

Appendix A

Consultation Responses

Meeting Notes



*Job Title / Ref.: Clackmannanshire-Fife-Edinburgh STAG Study		Job No. S 106302	
		Project No.	
Subject of Meeting	STAG Workshop	Meeting No.: 1	Date & Time: 22-Apr-09 10:00
Attendees:	Alex Macaulay AM SEStran	Venue: SEStran offices	Notes By: Marwan AL-Azzawi
	Ian Mathie IM SEStran		
	Alastair Short AS SEStran	Distribution: Attendees plus Project Team	
	Trond Haugen TH SEStran		
	Alistair Clyne AC Fife Council		
	Jane Findlay JF Fife Council		
	Marwan AL-Azzawi MA Scott Wilson		
	Jonathan Campbell JC Scott Wilson		

Item No.	NOTES	ACTION
1	<p><u>Introductions and Background</u></p> <p>The purpose of this STAG Workshop was to discuss the issues relating to the Clackmannanshire-Fife-Edinburgh (CFE) STAG Study. Scott Wilson prepared a presentation which was used to guide the discussions and is attached to these notes. These minutes reflect the items raised during the discussions</p> <p>Mac West from Clackmannanshire Council gave his apologies, however he sent a completed STAG Questionnaire prior to the workshop. This completed questionnaire was presented to the rest of the attendees and key relevant elements were input into the discussions</p>	
2	<p><u>Study Approach</u></p> <p>JC gave a brief overview of the study process being followed. This was based on the new version of the Scottish Transport Appraisal Guidance (STAG) and included the following workstreams:</p> <ul style="list-style-type: none"> • Data Collection and Surveys; • Pre-Appraisal & Initial STAG Appraisal; • Transport Modelling; • Engineering & Costs; • Detailed STAG Appraisal; and • Study Reporting <p>Some of the workstream above can be carried out simultaneously and dialogue with key stakeholders would be held during the study</p>	
3	<p><u>Study Area</u></p> <p>After some discussion, it was agreed that the study area is the region confined to the north shore of the Forth, bounded by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing both the A985 trunk route and Alloa to Dunfermline rail line before, before then finally linking Kincardine up with Alloa in the Tullibody area</p> <p>The implications of travel on (mainly parallel) routes outwith the study area would be considered in relation to the performance of options during the appraisal.</p>	

Item No.	NOTES	ACTION
4	<p><u>Issues/Problems</u></p> <p>The issues and problems experienced in the corridor were debated. After some discussion, the following was highlighted and agreed:</p> <ul style="list-style-type: none"> • there is a need to improve connectivity to and from Clackmannanshire from the west and east; • connectivity should be improved for south and west Fife to Edinburgh; • connections for passengers and freight should be improved to serve the emerging plans from National Planning Framework 2 (NPF2) and Freight Action Plan (FAP); • connectivity from Dunfermline and west Fife to Clackmannanshire, Stirling and west Scotland should be improved; • road safety could be improved along the A907 and A985; • carbon usage by both road and rail should be reduced to correspond with national transport objectives; • local environmental impacts should be minimised such (e.g. severance and noise); • the sustainability of freight distribution for local industrial areas could be improved; and • for freight at a local level, connections to local freight generators/attractors could also be improved <p>The above issues were then discussed and agreed as being the starting point for the Transport Planning Objectives (TPO) for the STAG appraisal. They could be cross-referenced to the RTS</p> <p>{Post Meeting Note – if time/budget limitations permit, the TPO's could be cross referenced to the LTS's of the 2 Councils}</p>	SW
5	<p><u>Options</u></p> <p>The following potential options for travel improvements were discussed:</p> <p><u>Rail</u></p> <ul style="list-style-type: none"> • Charlston Chord at Rosyth Port; and • extend Borders Rail to Alloa (TMfS has reference case of Borders extended to Inverkeithing, so extend this services from Inverkeithing to Alloa) <p><u>Bus</u></p> <ul style="list-style-type: none"> • express buses to the key areas described in the issues/problems above and the TPOs; • for external connectivity, express bus services through Kincardine Bridge to Glasgow and Edinburgh; and • encourage bus trips to Ferrytoll Park and Ride interchange to change to go to Edinburgh <p><u>Water</u></p> <ul style="list-style-type: none"> • passenger service from Stirling to Alloa to Rosyth to Granton (Edinburgh); and • freight service (barges) from Alloa to Grangemouth to Rosyth to Inverkeithing to Burntisland to Kirkcaldy to Leven/Methil Docks <p><u>Road</u></p> <ul style="list-style-type: none"> • Rosyth bypass; and • upgrades to A985 and A907 <p><u>Park and Ride</u></p> <ul style="list-style-type: none"> • Cambus Park and Ride • Other stops at key locations <p><u>Cycling</u></p> <ul style="list-style-type: none"> • extend cycle lane from Slacks/Bogside to Alloa 	

Item No.	NOTES	ACTION
6	<p><u>New Developments</u></p> <p>The following new developments in the area were highlighted:</p> <p><u>Transport Schemes</u></p> <ul style="list-style-type: none"> • Rosyth Bypass; and • rail upgrade / re-signalling between Larbert and Stirling. SW should refer to the Route Utilisation Strategy (RUS) <p><u>Transport Services</u></p> <ul style="list-style-type: none"> • ScotRail have announced plans for 2 trains per day from Alloa to Stirling to Edinburgh (assumed to start 2010);and • new Rosyth to Zeebrugge ferry service <p><u>Land Use</u></p> <ul style="list-style-type: none"> • various new land-use plans are proposed. After discussion, it was felt the best way ahead would be to set up a meeting with Fife and Clackmannanshire Council planners and also SESplan 	MA/TH
7	<p><u>SWOT</u></p> <p>After some discussion, the following SWOT issues were noted:</p> <p><u>Strengths</u></p> <ul style="list-style-type: none"> • well connected for businesses across Forth Estuary; • international trade links via Rosyth; and • 82% of Fife Council residents work in their council area (RTS Table 8.1) <p><u>Weaknesses</u></p> <ul style="list-style-type: none"> • limited choices of travel; • not a largely self-contained corridor relying on employment elsewhere; • significant congestion at East end of corridor; • 56% of Clackmannanshire residents work in the Council area (RTS Table 8.1); and • 45% of total employment in SEStran is in Edinburgh area but only 31% of population, suggesting Edinburgh depends on its hinterland for employment catchment therefore reinforcing the need for Edinburgh to have good connectivity <p><u>Opportunities</u></p> <ul style="list-style-type: none"> • potential to develop an intermodal freight hub at Rosyth; • potential to create a barge network within the Forth; • potential to lever funding from the Strategic Land Allocations for financing some improvements; and • 84% of trips between Local Authorities in SEStran are made by car (RTS Table 8.2) so there is potential to reduce this dependence <p><u>Threats</u></p> <ul style="list-style-type: none"> • increasing travel distances; • insufficient demand; • FRC leading to increased car trips; and • less than 4% of trips originating in Fife end up in Strathclyde and Central Scotland (Fife Council LTS Fig 4.3) 	
8	<p><u>Any Other Business</u></p> <p>There is a need to check the proposed modelling system (TMfS:05H) has the most recent planning data. SW should determine what MVA are assuming in terms of planning data and JF to cross-reference with Fife Council planning department</p>	MA/JF

Copy to:



Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	27 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 14:25	hrs
Interviewee Name	Brian Peat	Organisation	First Group
Address		E-mail & telephone	01324 602200 Brian.Peat@firstgroup.com
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: Brian Peat, Commercial Manager Organisation (if relevant): First Group Address: Tel. No: 01324 602200 Email: Brian.Peat@firstgroup.com
2	KEY ISSUES
2.1	What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth) , considering in particular the modes which you regard as being the most relevant to yourself or your organisation? <ul style="list-style-type: none"> • It is not very good at the moment, direct services are limited, First pulled out of this area previously as the services were not commercially viable.
2.2	What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor , considering any mode specific issues? <ul style="list-style-type: none"> • Bus service provision is limited. • Rail routes which serve the area are circuitous.
2.3	What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied? <ul style="list-style-type: none"> • Bus services are limited and rail links circuitous as above. • Through traffic from Alloa to Dunfermline is very small.
2.4	What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes? <p>a) currently:</p> <ul style="list-style-type: none"> • The road layouts are such that it is hard to join places together (e.g. Clackmannan and Culross) the company previously experienced a high number of accidents with the large buses on these routes. • The area has a small market of travel from Clackmannan to Dunfermline. <p>b) future, short term (up to 2012):</p> <p>c) future, medium/longer term (up to 2020):</p>
2.5	Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh ? <ul style="list-style-type: none"> • Aware of number of developments in Dunfermline but these are linked mainly to Edinburgh, not the study corridor.
3	OTHER ISSUES
3.1	Are there any other issues that should be considered as part of the study? <ul style="list-style-type: none"> • Considering the size of the market, what type of public transport improvements (e.g. quality, services etc) would attract a larger market to public transport.



Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	27 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 13:30	hrs
Interviewee Name	David Eaglesham	Organisation	Road Haulage Association
Address		E-mail & telephone	01314724180 d.eaglesham@rha.uk.net
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: David Eaglesham, Policy Advisor Organisation (if relevant): Road Haulage Association Address: Tel. No: 01314724180 Email: d.eaglesham@rha.uk.net
2	KEY ISSUES
2.1	What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth) , considering in particular the modes which you regard as being the most relevant to yourself or your organisation? <ul style="list-style-type: none"> • The A985 could do with upgrading, especially to cope with increasing traffic from Kincardine bridges. • Road links into Rosyth could be upgraded to cater for 44 tonne trucks. • Would be a good idea to develop the old rail lines to link directly into Rosyth ferry port, for freight.
2.2	What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor , considering any mode specific issues? <ul style="list-style-type: none"> • Roads in corridor could do with upgrading as above. • The Stirling – Alloa rail line could be extended further to Rosyth. • Road links between Rosyth and M90 could do with upgrading.
2.3	What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied? <ul style="list-style-type: none"> • They are met to a certain extent, however, in order to grow the economy the roads should be upgraded. This would help reduce congestion and improve safety, leading to easier freight movements.
2.4	What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes? <p>a) currently:</p> <ul style="list-style-type: none"> • There are now two sets of flows from Kincardine bridges using the A985, this should be upgraded to cope with these flows. <p>b) future, short term (up to 2012):</p> <ul style="list-style-type: none"> • If freight forecasts for new ferry service come to fruition, the links to Rosyth Port will have to be examined to determine if they can cope with demand, given the new ferry is larger than the previous service operated. <p>c) future, medium/longer term (up to 2020):</p> <ul style="list-style-type: none"> • If ferry services increase frequency to daily or service destinations increased (e.g. to serve Norway) there will be more HGVs so roads will have to be examined to determine if they can cope with flows. • Will have to look at other links, such as those to the M90 and their ability to cope with freight movements.

2.5	<p>Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh?</p> <ul style="list-style-type: none">• Possible development plans by Babcock at Rosyth Port would increase traffic flows.
3	OTHER ISSUES
3.1	<p>Are there any other issues that should be considered as part of the study?</p> <ul style="list-style-type: none">• The traffic flows between the two Kincardine and current and future Forth crossings and the interaction between these sites should be studied.



Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	25 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 15:10	hrs
Interviewee Name	Gavin Scott	Organisation	Freight Transport Association
Address		E-mail & telephone	01786 457503 gavin.scott@fta.co.uk
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: Gavin Scott Head of Policy, Scotland Organisation (if relevant): Freight Transport Association Address: Tel. No: 01786457503 Email: gavin.scott@fta.co.uk
2	KEY ISSUES
2.1	What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth) , considering in particular the modes which you regard as being the most relevant to yourself or your organisation? <ul style="list-style-type: none"> • The A985 is a poor road, acting as the main alternative route when the Forth Road Bridge is closed, requires serious upgrading. • With the planned forth replacement crossing, must plan ahead to link in with Halbeath and M90/M9. • The access to Rosyth needs improved; in particular there should be proper rail freight access. • The Alloa-Kincardine rail line should be extended to Rosyth/Dunfermline, this would allow more rail services to operate and relieve road traffic. • The new Clackmannanshire Bridge is a good improvement, although the refurbishment of the current Kincardine Bridge is a very important issue. • A977 to North needs improving.
2.2	What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor , considering any mode specific issues? <ul style="list-style-type: none"> • N/A
2.3	What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied? <ul style="list-style-type: none"> • The vast majority of freight is road based but a significant number of people travel by rail
2.4	What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes? <p>a) currently:</p> <ul style="list-style-type: none"> • There are problems with the road infrastructure, particularly the A985 which requires straightening, improved sight lines etc. • As part of NPF2 and the development of Rosyth as a container terminal, and the possible increased frequency of the Rosyth to Zeebrugge ferry service to a daily service, a rail chord needs to be added to serve Rosyth. • Rail chord should link Rosyth/Dunfermline to Alloa line. <p>b) future, short term (up to 2012):</p> <ul style="list-style-type: none"> • Nothing much will be changing, looking towards replacement Forth crossing. <p>c) future, medium/longer term (up to 2020):</p> <ul style="list-style-type: none"> • Replacement crossing needs to be fully integrated with key transport system. • Grangemouth Port will be full, Rosyth needs to be developed as a container port with a rail facility.

2.5	<p>Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh?</p> <ul style="list-style-type: none">• There are plans to develop Rosyth as a container port.• There are plans to increase the frequency of the ferry service from Rosyth to Zeebrugge.
3	OTHER ISSUES
3.1	<p>Are there any other issues that should be considered as part of the study?</p> <ul style="list-style-type: none">• When will the upgrading of the Kincardine Bridge take place? This is very important for freight transport.



Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	28 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 09:55	hrs
Interviewee Name	John Yellowlees	Organisation	First Scotrail
Address		E-mail & telephone	0141 3354787 John.yellowlees@firstgroup.com
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: John Yellowlees, External Relations Manager Organisation (if relevant): First Scotrail Address: Tel. No: 01413354787 Email: john.yellowlees@firstgroup.com
2	KEY ISSUES
2.1	What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth) , considering in particular the modes which you regard as being the most relevant to yourself or your organisation? <ul style="list-style-type: none"> • There isn't a passenger train line in the area, the current freight line has speed restrictions of 35mph and is unsuitable for passenger services.
2.2	What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor , considering any mode specific issues? <ul style="list-style-type: none"> • Bus services in the area are subsidised, indicating a lack of demand in the area. The view is if the train line were to operate passenger services there would not be much demand for local services. • However, looking at the bigger picture there could be demand between Fife and Glasgow and Alloa and Edinburgh.
2.3	What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied? <ul style="list-style-type: none"> • There is an existing freight line which is not used between Longannet and Dunfermline, showing little demand for freight transport on this route. • There are train services from Alloa to Edinburgh via Stirling. • There is a high quality bus service from Dunfermline to Glasgow which suggests a demand for travel in this direction.
2.4	What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes? <p>a) currently:</p> <ul style="list-style-type: none"> • Electrification of Stirling – Alloa line, will not extend beyond Clackmannan. • Clackmannanshire now has 2 road bridges congestion should reduce as a result. <p>b) future, short term (up to 2012):</p> <ul style="list-style-type: none"> • Commuting to Edinburgh may decrease as a result of the collapse of the banking sector in Edinburgh. <p>c) future, medium/longer term (up to 2020):</p> <ul style="list-style-type: none"> • Road congestion will increase as more roads are built, encouraging more cars on to the road.



2.5	<p>Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh?</p> <ul style="list-style-type: none">• The electrification of the Stirling-Alloa rail line.
3	OTHER ISSUES
3.1	<p>Are there any other issues that should be considered as part of the study?</p> <ul style="list-style-type: none">• To what extent can the study contribute to improved train capacity between Dunfermline and Edinburgh?• Doesn't feel the rail link to Rosyth has anything to do with the study, there is not enough road freight at the moment with only three boats a week, so little demand for rail freight. The current link to Rosyth is not used so would favour trains going into and out of Dunfermline rather than building the Charleston Chord.



Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	27 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 13:40	hrs
Interviewee Name	Mike Murray	Organisation	Babcock
Address		E-mail & telephone	01383424364 Mike.murray@babcock.co.uk
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: Mike Murray, Site Development Manager Organisation (if relevant): Babcock Address: Tel. No: 01383 424364 Email: mike.murray@babcock.co.uk
2	KEY ISSUES
2.1	What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth) , considering in particular the modes which you regard as being the most relevant to yourself or your organisation? <ul style="list-style-type: none"> • Believe the A985 could benefit from upgrading, particularly at Rosyth and link into the Rosyth bypass. • The upgrading of the Stirling-Alloa-Kincardine line has been encouraging, this could be continued to Dunfermline.
2.2	What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor , considering any mode specific issues? <ul style="list-style-type: none"> • Most people within the corridor are dependant on personal transport; • If public transport was increased this may encourage people to leave the car and use other modes. • Improving accessibility of Rosyth by public transport would be better and potential rail connection to Rosyth would be helpful.
2.3	What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied? <ul style="list-style-type: none"> • At the moment passenger transport is unsatisfactory, there is no alternative to bus services and improvements are needed.
2.4	What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes? <p>a) currently:</p> <ul style="list-style-type: none"> • The A985 needs upgrading, there is an opportunity at present to integrate with the new Forth crossing and Clackmannanshire bridge, neither project seems to include the corridor. <p>b) future, short term (up to 2012):</p> <ul style="list-style-type: none"> • It is hoped that the new Forth Crossing development will address the problems noted in the short term. <p>c) future, medium/longer term (up to 2020):</p> <ul style="list-style-type: none"> • In the longer term rail improvements should be addressed, possibly connecting in with the forth crossing.
2.5	Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh ? <ul style="list-style-type: none"> • There are plans for the Rosyth waterfront to be expanded, this requires better connections to both the east and west.
3	OTHER ISSUES



3.1	Are there any other issues that should be considered as part of the study? <ul style="list-style-type: none"><li data-bbox="367 336 1332 380">• No, but would like to see details of any plans which are made at a later stage.
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Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	25 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 15:30	hrs
Interviewee Name	Nigel Wunsch	Organisation	Network Rail
Address		E-mail & telephone	0141 555 4022 Nigel.wunsch@networkrail.co.uk
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: Nigel Wunsch, Principal Route Planner, Scotland Organisation (if relevant): Network Rail Address: Tel. No:0141 555 4022 Email: nigel.wunsch@networkrail.co.uk
2	KEY ISSUES
2.1	What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth) , considering in particular the modes which you regard as being the most relevant to yourself or your organisation? <ul style="list-style-type: none"> • There is adequate transport infrastructure for those wishing to transfer between Clackmannanshire and Fife.
2.2	What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor , considering any mode specific issues? <ul style="list-style-type: none"> • There are good bus and road services through the corridor. • There is no rail passenger service at moment, doesn't think the corridor needs one.
2.3	What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied? <ul style="list-style-type: none"> • There are good freight transport services for coal service to Longannet and capacity for others to operate.
2.4	What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes? <p>a) currently:</p> <ul style="list-style-type: none"> • Currently not aware of any transport issues in area, the transport links are adequate at the moment. <p>b) future, short term (up to 2012):</p> <ul style="list-style-type: none"> • As above <p>c) future, medium/longer term (up to 2020):</p> <ul style="list-style-type: none"> • May require more bus services to be operated. • Links between Fife and Edinburgh are more of an issue to be resolved than Clackmannanshire to Fife.
2.5	Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh ? <ul style="list-style-type: none"> • Not aware of any committed schemes. • The rail links between Edinburgh and Fife will be affected and improved as a result of the Edinburgh-Glasgow rail improvements programme.
3	OTHER ISSUES
3.1	Are there any other issues that should be considered as part of the study? <ul style="list-style-type: none"> • Nothing further to add – refer to Audrey McArthur's email.



Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	28 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 10:20	hrs
Interviewee Name	Nik Scott-Gray	Organisation	Forth Ports
Address		E-mail & telephone	Nik.scott-gray@forthports.co.uk
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: Nik Scott-Gray, Business Development Manager – Scottish Ports Organisation (if relevant): Forth Ports PLC Address: Tel. No: 01324 668401 Email: nik.scott-gray@forthports.co.uk
2	KEY ISSUES
2.1	<p>What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth), considering in particular the modes which you regard as being the most relevant to yourself or your organisation?</p> <p>Road</p> <ul style="list-style-type: none"> • The new Clackmannanshire Bridge has made a significant difference and reduced congestion in the area. • The A985 is not ideal for freight, many drivers avoid this road and take the M9 to the Forth Road Bridge instead to access Rosyth. • The A977 to Kinross is not suitable for the level of HGV traffic it carries. <p>Rail</p> <ul style="list-style-type: none"> • From the Rosyth perspective the current rail head is not active, at present trains would have to go out to the East Coast Main Line then loop round, a link to the Alloa line would be useful and encourage more transport. <p>Overall</p> <ul style="list-style-type: none"> • The Clackmannanshire side of the corridor does not have good transport connections to the east and west. • There have been rail enhancements in the area but the lines still need to improve. <p>2.2 What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor, considering any mode specific issues?</p> <ul style="list-style-type: none"> • Forth Ports currently have good interaction with Fife council and there is now a spine road linking directly to the M90, this has eased a lot of traffic congestion in the area. • They currently have little interaction with Clackmannanshire council and it would do some good to interact with the council to understand the volumes of freight traffic put on the roads from Rosyth and Grangemouth ports. <p>2.3 What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied?</p> <ul style="list-style-type: none"> • Forth Ports have a good relationship with Fife Council so a lot of their concerns/requirements have been met. • This is not so much the case in Clackmannanshire; it's a question of communication and interaction. <p>2.4 What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes?</p> <p>a) currently:</p> <ul style="list-style-type: none"> • The roads and existing infrastructure in the area are inadequate. In Clackmannanshire a lot of HGVs are travelling on A roads, leading to congestion at

2.5	<p>certain times of the day.</p> <ul style="list-style-type: none"> • There are a lot of vehicles using the current A roads as a short cut to Grangemouth however due to the age and nature of the roads this means passing through a lot of towns which is not ideal for the level of traffic. <p>b) future, short term (up to 2012):</p> <ul style="list-style-type: none"> • There are plans for growth at the ports. This includes increasing the number of vessels serving the Rosyth to Zeebrugge route from 1 vessel three times a week to 2 vessels six times a week if the freight demand is large enough. • This increase in freight transport will lead to more HGVs on the roads and compound the problems on the A roads. <p>c) future, medium/longer term (up to 2020):</p> <ul style="list-style-type: none"> • There needs to be an improvement in the infrastructure and more dual carriageways and avoidance of villages. <p>Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh?</p> <ul style="list-style-type: none"> • Not aware of any developments in Clackmannan. • There are developments around Rosyth port, including housing developments which do not fit with the port activities and HGV traffic.
3	OTHER ISSUES
3.1	<p>Are there any other issues that should be considered as part of the study?</p> <ul style="list-style-type: none"> • The preferences for freight should be, make sure it can move freely, limit congestion as much as possible and manage car traffic. • There should be an extension of the Kincardine – Alloa freight line to allow more inter-Scottish freight traffic.



Project Data			
Title	Clackmannanshire – Fife - Edinburgh Corridor Study	Reference Number	S106302
Call Information			
Date	25 May, 2009		
From (Receiver)	Lynsey MacPhail, SWS&I	Time 14:50	hrs
Interviewee Name	Paul Phillips	Organisation	DB Schenker
Address		E-mail & telephone	08701406060 paul.phillips@dbschenker.
Actions			
Please return call <input type="checkbox"/>		Will call again <input type="checkbox"/>	

1	STAKEHOLDER DETAILS
1.1	Please confirm your name and contact details: Name/position: Paul Phillips, Business Manager Scotland (Networks) Organisation (if relevant): DB Schenker Address: Tel. No: 08701406060 Email: paul.phillips@dbschenker.
2	KEY ISSUES
2.1	What is your view of the current transport infrastructure (rail links, rail infrastructure roads, bus station, bus stops etc) between Clackmannanshire (Alloa) and Fife (Dunfermline/Rosyth) , considering in particular the modes which you regard as being the most relevant to yourself or your organisation? <ul style="list-style-type: none"> • Lack of gauge clearance at moment, rail network can't cater for large enough freight containers. • There are problems with the availability of efficient paths for freight services.
2.2	What is your view of the current transport services (e.g. rail, bus, other road etc) in the Clackmannanshire – Fife – Edinburgh corridor , considering any mode specific issues? <ul style="list-style-type: none"> • N/A
2.3	What is your view on the extent to which the needs of passenger & freight transport in the Clackmannanshire – Fife – Edinburgh corridor are satisfied? <ul style="list-style-type: none"> • Did not wish to answer – feel a very general question.
2.4	What are, in your opinion, the current and potential future key transport problems in the corridor between Clackmannanshire, Fife and Edinburgh and what could be the underlying causes? <p>a) currently:</p> <ul style="list-style-type: none"> • There are capacity issues at moment – lack of capacity for trains to pass through • Current gauge sizes to Cameron Bridge are an issue <p>b) future, short term (up to 2012):</p> <ul style="list-style-type: none"> • As before, with capacity becoming more of an issue. <p>c) future, medium/longer term (up to 2020):</p> <ul style="list-style-type: none"> • As before, with capacity becoming more of an issue.
2.5	Are you aware of any plans or schemes (e.g. housing, industry etc within this corridor), that are presently committed or are in preparation that may have a significant impact on future transport demand between Clackmannanshire, Fife and Edinburgh ? <ul style="list-style-type: none"> • No
3	OTHER ISSUES
3.1	Are there any other issues that should be considered as part of the study? <ul style="list-style-type: none"> • Would like to see the retention of rail freight capacity at a realistic cost on the Methil branch. • Refer to Karen McFarlane's e-mail.

Appendix B

Initial Environmental Report

S106302 Clackmannanshire-Fife-Edinburgh Transport Options Study

Clackmannanshire-Fife-Edinburgh (CFE) Transport Options Study: Initial Assessment STAG
Environmental Appraisal

25-06-09

Introduction

This appraisal outlines the potential environmental impacts of the sixteen packages that have been identified for the Clackmannanshire-Fife-Edinburgh Transport Options Study.

A number of initial consultations have been carried out and are reported below:

Consultations

The following consultees were contacted:

- Babcock Marine;
- City of Edinburgh Council – Planning and Strategy;
- Clackmannanshire Council – Biodiversity;
- Clackmannanshire Council – Development Management (Planning);
- Clackmannanshire Council – Economic Development;
- Clackmannanshire Council – Rangers;
- Clackmannanshire Council – Roads, Traffic and Transportation;
- DB Schenker;
- Falkirk Council – Development Services;
- Fife Chamber of Commerce and Enterprise Ltd;
- Fife Council – Business & Strategy, Economic Development;
- Fife Council – Development Services, Business & Strategy, Local and Community Policy;
- Fife Council – Development, Promotion and Design;
- Fife Council – Environmental Services;
- Fife Council – TAPIF Environmental Information Centre;
- First Scotrail;
- First Group;
- Forthports Plc;
- Freight Transport Association;
- Health and Safety Executive (HSE);
- Historic Scotland;
- Mackies Coaches;
- Moffat and Williamson;
- Network Rail;
- Road Haulage Association;
- Scottish Enterprise Fife;
- Scottish Enterprise Forth Valley;
- Scottish Environmental Protection Agency (SEPA);
- Scottish Natural Heritage (SNH);
- Scottish Water;
- Stagecoach in Fife;
- Stirling Council – Environment Services;
- The Scottish Government – Director General Environment;
- The Scottish Government – General Economy; and

- Transport Scotland

To date responses have been received either in writing or verbally from SNH, Clackmannanshire Council, City of Edinburgh Council, Fife Council, First, Historic Scotland HSE, Network Rail, the Road Haulage Association, Transport Scotland and the Scottish Government Climate Change Division. The responses are summarised in the table below:

Consultee	Comments
Fife Council Environmental Services	<p>General comments regarding status of development plans and transport schemes. Can see benefit in rail and water options taking freight off road network. Provided copy of Fife State of the Environment Report.</p> <p>Provided details and information on current noise complaint applicable to SAK railway.</p> <p>Provided species records and biological information.</p>
Scottish Natural Heritage (SNH)	<p>Provided links to sources of information on designated sites and biodiversity</p>
City of Edinburgh Planning	<p>Identify the following projects to have an impact on South Fife: Granton Harbour and Waterfront Redevelopments; Leith Docks Western Harbour Redevelopment; Waterfront Promenade Redevelopment; Kincardine Bridge, Forth Replacement Crossing and links; Burntisland to Granton Catamaran Crossing; Kirkcaldy to Leith Docks Hovercraft; and West Edinburgh Proposals.</p> <p>Key concern is cross boundary impacts on West Edinburgh and cross Forth travel. West Edinburgh identified in NPF2 as nationally important strategic area esp with new Forth Crossing and Airport. Makes reference to the evolution of West Edinburgh Planning Framework and Rural West Edinburgh Local Plan. Make reference to STAG study in the West Edinburgh area.</p>
Clackmannanshire Council Planning	<p>Provided information on transport modeling. Indicated that there would be no immediate strategic transport improvements in Clackmannanshire due to SAK railway and new Kincardine crossing.</p>
Clackmannanshire Council Economic Development Manager	<p>Application made to Scottish Govt. for £60 million Town Centre Regeneration Fund for Alloa – confident that they will receive an allocation. Have two Business Improvement Districts in partnership with local businesses – Ten Business Parks and Town Centre. Would welcome any developments which would improve connections to/from Alloa in particular rail option to Dunfermline.</p>
First Scotland East	<p>Principal bus operator in Clackmannanshire and serves Kincardine. Have operated Kincardine to Edinburgh services in the past. Would like to find out more about the options in order to provide further details and welcome opportunity to discuss them – Suggested a meeting.</p>
Health and Safety Executive (HSE)	<p>No useful information to provide.</p>
Network Rail	<p>Capacity of Forth Rail Bridge presents operational constraints. Freight services destined for Longannet only operate one day a week on Sunday afternoons after complaints from residents in Culross regarding noise. Mentioned proposed new station for Dunfermline but questions the need for a third station for the town. Other constraints such as the single line between Charlestown Jn and Alloa and the current linespeed of 35mph would require some investment to increase it.</p> <p>Other capacity constraints to be considered are those proposed between</p>

	Dalmeny Jn and Saughton Jn through the provision of a chord which would enable additional services to run between Edinburgh and Glasgow.
Historic Scotland	Cannot provide detailed comments due to the extensive study area – provided links to Historic Scotland information sources (Pastmap and GIS) and recommend contacting local authority archaeologists. Look forward to receiving more detailed information.
Transport Scotland	Require further details – Requested a meeting.
Scottish Government Climate Change Division	Should ensure no significant impacts on surface and groundwater. SEPA should be involved in such discussions. Refer to Water Environment (Controlled Activities) Regulations 2005, and SEPA's Pollution Prevention Guidance (PPG) series, in particular PPG 5. SUDs should be implemented where possible. Measures should be adopted that ensure the safe and appropriate storage and handling of substances harmful to the water environment, such as fuel or oil within 110% containment bunds. Both private water supplies and watercourses require identification and protection. Provide link to Scottish Govt. Noise Mapping website.
Road Haulage Association (RHA)	Development of corridor very important in terms of freight. In particular would wish to upgrade road links to Rosyth ferry port and along the length of A985.

The option packages on which the environmental appraisal was undertaken are:

Rail Options:

- Option 1a: Old Railway line Alloa to Rosyth (passenger and freight);
- Option 1b: New alignment to avoid Longannet;
- Option 1c: Disused Railway Line between Alloa and Dunfermline with new alignment to Rosyth (National Cycle Route 764);

Bus Options

- Option 2a: Express Bus between Alloa and Rosyth (A985) inc limited stops;
- Option 2b: Express Bus between Alloa and Rosyth (A907) inc limited stops;
- Option 2c: Express services from Dunfermline to Glasgow via (A907) M876/M80;
- Option 2d: Express services from Alloa to Edinburgh via M9;

Waterborne Options:

- Option 3a: Passenger service from Stirling to Alloa to Rosyth, Bo'ness to Granton (Edinburgh);
- Option 3b: Freight Service (barge) from Alloa to Grangemouth to Rosyth to Inverkeithing to Burntisland to Kirkcaldy to Leven/Methil Docks;

Road Based Solutions:

- Option 4a: Upgrade A985 (A977) ;
- Option 4b: Upgrade A907 (A823); and
- Option 4c: Upgrade A985 and A907;

Planning Context

The proposal offers a major opportunity to implement a number of local and strategic policies, as a mechanism for promoting sustainable development. The proposal would encourage a more efficient use of the private car, improve the quality of the environment, and would increase access to a public transport system serving areas of employment, residence and recreation, therefore promoting and implementing social inclusion.

Route Appraisal

The following appraisal addresses the four option packages identified above. The appraisal describes the likely environmental impacts for each option package, within the study area.

A seven-point scale is used for an overall appraisal score within each AST. This is outlined below:

✓✓✓ major benefit		××× major negative impact
✓✓ moderate benefit	O no impact	×× moderate negative impact
✓ minor benefit		× minor negative impact

Option 1a: Old Railway line Alloa to Rosyth (Passenger and Freight)

Noise and Vibration

There are likely to be no impacts related to construction if passenger and freight services use existing line and infrastructure. If widening is required noise and vibration impacts will be experienced during construction, and are likely to range from moderate to major negative for receptors next to the line. During operation the re-introduction of passenger train services into an area previously without passenger rail services will result in increased noise and vibration impacts as a result in the increase in frequency of train movements. Currently freight trains coming from Dunfermline and serving Longannet power station only operate on Sunday afternoons after complaints from residents located adjacent to the line regarding noise. The introduction of additional freight services coupled with passenger services could compound this situation resulting in major negative impacts to residential receptors.

Air Quality

There are likely to be no impacts if passenger and freight services use existing line and infrastructure. There are likely to be moderate negative impacts associated with construction of additional line on local air quality, though these will be temporary. There will also be permanent negative impacts due to the re-introduction of passenger rail services into an area previously without passenger rail services. There may be minor beneficial impacts on the local roads due to a potential reduction in congestion at major pinch points.

The proposal will help facilitate a modest modal shift from road to rail, resulting in minor beneficial impacts on greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There is potential for pollution to the Firth of Forth (SPA/Ramsar/SSSI), Bluther Burn, Lyne Burn, and other watercourses in relation to this proposed option due to widening of crossings, etc. In particular, a large section of the existing line is located immediately adjacent to the Firth of Forth shoreline. Pollution of watercourses and waterbodies may result from construction activities (sediment, oil spills) in addition to pollution during operation. Taking appropriate mitigation

measures will minimise the risk. The potential for industrial contamination should be further investigated, as the option is located in a former mining area.

Geology and Soils

There are likely to be no impacts if using the existing railway line infrastructure. However, if an additional line is required there are likely to be moderate/major negative impacts during construction associated with groundbreaking work, and the potential removal of spoil, although there could be moderate/major negative impacts if there is significant realignment or widening. There is a risk of negative impacts resulting from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The Firth of Forth is located adjacent to the route option and is designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site for much of the length. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. There is the potential for disturbance to both the bird populations and habitats during the construction period associated with railway alignment, specifically between Longannet and Torryburn. Where there is potential for the integrity of European designated sites (e.g. the Firth of Forth SPA) to be adversely affected, an Appropriate Assessment (AA) may be required¹.

The proposal runs close and adjacent to areas of ancient woodland around Blair Castle, Dunimarle Castle, Torryburn, Pitliver House and Gallowridge Hill. The proposal runs close to the Site of Importance for Nature Conservation at Valleyfield.

There is potential for impacts on the Bluther Burn, Lyne Burn, and other smaller watercourses during construction of the railway improvements. Otters may be present along the Bluther Burn, Lyne Burn, Fordell Burn, and possibly on some of the smaller watercourses, and construction activity has the potential to cause disturbance.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

Mature trees or buildings along the proposed route may provide suitable roost sites for bats. Therefore any proposals requiring removal or disturbance of mature trees or buildings may have negative impacts on any resident bat populations.

Badger setts and foraging habitat are likely to be present along the alignment, as the mix of woodland and agricultural habitats represent favourable conditions and there are existing records for the area.

Landscape

Designations potentially affected: 5 Conservation Areas, 1 Area of Great Landscape Value, 3 Historic Gardens and Designed Landscapes (Dunimarle Castle, Culross Abbey and Valleyfield), Ancient Woodland.

Landscape Character Assessment:

¹ S48 of the Conservation (Natural Heritage &c) Regulations 1994 requires the competent authority to undertake an Appropriate Assessment where it is considered that a development or project unrelated to the conservation management of that site is likely to have significant effects upon the features of the site for which the area has been designated. For the purposes of an Appropriate Assessment, the competent authority is defined as the organisation that grants consent for the scheme to proceed

- Fife LCA - Lowland Hills and Valleys, Coastal Hills, Coastal Flats Landscape Character Types
- Clackmannanshire LCA – River Valleys (Carse of Forth), Valley Fringes (Devon/Forth) Landscape Character Types

The landscape is relatively flat or gently undulating sloping gradually towards the Firth of Forth. The area is predominately agricultural with a number of larger areas of woodland in the wider landscape and small copses and shelter belts in the immediate vicinity of the route.

The railway is already in operation so the addition of more trains would not have significant landscape effects, however widening sections of the route with associated earthworks and vegetation loss could potentially have significant adverse effects initially. Over time the effects would reduce as associated planting matures. The addition of new station buildings and associated car parking etc. could potentially adversely affect conservation areas and would need to be carefully sited and designed. Major planned new developments in the area may also impact on the design. Impacts are likely to be minor negative.

Visual Amenity

The route passes through built up areas, areas of countryside and coastal areas and is crossed by other routes. There is likely to be a large number of highly sensitive residential receptors and other less sensitive receptors. In the coastal areas, where the landscape is flat and where there is little screening, changes to the line are likely to be highly visible.

The addition of more trains on the already operational line will not have significant visual effects but widening sections of the route with associated earthworks and vegetation loss could potentially have significant adverse effects on receptors located adjacent or close to the route. Impacts are likely to be major/moderate negative impact.

Land Use

The majority of the railway line is already intact and operational, however if the route requires widening to accommodate an additional line, there could be major negative impacts by virtue of increased land take and potential demolition of buildings. The surrounding land uses are predominately rural, coastal and settlements.

Cultural Heritage

The proposed route option would run in close proximity to a number of Listed Buildings and Scheduled Monuments. There is a Conservation Area in Culross. Depending on the final alignment impacts are likely to vary from minor to major negative upon these receptors. Once the detailed designs are known, it will be possible to determine the potential scale of impact and mitigation measures required. There would be no impacts to these features during operation. There is the possibility of negative impacts upon NMRS sites.

Option 1b: New alignment to avoid Longannet

Noise and Vibration

Noise and Vibration impacts will be experienced during construction, and are likely to be major negative for receptors next to the line. During operation there would be an increase in train movements into an area previously without passenger services resulting in minor/moderate negative impacts. There will also be increased train movements on the existing section of the line which will cause some noise and vibration impacts. Currently freight trains coming from Dunfermline and serving Longannet power station only operate on Sunday afternoons after complaints from residents located adjacent to the line regarding noise. The introduction of

additional freight services coupled with passenger services could compound this situation resulting in major negative impacts to residential receptors.

Air Quality

There are likely to be moderate negative impacts associated with construction on local air quality, though these will be temporary. There may be minor beneficial impacts on the local roads due to a potential reduction in congestion at major pinch points.

The proposal will help facilitate a modest modal shift from road to rail, resulting in minor beneficial impacts on greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There is potential for pollution to the Firth of Forth (SPA, Ramsar, SSSI), Bluther Burn, Lyne Burn, Fordell Burn and other watercourses in relation to this proposed option as a result of widening crossings, etc. In particular, a large section of the existing line is located immediately adjacent to the Firth of Forth shoreline. Pollution of watercourses may result from construction activities (sediment, oil spills) in addition to pollution during operation. Taking appropriate mitigation measures will minimise the risk. The potential for industrial contamination should be further investigated, as the option is located in a former mining area.

Geology and Soils

There are likely to be minor-moderate negative impacts during construction of the new alignment associated with groundbreaking work, and the potential removal of spoil. Additional negative impacts may result from the disturbance of contaminated land. Both these issues will be temporary.

If an additional line is required there are likely to be minor/moderate negative impacts during construction associated with groundbreaking work, and the potential removal of spoil, although there could be major impacts if there is significant realignment or widening. There is a risk of negative impacts resulting from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The Firth of Forth is located adjacent to the route option and is designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site for much of the length. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. There is the potential for disturbance to both the bird populations and habitats during the construction period associated with railway alignment, specifically between Longannet and Torryburn. Where there is potential for the integrity of European designated sites (e.g. the Firth of Forth SPA) to be adversely affected, an Appropriate Assessment (AA) may be required².

The proposal runs close and adjacent to areas of Ancient Woodland around Blair Castle, Dunimarle Castle, Torryburn, Pitliver House and Gallowridge Hill. The proposal runs close to the Site of Importance for Nature Conservation at Valleyfield.

² S48 of the Conservation (Natural Heritage &c) Regulations 1994 requires the competent authority to undertake an Appropriate Assessment where it is considered that a development or project unrelated to the conservation management of that site is likely to have significant effects upon the features of the site for which the area has been designated. For the purposes of an Appropriate Assessment, the competent authority is defined as the organisation that grants consent for the scheme to proceed

There is potential for impacts on the Bluther Burn, Lyne Burn, and other smaller watercourses during construction of the railway improvements. Otters may be present along the Bluther Burn, Lyne Burn, Fordell Burn, and possibly on some of the smaller watercourses, and construction activity has the potential to cause disturbance.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

Mature trees or buildings along the proposed route may provide suitable roost sites for bats. Therefore any proposals requiring removal or disturbance of mature trees or buildings may have negative impacts on any resident bat populations.

Badger setts and foraging habitat are likely to be present along the alignment, as the mix of woodland and agricultural habitats represent favourable conditions and there are existing records for the area.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: I Conservation Area, Ancient Woodland.

