vehicle emissions (particularly HGVs).
Healthier:	**Neutral**	This intervention would not affect access to health services or encourage modal shift from car to public transport or more sustainable modes.

Table E9.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with this intervention. However, these are unlikely to be significantly different from the construction of any new railway line. The geology beneath the route includes various limestones. However, although these have been quarried in the vicinity of Limekilns and Charlestown to the west of Rosyth, at this stage the risk of mining beneath the routes is low. However this remains a potential risk affecting deliverability of this intervention. A large proportion of the work would be carried out on a new alignment and there may be disruption for people living and working close to the construction of the line. There may be further disruption when connecting the line to the Longannet Branch however, the number of freight trains on this route will be low following the opening of the Stirling – Alloa – Kincardine Railway and this work could be timed to coincide with closures for routine maintenance.
Operational:	An increase in freight trains to Rosyth may impact on capacity elsewhere on the rail network however, these issues are not anticipated to be significant.
Public:	There has been no detailed consultation specifically on this individual intervention however, it is expected that any measure which promotes modal shift to more sustainable transport would achieve public support.

Detailed Appraisal	**Intervention E10: Improved Road Links to Edinburgh Airport**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £50m - £100m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10m - £50m ***BCR/PVB*** 1.75 – 2.25 / £50m - £100m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to promote efficient and effective links to Edinburgh Airport, one of the proposed national developments identified in the draft NPF2. The intervention would consist of:

- A new road link from the M8 between Junction 1 and 2 directly into Edinburgh Airport.

Summary: Rationale for Not Recommending

Many of the objectives of the STPR for the Edinburgh Urban Network and surrounding corridors are better addressed in a more sustainable manner by the other interventions such as the new rail interchange serving Edinburgh Airport and the tram links to the airport.

There is a potential major adverse effect on cultural heritage, as the intervention could impact on a Scheduled Monument.

Any road based interventions necessary to support the West Edinburgh Planning Framework should be taken forward by the planning authority as part of the infrastructure intervention required to serve the land use developments in the area.

Table E10.1.1 STPR Objectives

STPR Objectives	
STPR Objective 13.1: To increase public transport capacity and reduce journey time between Edinburgh and Glasgow.	**13.1: Neutral –** This intervention is not expected to have a significant impact on public transport capacity and public transport journey times between Edinburgh and Glasgow.
STPR Objective 13.2: To make best use of the available road space and better manage peak demand.	**13.2: Neutral -** This intervention proposes new road space and therefore does not specifically seek to make better use of the existing network. However, the transfer of traffic from existing roads will result in improved operation on the A8/M8 in the vicinity of the airport.
STPR Objective 13.3: To increase public transport capacity and frequency between Livingston and Edinburgh.	**13.3: Neutral –** This intervention does not propose any direct change to public transport provision.
STPR Objective 13.4: To contribute to both a reduction in emissions per person kilometre and a reduction in overall emissions.	**13.4: Slightly Positive –** Environmental modelling outputs indicate that if this intervention was to be implemented then there would be a slight decrease in forecast 2022 levels.
STPR Objective 13.5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**13.5: Slightly Positive –** This intervention would reduce accident and severity rates on this section of the road network, as the new provision would be safer than the current A8 dual carriageway.
STPR Objective 13.6: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.	**13.6: Strongly Positive –** The provision of a new road link from the M8 between Junctions 1 and 2 connecting directly to Edinburgh Airport would have a significant impact on improving road based transport links to Edinburgh Airport from the Scottish road network.

Table E10.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate/Major Negative Impact**	The effects of this intervention would be contained within an area of land already dominated by elements of an urban environment including transport infrastructure. There could be major detrimental effects of crossing a nationally designated Scheduled Monument. However there would be scope to mitigate effects by giving consideration during the detailed design stage.
Safety:	**Minor Benefit**	Providing a new road link from the M8 to Edinburgh Airport could result in a reduction of accident rates Due to reduced traffic levels at Gogar and Newbridge junctions.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** The provision of a new road link between the M8 and Edinburgh Airport would result in

		travel time savings and vehicle operating cost benefits for those travelling to the airport and adjacent economic development sites, particularly during peak hours. This would include bus services and freight movements. Journey time reliability would improve, particularly in the peak hours, due to the reduced need to travel via Gogar and Newbridge Junctions. A strong economic return with a benefit to cost ratio between 1.75 and 2.25 is forecast. **Wider Economic Benefits (WEBs):** This intervention would provide the capacity for increased and more reliable movement of goods and people between Edinburgh Airport, economic development land as identified within the *West Edinburgh Planning Framework (WEPF)* (*Scottish Executive, 2006)* and the surrounding area. West Edinburgh records an employment density of almost 8 strategic jobs per hectare, significantly above the local average. In 2005, the area was home to an estimated 35,600 jobs in strategic industries. Through implementation of this intervention, the time taken to move people and freight would be reduced, resulting in increased productivity for key employers and locations including Edinburgh Park, Gogarburn, Royal Bank of Scotland, BT, Scottish Equitable, BAE Systems and Diageo. It is expected that the proposed new road link would significantly increase the potential labour market to Edinburgh Airport and to a lesser extent in West Edinburgh. There would not be any impact on the labour catchment for the city centre. **Economic Activity and Location Impacts (EALIs):** This intervention would assist the development area in the immediate vicinity of the airport (as identified within the *WEPF*) and improve access to the airport, where the Aviation White Paper *(The Future of Air Transport, Department for Transport, December 2003)* suggests that passenger numbers could grow from 7 million per annum to over 20 million by 2030. The intervention would act as a fundamental 'building block' in the continuing competitiveness of Edinburgh and the surrounding area, at strategic investment locations.
Integration:	**Minor Negative Impact**	**Transport Integration:** This intervention would have no significant effect on transport integration. **Transport and Land-Use Integration:** This intervention would have a minor negative impact on the policy of reducing the need to travel. However, development of the West Edinburgh area is seen as important for growth of the local and regional economy and this intervention would help facilitate this development. **Policy Integration:** This intervention would not affect policies related to disability, health, rural affairs or social inclusion, as it does not include measures to encourage modal shift or assist in achieving a healthy and inclusive society.
Accessibility and Social Inclusion:	**Minor Negative Impact**	**Community Accessibility:** This intervention would not have any effect on community accessibility as it does not improve public transport network coverage nor does it promote "active transport" trips to access local services. **Comparative Accessibility:** This intervention would not affect any individual group of people. It would improve access to Edinburgh Airport and to the identified development areas to the west of Edinburgh, but would not provide greater accessibility for the more deprived and socially excluded regeneration areas.

Table E10.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	This intervention would provide improvements in journey times between the M8 and Edinburgh Airport, with increased capacity. It would also potentially provide access to the economic development sites identified within the WEPF, as well as improving the connectivity of Edinburgh Airport to the Central Belt. The WEPF forecasts increased levels of congestion in the vicinity of the airport and this intervention would help to address this.
Reduce Emissions:	**Neutral**	This intervention would not lead to a substantial modal shift that could lead to local improvements in air quality or reduction in CO_2e emissions. Any reduction in emissions, due to the reduction of existing stop-start driving on the A8, would be offset by higher driving speeds, made possible due to infrastructure improvements.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Construction of a new road link to Edinburgh Airport could improve the quality of the drive to the airport and accessibility would improve with the addition of a dedicated road link. However, this would provide greater benefits for those travelling by car than by public transport. This intervention would not impact on affordability.

Table E10.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention would improve safety through the provision of a new road link which would be safer than the current dual carriageway arrangement. However, this could be counter-balanced by the overall increase in traffic levels which would have associated safety implications. It would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no impact on access to schools, colleges and universities.
Wealthier and Fairer:	**Moderate Benefit**	The road link to Edinburgh Airport and the identified West Edinburgh economic development sites would benefit from the reduced time spent on the road by people and goods. This intervention would assist in the continuing competitiveness of Edinburgh and the surrounding area, as strategic investment locations.
Greener:	**Neutral**	The intervention would not affect air quality or CO_2e emissions. It would also not encourage modal shift from car to public transport.
Healthier:	**Neutral**	The road link would not impact on health and access to healthcare, nor would it encourage modal shift and associated health benefits.

Table E10.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would not involve any untried techniques during its implementation. However, as the design stages progress, localised issues may arise which require increased technical capabilities to overcome.
Operational:	The operation of the route could become the responsibility of Transport Scotland and its maintenance contractor. There may be some disruption to road users on the M8 and A8 during construction, where the proposed link road connects with the existing road network.
Public:	The principle of the route was consulted on as part of wider consultation on the WEPF and gained support from stakeholders including BAA. It is possible that this intervention may be subject to opposition from local residents.

Detailed Appraisal	**Intervention E11: Inverclyde Road Improvements**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50m - £100m ***BCR/PVB*** < 0.75 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to improve the operation of the A8/M8, improve road safety and improve access to Greenock Port.

