

Detailed Appraisal		D25 – West of Scotland Strategic Rail Enhancements						
Estimated total Public Sector Funding Requirement:		<i>Capital Costs/grant</i>		£1.5bn - £3bn				
		<i>Annual Revenue Support Present</i>		None				
		<i>Value of Cost to Gvt</i>		£500m - £1bn				
		<i>BCR/PVB</i>		N/A				
Summary Impact on STAG Criteria	Environment Safety Economy Integration Accessibility and Social Inclusion	---	--	-	0	+	++	+++
(Judgement based on available information against a 7pt. scale.)								
Intervention Description:								
<p>This intervention supports the terminal capacity issues in Glasgow, which significantly constrain the future ability of the rail network in the West of Scotland to respond to challenges and facilitate change. This intervention supports the objectives to address rail capacity issues in central Glasgow and increase public transport access to areas of economic activity. It also assists in contributing to objectives within corridors that serve Glasgow. The detail of the strategy to address this includes some or all of the following components, recognising the opportunity for early wins and an incremental and scalable solution:</p> <ul style="list-style-type: none"> The provision of a new city centre surface station to the east of Glasgow Central linking the rail network to the south and east of the city; The provision of a new city centre sub-surface station as part of a tunnel below the city centre linking the north and south rail networks; and/or The development of a Metro network across Glasgow comprising a mixture of conversion of heavy rail (e.g. part or all of the Cathcart Circle), lines on existing redundant infrastructure (e.g. Great Western Road / Botanic Gardens), new lines (e.g. Clyde Waterfront) and some on-road or next-to-road sections. <p>Both of the new city centre station options would provide additional platform capacity in the city centre and permit cross-city services to be provided.</p> <p>A Metro system could include new stations, improved service frequencies and improved access to and across central Glasgow. The system would be rolled out on a phased basis. The operational concept for the system using proven technology could be expanded to include a new crossing of the Clyde to around the Southern General Hospital and other lines to link areas not currently served by the heavy rail network.</p>								
Summary Rationale for Selection								
<p>Existing Glasgow rail terminal capacity will be at capacity within the timeframe of STPR. The lack of future rail terminal capacity places a significant constraint on the provision of additional rail services to meet future growth.</p> <p>The analysis has identified that previous development of the rail network in the West of Scotland has been successful in making best use of the network by implementing small scale interventions and targeting individual constraints. The issue of terminal capacity cannot be addressed in this way, meaning that a 'step-change' is required in order to meet predicted future demand. This 'step-change' will be supported by some smaller scale interventions and enabling works. Some of these may be deliverable earlier than the major component(s) and allow some interim relief to be gained.</p> <p>Detailed analysis of the problems has been undertaken to understand the function of the terminal capacity issues within the wider West of Scotland context. This analysis in conjunction with the objectives has allowed the identification of three broad core elements, each of which could form the basis of the strategy to address the objectives:</p> <ul style="list-style-type: none"> New surface station east of Glasgow Central; New sub-surface station between Glasgow Central and Glasgow Queen Street; and Development of a Metro network. 								

Development of these core elements has been undertaken to a level to confirm that each could provide a workable solution. This has included consideration of phasing and interaction both within and beyond the STPR period to deliver a meaningful solution.

The elements identified vary in terms of cost, risk, phasing, potential benefits, delivery timescale and in the way that they address the objectives. The elements are also not exclusive, so the strategy could for example include a new city centre station and the development of certain metro lines.

The strategy will provide a level of 'step-change' that permits a fundamental restructuring and realignment of services across the West of Scotland and potentially beyond. The details of this are undefined, meaning that the potential benefits that could be gained are not yet fully understood. Similarly, the extent to which the Metro network would be developed is not a fixed proposal, but a number of phases have been identified and considered. It is however understood that the additional capacity provided by the overall strategy would be such that it would provide for a variety of potential service enhancements, including other interventions identified within STPR.

This intervention would complement the development of Intercity rail operations, giving an expanded public transport hierarchy. Metro could provide for inner suburban movements, leaving heavy rail to cater principally for outer suburban and links to surrounding towns. By providing cross-city routes, the metro network could connect across Glasgow and also take pressure off the existing interchange facilities focused in the city centre.

Table 25.1.1 STPR Objectives

STPR Objectives	
<p><u>STPR Objective G1:</u> To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.</p> <p><u>STPR Objective G2:</u> To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road, and demand management.</p> <p><u>STPR Objective G3:</u> To address rail capacity and connectivity issues in central Glasgow.</p> <p><u>STPR Objective G4:</u> To promote continuing reduction in accident rates and severity rates across the strategic transport network.</p> <p><u>STPR Objective G5:</u> To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.</p> <p><u>STPR Objective G6:</u> To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.</p>	<p>1: Strongly Positive - Any of the intervention options or combination of options provide for a 'step-change' in rail capacity to and across the city centre. The Metro option in particular would support public transport access along the Clyde.</p> <p>2: Slightly Positive - This intervention would allow for significant increases in public transport capacity into and across the city centre. This would provide for modal shift from car, though the level of impact on the operation of the M8 would be limited.</p> <p>3: Strongly Positive - Any of the intervention options or combinations of options provides for a 'step-change' in rail capacity and either directly or by facilitating new rail services, provides improved connectivity.</p> <p>4: Neutral - While the intervention provides for modal shift from car to rail, the level of impact of this intervention on accident rates would not be significant.</p> <p>5: Slightly Positive – This intervention would assist in relieving congestion on approaches to Glasgow and provide additional pathing options, which would increase the ability of the rail network to cope with disruption.</p> <p>6: Strongly Positive - Any of the intervention options or combination of options would provide the capacity for significantly improved access to the airport from a wide area of the West of Scotland and beyond.</p>