Landscape Character Assessment: Fife LCA - Coastal Flats Landscape Character Type.

The landscape is flat coastal plain adjacent to the Firth of Forth. The area is predominately agricultural with a number of small areas of woodland and shelter belts in the immediate vicinity of the route.

The introduction of a new railway into the landscape could have significant adverse landscape effects depending on the need for earthworks and the removal of vegetation. Over time the effects would reduce as associated planting matures but the adverse effects would still be significant. The addition of new station buildings and associated car parking etc. could potentially adversely affect the Conservation Area and would need to be carefully sited and designed. Impacts are likely to be major negative.

Visual Amenity

The route passes through un-developed coastal areas. There is likely to be a small number of highly sensitive residential receptors and other less sensitive receptors.

The introduction of a new railway into the landscape could have significant adverse landscape effects on individual receptors located adjacent or close to the route depending on the need for earthworks and the removal of vegetation. Any changes are likely to be highly visible in the coastal location where there is little screening. The overall visual effect is likely to be less significant because of the small number of receptors. Impacts are likely to be moderate negative.

Land Use

The majority of the railway line is already intact and operational, however if the route requires widening to accommodate an additional line, and a realigned section of new double track railway at Longannet, there could be a major negative impact by virtue of increased land take and

potential demolition of buildings. The surrounding land uses are predominately rural, coastal and residential.

Cultural Heritage

The proposed route option would run in close proximity to a number of Listed Buildings and Scheduled Monuments. There is a Conservation Area in Culross. Depending on the final alignment impacts are likely to vary from minor to major negative upon these receptors both during construction and operation stages. Once the detailed designs are known, it will be possible to determine the potential scale of impact and mitigation measures required. There would be no impacts to these features during operation. There is the possibility of impacts upon NMRS sites.

Option 1c: Disused Railway Line between Alloa and Dunfermline with new alignment to Rosyth (National Cycle Route 764)

Noise and Vibration

Noise and Vibration impacts will be experienced during construction, and are likely to range from moderate to major negative for receptors next to the line. During operation the re-introduction of passenger train services into an area previously without passenger rail services will result in increased noise and vibration impacts as a result in the increase in frequency of train movements.

There will also be increased train movements on the existing section of the line which will cause some moderate negative impacts in terms of noise and vibration to nearby receptors.

Air Quality

There are likely to be moderate negative impacts associated with construction on local air quality, though these will be temporary. There will also be permanent negative impacts due to the re-introduction of passenger rail services into an area previously without passenger rail services. There may be minor beneficial impacts on the local roads due to a potential reduction in congestion at major pinch points.

The proposal will help facilitate a modest modal shift from road to rail, resulting in minor beneficial impacts on greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There is potential for pollution to the Black Devon, Bluther Burn, Comrie Burn, and Pitfirrane Burn, Lyne Burn, and other watercourses in relation to this proposed option due to widening of crossings, etc. In particular, a new crossing would be required for the Lyne Burn and other small watercourses for the off line rail alignment to the east of Dunfermline. Pollution of watercourses and waterbodies may result from construction activities (sediment, oil spills) in addition to pollution during operation. Taking appropriate mitigation measures will minimise the risk. The potential for industrial contamination should be further investigated, as the option is located in a former mining area.

Geology and Soils

There are likely to be minor-moderate negative impacts during construction of the new alignment associated with groundbreaking work, and the potential removal of spoil. Additional negative impacts may result from the disturbance of contaminated land. Both these issues will be temporary.

If an additional line is required there are likely to be minor/moderate negative impacts during construction associated with groundbreaking work, and the potential removal of spoil, although

there could be major impacts if there is significant realignment or widening. There is a risk of negative impacts resulting from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The proposal runs close and adjacent to areas of woodland that are classified within the Inventory of Ancient, Long-established and Semi-Natural Woodland. These woodlands include an area near Tullygarth, Slack Wood, Easter Clashies, Castle Hill, Inzievar wood, Dean Plantation and Milton Green. Any removal of this habitat should be avoided where possible. Ecological survey would quantify any loss involving ancient woodland.

A number of watercourses will potentially be affected, including the Black Devon, Bluther Burn, Comrie Burn and Pitfirrane Burn in addition to a number of small unnamed watercourses. Pollution incidents during construction and operation could have implications for the watercourses and their habitats. Although not designated themselves, Black Devon and Bluther Burn flow into the River Forth which is designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. Therefore, all measures should be taken to prevent any pollution incidents associated with the construction and operation of this route into the tributaries of this River.

From desk-based study it appears that there is suitable badger sett and foraging habitat along the route. Further survey is essential to confirm presence or absence of badgers along the route. Records from Scottish Badgers should be sought as part of further assessment procedures. Badger survey of the route would also inform mitigation options should there be any risk of impact upon badger populations in the area.

Any mature trees or structures e.g. bridges, buildings, to be demolished may provide suitable roost sites for bats. Any proposals requiring removal or disturbance to such trees or structures may have negative impacts on any resident bat populations. Bat surveys would be required for any mature trees or structures earmarked for demolition, and mitigation measures put in place to identify alternative roost sites and possibly provide replacement roosting boxes if necessary. In the long-term, bats would be expected to relocate their roosts to other suitable sites.

As the proposed route crosses several watercourses that will provide suitable habitat for otter and water vole, it will be necessary to carry out comprehensive survey for otter and water vole along all watercourses bisecting the rail line route as part of further assessment of this route option to inform mitigation options to minimise any impact on these species.

The removal of trees, scrub or woodland to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: 3 Conservation Areas, 1 Area of Great Landscape Value, 1 Historic Garden and Designed Landscape (Pittencrieff Park), Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys, Coastal Hills, Coastal Flats Landscape Character Types
- Clackmannanshire LCA – River Valleys (Carse of Forth), Valley Fringes (Devon/Forth) Landscape Character Types.

The landscape is gently undulating and sloping gradually towards the Firth of Forth. The area is predominately used for agriculture with a number of large areas of woodland and small copses and shelter belts in the immediate vicinity of the route.

The route would occupy a disused railway line where the rails have been removed but the formation is still in existence and used as part of the National Cycle Route (NCR). The introduction of a railway line only on to the existing formation would not have significant adverse landscape effects. However if the formation is widened to accommodate a railway line and a parallel NCR with associated earthworks and vegetation loss there could be potential significant adverse effects initially. Over time the effects would reduce as associated planting matures. The addition of new station buildings and associated car parking etc. could potentially adversely affect conservation areas and would need to be carefully sited and designed. Major planned new developments in the area may also impact on the design. Impacts are likely to be moderate negative impact.

Visual Amenity

The route passes through built up areas, areas of countryside and coastal areas and is crossed by other routes. There are likely to be large numbers of highly sensitive residential receptors and other less sensitive receptors.

The introduction of a railway line on to the disused formation may affect individual receptors owing to the cut back of vegetation and introduction of track and trains into the view. The widening of the line with associated earthworks and vegetation loss could potentially have significant adverse effects on receptors located adjacent or close to the route. Disruption of the NCR either by moving it to run parallel to the railway line or removing it and diverting to alternative routes would change the views and perception of the area for recreational receptors and could have significant adverse effects. Impacts are likely to be moderate negative impact.

Land Use

The majority of the infrastructure of the disused railway line is already intact and is currently used as a cycleway and footpath, there would therefore be major negative impacts to users of the route if the railway line is reinstated. However, if the route requires widening there could be major negative impacts by virtue of increased land take, and potential demolition of buildings. The surrounding land uses are predominately rural, and settlements. It is likely that vacant areas will be required during construction for work compounds, though these will be temporary, and may cause minor negative impacts at worst. It is likely that a number of buildings will require demolition, though the exact properties are not known at this point. Depending on the number and the status of these buildings (i.e. whether they are listed buildings or not), the impacts are likely to be moderate/major negative.

Cultural Heritage

There are Conservation Areas (Alloa, Dunfermline and Inverkeithing) and a Historic Garden and Designed Landscape (Pittencrief Park) in eastern Dunfermline. There are a number of National Monuments Record of Scotland (NMRS) sites alongside the existing route. The route would also pass adjacent to areas of Ancient Woodland.

The proposed route option would run in close proximity to a number of Listed Buildings, Scheduled Monuments and Archaeological Sites of Regional Importance, and could even

potentially run through some of these receptors on the new alignment east of Dunfermline. Therefore impacts upon these receptors could vary from moderate to major negative depending on the final design and route alignment.

Option 2a: Express Bus between Alloa and Roysth (A985) inc. limited stops

Noise and Vibration

There are likely to be no impacts associated with this option as little construction would be required, and the A985 is already used by traffic. There would be no impacts during operation.

Air Quality

There are likely to be no impacts to local air quality during construction, though these will be temporary. There may be minor beneficial impacts on the local roads due to a potential reduction in congestion at major pinch points.

The proposal will help facilitate a modest modal shift from private vehicles to public transport, resulting in minor beneficial impacts on greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There is potential for pollution to the River Black Devon, Bluther Burn, Lyne Burn, and other watercourses in relation to this proposed option.

It is unlikely that there will be any impacts upon water resources in relation to this option. However there is potential for minimal increases in pollution associated with the operation of the new bus service and pollution to watercourses in association with the construction of bus-related infrastructure (bus stops/shelters). Taking appropriate mitigation measures will minimise the risk.

Geology and Soils

There are likely to be minor/moderate negative impacts during construction associated with groundbreaking work, and the potential removal of spoil relating to the construction of bus related infrastructure (shelters, lay-bys etc). There is a risk of negative impacts resulting from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The proposed route runs along existing roads and so it is unlikely that there will be any significant impact. However, the existing road crosses a number of watercourses including Black Devon, Bluther Burn and Lyne Burn. These watercourses flow directly into the Firth of Forth which is designated an SPA, SSSI and Ramsar Site. Pollution incidents during construction/operation could have implications for these watercourses and it will be necessary to take the necessary precautions to prevent any pollution incidents occurring in these watercourses. Otters and water voles may be present along the watercourses and construction and operation activity has the potential to cause disturbance.

The proposed route transects several areas of Ancient Woodland including Black Wood, woodland at Tulliallan golf course, sawmill plantation, Devilla forest, Broadhills plantation and Lochymuir plantation. Any removal of this habitat should be avoided where possible. Ecological survey would quantify any loss involving ancient woodland.

Any mature trees to be demolished may provide suitable roost sites for bats. Any proposals requiring removal or disturbance to such trees may have negative impacts on any resident bat

populations. Bat surveys would be required for any mature trees that were to be removed, and mitigation measures put in place to identify alternative roost sites.

From desk-based research it appears there is suitable badger sett and foraging habitat surrounding the proposed route. Further survey is essential to confirm presence or absence of badgers along the route. Records from Scottish Badgers should be sought as part of further assessment procedures. Badger survey of the route would also inform mitigation options should there be any risk of impact upon this species.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: 2 Conservation Areas, 2 Historic Gardens and Designed Landscapes (Dunimarle, Valleyfield), 1 Area of Great Landscape Value, Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys, Coastal Hills, Landscape Character Types
- Clackmannanshire LCA – River Valleys (Carse of Forth), Valley Fringes (Devon/Forth) Landscape Character Types

The landscape is gently undulating sloping gradually towards the Firth of Forth. The area is predominately used for agriculture with a number of larger areas of woodland and small copses and shelter belts in the immediate vicinity of the route.

The introduction of an express bus route with limited stops on to existing roads will have minimal landscape effects. The addition of new bus shelters, lay bys etc. could potentially adversely affect conservation areas and would need to be carefully sited and designed. Major planned new developments in the area may also impact on the design. Impacts are likely to be minor negative.

Visual Amenity

The route passes through built up areas and areas of countryside and is crossed by other routes. There are likely to be a large numbers of highly sensitive residential receptors and other less sensitive receptors.

The addition express buses on to existing roads will not have significant visual effects even for receptors living adjacent to the route. The addition of new bus shelters, lay bys etc. could potentially adversely affect individual receptors and would need to be carefully sited and designed. Impacts are likely to be minor negative.

Land Use

The A985 is already in use as public highways for private and public vehicles, therefore the introduction of an additional bus service would have no impacts. The surrounding land uses are predominately rural, coastal and residential settlements (High Valleyfield and Crombie).

Cultural Heritage

The proposed route option would run in close proximity and adjacent to a large number of Listed Buildings, especially in Alloa and Kincardine. There is also Conservation Areas in Kincardine and Patesmuir. There are a number of NMRS sites alongside the existing route. There are likely to be no impacts to these receptors.

Option 2b: Express Bus between Alloa and Rosyth (A907) inc. limited stops

Noise and Vibration

There are likely to be no impacts associated with this option as little construction would be required and the A907 is already used by traffic. There would be no impacts during operation.

Air Quality

There are likely to be minor negative impacts to local air quality during construction, though these will be temporary. There may be minor beneficial impacts on the local roads due to a potential reduction in congestion at major pinch points.

The proposal will help facilitate a modest modal shift from private vehicles to public transport, resulting in minor beneficial impacts on greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There is potential for pollution to the River Black Devon, Bluther Burn, Blair Burn, Carnock Burn, Lyne Burn, Crossford Burn, Tower Burn and other watercourses in relation to this proposed option.

It is unlikely that there will be any impacts upon water resources in relation to this option. However there is potential for minimal increases in pollution associated with the operation of the new bus service and pollution to watercourses in association with the construction of bus-related infrastructure (bus stops/shelters). Taking appropriate mitigation measures will minimise the risk.

Geology and Soils

There are likely to be minor/moderate negative impacts during construction associated with groundbreaking work, and the potential removal of spoil relating to the construction of bus related infrastructure (shelters, lay-bys etc). There is a risk of negative impacts resulting from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The proposed route runs along existing roads and so it is unlikely that there will be any significant impacts as a result of the proposed bus route. However, the existing road crosses a number of watercourses including Black Devon, Blair Burn and Carnock Burn. These watercourses are tributaries of the Firth of Forth which is designated an SPA, SSSI and Ramsar Site. Pollution incidents during construction/operation could have implications for these watercourses and it will be necessary to take the necessary precautions to prevent any pollution incidents occurring in these watercourses during the construction and operation phase. Otters may also be present along these watercourses and construction activity has the potential to cause disturbance.

Ferry Hill SSSI is located nearby to the existing A907. This site is designated for its geological and biological interest. The Ferry Hills grassland occupy a small hill top location immediately north of North Queensferry. The site supports areas of species-rich, unimproved calcicolous grassland on this soils overlying moderately base rich igneous basalt rocks. This habitat is

scarce and declining. However, given its elevated position it is unlikely to be affected by any construction or operation activity associated with the development.

The proposed route transects several areas of Ancient woodland including woodland at Blairhall, Outfield plantation, Castle Hill, Peathill Wood and Back Wood. Although the route runs along existing roads there may be a requirement for widening of the road in some areas. Any removal of trees along the route should be avoided where possible. Ecological survey would quantify any loss involving ancient woodland.

Any mature trees to be demolished may provide suitable roost sites for bats. Any proposals requiring removal or disturbance to such trees may have negative impacts on any resident bat populations. Bat surveys would be required for any trees assessed to have bat roost potential that were to be removed.

From desk-based research it appears there is suitable badger sett and foraging habitat surrounding the proposed route. Further survey is required as part of further assessment of this route option to inform mitigation options to minimise impacts upon this species.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: 2 Conservation Areas, 1 Historic Garden and Designed Landscape (Pittencrieff Park), Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys, Coastal Hills Landscape Character Types
- Clackmannanshire LCA – River Valleys (Carse of Forth), Valley Fringes (Devon/Forth) Landscape Character Types

The landscape is gently undulating sloping gradually towards the Firth of Forth. The area is predominately used for agriculture with a number of larger areas of woodland and small copses and shelter belts in the immediate vicinity of the route.

The introduction of an express bus route with limited stops on to existing roads will have minimal landscape effects. The addition of new bus shelters, lay bys etc. could potentially adversely affect conservation areas and would need to be carefully sited and designed. Major planned new developments in the area may also impact on the design. Impacts are likely to be minor negative .

Visual Amenity

The route passes through built up areas and areas of countryside and is crossed by other routes. There are likely to be a large numbers of highly sensitive residential receptors and other less sensitive receptors.

The addition express buses on to existing roads will not have significant visual effects even for receptors living adjacent to the route. The addition of new bus shelters, lay bys etc. could potentially adversely affect individual receptors and would need to be carefully sited and designed. Impacts are likely to be minor negative.

Land Use

The A907 are already in use as public highways for private and public vehicles, therefore the introduction of an additional bus service would have no impacts. The surrounding land uses are predominately rural, coastal woodland and residential settlements (Clackmannan, Blairhall, Oakley, Carnock and Gowkhill).

Cultural Heritage

The proposed route option would run in close proximity and adjacent to a large number of Listed Buildings along the A907. There are Conservation Areas in Alloa and Dunfermline. There are a number of NMRS sites alongside the existing route. There are likely to be no impacts to these receptors.

Option 2c: Express services Dunfermline to Glasgow via A907, M876/M80

Noise and Vibration

There are likely to be no impacts as the bus service would use the existing transport network.

Air Quality

There are likely to be no impacts as the bus service would use the existing transport network. There may be minor beneficial impacts on the local roads due to a potential reduction in congestion at major pinch points.

The proposal will help facilitate a modest modal shift from private vehicles to public transport, resulting in minor beneficial impacts on greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There are likely to be no impacts as the bus service would use the existing transport network. However, if new bus stops and lay-bys are required, there is potential for pollution to the Black Devon, Lyne Burn, Firth of Forth, and other watercourses in relation to this proposed option. There is likely to be minor negative impacts as minimal construction would be required, although the construction of bus shelters and lay-bys may have the potential to effect groundwater and any nearby watercourses through pollution and sediment discharges.

It is unlikely that there will be any impacts upon water resources in relation to this option. However there is potential for minimal increases in pollution associated with the operation of the new bus service and pollution to watercourses in association with the construction of bus-related infrastructure (bus stops/shelters). Taking appropriate mitigation measures will minimise the risk.

Geology and Soils

There are likely to be no impacts as the bus service would use the existing transport network. However if new bus stops and lay-bys are required there are likely to be minor adverse impacts during construction associated with groundbreaking work required and the potential removal of spoil. Additional adverse impacts may result from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The proposed route transects several areas of Ancient woodland including woodland at Blairhall, Outfield plantation, Castle Hill, Peathill Wood, Back Wood and Lady's Brae. The majority of the

route runs along existing roads where there may be a requirement for widening of the road in some areas. Lady's Brae woodland however, may be impacted by an offline section, south of Clackmannan. Any removal of trees along the route should be avoided where possible. Ecological survey would quantify any loss involving ancient woodland.

A number of watercourses will potentially be affected, including the Lyne Burn. Pollution incidents during construction and operation could have implications for the watercourses and their habitats. Although not designated themselves Black Devon and Lyne Burn flow into the River Forth which is designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. Therefore, all measures should be taken to prevent any pollution incidents associated with the construction and operation of this route into the tributaries of this River. Otters and water vole may be present along the watercourse, and construction activity has the potential to cause disturbance.

From desk-based study it appears that there is suitable badger sett and foraging habitat along the route. Further survey is essential to confirm presence or absence of badgers along the route. Records from Scottish Badgers should be sought as part of further assessment procedures. Badger survey of the route would also inform mitigation options should there be any risk of impact upon badger populations in the area.

Any mature trees or structures e.g. bridges, building, to be demolished may provide suitable roost sites for bats. Any proposals requiring removal or disturbance to such trees or structures may have negative impacts on any resident bat populations. Bat surveys would be required for any mature trees or structures earmarked for demolition, and mitigation measures put in place to identify alternative roost sites and possibly provide replacement roosting boxes if necessary. In the long-term, bats would be expected to relocate their roosts to other suitable sites.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

As the proposed route crosses several watercourses that will provide suitable habitat for otter and water vole, it will be necessary to carry out comprehensive survey for otter and water vole along all watercourses bisecting the road route as part of further assessment of this route option to inform mitigation options to minimise any impact on these species.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: 1 Conservation Area, 1 Historic Garden and Designed Landscape (Pittencrieff Park), Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys Landscape Character Type
- Clackmannanshire LCA – Valley Fringes (Devon/Forth) Landscape Character Type
- Stirling to Grangemouth LCA – Lowland River Valleys (Carse of Forth) (Falkirk/Denny Urban Fringe), Coastal Margins (Grangemouth/Boness Flats), Lowland Hill Fringes (East Touch Fringe) Landscape Character Types.

The landscape is relatively flat or gently undulating sloping gradually towards the Firth of Forth and lowland increasingly urban landscape approaching Glasgow. The area is predominately agricultural with a number of larger areas of woodland and small copses and shelter belts in the immediate vicinity of the route. To the south of the Forth the landscape is increasingly dominated by infrastructure and built up areas.

The introduction of an express bus route with limited stops on to existing roads will have minimal landscape effects. The addition of new bus shelters, lay bys etc. could potentially adversely affect the Conservation Area and would need to be carefully sited and designed. Impacts are likely to be minor negative.