The intervention would include measures such as:

- Average speed enforcement cameras on the A8/M8; and
- Grade separation of junctions at Langbank, Woodhall and Port Glasgow.

Summary: Rationale for Not Recommending

The proposed intervention would contribute to the objectives to improve the operational efficiency of the A8/M8, improve safety on the A8 and enhance access to Greenock Port. However, the ability of the intervention to resolve these objectives fully is limited by the number of junctions that can feasibly be grade separated, given the constraints of the current road alignment and the urban areas through which it passes.

Due to the constrained nature of the junction locations, the proximity of the Inverclyde railway line and the need to maintain traffic flow during construction, this intervention has a high cost relative to the level of benefits that would be achieved. The intervention would provide poor value for money.

There is a potential major adverse impact on cultural heritage, namely the Grade A listed Ropeworks in the vicinity of Port Glasgow Roundabout.

Improvements to the operation of the trunk road through Intervention D6 (Using Intelligent Transport System to Enhance Capacity and Operations) could more effectively contribute to the relevant objectives for this corridor.

Table E11.1.1 STPR Objectives

STPR Objectives	
STPR Objective 17.1: To increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.	**17.1: Slightly Positive –** This intervention is unlikely to have a major effect on increasing capacity and reducing journey times by public transport between Glasgow and Inverclyde. Journey time variability on the corridor for general traffic is expected to reduce, but without specific measures in place for public transport, the intervention's contribution to achieving this objective would be limited.
STPR Objective 17.2: To facilitate freight access to Greenock port.	**17.2: Positive –** Grade separated junctions would reduce the conflict between motorists making strategic trips and those making local trips so that congestion would be reduced providing better access to Greenock port.
STPR Objective 17.3: To improve the efficiency of the A8/M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**17.3: Slightly Positive –** The construction of grade separated junctions on the A8 through Inverclyde, if combined with ramp metering (as described in Intervention D6) would improve the efficiency of the A8/M8 by reducing the impact of local traffic joining the A8 at the existing at-grade junctions and roundabouts. This would reduce congestion between local and longer distance travel during periods of peak demand. The proposed intervention would have a minimal effect on strategic traffic.
STPR Objective 17.4: To reduce the accident rate to the national road type average on the M8 and A8.	**17.4: Slightly Positive –** Speed enforcement measures have proven successful in reducing accident rates in various locations around the UK. The provision of such measures on the A8/M8 would result in greater speed compliance, with potential benefits for road safety and accident rates on this route. In addition, the construction of grade separated junctions on the A8 through Inverclyde would remove the conflict between local and long distance traffic, thereby reducing accident rates. However, upgrading may also result in a displacement rather than resolution of safety issues as the difference between a near-motorway-standard route and its adjacent urban and suburban section would be significant.
STPR Objective 17.5: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**17.5: Slightly Positive –** This intervention would help to reduce congestion and conflict on the A8/M8 thus providing a more efficient and effective transport link to Glasgow Airport from the Inverclyde region, supporting the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.

Table E11.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Major Negative Impact**	There could be slight adverse effects to air quality or the water environment, although the scale of these is uncertain. The key consideration for these works should be the potential major adverse effects upon nationally important cultural heritage sites; particularly the Grade A listed Ropeworks in the vicinity of Port Glasgow roundabout. This building immediately abuts the roundabout and proposed work could affect its setting and integrity. Other potential adverse impacts exist at Langbank where grade separation may affect neighbouring designated areas, however, this should be addressed through detailed design.
Safety:	**Moderate Benefit**	This intervention would provide improvements in safety. The accident rate on the corridor is 22.8 P.I.A./100MVkm compared to the national rate of 15.5P.I.A./100MVkm; therefore improvements would reduce this towards the national rate. The fatal accident rate is in line with the national average for this type of road. The provision of speed enforcement measures would result in greater speed compliance, with potential benefits for road safety and accident rates on this route. In addition, the

		construction of grade separated junctions would remove the conflict between local and long distance traffic, thereby reducing accident rates. However, upgrading may also result in a displacement rather than resolution of safety issues as the difference between a near-motorway-standard route and its adjacent urban and suburban section would be significant. The dense urban nature of much of this route limits the ability to deliver an effective solution.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** The benefit to cost ratio for this intervention is less than 0.75. Therefore this intervention would not provide value for money. **Wider Economic Benefits (WEBs):** The provision of grade-separated junctions would provide the capacity for increased and more reliable movement of goods and people between Greenock and Langbank, and provide more efficient access to Greenock port particularly for HGVs. The time taken to move people and freight would be reduced, resulting in increased productivity. **Economic and Location Impacts (EALI):** The grade separated junctions would assist in the progression of development areas in Inverclyde, including the 77 hectares of land associated with the Riverside Inverclyde development and regeneration area, together with the Areas of Economic Activity identified within Glasgow City Centre and the Glasgow Airport Corridor. This would assist in developing the economy of Inverclyde and the surrounding area.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention would have no significant effect on Transport Integration. **Transport and Land-Use Integration:** Development of the Riverside Inverclyde area is seen as important for growth of the local and regional economy and this intervention would help facilitate this development. In addition, this intervention would improve access to Greenock port. However, it may facilitate car based commuting to and from Glasgow. **Policy Integration:** This intervention would not affect wider policies on disability, health services, rural affairs or social inclusion, as it does not include measures to encourage modal shift and assist in achieving a healthy and inclusive society. It would have a negative effect on road traffic reduction aspirations.
Accessibility and Social Inclusion:	**Minor Negative Impact**	**Community Accessibility:** This intervention would not have any effect on community accessibility as it does not improve public transport network coverage nor does it promote non-motorised trips to access local services. **Comparative Accessibility:** This intervention would not affect any individual group of people. It would improve access to Langbank and Greenock, including Greenock port and development areas such as Riverside Inverclyde, but would not provide greater accessibility for more deprived and socially excluded regeneration areas.

Table E11.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)

Objective:	Assessment Summary:	Supporting Information:
Improve Journey Times and Connections:	**Moderate Benefit**	Grade separated junctions along the full length of the A8 between Langbank and Greenock would help to improve the efficiency of the A8 by reducing the impact of local traffic joining the A8 at the existing at-grade junctions and roundabouts, and is thus expected to improve journey times due to reduced congestion. The introduction of speed enforcement measures would reduce the delays due to accidents, and improve journey time reliability. Implementation of such measures elsewhere in the UK have demonstrated that journey time variability can be reduced by 27 per cent following implementation. The proposed intervention would have a limited impact on improving journey times for strategic traffic.
Reduce Emissions:	**Minor Negative Impact**	The relief of any congestion as a result of this intervention could reduce emissions at specific junctions due to vehicles travelling at more fuel efficient speeds. However, the overall impact on emission levels is expected to be negative due to the increased volume of vehicles using the route. The intervention would result in a small increase in CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Improved road standard on the A8 through Inverclyde would improve the quality of travel throughout the corridor and would improve general access along the corridor. The intervention would also improve access to Greenock port for HGVs. The intervention does not impact on affordability. The proposed intervention would have a minimal affect on strategic traffic.

Table E11.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention would improve safety to some degree through the provision of speed enforcement measures, which would reduce traffic speeds and decrease the potential for accidents. In addition, the construction of grade-separated junctions would remove the conflict between local and longer distance traffic, which would reduce the number of accidents on this corridor. However, upgrading may also result in a displacement rather than resolution of safety issues as the difference between a near-motorway-standard route and its adjacent urban and suburban section would be significant. It would not improve the quality, accessibility and affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would have no impact on access to schools, colleges and universities for those living along the corridor.
Wealthier and Fairer:	**Moderate Benefit**	The improved efficiency of the A8/M8, brought about by the provision of grade separated junctions, could increase productivity by reducing the time spent on the road by people and goods. The intervention would also assist in the proposed development areas within Inverclyde, and promote the urban regeneration at Riverside Inverclyde and at the Areas of Economic Activity at Glasgow City Centre and on the Glasgow Airport corridor.
Greener:	**Minor negative Impact**	This intervention would have a minor negative impact on air quality and CO_2e emissions. The intervention would also not encourage modal shift from car to public transport.
Healthier:	**Neutral**	The improved efficiency of the A8/M8, brought about by the provision of grade-separated junctions, may have a small impact on access to health services, for example to Inverclyde Royal Hospital which is situated to the west of the A8.

Table E11.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is unlikely that any untried techniques would be required when implementing any aspects of this intervention, however as the design stages progress, localised issues may arise which require increased technical capabilities to be addressed. All three grade separations would be technically challenging due to A8 being constrained between the railway and the river, and with adjacent local roads. Particular difficulties at Parklea Road junction where the existing at-grade roundabout is constructed over the railway - this may require the A8 to be carried over the interchange on an elevated viaduct.
Operational:	It is of note that Intervention D6 (Using Intelligent Transport Systems on Parts of the Road Network to Enhance Capacity and Operations) could improve network operations within the A8/M8 corridor. There are no envisaged operational issues related to this intervention during its projected life.
Public:	There has been no detailed consultation on this intervention. Due to the recognised accident issues on the corridor it is expected that any interventions aimed at reducing this problem would be acceptable to the public. In addition, it is considered that there would be public acceptability of the intervention to implement grade-separated junctions due to the anticipated improvements on a busy section of the strategic road network. However, impacts on local roads or access restrictions could prompt some negative public response.