Table 25.1.2 STAG Criteria

STAG Criteria		
Criteria:	Assessment Summary:	Supporting Information:
Environment:	Minor Negative Impact / Minor Benefit	This intervention would provide significant capacity for modal shift from car and would therefore have a benefit in terms of emissions reduction. There are however significant potential impacts in terms of streetscape, impact on listed buildings, visual impacts and noise/vibration.
Safety:	Moderate Benefit	There would be a benefit to the safety of the rail network by providing additional capacity and new infrastructure for operating services. In tandem, the ability to support modal shift from car to rail would have some benefits, although these would not be of a significant level.
Economy:	Major Benefit	<p>Transport Economic Efficiency (TEE): The intervention would provide significant benefits to travel time reliability across much of the rail network in the West of Scotland by providing additional capacity in and around the city centre. The provision of cross city services would also result in travel time savings by removing or reducing interchange time for current users and providing a new alternative for car trips that are currently subject to congestion.</p> <p>Wider Economic Benefits (WEBs): The consequences of not resolving the fundamental capacity constraints would be a constraint on the level of rail access to central Glasgow. This means that any subsequent growth in demand would have to be accommodated on an already congested road network. This would negatively affect the longer term economic growth of the city centre. Enhanced rail capacity provides for the support of sustainable economic growth, allowing the city centre to continue to provide an effective function as a growing area of economic activity.</p> <p>Economic and Location Impacts (EALIs): The different components would have differing impacts in terms of transport/land-use interaction. A new station to the east of Glasgow Central would provide a focus for continuing regeneration and offer new connectivity through south and east Glasgow. A tunnel linking the north and south rail networks would provide a central hub, strengthening the role of the city centre but also providing strategic connectivity where no competitive opportunity currently exists.</p> <p>The Metro network would be the most effective at providing rail connectivity for regeneration areas and at penetrating areas that currently have little or no rail activity. This would provide for more land availability that would support sustainable economic growth.</p>
Integration:	Major Benefit	<p>Transport Integration: This intervention would provide for enhanced integration either in terms of rail – rail service and facility integration, or through Metro integration with, for example, bus feeder services.</p> <p>Transport and Land-Use Integration: This intervention would support major developments in the city centre such as commercial and retail opportunities. Through the Metro option it would also provide key support for redevelopment along the Clyde Corridor.</p> <p>Policy Integration: This intervention would provide for access to jobs and open new public transport journey opportunities, supporting social inclusion. The ability, through Metro, to provide a fixed public transport connection to major health service sites such as the Southern General Hospital is a significant benefit.</p>

Accessibility and Social Inclusion:	Moderate Benefit	<p>Community Accessibility: The intervention would provide for some improvements to accessibility as a function of enhancing capacity and connectivity. The provision of a new station to the east of Glasgow Central would significantly improve the accessibility of this part of the city centre. The Metro component would have the most significant impact on improving accessibility by penetrating non rail served areas and providing a denser station coverage in some areas.</p> <p>Comparative Accessibility: The intervention would not in general provide any differing impacts on social groups, however the provision of new station facilities would have DDA compliant access and so improved accessibility for the mobility impaired would be available.</p>
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Table 25.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	Assessment Summary:	Supporting Information:
Improve Journey Times and Connections:	Major Benefit	The intervention options provide for a 'step-change' in capacity and connectivity that would address delays on approach to Glasgow Central and provide for new journey opportunities.
Reduce Emissions:	Minor Benefit	This intervention would provide for modal shift from road to rail, leading to a reduction in emissions, however the overall impact of this would be limited.
Improve Quality, Accessibility and Affordability:	Major Benefit	This intervention would represent a significant improvement in the quality of public transport in the West of Scotland. The potential for new cross city service opportunities and penetration of non-rail served areas by Metro, would greatly improve accessibility and journey opportunities by rail. It is not anticipated to have a significant impact on affordability.

Table 25.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	Assessment Summary:	Supporting Information:
Safer and Stronger:	Moderate Benefit	The intervention would impact positively on this objective by providing a step change in rail services provision and a major enhancement in the overall quality of the rail network in the West of Scotland. It would not affect affordability of public transport.
Smarter:	Moderate Benefit	The intervention would provide for improved access to schools, colleges and universities.
Wealthier and Fairer:	Moderate Benefit	Supporting sustainable economic development in central Glasgow and improving accessibility to jobs across the West of Scotland through this intervention will support this object.
Greener:	Minor Benefit	This intervention provides for a major expansion in rail service capacity and improved connectivity across the city. This will lead to modal shift from car to rail with an associated reduction in emissions.
Healthier:	Moderate Benefit	This intervention, through encouraging modal shift, may help encourage greater amounts of walking or cycling to access new or improved services. There would also be benefits in terms of providing improved access to health services.

Table 25.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	Sufficient work has been undertaken on each of the components to confirm that they would provide a workable solution. Any work within the city centre would require careful design and implementation of works, though these would be employing standard civil engineering techniques. Tunnel construction in particular, while being a well used method of construction, would be passing beneath a well established and dense urban area with major building foundations. This is viewed as a significant risk element for that particular component. There are requirements to tie-in with or divert existing services and alter existing infrastructure, which will require to maintain and operating public transport services through the period of construction.
Operational:	This intervention will drive and facilitate as fundamental change to rail operation in the West of Scotland. There will therefore be substantial changes for the operating environment compared with today. However, these changes will be overwhelmingly positive.
Public:	There has been no specific consultation on this intervention. However, previous work has suggested both a tunnel and the development of a Metro or Light Rapid Transit system have some level of public support.