Visual Amenity

The route passes through built up areas and areas of countryside and is crossed by other routes. There are likely to be a large numbers of highly sensitive residential receptors and other less sensitive receptors.

The addition express buses on to existing roads will not have significant visual effects even for receptors living adjacent to the route. The addition of new bus shelters, lay bys etc. could potentially adversely affect individual receptors and would need to be carefully sited and designed. Impacts are likely to be minor negative impact

Land Use

The A907, A977 M876 and M80 are already in use as a public highway for private and public vehicles, therefore the introduction of an additional bus service would have a no impacts impact. The surrounding land uses are predominately rural, coastal woodland and residential (Dunfermline, Oakley and Kincardine).

Cultural Heritage

There are a number of Listed Buildings in the Study Area (Carnock and Dunfermline) some directly adjacent to the A907, and Schedule Monuments (Parkmill Cross Slab and Castle Hill Enclosure, Bogside Wood) however this receptor is enveloped by the surrounding forest. There is a Conservation Area in Kennet. The A907 is used as a public highway for private and public vehicles, and the potential remains to negatively impact on unknown archaeological artefacts during construction of bus shelters and lay-bys. There is the possibility of impacts upon NMRS sites.

There are likely to be no impacts as the bus service would use the existing transport network.

Option 2d: Express services Alloa to Edinburgh via M9

Noise and Vibration

There are likely to be no impacts as the bus service would use the existing transport network.

Air Quality

There are likely to be no impacts as the bus service would use the existing transport network. There may be minor beneficial impacts on the local roads due to a potential reduction in congestion at major pinch points.

The proposal will help facilitate a modest modal shift from private vehicles to public transport, resulting in minor beneficial impacts on greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There are likely to be no impacts as the bus service would use the existing transport network. However, if new bus stops and lay-bys are required, there is potential for pollution to the Black Devon, Lyne Burn, Firth of Forth, and other watercourses in relation to this proposed option. There is likely to be minor negative impacts as minimal construction would be required, although the construction of bus shelters and lay-bys may have the potential to effect groundwater and any nearby watercourses through pollution and sediment discharges.

It is unlikely that there will be any impacts upon water resources in relation to this option. However there is potential for minimal increases in pollution associated with the operation of the new bus service and pollution to watercourses in association with the construction of bus-related infrastructure (bus stops/shelters). Taking appropriate mitigation measures will minimise the risk.

Geology and Soils

There are likely to be no impacts as the bus service would use the existing transport network. However if new bus stops and lay-bys are required there are likely to be minor adverse impacts during construction associated with groundbreaking work required and the potential removal of spoil. Additional adverse impacts may result from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The proposed route transects several areas of Ancient woodland including woodland at Blairhall, Outfield plantation, Castle Hill, Peathill Wood and Back Wood. Although the route runs along existing roads there may be a requirement for widening of the road in some areas. Any removal of trees along the route should be avoided where possible. Ecological survey would quantify any loss involving ancient woodland.

A number of watercourses will potentially be affected, including Black Devon and Lyne Burn. Pollution incidents during construction and operation could have implications for the watercourses and their habitats. Although not designated themselves Black Devon and Lyne Burn flow into the River Forth which is designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. Therefore, all measures should be taken to prevent any pollution incidents associated with the construction and operation of this route into the tributaries of this River. Otters and water vole may be present along the watercourse, and construction activity has the potential to cause disturbance.

Ferry Hill SSSI is located nearby to the existing A907. This site is designated for its geological and biological interest. The Ferry Hills grassland occupy a small hill top location immediately north of North Queensferry. The site supports areas of species-rich, unimproved calcicolous grassland on these soils overlying moderately base rich igneous basalt rocks. This habitat is scarce and declining. However, given its elevated position it is unlikely to be affected by any construction or operation activity associated with the development.

From desk-based study it appears that there is suitable badger sett and foraging habitat along the route. Further survey is essential to confirm presence or absence of badgers along the route. Records from Scottish Badgers should be sought as part of further assessment procedures. Badger survey of the route would also inform mitigation options should there be any risk of impact upon badger populations in the area.

Any mature trees or structures e.g. bridges, building, to be demolished may provide suitable roost sites for bats. Any proposals requiring removal or disturbance to such trees or structures may

have negative impacts on any resident bat populations. Bat surveys would be required for any mature trees or structures earmarked for demolition, and mitigation measures put in place to identify alternative roost sites and possibly provide replacement roosting boxes if necessary. In the long-term, bats would be expected to relocate their roosts to other suitable sites.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

As the proposed route crosses several watercourses that will provide suitable habitat for otter and water vole, it will be necessary to carry out comprehensive survey for otter and water vole along all watercourses bisecting the road route as part of further assessment of this route option to inform mitigation options to minimise any impact on these species.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: 2 Conservation Areas, 1 Historic Garden and Designed Landscape (Pittencrieff Park), Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys, Coastal Hills, Landscape Character Types
- Clackmannanshire LCA – River Valleys (Carse of Forth), Valley Fringes (Devon/Forth) Landscape Character Types
- The Lothians LCA – Coastal Margins (Linlithgow/Queensferry Farmlands)

The landscape is gently undulating sloping gradually towards the Firth of Forth. The area is predominately used for agriculture with a number of larger areas of woodland and small copses and shelter belts in the immediate vicinity of the route.

The introduction of an express bus route with limited stops on to existing roads will have minimal landscape effects. The addition of new bus shelters, lay bys etc. could potentially adversely affect conservation areas and would need to be carefully sited and designed. Major planned new developments in the area may also impact on the design. Impacts are likely to be minor negative

Visual Amenity

The route passes through built up areas and areas of countryside and is crossed by other routes. There are likely to be a large numbers of highly sensitive residential receptors and other less sensitive receptors.

The addition express buses on to existing roads will not have significant visual effects even for receptors living adjacent to the route. The addition of new bus shelters, lay bys etc. could potentially adversely affect individual receptors and would need to be carefully sited and designed. Impacts are likely to be minor negative

Land Use

The A907, A977 M876 and M9 are already in use as a public highway for private and public vehicles, therefore the introduction of an additional bus service would have no impacts. The surrounding land uses are predominately rural, coastal woodland and residential (Alloa and Kincardine).

Cultural Heritage

There are a number of Listed Buildings in the Study Area some directly adjacent to the route, and a Schedule Monument. There are Conservation Areas in Alloa and Kennet. The route is used as a public highway for private and public vehicles, and the potential remains to negatively impact on unknown archaeological artefacts during construction of bus shelters and lay-bys. There is the possibility of impacts upon NMRS sites.

There are likely to be no impacts as the bus service would use the existing transport network.

Option 3a: Waterborne Passenger service from Alloa to Kincardine to Bo'ness to Roysth to Granton (Edinburgh)

Noise and Vibration

There are likely to be some negative impacts associated with this option as the construction of ferry related infrastructure (i.e. terminals, car parking, etc) could be required at some locations (i.e. Alloa and Bo'ness).

The operation of a ferry service would result in no impacts to nearby receptors.

Air Quality

There are likely to be minor negative impacts to local air quality during construction (ferry passenger infrastructure), though these will be temporary. Permanent negative impacts are unlikely to be significant, though there may be beneficial impacts in the wider area due to a potential reduction in congestion at major pinch points.

Global air quality will not be significantly affected, though there is likely to be minor beneficial impacts as a result of a decrease in congestion, which will result in a reduction of greenhouse gas emissions.

Water Quality, Drainage and Flood Defence

There is likely to be no impacts for the passenger option if utilising existing dock facilities, however if new ferry infrastructure is required impacts on the Firth of Forth could vary from minor to major negative. Dredging operations at various harbours and approaches may be required in order to accommodate a passenger ferry service. This is likely to lead to temporary moderate/major negative impacts on the Firth of Forth SPA/SSSI/Ramsar.

In terms of operation there could be minor negative impacts resulting from pollution discharges into the Firth of Forth from the passenger vessels.

Geology and Soils

With regard to the development of a ferry service there are likely to be minor negative impacts during construction associated with groundbreaking work, and the potential removal of spoil at the sites of the new ferry infrastructure. Additional negative impacts may result from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The Firth of Forth is designated as a SPA, SSSI and Ramsar site. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. There is the potential for significant direct

disturbance to both the bird populations and habitats during the construction activity associated with railway alignment, and during the operation of the ferry. Where there is potential for the integrity of European designated sites (e.g. the Firth of Forth SPA) to be adversely affected, an Appropriate Assessment (AA) may be required.

Landscape

Designations potentially affected: 2 Conservation Areas.

Landscape Character Assessment: Not applicable

The landscape is coastal. Waterborne options will not change the character of the landscape. The introduction of any ferry-related infrastructure (i.e. passenger terminal, car park) may potentially affect the Conservation Areas at Alloa and Kincardine and would need to be carefully sited and designed. Impacts likely to be minor negative.

Visual Amenity

Visual receptors would include residential and other receptors at ports and recreational and business receptors on the water. The construction of ferry related infrastructure may adversely affect nearby receptors at ports. The scheme would introduce an interesting new feature. Impacts likely to be minor negative impact/minor positive.

Land Use

The existing use at the dock locations is predominantly industrial/commercial with activity linked to the dockside location. The route would utilise the Firth of Forth estuary which is used as a shipping lane from Grangemouth eastwards, however the route would use some existing docks for berthing/docking. Some locations such as Alloa would require passenger infrastructure which could be on brownfield or greenfield locations. Surrounding land uses are coastal, rural (arable and pastoral farmland) and urban. Land take from part of the docks for the construction of ferry related infrastructure would have no impacts.

Cultural Heritage

Impacts upon cultural heritage as a result of waterborne options will depend on detailed designs and exact locations of Ferry docking locations and construction site compounds. There are a significant number of Listed Buildings at some of sites such as Granton Harbour, which may experience negative impacts such as severance or impacts upon setting during construction and operation. There are Conservation Areas in Alloa and Kincardine.

It is assumed in the case of Alloa, Kincardine, Bo'ness and Granton that new passenger infrastructure would have to be constructed adjacent to the River Forth. The construction of passenger infrastructure could have an impact upon cultural heritage features depending on the location. Once the detailed designs are known, it will be possible to determine the potential scale of impact and mitigation measures required. There would be no impacts to these features during operation.

Option 3b: Freight Service (barge) from Alloa to Grangemouth to Rosyth/Inverkeithing to Burntisland to Leith to Kirkcaldy to Leven/Methil Docks

Noise and Vibration

There are likely to be negative impacts associated with this option as the construction of a freight infrastructure may be required at some locations.

The operation of a freight barge would result in no impacts to nearby receptors.

Air Quality

There are likely to be moderate negative impacts associated with construction on local air quality, though these will be temporary.

Water Quality, Drainage and Flood Defence

There is likely to be no impacts for the freight option if using existing dock facilities, however if new freight infrastructure is required impacts on the Firth of Forth could vary from moderate to major negative. Dredging operations at various harbours and the approach would be required in order to accommodate a freight barge service. This is likely to lead to temporary moderate/major negative impacts on the Firth of Forth SPA/SSSI/Ramsar.

In terms of operation there could be minor negative impacts resulting from pollution discharges into the Firth of Forth from the freight barges.

Geology and Soils

With regard to the development of a freight barge service there are likely to be minor negative impacts during construction associated with groundbreaking work, and the potential removal of spoil at the sites of the freight related infrastructure. Additional negative impacts may result from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The Firth of Forth is designated as a SPA, SSSI and Ramsar site. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. There is the potential for significant direct disturbance to both the bird populations and habitats during the construction activity associated with freight facilities, and during the operation of the Freight barges. Where there is potential for the integrity of European designated sites (e.g. the Firth of Forth SPA) to be adversely affected, an Appropriate Assessment (AA) may be required.

Landscape

Designations potentially affected: 2 Conservation Areas within the study area (constraints at Burntisland, Leith, Kirkcaldy and Leven/Methil Docks not included in this assessment).

Landscape Character Assessment: Not applicable

The landscape is coastal. Waterborne options will not change the character of the landscape. The introduction of any freight related infrastructure (i.e. freight terminal) may potentially affect the Conservation Areas at Alloa and Inverkeithing (and potentially other areas not within the study area) and would need to be carefully sited and designed. Impacts are likely to be minor negative.

Visual Amenity

Visual receptors would include residential and other receptors at ports and recreational and business receptors on the water. The construction of freight related infrastructure may adversely affect nearby receptors at ports. The scheme would introduce an interesting new feature. Impacts are likely to be minor negative impact/minor positive.

Land Use

The existing use at the dock locations is predominantly industrial/commercial with activity linked to the dockside location. The route would utilise the Firth of Forth estuary which is in use as a shipping lane from Grangemouth eastwards, however the route would use existing docks for berthing and loading/unloading. Surrounding land uses are primarily coastal and urban. Land take from part of the docks for the construction of freight infrastructure would have no impacts.

Cultural Heritage

Impacts upon cultural heritage as a result of waterborne options will depend on detailed designs and exact locations of freight docking locations and construction site compounds. There are a significant number of Listed Buildings at some of the proposed dock locations such as Rosyth, Burntisland and Kirkcaldy, which may experience negative impacts such as severance or impacts upon setting during construction and operation if construction work is required for freight related infrastructure. There are Conservation Areas in Alloa and Inverkeithing which may experience negative impacts as a result of the option.

It is assumed in the case of Alloa and possibly Inverkeithing that new freight infrastructure may be required to be constructed adjacent to the Firth of Forth. The construction of freight infrastructure could have negative impacts upon cultural heritage features depending on the terminal location. Once the detailed designs are known, it will be possible to determine the potential scale of impact and mitigation measures required. There would be no impacts to these features during operation.

Option 4a: Upgrade A985 (A977)

Noise and Vibration

Noise and Vibration impacts will be experienced during construction, and are likely to be major negative for receptors next to the road. During operation there could be minor/moderate negative impact as a result of increased traffic flows.

Air Quality

There are likely to be moderate negative impacts associated with construction on local air quality, though these will be temporary. During operation there could be minor/moderate negative impacts relating to air quality as a result of an increase in localised private vehicular and freight traffic using the road.

Water Quality, Drainage and Flood Defence

There is potential for pollution to the Bluther Burn, Torry Burn, Lyne Burn, and other watercourses in relation to this proposed option as the option could involve widening or realignment of the road. Pollution of watercourses may result from construction activities (sediment, oil spills) in addition to pollution during operation. Taking appropriate mitigation measures will minimise the risk. The potential for industrial contamination should be further investigated, as the option is located in a former mining area.

Geology and Soils

There are likely to be minor/moderate negative impacts during construction associated with groundbreaking work, and the potential removal of spoil, although there could be major impacts if there is significant realignment or widening. There is a risk of negative impacts resulting from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The proposal runs through and adjacent to areas of woodland that are classified within the Inventory of Ancient, Long-established and Semi-Natural Woodland. These woodland areas include an area near Tulliallan Golf Course, Tulliallan Wood, Devilla Forest, Drum Plantation, Broadhills Plantation, Craig's Plantation, Lochymuir Plantation and Brucemount Plantation. Any impact on these areas of ancient woodland, including tree felling, would have a negative impact on the local biodiversity of the area. Due consideration should be made during design and construction to ensure the nature conservation value of these areas, in particular trees and scrub habitat, are not threatened.

A number of watercourses will potentially be affected, including the Bluther Burn, Torry Burn and Lyne Burn. Pollution incidents during construction and operation could have implications for the water courses and their habitats. Although not designated themselves, Bluther Burn, Torry Burn and Lyne Burn flow into the River Forth which is designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. Therefore, all measures should be taken to prevent any pollution incidents into the tributaries of this River associated with the construction and operation of this route.

From desk-based study it appears that there is suitable badger sett and foraging habitat along the route. Further survey is essential to confirm presence or absence of badgers along the route. Records from Scottish Badgers should be sought as part of further assessment procedures. Badger survey of the route would also inform mitigation options should there be any risk of impact upon badger populations in the area.

Any mature trees or structures e.g. bridges, buildings may provide suitable roost sites for bats. Any proposals requiring removal or disturbance to such trees or structures may have negative impacts on any resident bat populations. Bat surveys would be required for any trees or structures earmarked for demolition, and mitigation measures put in place to identify alternative roost sites and possibly provide replacement roosting boxes if necessary. In the long-term, bats would be expected to relocate their roosts to other suitable sites.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the area.

As the proposed route crosses several watercourses that may provide suitable habitat for otter and water vole, it will be necessary to carry out comprehensive survey for otter and water vole along all watercourses bisecting the road route as part of further assessment of this route option to inform mitigation options to minimise any impact on these species.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: 2 Conservation Areas, 1 Area of Great Landscape Value, 3 Historic Gardens and Designed Landscapes (Tulliallan, Dunimarle Castle and Valleyfield), Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys, Coastal Hills Landscape Character Types
- Clackmannanshire LCA – Valley Fringes (Devon/Forth) Landscape Character Type

The landscape is relatively flat or gently undulating sloping gradually towards the Firth of Forth. The area is predominately used for arable farming with a number of larger areas of woodland in the wider landscape and small copses and shelter belts in the immediate vicinity of the route.

The upgrade of the roads by widening and straightening with associated earthworks and vegetation loss could potentially have significant adverse landscape effects. Over time the effects would reduce as associated planting matures. The works could potentially adversely affect conservation areas and would need to be carefully designed. Impacts are likely to be moderate negative.

Visual Amenity

The route passes through built up areas, areas of countryside and coastal areas and is crossed by other routes. There are likely to be a large number of highly sensitive residential receptors and other less sensitive receptors.

The widening and straightening of sections of the route with associated earthworks and vegetation loss could potentially have significant adverse effects on receptors located adjacent or close to the route. Impacts are likely to be moderate negative.

Land Use

The A985 is already in use as a public highway for private and public vehicles, therefore the upgrade of the A985 would have a no impacts unless the upgrade involved widening or realignment where impacts could vary from minor to moderate negative. The surrounding land uses are predominately rural (arable and pastoral), woodland/forestry and settlements (High Valleyfield, Crombie).

Cultural Heritage

There are a number of Listed Buildings in the study area some directly adjacent to the A985 and a Schedule Monuments (Tulliallan Castle and Tuilyies Standing Stone). There are Conservation Areas in Kincardine and Patesmuir. The A985 is used as a public highway for private and public vehicles, however if the upgrade of the road involves widening or realignment there could be negative impacts on nearby cultural heritage receptors, although the potential remains to negatively impact on unknown archaeological artefacts during construction. There is the possibility of impacts upon NMRS sites.

Option 4b: Upgrade A907 (A823)

Noise and Vibration

Noise and Vibration impacts will be experienced during construction, and are likely to be major negative for receptors next to the road. During operation there could be negative impacts as a result of increased traffic flows.

Air Quality

There are likely to be moderate negative impacts associated with construction on local air quality, though these will be temporary. During operation there could be minor/moderate negative impacts relating to air quality as a result of an increase in localised private vehicular and freight traffic using the road.

Water Quality, Drainage and Flood Defence

There is potential for pollution to the Black Devon, Bluther Burn, Comrie/Grange, Baldrige Burn, Tower Burn, Lyne Burn and other watercourses in relation to this proposed option as the option could involve widening or realignment of the road. Pollution of watercourses may result from construction activities (sediment, oil spills) in addition to pollution during operation. Taking appropriate mitigation measures will minimise the risk. The potential for industrial contamination should be further investigated, as the option is located in a former mining area.

Geology and Soils

There are likely to be minor/moderate negative impacts during construction associated with groundbreaking work, and the potential removal of spoil, although there could be major negative impacts if there is significant realignment or widening. There is a risk of negative impacts resulting from the disturbance of contaminated land. Both these issues will be temporary.

Biodiversity

The proposal runs through and adjacent to areas of woodland that are classified within the Inventory of Ancient, Long-established and Semi-Natural Woodland. These woodland areas include Back Wood, Peathill Wood, Castle Hill, Outfield Plantation and Shepherdlands Wood.

A number of watercourses will potentially be affected, including Black Devon and Lyne Burn. Pollution incidents during construction and operation could have implications for the watercourses and their habitats. Although not designated themselves Black Devon and Lyne Burn flow into the River Forth which is designated as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site. The Firth of Forth SPA supports wintering and post-breeding (passage) bird populations of international importance and the coastal habitats are of national importance. Therefore, all measures should be taken to prevent any pollution incidents associated with the construction and operation of this route into the tributaries of this River. Otters and water vole may be present along the watercourse, and construction activity has the potential to cause disturbance.

Ferry Hill SSSI is located nearby to the existing A907. This site is designated for its geological and biological interest. The Ferry Hills grassland occupy a small hill top location immediately north of North Queensferry. The site supports areas of species-rich, unimproved calcicolous grassland on these soils overlying moderately base rich igneous basalt rocks. This habitat is scarce and declining. However, given its elevated position it is unlikely to be affected by any construction or operation activity associated with the development.

From desk-based study it appears that there is suitable badger sett and foraging habitat along the route. Further survey is essential to confirm presence or absence of badgers along the route. Records from Scottish Badgers should be sought as part of further assessment procedures. Badger survey of the route would also inform mitigation options should there be any risk of impact upon badger populations in the area.