Detailed Appraisal	**E13 - New Light Rapid Transit Line to Southeast Edinburgh**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50 - £100m ***BCR/PVB*** 1.25 - 1.75 / £100m - £250m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment		■				■	
Safety				■			
Economy						■	
Integration						■	
Accessibility and Social Inclusion						■	

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective to maintain the 60 minute commutable labour market within Edinburgh at the current level, with a particular focus on linking areas of economic activity by extending the Edinburgh Light Rapid Transit network to the south east of the city. The proposed scheme would follow the previously identified "Line 3" route from Edinburgh City Centre to the New Royal Infirmary of Edinburgh, and then east to Newcraighall Station. The scheme would require construction of the tram route, as well as new rolling stock, stations and car parking. The scheme could be extended to serve Queen Margaret University and Musselburgh.

Summary: Rationale for Not Recommending

Although this intervention performs well against some of the planning objectives, the benefits would be largely at local and regional level.

There are potential moderate adverse environmental impacts associated with cultural heritage and landscape.

The other interventions considered, particularly D23 (Rail Enhancements in the East of Scotland) and D11 ((Strategic) Park-&-Ride/Park-&-Choose Strategy) would provide a greater benefit to the communities to the east of Edinburgh.

Table E13.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking areas of economic activity.	**1: Slightly Positive –** This intervention would help maintain the 60-minute commutable labour market area through the increase in public transport capacity and new links. It would specifically link the area of economic activity in the south east of Edinburgh to the city centre, with subsequent benefits for those travelling to, from and between these parts of the city. However, the impacts would largely be felt within the city, rather than on the strategic transport network serving it.
STPR Objective 2: To enhance public transport interchange opportunities, where feasible to do so.	**2: Positive –** This intervention would connect with Edinburgh Tram, which is currently under construction and would offer interchange opportunities with both Waverley and Haymarket Rail Stations. There would also be opportunities to connect with Edinburgh Tram and express bus services to Edinburgh Airport.
STPR Objective 3: To increase public transport capacity and frequency between Fife and Edinburgh.	**3: Neutral –** This intervention would have no effect on increasing public transport capacity between Fife and Edinburgh.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral –** This intervention would not have any significant direct effect on promoting continuing reduction in accident rates and severity rates across the strategic transport network; however by encouraging modal shift from car to Light Rapid Transit and thereby reducing the number of vehicles on the road, road accidents should be reduced.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.	**5: Neutral –** This intervention would have no impact on the reduction in journey times between the Central Belt and Aberdeen/Inverness.

Table E13.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Moderate Benefit/Moderate Negative Impact**	There is potential for modal shift from car to light rail, which is likely to result in improved local air quality, potentially within the Air Quality Management Area. There is considered to be limited potential for effects upon the natural environment, as the vast majority of the works would be constructed within the boundary of the existing road network. In addition, reduced levels of road traffic have the potential to improve the setting of cultural heritage sites. However, there are potential moderate adverse environmental impacts associated with cultural heritage and landscape.
Safety:	**Neutral**	The safety implications of this intervention would be dependant on the nature of the Light Rapid Transit line and the relationship with other modes. Running Light Rapid Transit on shared use roads and pedestrian footpaths could result in a negative perception on safety for these sections of the route. It is anticipated that this intervention would result in a slight reduction in the number of vehicles on the road. However, the impact on the number of accidents is considered to be negligible. There would be little impact on security as a result of this intervention. The facility would be designed in line with best practice standards. It is anticipated that CCTV, lighting and surveillance would be in place on vehicles and platforms to maintain a high level of personal safety and perceived safety for all travellers.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention would have positive economic benefits, through reducing travel times for public transport between South East Edinburgh, Musselburgh and the city centre. However, benefits for existing road users would be minimal as a significant proportion of the users of the Light Rapid Transit would transfer from existing bus and rail services. **Wider Economic Benefits (WEBs):** Improvements to the capacity of the public transport network would result in improvements to journey times, reliability and service quality for commuters and business travellers. As such, Light Rapid Transit would help maximise labour catchment areas for businesses based in Edinburgh and East Lothian and help maintain good links between businesses in Edinburgh and surrounding areas. By encouraging a degree of modal shift from car, and reducing road congestion, the Light Rapid Transit may help improve the efficiency of the road network in Edinburgh. The project is likely to have a minor positive impact on the efficiency and productivity of business users travelling by road. **Economic Activity and Location Impacts (EALIs):** Improvements to journey times, reliability, service quality and accessibility for business travel and commuters would have a positive impact on the development of key employment sectors and key sites including developments in south east Edinburgh such as the Centre for Biomedical Research and other developments at the Edinburgh Royal Infirmary.
Integration:	**Moderate Benefit**	**Transport Integration:** This intervention would result in an expansion of the Edinburgh Tram network and therefore, by its nature, would integrate with public transport in Edinburgh. Furthermore, integration with the first phases of Edinburgh Tram would allow direct integration with Edinburgh Airport. **Transport and Land Use Integration:** Improving transport links between the city centre and the area of economic activity on the south east of the city would have a positive impact on transport land use integration, by benefiting the south east Edinburgh Economic Development Zone around Edinburgh Royal Infirmary and the Centre for Biomedical Research.

		Policy Integration: It is anticipated that fully accessible vehicles would be used as part of the measure integrating with the government objective on disability. Health services would be promoted through the development of a more attractive sustainable transport option progressed through this intervention. The areas affected are primarily urban in nature or within commutable distance to Edinburgh. It is anticipated that through the use of fully accessible vehicles the intervention is likely to be socially inclusive.
Accessibility and Social Inclusion:	**Moderate Benefit**	**Community Accessibility:** It is considered that the public transport network coverage would improve access to jobs, training, health services, shopping and other locally significant trips by providing a fast, efficient and direct link between the residential areas in Edinburgh, and parts of East Lothian, to the city centre and the south east area of economic activity. This intervention is therefore expected to improve public transport network coverage, and provide an additional alternative mode to the car. Local accessibility is therefore likely to increase. Local severance issues would be dependent on the final alignment of the route but designs should be cognisant of such potential issues. **Comparative Accessibility:** It is unlikely that the distribution of impacts would differ by people group in terms of age, gender, car ownership or income group. The new infrastructure would have to comply to design standards and would therefore be fully DDA compliant.

Table E13.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	Providing a new Light Rapid Transit line would help to improve public transport journey times and efficiency as there would be reduced conflict with road vehicles. Also, connections between Edinburgh City Centre and Edinburgh Royal Infirmary, Shawfair and parts of East Lothian would be improved.
Reduce Emissions:	**Minor Benefit**	This intervention could relieve some city centre traffic, by providing a link from the South East of Edinburgh into the city centre. This would have some positive effects on local air quality however, the extent would depend on the degree of modal shift achieved. Central Edinburgh, just south of Waverley station where the tram would terminate, is an Air Quality Management Area; therefore even a minor benefit in local air quality could have moderate beneficial effects within the Air Quality Management Area.
Improve Quality, Accessibility and Affordability:	**Major Benefit**	Commuters would have access to a high quality alternative to car, bus or train journeys into Edinburgh from the outskirts of the city. The introduction of a new Light Rapid Transit line would improve the quality of travel along this route as well as improving accessibility between Edinburgh City Centre and Edinburgh Royal Infirmary, Shawfair and parts of East Lothian. This intervention would not impact on affordability.

Table E13.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	The quality and accessibility of public transport between Edinburgh Royal Infirmary, Shawfair and potentially Musselburgh (as well as Edinburgh) and economic activity areas would improve. By removing traffic from city centre roads it is anticipated that this measure would also contribute to reducing road accidents in line with this objective. The intervention infrastructure would be designed in accordance with current good practice and standards to ensure that all aspects of passenger safety are allowed for wherever possible. Affordability of public transport would not be affected.
Smarter:	**Moderate Benefit**	This intervention would improve public transport access to the University of Edinburgh from across the city. This intervention could also improve access to Queen Margaret University at Musselburgh if the line is extended.
Wealthier and Fairer:	**Moderate Benefit**	The new Light Rapid Transit link between Edinburgh and Edinburgh Royal Infirmary, Shawfair and potentially Queen Margaret University at Musselburgh is likely to contribute to a Wealthier and Fairer Scotland by improving transport connections between these areas, which would support sustainable economic growth, and in turn providing travel opportunities for employment, education, business, leisure and tourism.
Greener:	**Minor Benefit**	This intervention encourages a modal shift to rail with the overall potential for improvements to air quality and reduced CO_2e emissions. It also promotes the use of sustainable transport.
Healthier:	**Moderate Benefit**	This intervention would encourage modal shift to public transport and improve public transport access to the Edinburgh Royal Infirmary from across the city.

