Detailed Appraisal	**D8 - Enhancing Rail System Capacity through Targeted Improvements**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £100m – £250m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m – £250m ***BCR/PVB*** N/A

Summary Impact on STAG Criteria

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Environment							
Safety							
Economy							
Integration							
Accessibility and Social Inclusion							

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

Intervention Description:

This intervention is over and above the day-to-day maintenance of the rail network which is the responsibility of Network Rail.

There are parts of the rail network that are operating close to or at capacity during peak periods, with limited or no opportunity for additional services. Much of the existing signalling infrastructure is not fit-for-purpose. This intervention would cover operational and relatively small scale infrastructure measures such as:

- Replacement of Radio Electronic Token Block signalling in the Highland region;
- Provision of additional signal blocks in heavily used parts of the network;
- Replacement of two-aspect signals with three or four aspect signals in heavily used parts of the network;
- Replacement of single lead junctions with double lead junctions as appropriate to improve efficiency; and
- Replacement of low speed junctions and crossovers as appropriate to improve efficiency.

This intervention provides upgrades for rail signalling, as well as track and junction layouts, to reduce headways and allow more trains to use the network.

Summary: Rationale for Selection

This intervention would have the effect of improving operational performance and would also lead to reduced journey times where trains times are currently constrained by limited capacity and a mix of train speeds. These benefits by themselves would encourage some modal shift from car to rail, hence reducing traffic emissions. In many areas of Scotland, additional rail services could contribute towards objectives where localised rail constraints have been identified. This intervention would provide a strategy to systematically address these constraints.

The main benefits of this intervention include:

- Reducing conflict between services;
- Improving efficiency;
- Reducing journey time variability;
- Improving reliability and resilience; and
- Providing room for growth.

Table D8.1.1 STPR Objectives

STPR Objectives	
National Objective 1: To promote competitive inter-urban journey times.	**1. Positive** – This intervention would address key constraint points on the rail network, particularly isolated speed restrictions, thus improving inter-urban journey times. Addressing conflict areas such as junctions to improve their efficiency would also improve the reliability of journey times.
National Objective 2: To reduce inter-urban journey time on public transport.	**2. Positive** – This intervention would address key constraint points on the rail network, particularly isolated speed restrictions, thus reducing inter-urban journey times. Addressing conflict areas such as junctions, to improve their efficiency, would also improve the reliability of journey times.
National Objective 3: Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. HOV, freight, bus) or provide improvements to journey time reliability.	**3. Neutral –** This intervention would not have any impact on promoting journey time reduction on the trunk road network for prioritised vehicles and users or provide improvements to journey time reliability.
National Objective 4: To promote journey time reductions between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day between these centres.	**4. Positive** – This intervention would address key constraint points on the rail network, particularly isolated speed restrictions, thus improving inter-urban journey times. Addressing conflict areas such as junctions to improve their efficiency would also improve the reliability of journey times. These measures would assist in achieving an effective working day for those needing to travel between the Central Belt and Aberdeen / Inverness.
National Objective 5: Maximise the labour catchment area in city regions (favouring PT and HOVs and balancing with other policy measures that promote reduction in need to travel).	**5. Positive** – This intervention would allow existing constraints on the busiest sections of line serving urban areas to be addressed, helping to maintain and enhance performance. Of key importance is the contribution of this intervention to allowing additional services to be accommodated through the provision of new train path opportunities by increasing network efficiency. The improved rail journey times would increase the labour catchment area.
National Objective 6: Support the development and implementation of the emerging national development interventions.	**6.Slightly Positive –** By improving journey times and journey time reliability across the rail network, this intervention would help support the development and implementation of the emerging national development interventions at Edinburgh and Glasgow airport and the freight facilities at Grangemouth and Rosyth.
National Objective 7: Reduce CO_2e emissions per person km.	**7. Slightly Positive** – Though the level of impact would be limited, the enhancements would improve system efficiency and so reduce emissions per passenger currently carried. There would also be a modal shift benefit that would accrue from the ability to run improved services.
National Objective 8: Stabilise total CO_2e emissions.	**8. Slightly Positive** – Though the level of impact would be limited, the enhancements would improve system efficiency and so reduce emissions per passenger currently carried. There would also be a modal shift benefit that would accrue from the ability to run improved services.
National Objective 9: Reduce CO_2e emissions in line with expectations from the emerging Climate Change Bill.	**9. Neutral –** This intervention is not expected to have any significant impact on reducing CO_2e emissions in line with expectations from the emerging Climate Change Bill.
National Objective 10: To promote continuing reduction in accident rates and severity rates across the strategic transport network, supporting the work of the Strategic Road Safety Plan.	**10. Neutral –** The limited modal shift brought about by this intervention would not have a significant impact on the accident rates or severity rates on the trunk road network.