Any mature trees or structures e.g. bridges, buildings, to be demolished may provide suitable roost sites for bats. Any proposals requiring removal or disturbance to such trees or structures may have negative impacts on any resident bat populations. Bat surveys would be required for any mature trees or structures earmarked for demolition, and mitigation measures put in place to identify alternative roost sites and possibly provide replacement roosting boxes if necessary. In the long-term, bats would be expected to relocate their roosts to other suitable sites.

The removal of trees, scrub or woodland habitat to accommodate this proposal will result in the loss of breeding bird habitat. Red squirrels could also be present in any woodland habitat, as shown in existing records for the local area.

As the proposed route crosses several watercourses that will provide suitable habitat for otter and water vole, it will be necessary to carry out comprehensive survey for otter and water vole along all watercourses bisecting the road route as part of further assessment of this route option to inform mitigation options to minimise any impact on these species.

Although unconfirmed to date, there is the possibility that Japanese knotweed or giant hogweed could be spread throughout the site and surrounding area during construction and operation stages. If found on site, these plants will be subject to a specific eradication/management programme before works can commence.

Landscape

Designations potentially affected: 2 Conservation Areas, 1 Historic Garden and Designed Landscape (Pittencrieff Park), Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys, Coastal Hills Landscape Character Types
- Clackmannanshire LCA – Lowland River Valleys (Carse of Forth), Valley Fringes (Devon/Forth) Landscape Character Types

The landscape is relatively flat or gently undulating sloping gradually towards the Firth of Forth. The area is predominately used for agriculture with a number of larger areas of woodland and small copses and shelter belts in the immediate vicinity of the route.

The upgrade of the roads by widening and straightening with associated earthworks and vegetation loss could potentially have significant adverse landscape effects. Over time the effects would reduce as associated planting matures. The works could potentially adversely affect conservation areas and would need to be carefully designed. Impacts are likely to be moderate negative.

Visual Amenity

The route passes through built up areas, areas of countryside and coastal areas and is crossed by other routes. There are likely to be a large number of highly sensitive residential receptors and other less sensitive receptors.

The widening and straightening of sections of the route with associated earthworks and vegetation loss could potentially have significant adverse effects on receptors located adjacent or close to the route. Impacts are likely to be moderate negative.

Land Use

The A907 is already in use as a public highway for private and public vehicles, therefore the upgrade of the road would have no impacts unless the upgrade involved widening or realignment where impacts could vary from minor to moderate negative. The surrounding land uses are predominately rural (arable and pastoral), woodland/forestry and settlements (Blairhall, Comrie, Oakley, Carnock).

Cultural Heritage

There are a number of Listed Buildings in the Study Area (Carnock and Dunfermline) some directly adjacent to the A907, and Schedule Monuments (Parkmill Cross Slab and Castle Hill Enclosure, Bogside Wood) however this receptor is enveloped by the surrounding forest. There are Conservation Areas in Alloa and Dunfermline. The A907 is used as a public highway for private and public vehicles, however if the upgrade of the road involves widening or realignment there could be negative impacts on nearby cultural heritage receptors, and the potential remains

to negatively impact on unknown archaeological artefacts during construction. There is the possibility of impacts upon NMRS sites.

Option 4c: Upgrade A985 and A907

Noise and Vibration

As Option 4a + 4b.

Air Quality

As Option 4a + 4b.

Water Quality, Drainage and Flood Defence

As Option 4a + 4b.

Geology and Soils

As Option 4a + 4b.

Biodiversity

As Option 4a + 4b.

Landscape

Designations potentially affected: 4 Conservation Areas, 2 Areas of Great Landscape Value, 4 Historic Gardens and Designed Landscapes (Tulliallan, Dunimarle Castle, Valleyfield and Pittencrieff Park), Ancient Woodland.

Landscape Character Assessment:

- Fife LCA - Lowland Hills and Valleys, Coastal Hills Landscape Character Types
- Clackmannanshire LCA – Lowland River Valleys (Carse of Forth), Valley Fringes (Devon/Forth) Landscape Character Type

The landscape is relatively flat or gently undulating sloping gradually towards the Firth of Forth. The area is predominately used for arable farming with a number of larger areas of woodland in the wider landscape and small copses and shelter belts in the immediate vicinity of the route.

The upgrade of the roads by widening and straightening with associated earthworks and vegetation loss could potentially have significant adverse landscape effects. Over time the effects would reduce as associated planting matures. The works could potentially adversely affect conservation areas and would need to be carefully designed. Impacts are likely to be moderate negative.

Visual Amenity

The route passes through built up areas, areas of countryside and coastal areas and is crossed by other routes. There are likely to be a large number of highly sensitive residential receptors and other less sensitive receptors.

The widening and straightening of sections of the route with associated earthworks and vegetation loss could potentially have significant adverse effects on receptors located adjacent or close to the route. Impacts are likely to be moderate negative.

Land Use

As Option 4a + 4b.

Cultural Heritage

As Option 4a + 4b.

Appendix C

Initial Appraisal Summary Tables (ASTs)

Option 1a Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 1a: Rail	
Proposal Description:	Passenger and freight services on the existing railway (freight) line from Alloa to Rosyth which might also require development of the Charleston Chord;	Annual operating cost of: £2.49m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	

Planning Objectives	
Objective:	Performance against planning objective:
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option scores very well in this objective, owing to the significant demand for the rail services within and between the study area and Edinburgh.
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option performs very well, as might be expected from the opportunities presented by opening up the corridor to freight access.
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing car & freight traffic on the main routes through the study corridor.
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	This option performs well here as it is expected to remove traffic from the roads, minimising severance, noise and reducing carbon emissions.

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	It is unlikely that the rail option will show sufficient demand in terms of passenger services to operate without requiring subsidy. However, the rail services will offer considerable wider economic benefits, not least those associated with freight movements and environmental impacts. Taking these into consideration, and converting them into monetised values, the total benefits are anticipated to outweigh operating costs.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x	Option 1a would have minor adverse impacts in terms of visual amenity, land use and cultural heritage (e.g. Culross Conservation Area) if the option involves widening of route to accommodate an additional line. If the option were to run services using the pre-existing infrastructure then these impacts would be reduced. However there is likely to be major beneficial impacts in terms of air quality as a result in a switch from private vehicles to rail.
Safety:	✓	Accident rates per passenger kilometre are lower for rail travel than car travel and thus a net transfer of highway mileage from car to P+R (rail) would be expected to lead to a reduction in personal injury accidents. Personal security within the station and car park site would remain on par with car travel through suitable lighting levels along with a CCTV system.
Economy:	✓✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment. The option captures benefits associated with freight movements, some beneficiaries with a national reach as well as passenger service availability increases.
Integration:	✓✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables. In addition, the freight transport improvements offered by the proposed investment offers a major opportunity to implement local and strategic planning and transport policies as a mechanism for promoting development on a more sustainable footing.
Accessibility & Social Inclusion:	✓✓	Transport accessibility: new transport facility broadens choice and option values.
Rationale for Selection or Rejection of Proposal:	This option produces good economic and other benefits and is likely to be the cheapest of the rail options. These benefits are positive for both passengers and freight services. In addition, it has the lowest negative environmental impacts of the rail options and hence should be considered further.	

Option 1b Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 1b: Rail	
Proposal Description:	As option 1a but with a straightened section from Longannet to north of Kincardine to provide a slightly faster running time	Annual operating cost of: £2.46m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	

Planning Objectives	
Objective:	Performance against planning objective:
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option scores very well in this objective, owing to the significant demand for the rail services within and between the study area and Edinburgh.
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option performs very well, as might be expected from the opportunities presented by opening up the corridor to freight access.
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing car & freight traffic on the main routes through the study corridor.
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	This option performs well here as it is expected to remove traffic from the roads, minimising severance, noise and reducing carbon emissions.

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	It is unlikely that the rail option will show sufficient demand in terms of passenger services to operate without requiring subsidy. However, the rail services will offer considerable wider economic benefits, not least those associated with freight movements and environmental impacts. Taking these into consideration, and converting them into monetised values, the total benefits are anticipated to outweigh operating costs.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x	Option 1b would have similar impacts to Option 1a such as minor adverse impacts in terms of visual amenity, land use and cultural heritage (e.g. Culross Conservation Area) if the option involves widening of route to accommodate an additional line, however, the construction of the realigned section of railway could present major adverse impacts in terms of geology and soils and landscape due to construction. However there is likely to be major beneficial impacts in terms of air quality as a result in a switch from private vehicles to rail.
Safety:	✓	Accident rates per passenger kilometre are lower for rail travel than car travel and thus a net transfer of highway mileage from car to P+R (rail) would be expected to lead to a reduction in personal injury accidents. Personal security within the station and car park site would remain on par with car travel through suitable lighting levels along with a CCTV system.
Economy:	✓✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment. The option captures benefits associated with freight movements, some beneficiaries with a national reach as well as passenger service availability increases.
Integration:	✓✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables. In addition, the freight transport improvements offered by the proposed investment offers a major opportunity to implement local and strategic planning and transport policies as a mechanism for promoting development on a more sustainable footing.
Accessibility & Social Inclusion:	✓✓	Transport accessibility: new transport facility broadens choice and option values.
Rationale for Selection or Rejection of Proposal:	From the demand analysis this option produces slightly better revenues than Option 1a but it is anticipated to have much higher capital and maintenance costs. Therefore, given the additional benefits are small compared to the anticipated significant costs and environmental disbenefits, it is considered appropriate to discount at this stage.	

Option 1c Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 1c: Rail	
Proposal Description:	Re-open disused railway line from Alloa to Rosyth (currently Local Cycle Route 64) for passenger and freight services then tie-in using the BRT/LRT reserve corridor as part of the eastern expansion or an alternative connecting route between Local Cycle Route 64 and the rail network	Annual operating cost of: £2.23m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	
Planning Objectives		
Objective:	Performance against planning objective:	
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option scores very well in this objective, owing to the significant demand for the rail services within and between the study area and Edinburgh.	
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option performs very well, as might be expected from the opportunities presented by opening up the corridor to freight access.	
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing car & freight traffic on the main routes through the study corridor.	
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	This option performs well here as it is expected to remove traffic from the roads, minimising severance, noise and reducing carbon emissions.	

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	It is unlikely that the rail option will show sufficient demand in terms of passenger services to operate without requiring subsidy. However the rail services will offer considerable wider economic benefits, not least those associated with freight movements and environmental impacts. Taking these into consideration, and converting them into monetised values, the total benefits are anticipated to outweigh operating costs.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x	The impacts of Option 1c are similar to Option 1b above where there are likely to be environmental impacts associated with increased land-use due to a new rail line being constructed, and could present major adverse impacts in terms of geology and soils and landscape due to construction but also the loss of the existing cycle route (Local Cycle Route 64). However, there is likely to be major beneficial impacts in terms of air quality as a result in a switch from private vehicles to rail.
Safety:	✓	Accident rates per passenger kilometre are lower for rail travel than car travel and thus a net transfer of highway mileage from car to P+R (rail) would be expected to lead to a reduction in personal injury accidents. Personal security within the station and car park site would remain on par with car travel through suitable lighting levels along with a CCTV system.
Economy:	✓✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment. The option captures benefits associated with freight movements, some beneficiaries with a national reach as well as passenger service availability increases.
Integration:	✓✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables. In addition, the freight transport improvements offered by the proposed investment offers a major opportunity to implement local and strategic planning and transport policies as a mechanism for promoting development on a more sustainable footing.
Accessibility & Social Inclusion:	✓✓	Transport accessibility: new transport facility broadens choice and option values.
Rationale for Selection or Rejection of Proposal:	From the demand analysis this option produces higher benefits than the other options, however it is anticipated to have much higher capital and maintenance costs than the other options due to the new infrastructure required. Therefore, given the additional benefits are small compared to the anticipated significant costs and environmental disbenefits, it is considered appropriate to discount at this stage.	

Option 2a Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 2a: Bus	
Proposal Description:	Express service from Alloa to Rosyth with limited stops (B9037/A985);	Annual operating cost of: £0.86m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	

Planning Objectives	
Objective:	Performance against planning objective:
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option scores well in this objective, owing to the significant demand for services within and between the study area and Edinburgh.
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The bus options have no freight capacity and therefore will have a neutral score.
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing some car traffic on the main routes through the study corridor although they are not as safe compared to trains.
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The express bus option has a minor positive impact, as it will remove some traffic from the roads, minimising severance, noise and reducing carbon emissions.

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	The express bus option is unlikely to attract sufficient demand to be able to operate commercially, and therefore may require on-going operational financial support. In addition, the service is likely to abstract substantial numbers of passengers from existing public transport services, to the extent that some of the services impacted upon could have their viability reduced.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	✓	There are likely to be moderate beneficial impacts in terms of noise and vibration and air quality as a result of a switch from private vehicles to bus. However, the option would also have some minor adverse impacts due to the construction of bus related infrastructure (i.e. shelters), so the score would be reduced to a single tick for this option.
Safety:	✓	The option would be expected to reduce the accident rates on the corridor road network. The main reason is the removal of road vehicular traffic. Personal security within the bus stops would remain on par with car travel through suitable lighting levels.
Economy:	✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment. However, as no freight improvements are proposed the economic benefits are limited to the local population.
Integration:	✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables.
Accessibility & Social Inclusion:	✓✓✓	The express bus options meet both the community and comparative accessibility criteria very well. All groups in the community will benefit both within the corridor and further afield. The relatively large number of stops in the corridor ensures high public transport penetration of the study area. The relative competitiveness of bus fares ensures that bus transport is within reach of almost all sections of society.
Rationale for Selection or Rejection of Proposal:	The bus options performed well in terms of minimal environmental impacts and good accessibility / social inclusion and integration benefits. However, on its own it does not assist with the freight planning objective. Nevertheless, it may be possible to obtain similar benefits as option 1a by testing a hybrid of the bus and rail modes, namely the rail freight component of option 1a and bus services for passengers. Therefore this could be considered as part of a combined bus/rail option.	

Option 2b Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 2b: Bus	
Proposal Description:	Express services from Alloa to Edinburgh via M9	Annual operating cost of: £0.74m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	
Planning Objectives		
Objective:	Performance against planning objective:	
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option scores well in this objective, owing to the significant demand for services within and between the study area and Edinburgh.	
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The bus options have no freight capacity and therefore will have a neutral score.	
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing some car traffic on the main routes through the study corridor although they are not as safe compared to trains.	
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The express bus option has a minor positive impact, as it will remove some traffic from the roads, minimising severance, noise and reducing carbon emissions.	

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	The express bus option is unlikely to attract sufficient demand to be able to operate commercially, and therefore may require on-going operational financial support. In addition, the service is likely to abstract substantial numbers of passengers from existing public transport services, to the extent that some of the services impacted upon could have their viability reduced.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	✓	The option would result in minor adverse impacts due to the construction of bus related infrastructure (i.e. shelters). However, there are likely to be moderate beneficial impacts in terms of noise and vibration and air quality as a result of a switch from private vehicles to bus
Safety:	✓	The option would be expected to reduce the accident rates on the corridor road network. The main reason is the removal of road vehicular traffic. Personal security within the bus stops would remain on par with car travel through suitable lighting levels.
Economy:	✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment. However, as no freight improvements are proposed the economic benefits are limited to the local population.
Integration:	✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables.
Accessibility & Social Inclusion:	✓✓✓	The express bus options meet both the community and comparative accessibility criteria very well. All groups in the community will benefit both within the corridor and further afield. The relatively large number of stops in the corridor ensures high public transport penetration of the study area. The relative competitiveness of bus fares ensures that bus transport is within reach of almost all sections of society.
Rationale for Selection or Rejection of Proposal:	As with Option 2a, the option performed well in terms of minimal environmental impacts and good accessibility / social inclusion and integration benefits. However, on their own they do not assist with the freight planning objective. Nevertheless, it may be possible to obtain similar benefits as option 1a by testing a hybrid of the bus and rail modes, namely the rail freight component of option 1a and bus services for passengers. Therefore this could be considered as part of a combined bus/rail option.	

Option 2c Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 2c: Bus	
Proposal Description:	Express services from Dunfermline to Glasgow via M876/M80	Annual operating cost of: £0.75m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	
Planning Objectives		
Objective:	Performance against planning objective:	
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	This option is not expected to perform so well with this objective, as passenger demand is much lower than with the other bus services.	
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The bus options have no freight capacity and therefore will have a neutral score.	
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing some car traffic on the main routes through the study corridor although they are not as safe compared to trains.	
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The express bus option has a minor positive impact, as it will remove some traffic from the roads, minimising severance, noise and reducing carbon emissions.	

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	The express bus option is unlikely to attract sufficient demand to be able to operate commercially, and therefore may require on-going operational financial support. In addition, the service is likely to abstract substantial numbers of passengers from existing public transport services, to the extent that some of the services impacted upon could have their viability reduced.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	✓	There are likely to be moderate beneficial impacts in terms of noise and vibration and air quality as a result of a switch from private vehicles to bus. However, thee option would also have some minor adverse impacts due to the construction of bus related infrastructure (i.e. shelters), so the score would be reduced to a single tick for this option.
Safety:	✓	The option would be expected to reduce the accident rates on the corridor road network. The main reason is the removal of road vehicular traffic. Personal security within the bus stops would remain on par with car travel through suitable lighting levels.
Economy:	✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment. However, as no freight improvements are proposed the economic benefits are limited to the local population.
Integration:	✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables.
Accessibility & Social Inclusion:	✓✓✓	The express bus options meet both the community and comparative accessibility criteria very well. All groups in the community will benefit both within the corridor and further afield. The relatively large number of stops in the corridor ensures high public transport penetration of the study area. The relative competitiveness of bus fares ensures that bus transport is within reach of almost all sections of society.
Rationale for Selection or Rejection of Proposal:	As demand for this service is predicted to be low, it is therefore considered appropriate to discount the option at this stage.	

Option 2d Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 2d: Bus	
Proposal Description:	Express service from Alloa to Rosyth (A907)	Annual operating cost of: £0.75m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	
Planning Objectives		
Objective:	Performance against planning objective:	
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option scores well in this objective, owing to the significant demand for services within and between the study area and Edinburgh.	
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The bus options have no freight capacity and therefore will have a neutral score.	
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing some car traffic on the main routes through the study corridor, although they are not as safe compared to trains.	
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The express bus option has a minor positive impact as it will remove some traffic from the roads, minimising severance, noise and reducing carbon emissions.	

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	The express bus option is unlikely to attract sufficient demand to be able to operate commercially, and therefore may require on-going operational financial support. In addition, the service is likely to abstract substantial numbers of passengers from existing public transport services, to the extent that some of the services impacted upon could have their viability reduced.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	✓	There are likely to be moderate beneficial impacts in terms of noise and vibration and air quality as a result of a switch from private vehicles to bus. However, thee option would also have some minor adverse impacts due to the construction of bus related infrastructure (i.e. shelters), so the score would be reduced to a single tick for this option.
Safety:	✓	The option would be expected to reduce the accident rates on the corridor road network. The main reason is the removal of road vehicular traffic. Personal security within the bus stops would remain on par with car travel through suitable lighting levels.
Economy:	✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment. However, as no freight improvements are proposed the economic benefits are limited to the local population.
Integration:	✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables.
Accessibility & Social Inclusion:	✓✓✓	The express bus options meet both the community and comparative accessibility criteria very well. All groups in the community will benefit both within the corridor and further afield. The relatively large number of stops in the corridor ensures high public transport penetration of the study area. The relative competitiveness of bus fares ensures that bus transport is within reach of almost all sections of society.
Rationale for Selection or Rejection of Proposal:	As with Options 2a & b, the option performed well in terms of minimal environmental impacts and good accessibility / social inclusion and integration benefits. However, on their own they do not assist with the freight planning objective. Nevertheless, it may be possible to obtain similar benefits as option 1a by testing a hybrid of the bus and rail modes, namely the rail freight component of option 1a and bus services for passengers. Therefore this could be considered as part of a combined bus/rail option.	

Option 3a Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 3a: Waterborne	
Proposal Description:	Passenger service (Alloa – Kincardine – Bo’ness – Rosyth – Granton)	Annual operating cost of: £0.63m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	

Planning Objectives	
Objective:	Performance against planning objective:
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option has a minor positive impact on connectivity, due to the lower numbers of people who could access the service along the corridor. Furthermore the journey times are longer than with other modes.
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option has no freight capacity and therefore will have a neutral score.
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing some car traffic on the main routes through the study corridor.
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The option has a minor positive impact, as it will remove some traffic from the roads, minimising severance, noise and reducing carbon emissions.