Table E13.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There would be technical risks associated with the construction of this intervention. As much of the route is on-street, there are likely to be underground services that would have to be diverted. Protection against current leakage would also have to be designed for. There would be considerable disruption to existing traffic during the construction of the Light Rapid Transit system as much of the route is on-street. This would necessitate the closure or partial closure of city streets to allow construction to safely take place.
Operational:	After opening, there may be disruption to existing road traffic. However, it is considered that much of this can be mitigated by the design of traffic signalling systems and the interface between road traffic and the Light Rapid Transit system.
Public:	There has been significant detailed public consultation regarding this intervention. It is expected that any measure which promotes modal shift to more sustainable transport would achieve public support the support for Tram Lines 1 and 2 within Edinburgh was mixed.

Detailed Appraisal	**E14: Augment Far North Line Rail Services with Express Coach Facilities**		
Estimated total Public Sector Funding Requirement:		***Capital Costs/grant***	<£10m
		Annual Revenue Support Present	-
		Value of Cost to Gvt	<£10m
		BCR/PVB	<0.75 / <£10m

Summary Impact on STAG Criteria	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objective of enhancing public transport accessibility and reducing journey time to and from Inverness.

The intervention would consist of:

- Coach stop facilities to augment railway stations on the Far North Line, with additional stops to serve the Black Isle and Dornoch; and
- Targeted infrastructure improvements to address constraints on the A9 (in conjunction with D3 (Targeted Programme of Measures to Reduce Accident Severity on the A9 north of Inverness)).

Summary: Rationale for Not Recommending

Currently the rail services north of Inverness carry the lowest levels of passengers on the Scottish rail network. Consequently a high level of subsidy is required. Provision of infrastructure to facilitate express coaches would adversely impact on the already low rail patronage levels and could affect the viability of this section of the rail network as an increase in the level of subsidy would be required. This intervention would not have any measurable modal shift from car to public transport. Therefore the costs of this scheme far outweigh any benefits that may be accrued.

Table E14.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To enhance public transport accessibility and reduce public transport journey time to and from Inverness. STPR Objective 2: To reduce the fatal and severe accident rates to the national average or lower.	**1: Positive -** Augmenting the existing rail service with coach service facilities along the Far North rail line would result in improved access for communities currently not served by the rail network. Due to the circuitous route of the rail network on this corridor, improved bus facilities together with targeted road improvements would improve bus services and reduce journey times to and from Inverness. **2: Neutral –** Generally improvements to public transport on the route may result in a degree of modal shift, however, the overall impact of the measures on accident and severity rates would be negligible.

Table E14.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral/Minor Negative Impact**	It is recognised that there could be a need for targeted infrastructure improvements along the road however, these are envisaged to be primarily online, with no substantial widening, and localised in nature. There is also likely to be potential to relocate any works to avoid the most sensitive environmental sites.
Safety:	**Neutral**	The accident rate for passengers of coach services is higher than that of rail services however, it would be expected that there would be a degree of modal shift towards public transport and therefore this would reduce the number of car trips. The overall impact of the measures on accident rates is anticipated to be neutral.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** The proposed intervention, which augments the existing rail service, would help to reduce travel times for those people using public transport within the corridor. The land / sea public transport Interchange at Thurso would be enhanced as the existing rail terminus is approximately 3.5km east of the ferry terminal of Scrabster. However, these improvements are expected to be at the detriment of the Far North Line rail services, which could require further subsidy to continue operating. **Wider Economic Benefits (WEBs):** Improved productivity in the region would occur as a result of the improved public transport provision in the corridor. Business and recreational travel along the corridor may also become more attractive due to better services and the integrated link with the ferry services to Orkney. Augmentation of the existing rail service could provide more reliable journey times to the economic Regeneration Partnership area of Caithness and North Sutherland. **Economic Activity and Location Impacts (EALIs):** It is felt that economic activity in the region would benefit from this measure by making public transport more attractive to residents and visitors alike and making business locations more attractive to customers and the workforce.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention would have a slightly positive effect on transport integration as the proposed public transport links would terminate at the port of Scrabster linking with the Northern Isles ferry services. The existing rail service terminates to the south of Thurso town centre approximately 3.5km from the ferry port. Integration to Inverness Airport could also be improved through direct access by bus from the corridor. Time integration with rail services at Inverness is also expected to improve. New services would also improve integration with local services along the corridor through improved frequency and interchange points.

		Transport and Land-Use Integration: This measure would not have a significant impact on land use planning along the corridor. However, it would have a small positive impact on the industrial and business locations at Wick, Golspie, Thurso, Inverness, Alness, Evanton, Invergordon and Dornoch. **Policy Integration**: This intervention would not affect disability, health services, rural affairs or social inclusion but would have a minor positive impact on the aspiration to reduce road traffic through modal shift to car from bus. The measure fits with the overarching HITRANS policy that seeks to develop a fit for purpose multi-modal transport network.
Accessibility and Social Inclusion:	**Minor benefit**	**Community Accessibility**: This intervention could have a small positive impact on community accessibility as it improves public transport network coverage and promotes non-motorised trips to access local services. This measure would improve accessibility to jobs, training, and shopping for all the communities which it serves by offering a faster, more frequent and reliable service along the corridor. **Comparative Accessibility**: This intervention could have a positive impact on accessibility in Dornoch and the Black Isle where there are no existing rail services. This intervention could have a positive impact on accessibility for all economic development areas as well as the Caithness and North Sutherland regeneration area following the decommissioning of Dounreay.

Table E14.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	End to end rail travel can be slow due to the limitations of the rail network within the corridor, while improved bus services and interchange could result in improved journey times for bus passengers. Connections to ferry services at Scrabster would be improved due to improved services along the corridor. Services may be able to provide a more flexible alternative, with potentially higher frequency closer to Inverness and the Black Isle. However, this may be at the detriment of current, rail users on the Far North Line.
Reduce Emissions:	**Minor Benefit**	Providing coach service facilities mirroring the Far North Rail Line could result in a modal shift from road to rail/bus, thereby reducing the number of cars on the road and so potentially contributing to a small decline in CO_2 emissions and improvements to local air quality. However, modal shift as a result of this intervention is likely to be limited.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would improve quality of travel and frequency of service along the corridor for bus passengers. People without a car would have improved accessibility, whilst car owners would have increased choice. The intervention would not significantly impact affordability.

Table E14.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	The provision of an augmented rail / bus service between Wick / Thurso and Inverness would make a contribution to safety by reducing the number of vehicle journeys on the corridor. However, the overall impact of the measures on accidents would be minimal. This intervention would improve the quality and accessibility of public transport but would not affect affordability.
Smarter:	**Minor Benefit**	This intervention would provide a minor benefit towards improving access to educational facilities in Inverness through reducing journey times to/from Inverness.
Wealthier and Fairer:	**Minor Benefit**	This intervention could increase productivity by reducing the time spent on the road by people in the corridor. This may help to make the region wealthier by improving the transport accessibility to the regeneration and development areas.
Greener:	**Minor Benefit**	This intervention promotes a minor modal shift to rail/coach with improvements to air quality and reduced carbon emissions. It also promotes the use of sustainable transport.
Healthier:	**Minor Benefit**	This intervention would improve accessibility to regional healthcare services in Inverness.

Table E14.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is expected that there would not be any technical issues which would arise from this intervention. This intervention is technically feasible with no untried technologies.
Operational:	Acceptable patronage levels would be required to successfully operate the intervention. Transport Scotland currently does not have the administrative powers to introduce a regulated coach service.
Public:	There has been no detailed consultation on this intervention however, it is expected that any measure which promotes modal shift to more sustainable transport would achieve public support.

Detailed Appraisal	**E15 – Rail Freight Access Enhancements to Greenock Port**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m - £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £50m - £100m ***BCR/PVB*** <0.75

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to improve access to Greenock Port and improve the operation of the A8/M8 by transferring freight from road to rail.

It would re-open the closed branch line between Container Base Junction (on the Wemyss Bay branch) and Greenock Container Base. Additional capacity may be required between Paisley and Shields Junction depending on the volume of rail freight that would serve the container base, although the provision of improvements associated with Ayrshire/Inverclyde may provide alternatives for freight services on the western approaches to Glasgow.

Summary: Rationale for Not Recommending

The level of expenditure required to re-open the rail access to Greenock Port is high in comparison to the potential benefits. Intervention D27 (Rail Enhancements between Inverclyde, Ayrshire and Glasgow) is likely to limit the movement of freight trains through the Paisley to Shields section of route, thus limiting the benefits of this intervention.

These rail constraints, in addition to the significant costs, mean that this intervention provides poor value for money and limited impact on the wider objectives.