National Objective 11: To promote seamless travel. National Objective 12: Improve the competitiveness of public transport relative to the car. National Objective 13: To improve overall perceptions of public transport.	**11. Neutral –** This intervention is not expected to have any impact on the promotion of seamless travel. **12. Positive** – This intervention would provide improved journey times and greater reliability, thus making rail journeys more competitive. **13. Slightly Positive –** This intervention is expected to have a slightly positive impact on the overall perception of public transport.

Table D8.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	Proposed enhancements to rail capacity would not require substantial land-take or works outside the existing rail network and therefore no detrimental effects upon the natural environment are expected. Potential effects from construction are considered to be temporary, localised and marginal.
Safety:	**Neutral**	This intervention would not have a significant effect on modal shift from car to rail. Thus, any reduction in accidents due to a lower volume of traffic would be marginal.
Economy:	**Moderate Benefit**	**Transport Economic Efficiency (TEE):** This intervention would have a positive impact on TEE through reducing journey times and by improving journey time reliability. **Wider Economic Benefits (WEBs):** This intervention would produce wider economic benefits through improved journey time reliability. This would contribute to a more effective working day where travel is required. The improvement in rail capacity and reliability would also be attractive to freight operators and to the businesses they serve. Furthermore, these rail enhancements will benefit the emerging national developments at Edinburgh and Glasgow airports and the freight facilities at Grangemouth and Rosyth, **Economic Activity and Location Impacts (EALIs):** Improvements to the rail network would bring benefits to commuter services into the city regions by reducing journey times. In turn, this would have a beneficial impact on the potential opportunities for employment and productivity in these areas.
Integration:	**Minor Benefit**	**Transport Integration:** Infrastructure improvements would allow timetables to be changed which in turn would allow improvements in the integration between services at key interchange stations. **Transport Land-Use Integration:** This intervention would provide more efficient rail links to support employment development with significant benefits to transport and land-use integration. **Policy Integration:** This intervention is consistent with the policies set out in Scotland's Railways. While it would improve travel for those for whom the car is not an option, it would not have a significant impact on policies related to disability, health, rural affairs or social inclusion.
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not improve public transport network coverage; however, it would promote non-motorised trips.

		Comparative Accessibility: No impact.

Table D8.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	The benefits of targeted improvements to the transport network would be to provide minor journey time savings, but more importantly, to improve journey time reliability. Improving journey time reliability will help improve connections by reducing the likelihood of train services being delayed and connections being missed.
Reduce Emissions:	**Neutral**	This intervention would not have any significant impact on reducing emissions.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	This intervention would improve the quality of public transport by improving journey times and journey time reliability. There would not be any change in the accessibility of rail services or their affordability.

Table D8.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Neutral**	While this intervention will help to encourage a modest modal shift from car to public transport, any reduction in accident numbers would be marginal. It would improve quality and accessibility of public transport but would have no effect on the affordability of public transport.
Smarter:	**Minor Benefit**	This intervention would have a minor benefit on improving access to education facilities through improved journey times and journey time reliability.
Wealthier and Fairer:	**Moderate Benefit**	Improving journey times and journey time reliability addresses the Scottish Government's objective for a wealthier and fairer Scotland by helping to improve rail travel opportunities for business and leisure. This would also assist in achieving a more effective working day.
Greener:	**Minor Benefit**	This intervention would not have any significant impact on reducing emissions. This intervention would only encourage a modest modal shift to public transport.
Healthier:	**Minor Benefit**	Improving the quality of public transport through improved journey times and journey time reliability will have a benefit by encouraging modal shift from cars to public transport, which in turn will encourage a healthier lifestyle with people walking to and from public transport facilities rather than driving. However, this benefit would be marginal. This intervention may also improve access to healthcare.

Table D8.1.5 Implementability Appraisal

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