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	It is likely that the water-borne options will require an element of financial support as there are unlikely to be a sufficient number of passengers attracted onto the services, leading to operating costs being higher than anticipated revenues. However, other wider economic benefits may outweigh the operating costs of running the services.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x	The option could have potential minor adverse impacts as a result of construction of waterborne transport infrastructure. In particular there is a risk of pollution discharges during construction and operation into the Firth of Forth, of which large areas are designated as SPA/Ramsar/SSSI. However, although there are likely to be minor beneficial impacts in terms of air quality as a result in a switch from private vehicles to waterborne public transport, these are outweighed by the negative impacts associated with the other environmental categories.
Safety:	✓	The option would be expected to reduce the accident rates on the corridor road network. The main reason is the removal of road vehicular traffic. Personal security at the ferry stops would remain on par with car travel through suitable lighting levels.
Economy:	✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment, but speed constraints and limited regional penetration of these options limit the benefits for passenger traffic. However, as no freight improvements are proposed the economic benefits are limited to the local population.
Integration:	✓✓	In terms of services and ticketing, the options will provide an opportunity for the integration of services with the existing bus and rail service network. Opportunities will arise within the corridor to share brand names, ticketing arrangements and to 'dove-tail' rail and bus timetables with existing service timetables. There is also significant opportunity for integrating the water-borne passenger services with, in particular, bus services at Granton for instance.
Accessibility & Social Inclusion:	✓	The passenger water-borne transport option will be impeded in meeting the community and comparative accessibility sub-objectives owing to the relatively few destinations served and low general connectivity, lack of transport penetration within the study area and relatively low speed. All this will limit its appeal to certain markets, such as tourists, some shoppers and possibly commuters, and those others not constrained by a tight time budget.
Rationale for Selection or Rejection of Proposal:	The option produces low levels of benefits and does not meet all the planning objectives. Therefore, it is reasonable to conclude the option should not be taken forward and can be discounted at this stage.	

Option 3b Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 3b: Waterborne	
Proposal Description:	Freight service (Alloa – Grangemouth – Rosyth – Leith – Kirkcaldy – Leven/Methil Docks)	Annual operating cost of: £0.76m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	

Planning Objectives	
Objective:	Performance against planning objective:
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option has a minor positive impact on connectivity, due to the lower numbers of people who could access the service along the corridor. Furthermore the journey times are longer than with other modes.
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option scores moderately well in providing a freight link along certain parts of the corridor.
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option improves road safety by reducing some freight traffic on the main routes through the study corridor.
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The option has a minor positive impact, as it will remove some traffic from the roads, minimising severance, noise and reducing carbon emissions.

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	It is likely that the water-borne options will require an element of financial support as there are unlikely to be sufficient volumes of freight attracted onto the services, leading to operating costs being higher than anticipated revenues. However, other wider economic benefits may outweigh the operating costs of running the services.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers. Residents in the study corridor maintained that public transport was very poor, with few options available to connect to adjacent regions. With the improvements to public transport services proposed in this appraisal, it is reasonable to assume there would be significant public acceptability to the option examined.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x	The option could have potential minor adverse impacts as a result of construction of waterborne transport infrastructure. In particular there is a risk of pollution discharges during construction and operation into the Firth of Forth, of which large areas are designated as SPA/Ramsar/SSSI. However, although there are likely to be minor beneficial impacts in terms of air quality as a result in a switch from private vehicles to waterborne public transport, these are outweighed by the negative impacts associated with the other environmental categories.
Safety:	✓	The option would be expected to reduce the accident rates on the corridor road network. The main reason is the removal of road vehicular traffic.
Economy:	✓	By removing existing local transport constraints, the potential overall net effect of improving the transport infrastructure and implementing new services is to permit business expansion in the study area, allowing growth in both employment and investment, but speed constraints and limited regional penetration of these options limit the benefits for passenger traffic. In terms of national impacts, these will be limited to some freight benefits associated with better connectivity between Rosyth in particular and parts of the south and west of Scotland, and also possibly from England.
Integration:	✓✓	New infrastructure required for the water-borne option would provide an opportunity for any new terminal to incorporate both bus and freight interchange facilities. In addition, the freight transport improvements offered by the proposed investment in the rail and water-borne options in the study area offer a major opportunity to implement local and strategic planning and transport policies as a mechanism for promoting development on a more sustainable footing.
Accessibility & Social Inclusion:	○	The freight water-borne option does not target this objective, and therefore has a neutral impact.
Rationale for Selection or Rejection of Proposal:	The option produces low levels of benefits and does not meet all the planning objectives. Therefore, it is reasonable to conclude the option should not be taken forward and can be discounted at this stage.	

Option 4a Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 4a: Road	
Proposal Description:	Upgrade A985 (A977)	Annual operating cost of: £0.04m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	
Planning Objectives		
Objective:	Performance against planning objective:	
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option should make small improvements to connectivity along the corridor by addressing congestion at key junctions and improving traffic flows along the corridor.	
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option will see a minor disbenefit meeting this objective where road improvements are expected to generate additional traffic, which in turn adds to congestion, impeding freight flows.	
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option will have a minor positive impact as the safety benefits associated with improved road layouts are expected to slightly outweigh the heavier traffic generated with these options.	
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The additional traffic generated by this option is in conflict with this objective, and hence has a minor adverse impact.	

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	In terms of affordability, it is unlikely that the road options would require subsidy or support over and above normal route maintenance requirements.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x x	The options would result in minor to moderate adverse impacts for most of the environmental criteria as a result of junction lane widening or changes to the existing road infrastructure. This may result in increased noise and vibration and reduced air quality to local receptors where they exist, especially during construction.
Safety:	0	The option is anticipated to marginally increase traffic on the local roads, but on the flip-side they should be engineered to the latest safe design standards. Therefore, it would be reasonable to expect that the option would have a minor positive impact with respect to lowering accidents. With regards to security there would be no change, and therefore this option is scored neutral overall.
Economy:	0	As the road options are not actually providing any new options it is unlikely they will have much impact on the economy and is therefore scored as neutral.
Integration:	0	Transport integration or policy integration benefits are not applicable are the road enhancement options, therefore the option is scored as neutral.
Accessibility & Social Inclusion:	0	The road options examine highway network engineering solutions over the study area, which are not directly applicable to community nor comparative accessibility, therefore they are considered to have a neutral impact.
Rationale for Selection or Rejection of Proposal:	The option produces low levels of benefits and does not meet all the planning objectives. Therefore, it is reasonable to conclude the option should not be taken forward and can be discounted at this stage	

Option 4b Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 4b: Road	
Proposal Description:	Upgrade A907 (A823)	Annual operating cost of: £0.09m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	
Planning Objectives		
Objective:	Performance against planning objective:	
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option should make small improvements to connectivity along the corridor by addressing congestion at key junctions and improving traffic flows along the corridor.	
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option will see a minor disbenefit meeting this objective where road improvements are expected to generate additional traffic, which in turn adds to congestion, impeding freight flows.	
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option will have a minor positive impact as the safety benefits associated with improved road layouts are expected to slightly outweigh the heavier traffic generated with these options.	
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The additional traffic generated by this option is in conflict with this objective, and hence has a minor adverse impact.	

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	In terms of affordability, it is unlikely that the road options would require subsidy or support over and above normal route maintenance requirements.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x x	The options would result in minor to moderate adverse impacts for most of the environmental criteria as a result of junction lane widening or changes to the existing road infrastructure. This may result in increased noise and vibration and reduced air quality to local receptors where they exist, especially during construction.
Safety:	o	The option is anticipated to marginally increase traffic on the local roads, but on the flip-side they should be engineered to the latest safe design standards. Therefore, it would be reasonable to expect that the option would have a minor positive impact with respect to lowering accidents. With regards to security there would be no change, and therefore this option is scored neutral overall.
Economy:	o	As the road options are not actually providing any new options it is unlikely they will have much impact on the economy and is therefore scored as neutral.
Integration:	o	Transport integration or policy integration benefits are not applicable are the road enhancement options, therefore the option is scored as neutral.
Accessibility & Social Inclusion:	o	The road options examine highway network engineering solutions over the study area, which are not directly applicable to community nor comparative accessibility, therefore they are considered to have a neutral impact.
Rationale for Selection or Rejection of Proposal:	The option produces low levels of benefits and does not meet all the planning objectives. Therefore, it is reasonable to conclude the option should not be taken forward and can be discounted at this stage	

Option 4c Appraisal Summary table

Proposal Details		
Name of authority or organisation promoting the proposal: (Also provide name of any subsidiary organisations also involved in promoting the proposal)		Promoter: South East Scotland Transport Partnership (SEStran), Clackmannanshire Council and Fife Council
Proposal Name:	Option 4c: Road	
Proposal Description:	Upgrade A985 and A907	Annual operating cost of: £0.10m
Background Information		
Geographic Context:	The transport corridor is bound by the A907 to the north from the vicinity of Cambus/Tullibody eastwards to Crossgates, close to the Halbeath Lorry Park in Fife. The area boundary then follows south to the Forth at Dalgety Bay – Inverkeithing, and then proceeds westwards bordering the north shore of the Forth to the Kincardine Bridge, encompassing the current rail alignment and the A985 trunk route before finally linking Kincardine with Alloa in the Tullibody area.	
Social Context:	The study area is largely rural; with a significant proportion of the population living in Dunfermline or Clackmannan/Alloa/Stirling. The remaining population in the corridor is largely confined to a small number of minor scattered settlements. Areas of the route are characterised by social deprivation, with some settlements showing significant deprivation compared with many areas of Scotland. Variations in socio-economic groups seem to relate closely to their proximity to Dunfermline and the links this town offers to Edinburgh and the Central Belt of Scotland.	
Economic Context:	Along the route corridor, with the exception of the Longannet Power Station, economic activity tends to be concentrated on the eastern and western fringes of the corridor. Moreover, it is likely that the region closest to Dunfermline benefits from a number of transport links to Edinburgh.	
Planning Objectives		
Objective:	Performance against planning objective:	
<ul style="list-style-type: none"> ▪ Objective 1 (Connectivity) Improve connectivity along the corridor to/from Clackmannan to east and west, from south and west Fife to Edinburgh, and from Dunfermline and west Fife to Clackmannanshire, and further west. 	The option should make small improvements to connectivity along the corridor by addressing congestion at key junctions and improving traffic flows along the corridor.	
<ul style="list-style-type: none"> ▪ Objective 2 (Freight Accessibility) Improve connections for freight to serve the emerging plans from the National Planning Framework (NPF2) and Freight Action Plan (FAP), and encourage the transfer of movement of goods, produce and materials from road to more sustainable distribution. 	The option will see a minor disbenefit meeting this objective where road improvements are expected to generate additional traffic, which in turn adds to congestion, impeding freight flows.	
<ul style="list-style-type: none"> ▪ Objective 3 (Safety) Improve road safety along the A907 and A985. 	The option will have a minor positive impact as the safety benefits associated with improved road layouts are expected to slightly outweigh the heavier traffic generated with these options.	
<ul style="list-style-type: none"> ▪ Objective 4 (Environment) Minimise the environmental issues of severance / noise at strategic locations along the corridor, and reduce carbon emissions to correspond with government targets. 	The additional traffic generated by this option is in conflict with this objective, and hence has a minor adverse impact.	

Implementability Appraisal	
Technical:	The option uses standard engineering processes for both construction and operation. Therefore, there is not anticipated to be any feasibility issues.
Financial:	In terms of affordability, it is unlikely that the road options would require subsidy or support over and above normal route maintenance requirements.
Public:	There was a view held by businesses that were interviewed that improvements to transport links between Fife and Clackmannanshire would provide significant commercial benefits to businesses, and also to consumers.

Government's Objectives for Transport		
Objective	Assessment Summary	Supporting Information
Environment:	x x	The options would result in minor to moderate adverse impacts for most of the environmental criteria as a result of junction lane widening or changes to the existing road infrastructure. This may result in increased noise and vibration and reduced air quality to local receptors where they exist, especially during construction.
Safety:	o	The option is anticipated to marginally increase traffic on the local roads, but on the flip-side they should be engineered to the latest safe design standards. Therefore, it would be reasonable to expect that the option would have a minor positive impact with respect to lowering accidents. With regards to security there would be no change, and therefore this option is scored neutral overall.
Economy:	o	As the road options are not actually providing any new options it is unlikely they will have much impact on the economy and is therefore scored as neutral.
Integration:	o	Transport integration or policy integration benefits are not applicable are the road enhancement options, therefore the option is scored as neutral.
Accessibility & Social Inclusion:	o	The road options examine highway network engineering solutions over the study area, which are not directly applicable to community nor comparative accessibility, therefore they are considered to have a neutral impact.
Rationale for Selection or Rejection of Proposal:	The option produces low levels of benefits and does not meet all the planning objectives. Therefore, it is reasonable to conclude the option should not be taken forward and can be discounted at this stage	

Appendix D

Modelling Note

South East Scotland Transport Partnership (SEStran)

Clackmannanshire – Fife – Edinburgh (CFE) STAG Study

Model Development

Revision Schedule



Clackmannanshire – Fife – Edinburgh (CFE) STAG Study

August 2009

S106302

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	12 August 2009	Draft	Geoffrey Cornelis Transport Planner	Marwan AL-Azzawi Associate	Marwan AL-Azzawi Associate

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1 Introduction

1.1 Background

- 1.1.1 South East Scotland Transport Partnership (SEStran), Fife Council and Clackmannanshire Council appointed Scott Wilson to carry out a STAG-based study to examine freight and passenger transport connectivity issues between Clackmannanshire, Fife and Edinburgh.
- 1.1.2 The SEStran Regional Transport Strategy (RTS) 2008-2023 identifies a series of measures to be introduced across the South East of Scotland region. The RTS suggests a number of corridors with poor transport connectivity for prioritising investment, including the Clackmannanshire – Fife – Edinburgh corridor where there may be opportunities to address modal shift for both freight and public transport.
- 1.1.3 The inauguration of the Stirling to Alloa railway which opened to passenger services and freight was the signal for this particular study. However, options were assessed for a number of modes, including road improvements, rail, bus and ferry services.
- 1.1.4 Part of the remit was to estimate future levels of patronage and freight modal shift along the corridor for each potential option. For this purpose, a model of the study area was developed.
- 1.1.5 This technical note details the methodology adopted to carry out the modelling and produce high-levels estimation of potential demand. It also outlines the economic appraisal and its associated results.

1.2 Structure of this Technical Note

- 1.2.1 The overall structure of this note is as follows.

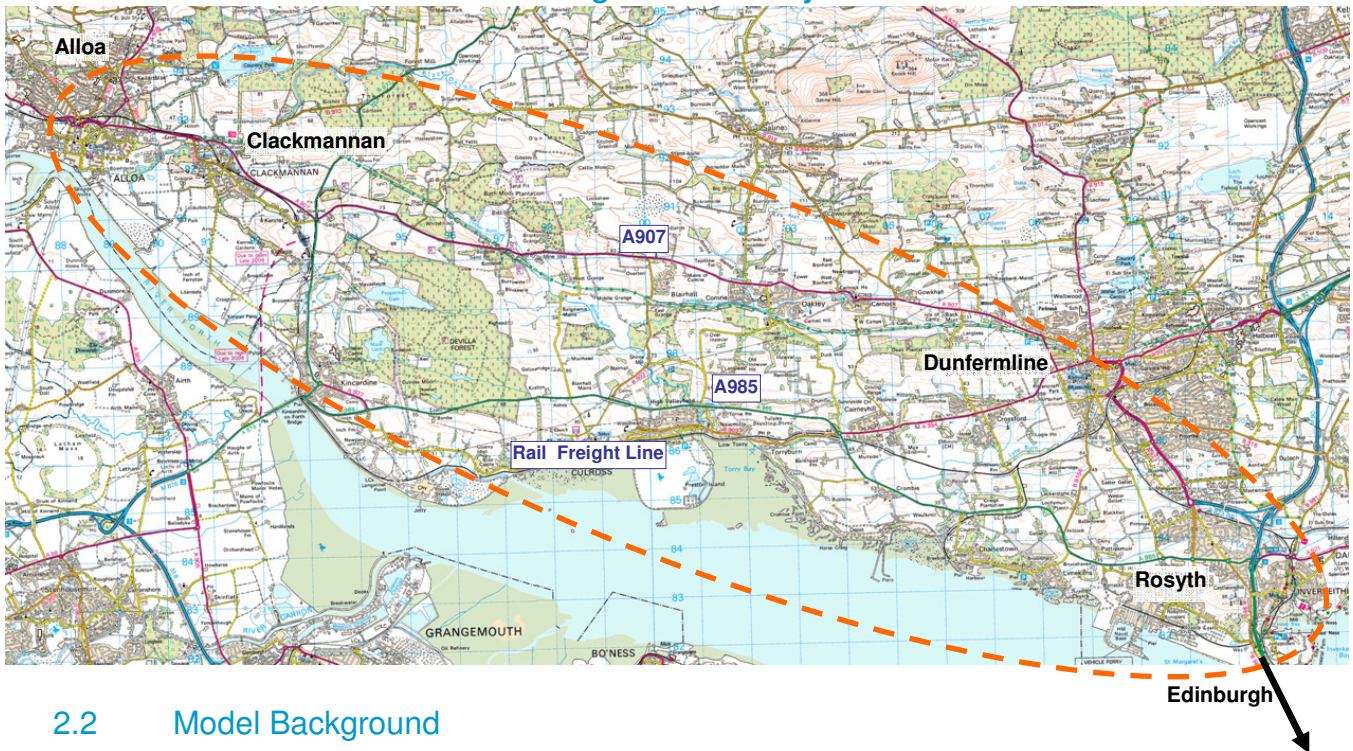
- Chapter 2 - describes the modelling framework and reviews the options analysed;
- Chapter 3 - presents the results of the modelling exercise;
- Chapter 4 - sets out the results of the economic appraisals; and
- Chapter 5 - summarises the conclusions.

2 Model Review and Description of Options

2.1 Study Area

- 2.1.1 The study area (shown in Figure 2.1) consists of a corridor to the north of the Forth, approximately 30km long, from Alloa to the Forth bridge/Inverkeithing area. The main thoroughfares in this corridor are the A907 from Alloa to Dunfermline and the A985 trunk route from Kincardine to Rosyth/Inverkeithing. It also encompasses a rail freight line from Alloa to Dunfermline and a cycle route from Clackmannan to Dunfermline.
- 2.1.2 The main movements in the corridor, for both passengers and freight, follow an east-west axis between Alloa and Stirling to the west, and Dunfermline, Rosyth and Edinburgh to the east.
- 2.1.3 Public transport connectivity is quite poor in the area, and most public transport trips between Stirling/Alloa and Edinburgh currently occur on the south side of the Forth, using the existing Alloa-Edinburgh rail line or the M9.

Figure 2.1 – Study Area



2.2 Model Background

Overview

- 2.2.1 For the purpose of estimating passengers demand, the Transport Model for Scotland version 05.a (TMfS:05a) was used, which is developed and maintained by the MVA Consultancy on behalf of Transport Scotland. TMfS was requested in order to provide a consistent modelling framework with other SEStran studies. This multi-modal transport demand and assignment model was previously used for the Strategic Transport Projects Review (STPR).

Model Development

2.2.2 For the estimation of modal shifts in freight movements, output from the Scottish Freight Model (SFM) was used, as TMfS does not include rail and waterborne freight. The SFM was developed by Scott Wilson as part of the Scottish Freight Study and represents detailed patterns of freight movements across all modes (road, rail, sea, air).

Reference Case

2.2.3 In order to model and assess transport schemes, it is important to compare against a Reference Case. This scenario takes into account planned and committed schemes which will occur and allow for comparison against the future state of the network. The TMfS has defined the following Reference Case of committed transport schemes for inclusion in future demand modelling:

2012 Reference Case Scheme

- Existing Forth Crossing and Tay Bridge – no tolls;
- M74 Completion;
- M9 Spur Extension;
- Finnieston Bridge;
- A68 Northern Bypass;
- Ferrytoll Link Road;
- Second Upper Forth Crossing;
- M8 Baillieston to Newhouse and Associated Improvements (Raith Interchange and adjacent Network Improvements);
- M80 Upgrade;
- Aberdeen Western Peripheral Road;
- A830 Arisaig to Loch Nan Uahm;
- A96 Fochabers to Mosstodloch (Bypasses);
- A90 Balmedie to Tippetty (Dualling);
- Stirling – Alloa – Kincardine Rail Link;
- Airdrie – Bathgate Rail Reopening;
- Edinburgh Tram Line Phase 1a;
- Glasgow Airport Rail Link;
- Borders Rail Service;
- Larkhall to Milngavie Rail Project;
- Edinburgh Waverley Station Upgrade;
- Scotland's Railway Short Term infrastructure:
 - new rail station at Laurencekirk with 1 service every two hours;
 - platform extension at Bishopbriggs with six-car trains on Glasgow to Dunblane services;
 - platform extension at Elgin and Inverness with six-car trains on Aberdeen to Inverness services;
 - Lugton and Stewarton loop with two trains per hour between Glasgow and Kilmarnock;
 - Haymarket station (no modelled impact in TMfS); and
 - Gourock Transport Interchange (no modelled impact in TMfS).
- Cross Forth rail scenarios associated with Larbert-Stirling and Forth Bridge re-signalling:
 - additional park and ride capacity at Kirkcaldy, Markinch, Rosyth,
 - Perth, Cupar, Dunfermline Town, Leuchars, Markinch, and Dunfermline Queen Margaret;

Model Development

- Edinburgh to Aberdeen express rail services;
- new Edinburgh to Dundee rail services stopping at Fife stations;
- hourly Edinburgh to Perth service; and
- Newcraighall services no longer integrated with Dunblane and Bathgate services and extended to Fife.
- Development Management led infrastructure:
 - Heartlands;
 - Pollock;
 - A68 new roundabout at Newton St Boswells;
 - A90 new interchange at Portlethen;
 - A82 Strathleven Roundabout;
 - Bishopton;
 - A77 south of Whitlett dualling; and
 - Glasgow East End Regeneration Route.