Table E15.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To Increase capacity and reduce journey times by public transport between Glasgow and Inverclyde.	**1: Neutral -** This intervention would not have any impact on this objective as it is aimed at improving provision for freight services.
STPR Objective 2: To facilitate freight access to Greenock port.	**2: Strongly Positive** - The re-opening of the Greenock freight branch would greatly enhance the accessibility of Greenock port by reducing the need for goods to enter and leave the port using the A8.
STPR Objective 3: To improve the efficiency of the A8 / M8 during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic.	**3: Neutral -** This intervention would contribute to a reduction in HGVs on the A8/M8 by encouraging a transfer of freight movement from road to rail, however the impact on the A8 / M8 is expected to be marginal.
STPR Objective 4 To reduce the accident rate to the national road type average on the M8 and A8.	**4: Neutral -** This intervention would not have any significant effect on reducing accident rates and severity rates across the strategic transport network. However, the intervention could encourage modal shift for freight from road to rail which could result in a reduction in the number of accidents due to fewer HGVs on the A8 and M8. This is expected to be marginal.
STPR Objective 5 To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**5: Neutral -** This intervention is unlikely to have any significant effect on this objective.

Table E15.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral/Minor Benefit**	This intervention could potentially have positive impacts on air quality and climatic factors, as modal shift of freight from road to rail would reduce road vehicle traffic (particularly HGVs) and thereby result in a slight reduction in overall emissions.
Safety:	**Neutral**	This intervention would not have any significant impact on improving safety. However, the intervention could encourage modal shift for freight from road to rail and there could potentially be a reduction in the number of accidents if there are fewer goods vehicles on the road, although this impact is expected to be marginal.
Economy:	**Minor Negative Impact**	**Transport Economic Efficiency (TEE):** Providing rail access to Greenock Port for freight would encourage a modal shift from road to rail. This would reduce the number of HGV's entering and leaving the port facility and help reduce congestion in Greenock and on the A8 through the town. However, the benefits are not considered to compare favourably with the cost and therefore the intervention will not provide value for money, compared to other interventions considered. **Wider Economic Benefits (WEBs):** There could be a wider benefit to road users by reducing the volume of freight on the roads, but this is likely to be marginal. **Economic Activity and Location Impacts (EALIs):** Providing rail freight access to Greenock Port would improve overall access to its facilities. However, there is limited room for growth of those facilities due to the constrained site, so any benefits of providing rail freight access will be limited.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention would provide a new rail link into Greenock Port, allowing freight entering or leaving the country by ship to transfer directly to rail. **Transport and Land-Use Integration:** This intervention would integrate rail access for freight into the port and distribution facilities at Greenock, supporting the development and expansion of the port. **Policy Integration:** This intervention is consistent with the policy aims of the National Transport Strategy, Scotland's Railways and the Freight Action Plan.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not impact on the public transport network coverage or any local accessibility issues. **Comparative Accessibility:** There are no comparative accessibility issues associated with this intervention.

Table E15.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Negative Impact / Minor Positive**	This intervention would improve journey times for freight, which transfers from road to rail, as it would allow the avoidance of the congested motorway network through Glasgow. Rail access would also allow freight to be distributed across Scotland and the rest of the UK by rail. However, there could be an impact on journey times for passenger services due to the increased number of freight services operating over the congested section of line between Paisley Gilmour Street and Shields Junction.
Reduce Emissions:	**Minor Benefit**	This intervention would encourage some freight modal shift from road to rail, which could result in a slight reduction in $C0_2e$ emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	Access to Greenock Port for freight is likely to be improved due to the avoidance of the congested road network. This intervention will not impact on affordability.

Table E15.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	The reduction of HGVs journeys would have a marginally positive impact on road safety in Greenock and along the A8. This intervention would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would not impact on access to education.
Wealthier and Fairer:	**Minor Benefit**	Better use of existing infrastructure to reduce freight transport costs, speed up rail links and better connect the west coast with the rest of Scotland, could lead to economic growth, job creation and prosperity. The rail freight access to the freight hub at Greenock Port could lead to inward investment; however, there is limited room for growth of the freight facilities due to the constrained site.
Greener:	**Minor Benefit**	This intervention promotes a modal shift to rail with resultant improvements to air quality and reduced carbon emissions. It also promotes the use of sustainable transport.
Healthier:	**Neutral**	This intervention would encourage modal shift from road vehicles to more sustainable rail trips for freight journeys, marginally reducing emissions and their impact on the community. It would also not affect access to healthcare.

Table E15.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would involve upgrading an existing railway line to allow a regular freight service to be introduced. The current status of this infrastructure is unknown. However, no untried technologies would be required when implementing this intervention. As the design stages progress, localised issues may arise which require increased technical capabilities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running more freight trains on the already congested line from Paisley Gilmour Street to Shields Junction could reduce the reliability of this section of line for passenger services.
Public:	Public opinion on this intervention is likely to be neutral as it should not have a significant impact on passenger services.

Detailed Appraisal	**E16: Extension of Glasgow Southern Orbital from East Kilbride to M73/M74**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** 1.75 – 2.25 / £250m - £500m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention supports the objectives to improve the efficiency of the M8 in Glasgow. It would provide a new dual carriageway link between the current eastern end of the Glasgow Southern Orbital at East Kilbride with the M73/M74 junction at Maryville. Intermediate junctions would be provided with the A749 (East Kilbride to Glasgow) and the A724 (Hamilton to Rutherglen).

Summary: Rationale for Not Recommending

This intervention duplicates much of the provision and has the potential to undermine the benefits being brought forward under the M74 extension project.

This intervention would require substantial new land take from the urban fringe. There are likely to be adverse effects on cultural heritage resources, the water environment and air quality. There are also likely to be adverse effects on local biodiversity, local landscape and visual setting and local noise levels. It is considered that the potentially substantial adverse environmental impacts outweigh the benefits of this intervention.

Table E16.1.1 STPR Objectives

STPR Objectives	
STPR Objective 18.1: To make best use of the available road space and better manage peak demand taking into account the need to contribute to emissions reduction.	**18.1: Negative –** This intervention proposes new road space and therefore does not seek to make better use of the existing network. It would also, to some extent, duplicate provisions from the M74 extension.
STPR Objective 18.2: To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.	**18.2: Slightly Negative –** The construction of a new road would have a negative impact on the competitiveness of rail freight. This could then result in increased road vehicle emissions which could have an adverse impact on local air quality and contribute to an increase in overall CO_2e emissions.
STPR Objective 18.3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**18.3: Neutral –** The extension of the GSO would remove some strategic through trips from East Kilbride town centre, which would reduce the conflict between strategic and local trips and between vehicles and pedestrians resulting in improved accident rates on the local network. However, the route could increase car use in the area, thus potentially increasing the number of road accidents on the strategic network. Overall the impact on accident rates and severity rates is considered neutral.

Table E16.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor/Moderate Negative Impact**	This intervention would require substantial new land-take from the urban fringe, with potential for minor adverse effects on locally important natural resources such as landscape, biodiversity, geology and the water environment. There is potential for substantial effects on cultural heritage resources, with a number of nationally designated sites that could fall within the footprint of, or close to, the new road, although the scale and nature of effects remains uncertain at this stage, as the exact route of the road has not been defined. In addition, the road would introduce a new noise source to local receptors, and potentially increase emissions to air.
Safety:	**Neutral**	The extension of the GSO would remove some strategic through trips from East Kilbride town centre, which would reduce the conflict between strategic and local trips and between vehicles and pedestrians resulting in improved accident rates. However the route could increase car use in the area, with the potential negative impact on the number of road accidents.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** The provision of a new road link between East Kilbride and the M73/M74 would result in travel time savings and vehicle operating cost benefits for freight traffic, particularly during peak hours. **Wider Economic Benefits (WEBs):** The provision of a new road link would provide the capacity for increased and more reliable movement of goods to and from Ayrshire and southern parts of Glasgow. Journey times for freight vehicles would be reduced, resulting in increased productivity. **Economic Activity and Location Impacts (EALIs):** The new road link would improve access to the M73/M74 and would act as a 'building block' in the continuing competitiveness of the west of Scotland as a strategic investment location for manufacturing.

Integration:	**Neutral**	**Transport Integration:** This intervention would have no significant impact on enhancing transport integration. **Transport and Land Use Integration:** Land use integration would depend on the final alignment of the route; however it is considered that the benefits would occur at a local level in East Kilbride, rather than at a strategic level. **Policy Integration:** This intervention would not affect policies relating to disability, health services, rural affairs or social inclusion, as it does not include measures to encourage modal shift from car, to assist in achieving a healthy and inclusive society.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not have any effect on community accessibility as it does not improve public transport network coverage nor does it promote non-motorised trips to access local services. **Comparative Accessibility:** This intervention would primarily benefit road transport, by improving road access to parts of Glasgow and Ayrshire from the M73/M74.