2022 Reference Case Scheme

- Cross Forth rail scenarios:
 - hourly Edinburgh to Inverness service;
 - remove Dalmeny and North Queensferry stops from Fife Circle services;
 - extend Borders rail services to Inverkeithing stopping at all stations; and
 - all Edinburgh to Dundee services to be operated by six-car trains.

2.2.4 Application of TMfS:05a was discussed and agreed with Fife and Clackmannanshire Councils and SEStran and the model is therefore considered to be an appropriate tool to estimate patronage on the proposed services.

2.2.5 Demand data were produced for the years 2012 and 2022, using the integrated Transport and Economic Land Use Model of Scotland (TELMoS) which supplies TMfS with forecasts of the land-uses which generate the demand for travel.

2.2.6 A Park-and-Ride (P&R) module was also used to estimate the transfer from car drivers and public transport users to P&R users. This is particularly important as the study corridor is a relatively rural area and therefore there might be a significant number of users necessitating driving to a proposed bus or train station and travelling onwards using public transport.

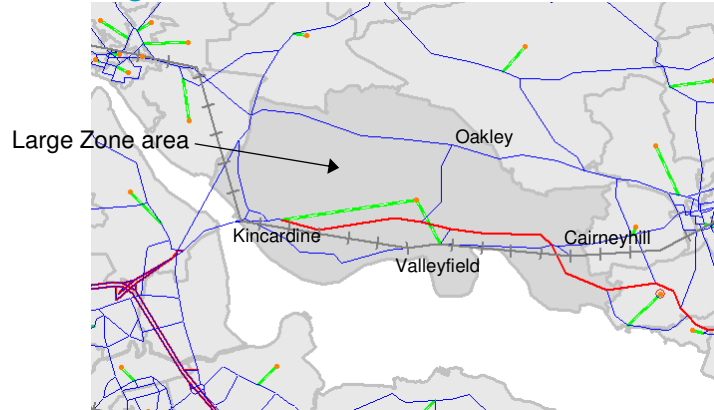
2.2.7 Regarding freight, output from the Scottish Freight Model was produced for 2020 and interpolated for the 2012 and 2022 forecast years.

Observations on the Use of TMfS:05a

Zoning system

2.2.8 Although TMfS uses detailed demand modelling in large urban conurbation, the zoning system is coarser in less dense areas. This was found to be a limitation in the mostly rural Clackmannanshire-Fife corridor, as most of the central part of the study area is comprised in one single large zone which includes Kincardine, Oakley, Valleyfield and Cairneyhill. As a result, all demand from and to this large zones is loaded on only two nodes in the network, as illustrated in Figure 2.2 below. Therefore, the model does not allow for detailed stopping patterns to be assessed in this area.

Figure 2.2 – TMfS Kincardine & Culcross Zone



Land-use Assumptions

- 2.2.9 Another issue arose regarding the demand modelling, as it was found that travel demand tends to decrease in the future in the corridor area, essentially for public transport users. This is a consequence of the design of TELMoS. The strategic process which estimates household and employment movements operates at a large area level, with households and population being drawn towards areas that have relatively strong economies and away from areas where the economy is relatively weak. All of Fife fell within an area with relatively poor industrial structure, which means that few households or population are drawn to the area from other parts of Scotland.
- 2.2.10 Additionally, this version of TELMoS does not include a distance deterrence function, which results in some zones being excessively attractive. Furthermore, the demand forecast has no capacity constraint in terms of development within a zone. This leads to a very important growth in transport demand in some areas such as Edinburgh, to the detriment of other, less developed areas such as Fife and Clackmannanshire.

Future Developments

- 2.2.11 As a result of the issues mentioned above, Local Authorities in Fife and Clackmannanshire considers future travel demand assumptions to be too low in their area. An illustration of this is that some significant residential and office developments are planned in the Clackmannanshire and Fife Structure/Local Plans but have not been included in TMfS. Data for these new developments was obtained from Clackmannanshire and Fife Councils and the details are shown in the following table.

Table 2.1 – Future Landuse Developments

Type	Completed by 2012	Completed by 2022
Clackmannanshire		
Housing (units)	2,000	4,500
Industrial (ha)	0	64.5
Offices (sqm)	5,287	11,325
Fife		
Housing (units)	1,600	2,500
Industrial (ha)	3.6	137.1
Offices (sqm)	6.9	26.6

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2.2.12 Hence, if the above was included, the demand matrices from TELMoS could be significantly higher. To demonstrate the potential increase, we have sourced trip rates for each landuse using the TRICS 2009 database and, applying these rates to the values in Table 2.1, the number of trips which could also be generated was estimated for both car and public transport. The se are shown in Table 2.2.

Table 2.2 – New Developments Generated Trips

	2012		2022	
	Car	PT	Car	PT
Clackmannanshire				
AM Peak	709	225	2,687	562
Off Peak	436	57	2,490	127
PM Peak	683	111	3,573	261
Fife				
AM Peak	1,133	331	5,484	1,001
Off Peak	702	80	5,110	205
PM Peak	1,125	194	7,468	617

2.2.13 However, after discussion with SEStran, it was agreed to use the base matrices from TMfS “as is” since these would provide a low growth scenario which would produce a more robust forecast of potential patronage for the economic appraisal, as adding the above developments can only increase the benefits associated with any options emerging from this study.

2.2.14 The additional trips above can however be included in a sensitivity test to gauge the impact on the economic appraisal. This can be viewed as a high growth scenario.

2.3 Options Tested

2.3.1 Following on from the initial assessment of travel patterns and consultations with local authorities, a number of initial options for improvements to the transport infrastructure were then developed in the STAG process and tested in the modelling framework. However, before presenting the modelling results, it is worth presenting the options modelled which are detailed below.

Rail Options

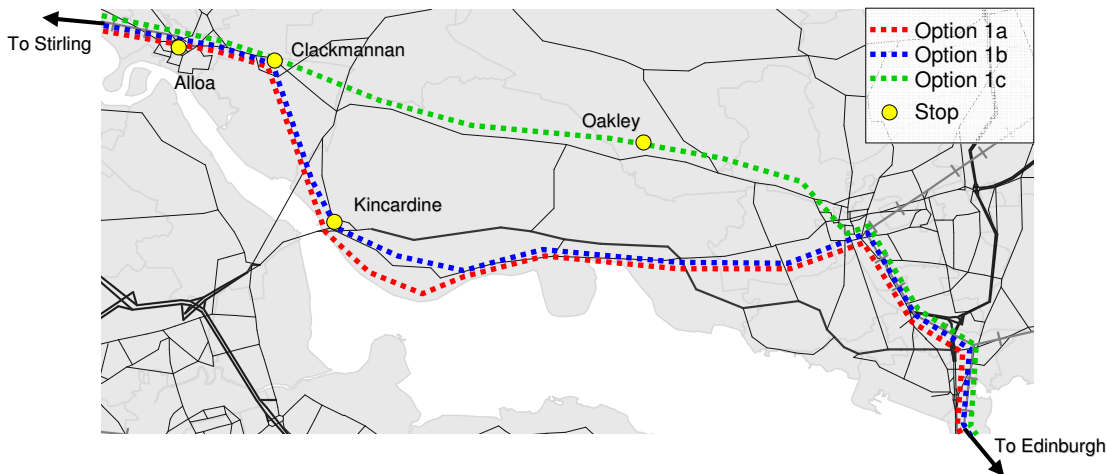
2.3.2 Three rail options have been considered to cater for passenger and freight demand, which would be running as extensions of the Stirling Alloa line. Figure 2.3 shows these options.

- **Option 1a:** Passenger and freight services on the existing railway line from Stirling to Edinburgh. This line is currently open to freight trains only with speed restriction of 35mph and signalling block not suitable for passenger trains. Under this proposal, the line would be upgraded and reopened to shared passenger and freight services. The line would be an extension of the Stirling – Alloa service and would tie-in to the existing railway network at Dunfermline, which might require development of the Charlestown Chord. The modelled option includes stops at Alloa, Clackmannan, Kincardine, and then a direct service to Edinburgh, with an average speed of 85 km/h on the new section;

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- **Option 1b:** As Option 1a but with a new straightened section from Longannet to north of Kincardine to allow passenger and freight trains to bypass Longannet and therefore provide a slightly faster running time; and
- **Option 1c:** Re-open disused railway line from Stirling to Edinburgh (currently cycle route 64) for passenger and freight services. The line would then tie-in to the existing network using the BRT/LRT reserve corridor identified by Fife Council to the west of Dunfermline, from Rumblingwell to Rosyth Station. This option was modelled with stops at Alloa, Clackmannan, Oakley and then direct service to Edinburgh, with an average speed of 100km/h on the new section.

Figure 2.3 – Rail Options Alignment



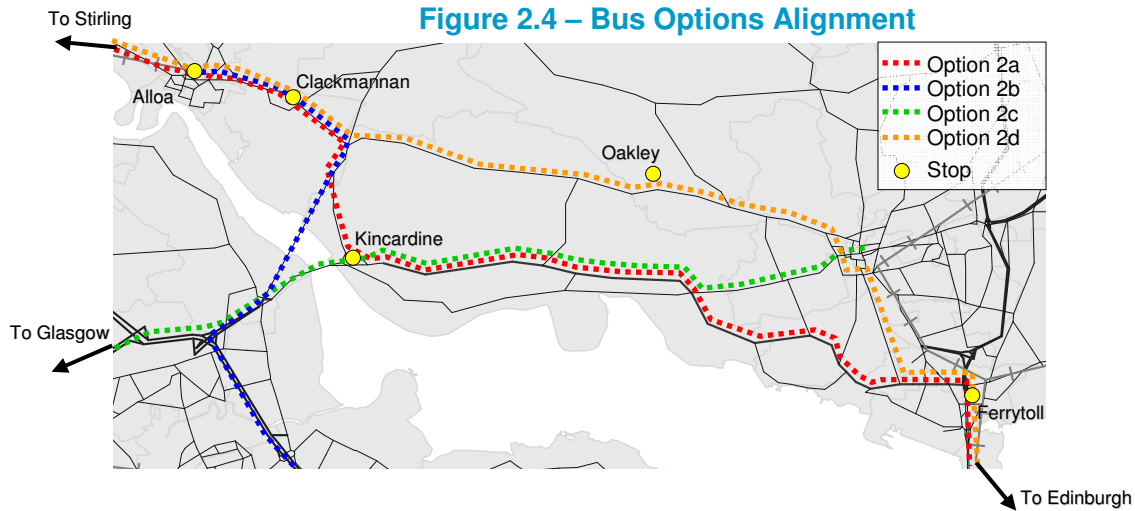
2.3.3 All three options were modelled with a frequency of 2 services per hour in each direction, based on existing services linking Stirling to Edinburgh. Timetables were based on existing stopping patterns from the MOIRA database between Edinburgh and Dunfermline. On the new sections, timetables were calculated assuming the average speed of 85km/h for options 1a and 1b and 100km/h for option 1c, and a 1 minute stop per station. Fares used in the model were based on standard TMfS values for rail.

Express Bus Options

2.3.4 Four possible express bus options were identified during the STAG process, which included services between Stirling and Edinburgh and services to Glasgow and Edinburgh out with the corridor. The options modelled are illustrated in Figure 2.4 and include:

- **Option 2a:** Express service from Stirling to Edinburgh using the B9037 and A985, with stops at Alloa, Clackmannan and Kincardine;
- **Option 2b:** Express service from Alloa to Edinburgh via M9, with stops at Alloa, Clackmannan and Kincardine;
- **Option 2c:** Enhanced express service from Dunfermline to Glasgow via M876/M80, which would provide a frequent connection to Glasgow and the west; and
- **Option 2d:** Express service from Stirling to Edinburgh but using the A907, with stops at Alloa, Clackmannan and Oakley.

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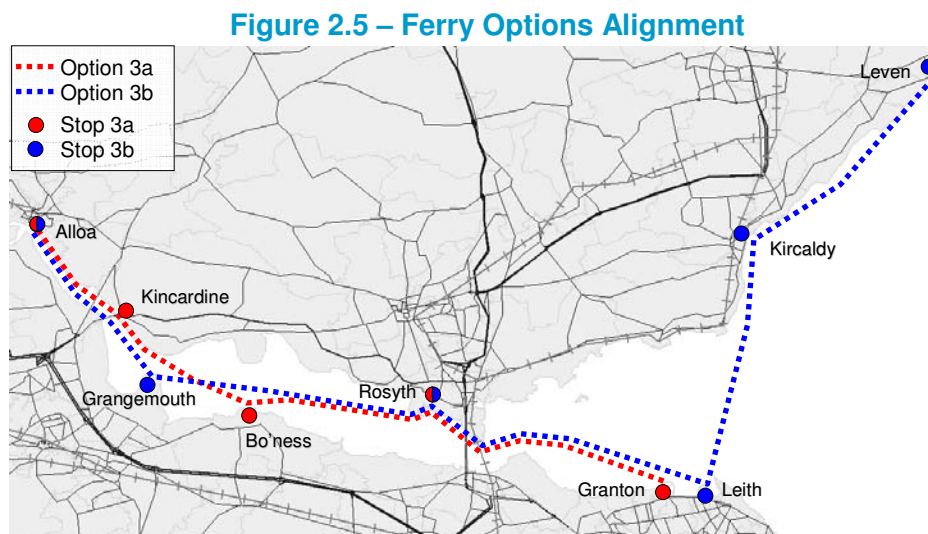


2.3.5 All options were modelled with a frequency of 3 buses per hour in each direction, based on existing services linking Stirling to Edinburgh. The speed for these services was calculated by TMfS during the assignment, based on links specifications and congestion. Fares used in the model were based on standard TMfS values for bus.

Waterborne Options

2.3.6 Two options were drawn up during the STAG process for water transport, reflecting the two user groups of passengers and freight. This included a passenger ferry service and a freight barge service running along the Firth of Forth. The routes for the options and possible stops are shown in Figure 2.5 below and includes:

- **Option 3a:** Passenger service between Alloa and Granton, with stops at Kincardine, Bo'ness, and Rosyth; and
- **Option 3b:** Freight service (using a barge vessel) between Alloa and Leven/Methill Docks, with stops at Grangemouth, Rosyth, Leith and Kirkcaldy.



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2.3.7 Both the ferry passenger service and the barge freight service were modelled with a frequency of 1 service per hour in each direction and a speed of 30km/h. Fares used in the model were based on TMfS values for ferries operating on the Firth of Clyde.

Road Improvement Options

2.3.8 To identify future congestion pinch-points, the ratio of flow-to-capacity (RFC) of road sections and junctions was estimated using TMfS. Those junctions along the key roads (A985/A977 and A907/A82) with an RFC of over 85% were identified as potentially benefiting from enhancement and small-scale capacity improvements were identified. Figure 2.6 shows the locations of the five junctions identified as potentially benefiting from improvements, which were:

- 1) Clackmannan – A907 (Clackmannan Road) / B909: widened entry on the north arm to provide two lanes for left and right turning movements in order to reduce vehicle queuing on the B909;
- 2) Gartarry Roundabout – A977: northbound towards the roundabout: widened entry (flared extra lane) to provide two lanes in order to separate left turning movements from other turning movements;
- 3) Kincardine Bridge New Roundabout – A977 / North Approach Road: widened entry (flared extra lane) on the North approach to provide two lanes in order to separate left turning movements from other turning movements;
- 4) A907 (Pittencrieff Street) / Chalmers Street / (A907) Glen Bridge: traffic signal upgraded to a demand-responsive system in order to prevent build-up of traffic on Chalmers Street; and
- 5) A907 (Carnegie Drive) / A823 (St. Margaret’s Drive) – at the approach from Townhill Road: additional lane on Holyrood Place on the approach to Sinclair Gardens Roundabout to allow the segregation of left hand turning traffic movements onto A907 (Appin Crescent) from other traffic.

Figure 2.6 – Road Improvement Options



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- 2.3.9 These junction improvements were intended to address the pinch points for traffic and also accident sites in the area. Each considered option was a combination of these five junctions, namely:
- **Option 4a:** This option involves junctions 1), 2) and 3) described above;
 - **Option 4b:** This option involves junctions 1), 2), 4) and 5); and
 - **Option 4c:** The final option would combine the two options and involve improvements on both the A985 and A907.
- 2.3.10 Of these five junctions, only junction 1, 4 and 5 are effectively modelled in TMfS in the reference case model. Hence, improvements were tested by adding one more lane on the congested approaches for junction 1 and 5 and by adjusting the phasing accordingly for the signal at junction 4. The remaining junctions are not coded in TMfS and it was not possible to assess the impact of the proposed improvements. However, it was assumed the benefits for these junctions would be similar to the other junctions.

2.4 Freight Modelling

Background Freight Movement

- 2.4.1 Although TMfS includes road freight, it does not take account of rail and sea freight. As a result, it was not feasible to model the potential modal shift from road-based freight to the proposed ferry and rail links using TMfS.
- 2.4.2 For this purpose, we therefore used an Incremental Transfer Model from the Passenger Demand Forecasting Handbook (PDFH) and using model output from the SFM. This model evaluates the transfer from road to rail for any given origin/destination (OD) pair, based on the changes in travel time and distance following the introduction of the proposed schemes. Regarding the ferry service, although these values are intended for rail it was assumed that the proposed ferry service would effectively work similar to a rail link and the same methodology was used, although the parameters were changed to reflect how a ferry operates.
- 2.4.3 The incremental model took the form of:

$$\text{Incremental Change} = (\text{GC}_{\text{Option}} / \text{GC}_{\text{Base}})^e$$

where $\text{GC}_{\text{Option}}$ is the generalised cost for the option considered, GC_{Base} is the generalised cost in the base scenario, and e is the elasticity factor. Based on Section B of the PDFH, elasticity factors of -0.66, -0.78 and -0.9 were used for journeys which were respectively shorter than 100 miles, between 100 and 200 miles, and longer than 200 miles.

- 2.4.4 The generalised cost is a function of the journey distance, time and potential interchange penalty and was calculated based on PDFH recommended values as follows:

$$\text{GC} = (2.7 \times \text{Time}) + (1.9 \times \text{Distance}) + (1.0 \times \text{Interchange})$$

- 2.4.5 Base times and distances were obtained from network skims from TMfS and SFM to take into account future traffic growth and congestion. Values for the various schemes being tested were calculated based on existing time and distances, and on the speed of the proposed links. The weighting coefficients used in the equation to convert the time, distance and interchange units into generalised costs were sourced from Section B of the PDFH.
- 2.4.6 The incremental model then produced the proportion of freight from the road freight matrices transferred on rail or ferry, for each OD for which demand was identified as likely to be



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attracted by the proposed schemes. These were generally journeys for which the opening of the new rail or ferry link would lead to savings in terms of time or distance.

Known Freight Plans

- 2.4.7 In addition to estimating the transfer of background freight, there are known plans by the Diageo site, which is a significant contributor to freight movements in the area, to transfer significant volumes of materials using freight rail services. The origins and destinations of these materials extend as far as Manchester, suggesting there could be significant national benefits from removing HGVs off the road network. Hence, these have been included in the estimates.
- 2.4.8 We have obtained information from Diageo on their projected cargoes to/from their site in the area. This includes the origins/destinations of various movements and the road length savings, as shown in Table 2.3.

Table 2.3 – Potential Diageo Freight ODs and HGV-km

Origin/Destination	Cargo	Annual Loads	Rd kms	Total Rd kms (per annum)
Leven – Grangemouth	RTD cased goods	5,000	63	315,000
Leven – Grangemouth	Other cased goods	7,000	63	441,000
Cameron Bridge – Cambus	Whisky	2,500	29	72,500
Leven – Cambus	Empty casks	900	58	52,200
Totals		15,400		880,700

- 2.4.9 As can be seen, there is potentially a saving of almost 0.9 million HGV-kms per annum (this does not allow for annual increases in volumes). We have therefore included these values in the base estimates to give the total demand flows for freight transfer.

3 Modelling Results

3.1 Public Transport Results Summary

- 3.1.1 This section details the results of the transport modelling carried out to estimate patronage for the various public transport options appraised in the initial STAG appraisal.
- 3.1.2 For the purpose of this appraisal, both the assumed first year of operation of 2012 and a future design year of 2022 were modelled, using the relevant demand data from TMfS:05a.

Rail Options

- 3.1.3 Table 3.1 below shows the estimated annual patronage for the three proposed rail services, for each station. Peak hour flows have been converted to annual figures using standard TMfS annualisation factors for public transport.

Table 3.1: Estimated Annual Rail Patronage

Station	Option 1a	Option 1b	Option 1c
2012			
Stirling	336,673	339,925	382,295
Alloa	224,681	226,852	226,026
Clackmannan	17,789	17,961	36,078
Kincardine	167,551	169,170	n/a
Oakley	n/a	n/a	244,377
Haymarket	187,649	189,461	226,247
Waverley	258,378	260,874	300,182
Total	596,360	602,121	707,602
2022			
Stirling	345,305	348,640	388,431
Alloa	227,633	229,832	223,245
Clackmannan	19,609	19,799	40,278
Kincardine	170,797	172,447	n/a
Oakley	n/a	n/a	250,871
Haymarket	181,012	182,760	220,760
Waverley	239,223	241,534	281,662
Total	591,790	597,506	702,624

- 3.1.4 The results show that options 1a and 1b, using the existing freight line, are very similar in terms of patronage. This is to be expected since the difference in infrastructure for these two options only leads to a few minutes difference in terms of timetabling. However, option 1c which uses a shorter railway line to the north returns higher levels of patronage, a consequence of it having faster services.
- 3.1.5 Passenger movements show that most trips occur between Stirling and Alloa to the west and Edinburgh to the east, with few journeys entirely within the corridor area.
- 3.1.6 It must also be noted that the high levels of patronage at Kincardine and Oakley may be artificially raised due to this area being modelled as a single large zone, as mentioned in

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Section 2.2.8. This might lead to demand from other towns in this zone (such as Cairneyhill or Valleyfields) using the proposed services, even though they would not have access to it in reality.

3.1.7 All three options show a slight decrease between 2012 and 2022, which is consistent with the trend of decrease in public transport in TMfS, particularly in Fife and Clackmannanshire, as noted in section 2.2.9.

Bus Options

3.1.8 Table 3.2 below shows the estimated annual patronage for the three proposed bus services, for each stop. Peak hour flows have been converted to annual figures using standard TMfS annualisation factors for public transport.

Table 3.2: Estimated Annual Bus Patronage

Bus Stop	Option 2a	Option 2b	Option 2c	Option 2d
2012				
Stirling	9,655	5,629	n/a	6,370
Alloa	51,187	52,315	n/a	40,343
Clackmannan	7,956	8,544	n/a	11,752
Kincardine	35,940	41,991	n/a	n/a
Oakley	n/a	n/a	n/a	3,568
Ferrytoll	35,404	n/a	n/a	33,319
Haymarket	24,622	39,644	n/a	23,843
Waverley	21,581	25,542	n/a	17,630
Dunfermline	n/a	n/a	14,171	n/a
Glasgow	n/a	n/a	14,171	n/a
Total	93,172	86,832	14,171	68,413
2022				
Stirling	8,694	4,924	n/a	5,649
Alloa	43,991	40,109	n/a	34,958
Clackmannan	7,580	6,272	n/a	11,180
Kincardine	30,582	34,369	n/a	n/a
Oakley	n/a	n/a	n/a	3,136
Ferrytoll	26,268	n/a	n/a	26,218
Haymarket	15,857	26,238	n/a	15,460
Waverley	12,688	18,135	n/a	11,051
Dunfermline	n/a	n/a	9,658	n/a
Glasgow	n/a	n/a	9,658	n/a
Total	72,830	65,024	9,658	53,826

3.1.9 The results show that patronage is significantly lower than for the rail services. The option performing best is option 2a (using the A985), followed by option 2b (express service using the M9), which does not include Ferrytoll but allows for faster services. Option 2c linking Dunfermline to Glasgow shows very poor results, due to insufficient demand on this journey and competing services already in existence.

3.1.10 As noted for the rail options, patronage at Kincardine may be artificially increased by the configuration of the model zones in the study area.

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3.1.11 All four options show a significant drop between 2012 and 2022 with patronage decreasing between 21% and 31%. This is consistent with the query raised in section 3.1.7.

Ferry Option

3.1.12 Table 3.3 below shows the estimated annual patronage for the proposed ferry passenger service, for each stop. Peak hour flows have been converted to annual figures using standard TfS annualisation factors for public transport.

Table 3.3: Estimated Annual Ferry Patronage

Port	Option 3a	
	2012	2022
Alloa	12,299	12,355
Kinross	17,452	17,396
Bo'ness	7,681	8,818
Rosyth	11,421	12,746
Granton	21,811	23,884
Total	35,332	37,599

3.1.13 As can be seen, patronage is quite low for the ferry option, due to its low speed compared with other existing public transport services. Therefore, it appears unlikely that this option could be commercially viable.

Abstraction from Other Modes

3.1.14 In order to provide a complete analysis of the impact of the proposed schemes on transport demand in the study area, it is important to evaluate the proportion of passengers which are abstracted from other modes, mainly car, bus and train. Table 3.4 below shows the estimated annual abstraction by mode for each option. These results include abstraction within the corridor area as well as on the M9 and existing railway line to the southern side of the Forth, to present a complete picture of transport movements between Stirling and Edinburgh.

Table 3.4: Estimated Annual Abstraction

Option	2012 Abstraction			2022 Abstraction		
	Bus	Rail	Car	Bus	Rail	Car
Rail option 1a	19%	68%	13%	14%	76%	10%
Rail option 1b	19%	68%	13%	14%	76%	10%
Rail option 1c	25%	65%	10%	17%	72%	11%
Bus option 2a	46%	34%	20%	34%	38%	28%
Bus option 2b	41%	33%	27%	28%	22%	50%
Bus option 2c	25%	35%	39%	26%	26%	48%
Bus option 2d	31%	41%	28%	23%	46%	31%
Ferry option 3a	n/a	n/a	n/a	n/a	n/a	n/a

3.1.15 The results show that for rail, up to ¾ of passengers using the new services are abstracted from the existing Stirling-Edinburgh line to the south of the Forth Estuary. Abstraction from bus is comprised between 14% and 25% and abstraction from car makes up the rest (10% to 13%).

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- 3.1.16 Abstraction levels for bus options vary notably. This is due to the fact that patronage for these options is low and therefore any slight alteration in modal shift during one period changes significantly the annual proportion for each mode. However, it can be observed that abstraction from public transport tends to drop between 2012 and 2022, whereas abstraction from car increases.
- 3.1.17 Abstraction for the ferry option was not calculated as the levels of patronage were too low to distinguish the genuine impact of the ferry to background noise in the model.

3.2 Road Improvements Options Results Summary

3.2.1 As an alternative to new public transport services, three options were tested involving road improvement on a number of congested junctions. Table 3.5 below show the results of the modelling exercise in terms of reduction in vehicle-kilometres and vehicle-hours.

Table 3.5: Estimated Annual Road Savings

	4a		4b		4c	
	2012	2022	2012	2022	2012	2022
Vehicle-kilometres	98,931	31,029	148,397	46,543	247,328	77,572
Vehicle-hours	1,351	4,196	2,027	6,294	3,378	10,490

3.2.2 It can be seen that option 4b returns better results than option 4a, due to the reduction in congestion on the A907 in Dunfermline town centre. Option 4c, being a combination of all the junctions, gives the best results. Reduction in vehicle-hours and vehicle-kilometres are however quite modest for all three options.

3.3 Freight Results Summary

3.3.1 In addition to the impact of the proposed schemes on public transport and car ridership, their potential in terms of usage by freight was also evaluated for the rail and ferry options. The following table indicates the estimated freight modal shift for the rail and ferry options, indicating the number of lorries that would be taken off the road following the introduction of each option, as well as the associated reduction in HGV-kilometres.

Table 3.6: Annual Freight Abstraction

	2012				2022			
	Rail 1a	Rail 1b	Rail 1c	Ferry 3b	Rail 1a	Rail 1b	Rail 1c	Ferry 3b
HGV Reduction	18,415	18,802	19,434	7,760	26,098	26,443	27,072	14,356
HGV-kilometres	2,746,312	2,817,810	3,001,074	428,741	3,196,607	3,267,276	3,451,194	824,522

- 3.3.2 Results show that, similarly to passenger patronage, the three rail schemes return similar results, with the best options being option 1c, followed by option 1b.
- 3.3.3 The introduction of the ferry service leads to a lesser reduction in HGVs, and only for shorter distances as can be seen from the modest reduction in HGV-kilometres.

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3.4 Revenue and Other Benefits

3.4.1 An outline economic analysis was undertaken to estimate the revenues and other potential benefits associated with each option. This section only presents outline results and a more detailed analysis for the preferred options is included in the following chapter.

Public Transport Revenue

3.4.2 Revenue generated by patronage was calculated for each public transport option, using output from TMfS.

3.4.3 For each service, an average fare of £4.50 for bus and ferry and £5.50 for rail was estimated, based on data from the CAPRI database (Computer Analysis of Passenger Revenue Information) for similar journeys. This fare was then adjusted for each origin/destination pair based on the distance travelled, producing a fare matrix which was applied to the demand matrix to give the total revenues. Results are illustrated in the following table.

Table 3.7: Public Transport Options Revenue

Option	2012	2022
1a – Rail using existing freight line	£2,044,550	£2,029,921
1b – Same as 1a with realigned section at Longannet	£2,064,299	£2,049,528
1c – Rail using disused railway	£2,383,654	£2,374,973
2a – Bus using A985	£196,098	£148,737
2b – Bus using the M9	£235,902	£163,308
2c – Bus Dunfermline-Glasgow service	£63,555	£43,314
2d – Bus using A985	£165,726	£130,276
3a – Ferry service	£74,090	£76,129

3.4.4 Similarly to patronage, revenues are much higher for rail options than bus and ferry. In 2012 rail options revenues are in excess of £2 millions per year, whereas bus options revenues range from £64k for option 1c to £236k for option 1b. The ferry service gives the lowest results with £74k. For all options, revenues decrease in 2022 due to the drop in patronage, except for the ferry service.

3.4.5 It must be noted that these figures indicate the total revenues associated with each proposed service but do not take into account abstraction from existing public transport services, and therefore do not reflect potential drops in revenue for other modes or services. This is particularly important for the rail options, where up to 76% of patronage is abstracted from the existing rail services to the south of the Forth.

Road Option Benefit

3.4.6 Benefits associated with the road improvement options were calculated by estimating the savings in time and vehicle operation costs (VOC) for each option. To convert the reduction of vehicle-minutes and vehicle-kilometres to time and VOC savings, values of 8.2p per kilometres and 11.6p per minute were used, sourced from the Department for Transport’s WebTAG.

Table 3.8: Road Options Benefits

	4a		4b		4c	
	2012	2022	2012	2022	2012	2022
VOC savings	£12,169	£3,817	£8,112	£2,544	£20,281	£6,361
Time savings	£14,108	£43,806	£9,405	£29,204	£23,513	£73,010

Freight Benefits

- 3.4.7 In order to assess the benefits produced by the modal shift from road to rail and ferry, we used the Department for Transport’s process to estimate the valued of Sensitive Lorry Miles (SLMs). This involves applying standard environmental rates to the HGV-kms saved per annum to estimate the environmental benefits of removing HGVs from the road.
- 3.4.8 The analysis used the Incremental Transfer Model detailed in section 2.4 to estimate the proportion of freight transferred from road to other modes, and the resulting decrease in HGV-kilometres. We then applied a standard value of 53p per lorry-mile removed, which returned the SLM benefits for each option.
- 3.4.9 Additionally, new revenues generated by the conveying of freight by rail or ferry were calculated. For this, the amount of freight taken off the road was converted into TEUs (Twenty-foot Equivalent Units) and a standard rate of £15 per TEU was applied, based on data from rail freight operators.
- 3.4.10 The resulting benefits for freight are shown in Table 3.9 below.

Table 3.9: Annual Freight Abstraction

	2012				2022			
	Rail 1a	Rail 1b	Rail 1c	Ferry 3b	Rail 1a	Rail 1b	Rail 1c	Ferry 3b
SLM	£904,627	£928,179	£988,545	£141,226	£1,052,953	£1,076,231	£1,136,813	£271,595
Revenue	£198,384	£202,545	£209,355	£91,962	£281,145	£284,868	£291,636	£170,117
Total	£1,103,012	£1,130,724	£1,197,901	£233,188	£1,334,099	£1,361,099	£1,428,449	£441,712

3.5 Detailed STAG Appraisal Modelling

Options Tested

- 3.5.1 Following the initial STAG appraisal and consultation with the client group, four options were shortlisted for detailed STAG appraisal. These had to be modelled accordingly in more details. To avoid confusion with the previous nomenclature, the options will be described as follows:
 - **Option A:** existing railway line from Alloa to Rosyth with the Charlestown Chord in place, as per the previous options 1a;
 - **Option B:** as option A but without the Charlestown Chord in place, requiring a ‘switch back’ operation and an additional 15 minute journey service time;

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- **Option C:** this will consist of the rail alignment in option A but for freight only, plus a new express bus service with an alignment based on the A985 (as per option 2a), stopping at Clackmannan, Kincardine, Ferrytoll and into Edinburgh; and
- **Option D:** this will consist of the rail alignment in option A but for freight only, plus a new express bus service with an alignment based on the A907 (as per option 2b), and with stops at Clackmannan, Oakley and Ferrytoll before going into Edinburgh.

Detailed Modelling Process and Results

3.5.2 Modelling for these four preferred options was undertaken following the same methodology as for the first round of options, using TMfS for passengers and the Incremental Transfer Model for freight. The same assumptions were used.

3.5.3 The following tables show a summary of the results for both passengers and freight, for all four options.

Table 3.10: 2012 Annual Results Summary

	Option A	Option B	Option C	Option D
Passengers				
Total Passengers	596,360	453,557	93,172	68,413
Revenue	£2,044,550	£1,330,751	£196,098	£165,726
Abstraction Bus	19%	19%	46%	31%
Abstraction Rail	68%	68%	34%	41%
Abstraction Car	13%	13%	20%	28%
Freight				
HGV reduction	18,415	15,832	18,415	18,415
HGV-km reduction	2,746,312	2,677,083	2746312	2746312
Sensitive Lorry Miles	£904,627	£881,824	£904,627	£904,627
Freight Revenue	£198,384	£170,557	£198,384	£198,384
Total Freight Benefits	£1,103,012	£1,052,380	£1,103,012	£1,103,012

Table 3.11: 2022 Annual Results Summary

	Option A	Option B	Option C	Option D
Passengers				
Total Passengers	591,790	446,136	72,830	53,826
Revenue	£2,029,922	£1,317,003	£148,737	£130,276
Abstraction Bus	14%	14%	34%	23%
Abstraction Rail	76%	76%	38%	46%
Abstraction Car	10%	10%	28%	31%
Freight				
HGV reduction	26,098	24,196	26,098	26,098
HGV-km reduction	3,196,607	3,145,629	3196607	3196607
Sensitive Lorry Miles	£1,052,953	£1,036,161	£1,052,953	£1,052,953
Freight Revenue	£281,145	£260,654	£281,145	£281,145
Total Freight Benefits	£1,334,099	£1,296,815	£1,334,099	£1,334,099



Model Development

- 3.5.4 As observed previously, the rail options achieve a much higher patronage than the bus options. Not having Charlestown Chord in place (option B) leads to a decrease of 25% of patronage and 35% of revenue, due to the additional time lessening the attraction of the service.
- 3.5.5 Regarding freight usage, the absence of the Charlestown Chord leads to a decrease of 14% in 2012 and 7% in 2022. However, this corresponds to a decrease of respectively 2.5% and 1.6% in HGV-kilometres reduction only. Results for options C and D are identical to option A as these schemes are the same for freight.

Potential for Additional Stop at Crossford

- 3.5.6 The above results are based on two new stations at Clackmannan and Kincardine. However, the client group requested an analysis of the potential for a further stop/station at the eastern end of the study area, at Crossford.
- 3.5.7 Table 3.12 below shows the impact of this additional stop on the results.

Table 3.12: Annual Results with Stop at Crossford

	Option A	Option B	Option C	Option D
2012				
Passengers	627,806	485,003	138,665	127,724
Revenue	£2,152,358	£1,423,014	£272,821	£259,910
2022				
Passengers	623,236	477,582	112,277	106,944
Revenue	£2,137,785	£1,409,831	£213,111	£211,593

- 3.5.8 While the above results suggest there are additional trips, our investigation into the modelling results suggest these area all abstracted from other rail or bus services (mainly from services in Dunfermline) and hence there is no new net revenue or passenger gain. Given the fact there are likely to be additional capital and operational costs of a new stop/station at Crossford, it was concluded this option should be discarded from the rest of the study.

4 Economic Appraisal

4.1 Methodology and Assumptions

- 4.1.1 A TEE (Transport Economic Efficiency) analysis was undertaken for the four preferred options. The central principle of the TEE analysis is to estimate the welfare gain from the transport investment, as measured by the “willingness to pay” for these improvements and the financial impact on the private sector transport operators. The TEE does not include financial costs and benefits to the Government as these are quantified separately.
- 4.1.2 In order to appraise the benefits and costs of the different options, the Railway Economic Appraisal Model (REAM) was used. This is a detailed TEE Model developed specifically for the appraisal of railway projects in the UK since it takes into account some of the specific characteristics of heavy rail schemes. It has been applied widely in other projects including the Edinburgh Airport Rail Link (EARL) and the Waverley Station Redevelopment Project^{1,2,3}. The model contains the following features:
- The model is based on the requirements of DfT’s web-based Transport Appraisal Guidance (webTAG⁴) and STAG. It has a long track-record in appraising other projects;
 - The model has been developed over a number of years and is constantly being updated to reflect recent project appraisal experiences, feedback from Government agencies and appraisal guidance; and
 - Its analysis is transparent to users thereby helping to avoid potential ‘black box’ calculations.
- 4.1.3 Specific economic assumptions and cost adjustments are consistent with the Scottish Government’s STAG appraisal methodology. All monetary values are in 2002 market prices, unless explicitly stated otherwise, and values are discounted to the base year 2002, as adopted in webTAG convention.
- 4.1.4 The appraisal discount rate is 3.5% for appraisal years 1 to 30, and 3% thereafter. An appraisal period of 60 years has been adopted, as per STAG procedures, with an assumed first full year of appraisal of 2012 and with a final horizon year of 2071. The capital expenditure profiles for the two options are assumed to be over two years, with a 40%:60% split.
- 4.1.5 Capital costs were estimated for each option, as detailed in Section 7.7 of the STAG Study Report. At this stage of the study, operating, maintenance and renewals costs were based on an assumed rate of 3% of the capital costs (4% for Option B as the removal of Charlestown Chord results in a significantly longer journey length for the trains).
- 4.1.6 Using these assumptions and output from TMfS, REAM was used to assess the value of each option. Details of costs and benefits were obtained, as well as the estimated Net Present Values (NPV) and Benefit to Cost Ratios (BCR) for each option.

¹ Edinburgh Airport Rail Link (Design Development Appraisal), Scottish Executive, May 2007

² Waverley Station Redevelopment: Final STAG Report, Scottish Executive, July 2004

³ Phase 1 of Waverley Station Redevelopment: Passenger Escalators Analysis, Transport Scotland, July 2008

⁴ webTAG: web-based Transport Analysis Guidance, Department for Transport 2004

4.2 Economic Appraisal Results

- 4.2.1 Table 4.1 below shows the results of the TEE appraisal on monetised benefits and costs. The table shows for each option the Net Present Value (NPV), Benefits to Costs Ratio (BCR) and Revenue over Operating Costs (R/O).

Table 4.1: Economic Appraisal Results Summary

	PVB	PVC	NPV	BCR
Option A – Rail with Charlestown Chord	£274.55m	£213.16m	£61.40m	1.29
Option B – Rail without Charlestown Chord	£234.59m	£236.55m	£-1.97m	0.99
Option C – Bus A985 + Rail Freight	£50.63m	£52.39m	£-1.76m	0.97
Option D – Bus A907 + Rail Freight	£43.68m	£51.35m	£-7.68m	0.85

- 4.2.2 Results confirm that Option A gives the best results and is therefore the best compromise between costs and revenues and other benefits. All three other options returns a BCR of less than 1.0

5 Conclusion

- 5.1.2 The present study aimed to assess the viability and impact of a number of potential public transport and freight links in the Clackmannanshire-Fife-Edinburgh corridor to the north of the Forth.
- 5.1.3 TMfS:05a was used to estimate potential patronage and modal shift for all options, in both 2012 and 2022. Additional calculation was undertaken to estimate the impact of these options on freight, using an incremental transfer model.
- 5.1.4 Following consultations with stakeholders, a first round of eleven options were modelled, which were made of rail, bus, ferry and road improvements schemes. Analysis of potential patronage and associated revenue was carried out for all options.
- 5.1.5 From these results and after the initial STAG analysis, four preferred options were taken forward for a detailed STAG analysis. These were as follows:
- **Option A:** existing railway line from Alloa to Rosyth with the Charlestown Chord in place;
 - **Option B:** as option A but without the Charlestown Chord in place;
 - **Option C:** rail alignment as in option A but for freight only, plus a new express bus service on the A985; and
 - **Option D:** rail alignment as in option A but for freight only, plus a new express bus service on the A907.
- 5.1.6 A detailed economic analysis was undertaken on these four options. Results show that the option that gives the best performance is Option A, which returns the best Net Present Value and Benefits/Costs Ratio.