Table E16.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	The provision of a new road link between the GSO and M73/M74 would improve road access to parts of Glasgow and Ayrshire from the M73/M74, although to some extent this would be provided by the M74 Extension. Journey time reliability would also improve.
Reduce Emissions:	**Minor Negative Impact**	The new road could reduce congestion through East Kilbride leading to a reduction in CO_2e emissions. However, the intervention is forecast to increase in both vehicle speed and traffic levels overall and therefore transport related emissions.
Improve Quality, Accessibility and Affordability:	**Neutral**	This intervention would improve journey time reliability and hence the quality of journeys, mainly for cars. Access to parts of Glasgow and Ayrshire would also be improved for road users. This intervention would not impact on affordability.

Table E16.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention could result in reduced accidents due to traffic transferring from East Kilbride town centre routes to the bypass, reducing the conflict with local vehicles, pedestrians and cyclists. A reduction of vehicles in the town centre could also result in a safer environment within East Kilbride resulting in a better quality of life. An overall increase in car use, due to the improvements could lead to an increase in accidents on the strategic network, thus negating the accident reductions on the local network. This intervention would not affect the quality, accessibility and affordability of public transport.
Smarter:	**Neutral**	This intervention would have no impact on access to schools, colleges and universities for those living along the relative corridor.
Wealthier and Fairer:	**Moderate Benefit**	The new road link could increase productivity by reducing the time spent on the road by passengers and freight. This intervention would assist in the continuing competitiveness of the west of Scotland, as a strategic investment location particularly for manufacturing.
Greener:	**Minor Negative Impact**	This intervention would have a minor negative impact on air quality and CO2e emissions. The intervention would also not encourage modal shift from car to public transport.
Healthier:	**Neutral**	The new road link would not affect access to health services, nor encourage modal shift and the associated health benefits.

Table E16.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	There are a number of technical issues associated with this intervention. The new road link may have to cross existing railway routes. There are also two golf courses adjacent to the proposed route. During construction, the new road link may require existing rail routes to close for a period of time and it may also affect other road users on the M73 and M74.
Operational:	This intervention is considered to be operationally feasible and it is unlikely that any adverse factors would affect the operation of this intervention during its projected life. The operation of the route is likely to become the responsibility of Transport Scotland and its maintenance contractor.
Public:	This intervention has been made public. It is likely that this intervention would have local support at a local level; however the adverse environmental impacts may attract objections on a regional/national level.

Detailed Appraisal	**E18: Suburban Rail Services Across Aberdeen**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** <0.75 / £50m - £100m

Summary Impact on STAG Criteria

	- - -	- -	-	*0*	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention targets the objective to improve accessibility along the corridor linking the areas of economic activity at Dyce (including Aberdeen Airport), Aberdeen City Centre and South East Aberdeen.

It would consist of:

- A regular cross-Aberdeen service, generally at half-hourly frequency, between Inverurie and Stonehaven, which would require additional rolling stock and track layout changes;
- New stations on the route (e.g. Cove, Kittybrewster and Kintore); and
- Provision at each station on the route for Park-&-Ride car park facilities, bus stops and access for cyclists and pedestrians.

Summary: Rationale for Not Recommending

This intervention would provide local and regional benefits through more frequent and direct cross-city rail services. However, a combination of Intervention D17 (Rail Service Enhancements between Aberdeen and Inverness) and D18 (Rail Service Enhancements between Aberdeen and the Central Belt) would greater enhance cross-city services, as well as providing significant additional benefits at the national level in terms of improving better connections between the cities.

Table E18.1.1 STPR Objectives

STPR Objectives	
STPR Objective A1: To improve accessibility, primarily by public transport, to and between the City Centre, Dyce, the airport and South East Aberdeen.	**A1: Strongly Positive –** The new station at Cove would provide direct rail access to employment opportunities at Altens, whilst the new station at Kittybrewster would improve residents' accessibility to employment opportunities at Dyce and Altens, including the technology park at Stoneywood and the business park at Dyce Drive. The improvements would reduce journey times significantly between stations north and south of Aberdeen by eliminating the need to change trains in Aberdeen. However, stopping at additional stations along the route would offset this reduction to some degree. The 30-minute frequency would be an attractive service to commuters on the key travel to work routes. Improved services to Dyce would improve travel efficiency for passengers travelling to and from the airport. As a result of the provision of Park-&-Ride car park facilities, bus stops and pedestrian and cyclist access at each station and on the route, accessibility to the suburban and national rail networks would be improved.
STPR Objective A2: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**A2: Neutral –** Although the intervention is expected to result in a slight transfer of trips from car to rail this is not expected to significantly impact on accident rates in the area.
STPR Objective A3: To promote journey time reductions, particularly by public transport, between Aberdeen and the Central Belt primarily to allow business to achieve an effective working day when travelling between these centres.	**A3: Slightly Positive –** This intervention would provide a frequent cross-city rail service, which would increase the options for passengers arriving in Aberdeen wishing to connect to local rail services. Interchange times would therefore be reduced through the implementation of the intervention, resulting in efficiency gains for business travellers using the route and allowing them to achieve a more effective working day. Park-&-Ride facilities and improved accessibility for cyclists, pedestrians and bus passengers could have a slightly positive impact by improving the integration of travel modes.

Table E18.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor Benefit/ Minor Negative Impact**	There is potential for this intervention to encourage a degree of modal shift from the car to rail, helping to reduce traffic levels and emissions within Aberdeen City. Counteracting these potential benefits, are the potential adverse effects on local biodiversity, cultural heritage and landscape that could result from implementation of new physical infrastructure. These effects are highly dependent on the location of the final works, and mitigation may well be possible, during the design stage.
Safety:	**Neutral**	Although the intervention is expected to result in a degree of transfer of trips from car to rail this is not expected to significantly impact on accident rates in the area.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** The measures proposed in this intervention would remove the need for rail passengers travelling between stations north (Dyce, Inverurie and Kintore) and south (Portlethen, Stonehaven) of Aberdeen to interchange in the city. This would result in significant time savings for passengers travelling between these stations.

		Passengers travelling from northwest or south of Aberdeen would benefit from more frequent services into the city centre. However, due to the relatively low volume of modal transfer the cost to benefit ratio is forecast to be <0.75. The benefits of higher service frequency and journey time savings on cross-city trips would be offset by the addition of stops at Kintore, Kittybrewster and Cove. Overall usage at existing stations is forecast to increase from approximately 3.4m passengers per annum in the reference case to 4.6m passengers per annum. Passengers using the new stations at Kintore, Kittybrewster and Cove would add to these figures. Based on these figures, increased service frequency and better cross-city connections would benefit a large number of passengers. The most significant growth would be expected at Stonehaven where passenger numbers are forecast to quadruple in comparison with the reference case scenario. However, the majority of rail passengers are forecast to transfer from bus rather than car. **Wider Economic Benefits (WEBs):** The measures promoted in this intervention would improve rail connectivity from Aberdeen to key areas of economic activity in Dyce and Altens. Reduced congestion on the A90 arising from increased modal shift to public transport would bring benefits to freight traffic and other remaining road users in the form of improved journey times and journey time reliability. Improvements to public transport efficiency and capacity could improve the comfort and ease of commuter travel to Aberdeen, so helping to maintain the labour catchment area for local employers. **Economic Activity and Location Impacts (EALIs):** A new station at Cove would provide a direct rail connection from stations between Stonehaven and Inverurie to key economic opportunities in Altens. Similarly, service enhancements would improve rail accessibility to Dyce, particularly from the south of Aberdeen, with beneficial impacts on employment and productivity in these locations. The cross-city rail services would therefore act as a "building block" in the continuing competitiveness of Aberdeen and the surrounding area as strategic investment locations.
Integration:	**Moderate Benefit**	**Transport Integration:** The provision of Park-&-Ride and additional facilities for bus interchange and cyclists and pedestrians could have a minor benefit to integration. **Transport and Land-Use Integration:** This intervention includes the construction of a new rail station at Cove with direct access to key economic opportunities at Altens. This would provide efficient rail links to support employment development at the site with significant benefits to transport and land-use integration. **Policy Integration:** This intervention would promote modal shift from car to rail, resulting in some benefit to health from environmental improvements. The intervention proposes rail enhancements that include new stations at Cove, Kittybrewster and Kintore. The station at Kittybrewster would improve public transport accessibility for residents at Woodside, tying in with local priorities for community regeneration. The intervention would therefore generate benefits to existing policies for social inclusion. The intervention should not have an impact on policies relating to rural affairs. It is expected that the new stations would be fully compliant with the Disability Discrimination Act (DDA), thus having a positive effect on disabled access.
Accessibility and Social Inclusion:	**Major Benefit**	**Community Accessibility:** The proposed construction of new stations at Cove and Kittybrewster represents improvements in rail network coverage. Residents would benefit from significantly enhanced accessibility to employment opportunities and services in Dyce, Altens and Central Aberdeen. Similarly, the intervention comprises a new direct half-hourly service linking stations across Aberdeen. This service would improve the accessibility of employment opportunities in Altens to areas north of Aberdeen and improve the accessibility of employment opportunities in Dyce to areas south of Aberdeen. Additional rail seating capacity of up to 4,300 seats, assuming six-carriage trains, would be expected to arrive in Aberdeen

		during a three-hour peak. **Comparative Accessibility:** The new station at Kittybrewster would open accessibility to employment opportunities for residents at Woodside and would therefore tie in with existing priorities for community regeneration.

Table E18.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	The measures proposed in this intervention would remove the need to interchange when travelling between railway stations north and south of Aberdeen, resulting in significant cross-city journey time improvements. These journey time improvements would be offset to a degree by the construction of new stops at Kintore, Kittybrewster and Cove which would give rise to slight increases in journey times for passengers travelling into Aberdeen. Implementation of the intervention would enhance service frequencies between Stonehaven, Aberdeen and Dyce, improving onward connections to these destinations for passengers connecting from national rail services. Dyce is the nearest station to Aberdeen Airport and improved services to Dyce would therefore improve travel efficiency for airport passengers.
Reduce Emissions:	**Minor Benefit**	It is envisaged that the improved rail services could encourage some modal shift from road to rail within Aberdeen, and that this could contribute to a reduction of core emissions and an improvement in air quality, resulting in a beneficial effect to the Aberdeen Air Quality Management Area.
Improve Quality, Accessibility and Affordability:	**Moderate Benefit**	This intervention would enhance service coverage through the construction of new stations at Kintore, Kittybrewster and Cove. This would result in significantly improved access to employment opportunities in these areas. More generally the intervention would improve cross-city access, allowing residents in the south of the city to access employment opportunities in the north east (particularly at Dyce) and vice versa. The new station at Kittybrewster, in particular, would generate accessibility improvements for community regeneration in the Woodside area. The quality and accessibility of the rail network would improve as a result of Park-&-Ride provision and the improvements for bus passengers, cyclists and pedestrians. Additional rail seating capacity of up to 4,300 seats would be expected to arrive during a three-hour peak at Aberdeen if the service were to be operated by six-carriage trains. This intervention will not impact on affordability.

Table E18.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	New stations at Cove, Kittybrewster and Kintore would result in significantly improved access to employment opportunities particularly near Cove. Residents of Aberdeen's Woodside area would benefit from improved public transport quality and accessibility supporting existing aspirations for community regeneration in that area. The intervention would also improve cross-city access, allowing residents in the south of the city to access employment opportunities in the north east (particularly at Dyce) and vice versa. It would not affect public transport affordability.
Smarter:	**Minor Benefit**	This intervention would improve accessibility to key education facilities in Aberdeen such as the University of Aberdeen.
Wealthier and Fairer:	**Moderate Benefit**	By removing the need to interchange in Aberdeen, the intervention would reduce rail journey times significantly between stations north and south of Aberdeen. A more intensive service frequency along the route would improve interchange times for passengers connecting from regional and national rail services. This intervention would support growth at key areas of economic development in Dyce and Altens, through service enhancements to Dyce and the new station at Cove. The improvements would provide more efficient links to the national rail network and to Aberdeen Airport (via Dyce) and improve access to employment opportunities at these sites.
Greener:	**Moderate Benefit**	Rail enhancements promote public transport use and have the potential to result in modal shift to rail. This could reduce reliance on the car and subsequently improve air quality.
Healthier:	**Minor Benefit**	This intervention would encourage modal shift from car to public transport and improve accessibility to health services in Aberdeen.

Table E18.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	It is not considered that any untried techniques would be required when implementing any aspects of this intervention. Localised issues could arise as the design stages progressed, which could require increased technical capabilities to overcome. Construction of some aspects of this intervention may have an impact on operating existing services, however much of this work could be carried out at times when the disruption would be minimised.
Operational:	Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.
Public:	This intervention has been the subject of a previous study and public consultation. It is expected that any measure which promotes modal shift to more sustainable transport would achieve public support.

Detailed Appraisal	**E19 – Glasgow Subway Upgrade and Modernisation**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** <0.75 / £10m - £50m

Summary Impact on STAG Criteria

	- - -	- -	-	0	+	++	+++
Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention targets the objectives in Glasgow to increase rail capacity and improve connectivity between economic growth areas and areas of regeneration.

The intervention would consist of:

- Upgrading and modernisation of rolling stock to permit driverless operations;
- Additional rolling stock to allow for an increase in frequency; and
- Station upgrades.

Summary:- Rationale for Not Recommending

This intervention consists of improvements to rolling stock, frequency of service and station facilities and would therefore not provide a step change in benefit to existing users. In addition it is anticipated that any transfer from road to rail as a result of this intervention would be negligible.

Table E19.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**1: Slightly Positive –** This intervention envisages the modernisation of the existing Glasgow Subway, with an increase on the existing service frequency, but no new lines. Thus the intervention is not likely to have a significant increase in accessibility. However, increasing service frequencies will reduce overcrowding and improve overall journey times on journeys to and from the city centre and other areas served by the subway.
STPR Objective 2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road and demand management.	**2: Slightly Positive –** This intervention envisages the modernisation of the existing Glasgow Subway, with an increase on the existing service frequency. This may encourage drivers who currently cross the Kingston Bridge when accessing the city centre to use the Park-&-Ride facilities at Shields Road, reducing the volume of traffic on the M8. However, this benefit is unlikely to be significant and will only impact on a short section of the motorway.
STPR Objective 3: To address rail capacity and connectivity issues in central Glasgow.	**3: Slightly Positive –** The increase in service frequency on the Subway will help to increase rail capacity into central Glasgow from the southwest of the city centre and the west end.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral –** This intervention would not to have any significant effect in promoting a reduction in accident rates and severity rates across the strategic transport network.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when traveling between these centres.	**5: Neutral –** This intervention does not positively or adversely impact the objective to promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**6: Neutral –** This intervention does not positively promote or impact on the development at Glasgow Airport.

Table E19.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	The upgrade and modernisation of the Glasgow Subway would not have any significant environmental impacts.
Safety:	**Minor Benefit**	The primary safety benefit is likely to accrue from the deployment of platform gates on stations which would stop passengers accidentally, or otherwise, being injured by trains or falling onto the track. Some safety benefit would result in modal shift from road transport; however, this would be negligible. The level of personal security would be maintained, through the provision of Closed Circuit Television (CCTV) surveillance and appropriate lighting.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** Economic benefits from a modernised subway would be realised as a result of a more frequent service and better interchange facilities. This would make travelling on the subway and interchange with other modes more efficient and therefore reduce travel times and travel time variability. This intervention could promote modal shift from car to public transport, which would result in reduced vehicle operating costs for drivers. **Wider Economic Benefits (WEBs):** Modal shift from car use may help the transport network in Glasgow function more efficiently. This would have additional economic benefits to the economy of the area. **Economic Activity and Location Impacts (EALIs):** This intervention would not have a significant impact on the location of economic activity in a regional or wider context, however the existing economic areas would benefit from a more efficient transport network.
Integration:	**Minor Benefit**	**Transport Integration:** An increased frequency of service would improve integration with other modes. **Transport and Land Use Integration:** There would be minimal impact on transport land use integration with the implementation of this intervention. **Policy Integration:** Any new infrastructure included within this intervention would be fully compliant with the Disability Discrimination Act (DDA). It is anticipated that this intervention would have no impact on policies related to rural affairs or social inclusion. It is considered that modernisation of the Subway would help meet a number of Strathclyde Partnership for Transport's Regional Transport Strategy objectives namely: safety and security; modal shift; an excellent transport system; effectiveness and efficiency; access for all; and the need for integrated transport provision (*A Catalyst for Change: The Regional Transport Strategy for the west of Scotland 2007-2021 – Final Draft).*
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not have any effect on community accessibility as it does not improve public transport network coverage. However, the intervention does promote non-motorised trips and access to local services. **Comparative Accessibility:** It is anticipated that there would be no significant impact on comparative accessibility from the intervention, as there would be no new stations or new lines proposed.

Table E19.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	More efficient interchange and more regular services would have a positive impact on connections and improve overall journey times for journeys which include interchange with other rail services or modes.
Reduce Emissions:	**Neutral**	Modelling outputs indicate an increase in the 2005 CO_2e baseline and a slight decrease in the predicted 2022 CO_2e baseline levels. Despite this, whilst increased frequency and improved service may encourage more people to use the subway, there is unlikely to be a noticeable reduction in car use as a result.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The quality and accessibility of the transport system in Glasgow would be improved due to the developments to the Subway and the associated ticketing, interchange and Park-&-Ride enhancements. This intervention would not impact on affordability.

Table E19.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention would improve the quality and accessibility of public transport in Glasgow, through the associated infrastructure improvements and potentially increasing safety through the provision of Closed Circuit Television (CCTV). Investment in new technologies such as pedestrian gates would assist in improving safety on the Subway. It would have no effect on road safety or affordability of public transport.
Smarter:	**Neutral**	This intervention would provide a better quality of service to the University of Glasgow, Strathclyde University and Glasgow Caledonian University.
Wealthier and Fairer:	**Minor Benefit**	The improvements to the Subway, including developments to integration and interchange, are likely to meet this objective by reducing travel times and increasing reliability which would benefit economic growth and improve travel opportunities for employment, business, leisure and tourism. This intervention would not help link other communities throughout Scotland.
Greener:	**Minor Benefit**	Whilst increased frequency and improved service may encourage more people to use the Subway, there would not be a noticeable reduction in car use as a result, unless Subway services were to be extended. This intervention does, however, support more sustainable forms of transport.
Healthier:	**Minor Benefit**	This intervention would not significantly improve access to health services and community services although the modal shift towards public transport would have a minor benefit to health by encouraging walking to access the public transport network.

Table E19.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	Technical issues could arise from the use of new ticketing systems and station gates, if untried technologies are used. Upgrading the Subway would take place in a confined environment and access to carry out works would be limited. This would affect how much work could take place at any one time and there is a constant risk of flooding in the Subway tunnels, due to their close proximity to the surface and due to the two crossings under the River Clyde. This water ingress would affect any work taking place and would have to be carefully managed. The Subway would have to close, at least in part, for this intervention to be implemented.
Operational:	The Subway is close to the surface along much of its length and crosses underneath the Clyde at two locations and as a result there is a constant flow of water adjacent to the system. This would mean that any technical systems required too support the new operations would have to be fail safe and resilient to water, otherwise there is the risk that the system could fail.
Public:	There have been a number of studies undertaken which look at options to upgrade the subway. It is expected that any measure which promotes modal shift to more sustainable transport as well as improving passenger safety would achieve public support.

Detailed Appraisal	**E20 - New Motorway Link between the M73 and Coatbridge**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £10m - £50m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £10m - £50m ***BCR/PVB*** <0.75 / <£10m

		- - -	- -	-	0	+	++	+++
Summary Impact on STAG Criteria	**Environment**							
	Safety							
	Economy							
	Integration							
	Accessibility and Social Inclusion							

(Judgement based on available information against a 7pt. scale.)

Intervention Description:

This intervention targets the objective to facilitate a reduction in road based freight and to promote a reduction in accident rates.

This intervention consists of a new link road from the M73 to the Freightliner terminal at Coatbridge (Gartsherrie).

Summary: - Rationale for Not Recommending

While this intervention would improve road access to the Freightliner terminal at Coatbridge, thereby reducing delays for road freight using the terminal, the benefits would be felt largely at the local level.

In addition, although improved access would result in a modal shift from road to rail for longer distance trips, the impact would not be significant at a national level.

A combination of D15 (Rail Enhancements on the Highland Mainline between Perth and Inverness), D18 (Rail Enhancements between Aberdeen and the Central Belt) and D29 (Enhancements to Rail freight between Glasgow and the Border via West Coast Mainline) would better facilitate freight movement and greatly improve accessibility of the freight network.

Table E20.1.1 STPR Objectives

STPR Objectives	
STPR Objective 18.1: To make best use of the available road space and better manage peak demand, taking into account the need to contribute to emissions reduction.	**1: Negative –** This intervention proposes new road space and therefore does not seek to make better use of the existing network. The slight reduction in road-based freight traffic would have an indirect benefit on peak demand management on the M73; however this impact is expected to be minimal.
STPR Objective 18.2: To contribute to emissions reduction by facilitating an increase in the proportion of freight passing through the corridor that is carried by rail.	**2: Slightly Positive –** The new road would provide a more direct route into the Freightliner terminal at Coatbridge, encouraging modal shift from road to rail. Since most of the journeys are long distance, this could contribute towards a reduction in emissions.
STPR Objective 18.3: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**3: Slightly Positive –** The new road link would help to reduce accident rates as it would provide an alternative route for road freight travelling south on the M73. This would negate the current need to use Townhead Road when accessing Coatbridge Freightliner terminal. The accident severity rate may increase as a result of faster moving vehicles.

Table E20.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Minor benefit/ Minor Negative Impact**	Improved road links to the terminal could result in providing a more attractive option for longer distance rail freight movements. Given that most of these journeys are long distance this should result in a reduction in emissions. The construction of the new road link would require land-take; however the area is generally urban with few natural or heritage resources, and few adverse effects on the environment are therefore envisaged.
Safety:	**Minor Benefit**	Providing a new link for road freight would result in a reduction in accident and severity rates. The Design Manual for Roads and Bridges (DMRB) Volume 15 indicates that the difference in accident rates between urban single carriageway and typical rural single carriageway (10m) is around 75 per cent. The existing route taken by the majority of road vehicles accessing the terminal is through a mainly residential / urban environment, which is unsuitable for a high volume of HGVs. It is therefore forecast that access via a dedicated route to the M73 would result in a reduction of accident rates. However, the accident severity rate may increase as a result of faster moving vehicles.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** The provision of a new road link between the M73 and the Freightliner terminal would result in travel time savings and vehicle operating cost benefits for freight traffic, particularly during peak hours. However, given that the intervention would impact on relatively few vehicles, the benefit to cost ratio is forecast to be less than 0.75. **Wider Economic Benefits (WEBs):** The provision of a new road link would provide the capacity for increased and more reliable movement of goods to and from the Freightliner terminal. The time taken to move freight would be reduced, resulting in increased productivity and improved long-distance freight movement through the corridor. **Economic Activity and Location Impacts (EALIs):** The new road link would improve access to the Freightliner terminal and would act as a 'building block' in the continuing competitiveness of the west of Scotland as a strategic investment location for manufacturing.
Integration:	**Minor Benefit**	**Transport Integration:** This intervention would have a positive impact on enhancing the integration between road and rail freight distribution. **Transport and Land Use Integration:** Effective and efficient freight transport is important for growth of the local and regional economy and this intervention would help to facilitate this growth. **Policy Integration:** This intervention supports policies to transfer freight from road to rail.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would have no impact on community accessibility as it does not improve public transport network coverage nor does it promote non-motorised trips to access local services. **Comparative Accessibility:** This intervention would primarily benefit freight transport. This intervention would improve road access to the Freightliner terminal.

Table E20.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Moderate Benefit**	The provision of a new road link between the M73 and Gartsherrie would improve road access into the Freightliner terminal, reducing delays for freight that is to be transferred to rail. This would help to reduce journey times for freight, making the service more attractive and helping to increase long-distance freight movement through the corridor and to the whole of Scotland.
Reduce Emissions:	**Minor/Moderate Benefit**	The new road would improve journey times to the Freightliner terminal, encouraging transfer of freight from Scotland by rail rather than road. Given the long distances over which these journeys occur, even a slight modal shift to rail is considered to result in a reduction in emissions. There would also be localised benefits within Coatbridge, where there is a designated Air Quality Management Area, through removal of HGV trips due to the new road link. The new road would improve journey times to the Freightliner terminal, encouraging transfer of freight from Scotland by rail rather than road.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The new road link from the M73 to the Freightliner terminal would improve road access into the terminal and increase capacity thus improving travel quality and accessibility on this route. This intervention would not impact on affordability.

Table E20.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	Construction of the new road link would reduce accident rates as it would transfer a large number of HGVs from an urban route onto a dedicated route accessing the motorway network. The accident severity rate may increase as a result of faster moving vehicles. The new road link would improve access to the Freightliner terminal and would contribute to the continuing competitiveness of the west of Scotland as a strategic investment location. This intervention would not affect the quality, accessibility or affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would benefit access to schools, colleges and universities.
Wealthier and Fairer:	**Moderate Benefit**	The new road link would increase productivity by reducing road journey times for freight. This intervention would also contribute to the continuing competitiveness of the west of Scotland as a strategic investment location, particularly for manufacturing.
Greener:	**Minor Benefit**	This intervention would improve journey times to the Freightliner terminal, encouraging transfer of freight from Scotland by rail rather than road thus reducing emissions and improving air quality.
Healthier:	**Neutral**	The new road link would have no impact on health or access to health services. It would also have no impact on the encouragement of modal shift from car to public transport and other sustainable modes.

Table E20.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	No untried techniques would be required when implementing any aspects of this intervention, although localised issues might arise during the design phase that require increased technical capabilities to overcome. The new road link may have to cross existing railway routes, in which case any associated technical issues would need to be considered early in the planning process. Some disruption could occur on the M73 and Gartcosh Road during construction which would require detailed traffic management planning. Further disruption might arise from temporary closure of existing rail routes during construction.
Operational:	This intervention is considered to be operationally feasible and it is unlikely that any adverse factors would affect the operation of this intervention during its projected life. The operation of the route is likely to become the responsibility of Transport Scotland and its maintenance contractor.
Public:	This intervention has not been made public. However, it is likely to be seen favourably by the local population as it would remove HGVs from inappropriate parts of the local road network.