Detailed Appraisal	**Intervention D23: Rail Enhancements in the East of Scotland**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** 0.75 - 1.25 / £100m - £250m

Summary Impact on STAG Criteria

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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 includes an increase in service frequency on rail services across the east of Scotland.

This intervention would include services such as:

- West Calder to Haymarket (in addition to the committed service improvements as part of the Edinburgh to Glasgow Rail Improvements Programme, D22);
- Edinburgh to Newcraighall (two trains per hour as an extension to existing Dunblane services and two trains per hour to Glasgow and the west of Scotland via the committed Airdrie to Bathgate line. This would replace the existing two trains per hour from Newcraighall to Dunblane and from Bathgate to Newcraighall);
- Edinburgh to Dunbar (as an extension of services from Glasgow and the west of Scotland via the committed Airdrie to Bathgate line);
- Edinburgh to Cowdenbeath semi-fast (as an extension of services from Tweedbank via the committed Borders Rail Link); and
- Haymarket to Kirkcaldy semi-fast (additional service on top of existing services).

This intervention would include additional rolling stock and facilities to support and maintain these services.

There is limited capacity available at Waverley Station and therefore capacity improvements would be required or alternatively, more efficient use of Waverley would have to be developed (which may include terminating some trains at Haymarket north platform or an equivalent on the south side provided as part of the committed Edinburgh to Glasgow improvements).

This intervention would include remodelling of various parts of the network to enhance capacity for these services, such as Portobello Junction to Newcraighall and Dunbar station. Additional capacity enhancements such as resignalling and loops would also be included where necessary.

Summary:- Rationale for selection

This intervention would contribute towards the objectives for Edinburgh and the corridors serving the city, particularly in providing access to areas of economic activity. The increased provision would increase the labour market catchment that can commute into Edinburgh within 60-minutes by 5-10 per cent.

This intervention would provide additional rail capacity on some of the busiest rail lines in Scotland, resulting in a transfer of up to 5 per cent modal shift from car to rail. The reduction in car journeys could positively contribute towards improved air quality within air quality management areas.

This intervention is forecast to capture trips from car travel, with an increase of over 1,100 new rail passengers during each peak hour period, approximately half of whom are expected to transfer from car.

Table D23.1.1 STPR Objectives

STPR Objectives	
STPR Objective 13.2: To make best use of the available road space and better manage peak demand.	**13.2: Neutral –** This intervention does not make use of road space, however, it would contribute to managing peak demand by providing an alternative to travel by car through additional rail services and reduced journey time.
STPR Objective 13.3: To increase public transport capacity and frequency between Livingston and Edinburgh.	**13.3: Strongly Positive –** This intervention would help to increase capacity and frequency of rail service between Edinburgh and Livingston South by providing two additional services and up to 400 additional seats per hour in both directions on top of existing and committed services, and would enhance the overall quality of journeys.
STPR Objective 13.4: To contribute to both a reduction in emissions per person kilometer and a reduction in overall emissions.	**13.4: Slightly Positive –** Increasing capacity and service frequency is forecast to cause a modal shift from cars to rail and therefore contribute towards a marginal reduction in emissions.
STPR Objective 13.5: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**13.5: Slightly Positive –** This intervention would have a small positive effect in promoting continuing reduction in accident rates and severity rates across the strategic transport network.
STPR Objective 14.2: To increase public transport capacity and frequency between Fife and Edinburgh.	**14.2: Positive –** Increased service frequencies on the Fife Circle would help to increase public transport capacity and frequency between Fife and Edinburgh. Increased frequencies of services would also help to cater for the peak demand periods where overcrowding is currently being experienced on the Fife Circle service.
STPR Objective 14.4 and E3: To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Rosyth, Forth Crossing and Edinburgh Airport identified in the NPF2.	**14.4 and E3: Slightly Positive -** This intervention would help to promote efficient and effective transport links to Edinburgh Airport, Rosyth and the Forth Crossing. Improved service frequencies on the Fife Circle would help to serve the proposed national developments at Rosyth and Forth Crossing better. This would also increase the number of services that are able to call at the committed station at Gogar, providing a connection to Edinburgh Airport via Edinburgh Tram.
STPR Objective 20.1: To increase the attractiveness and capacity of public transport into Edinburgh to reduce crowding and forecast road congestion.	**20.1: Slightly Positive -** This intervention would increase public transport capacity into Edinburgh from areas which previously had an infrequent service. The station remodelling, new rolling stock and additional capacity would make rail travel a more attractive alternative to car, and help ease congestion.
STPR Objective E.1: To maintain the 60-minute commutable labour market area at the current level, with a particular focus on linking the areas of economic activity.	**E.1: Strongly Positive -** This intervention would improve the frequency and journey time reliability of rail travel into Edinburgh and as a result of this, it is expected to increase the 60-minute commutable catchment area around Edinburgh by about 5 - 10 per cent.
STPR Objective E.2: To enhance public transport interchange opportunities.	**E.2: Positive -** This intervention would increase the frequency of services across much of the east of Scotland, reducing interchange times for trips that require changing trains at Edinburgh.

Table D23.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral/Moderate Benefit**	Improving rail services in and around Scotland's capital city are considered to have long term benefits. Encouraging a modal shift from car to rail travel, especially amongst commuters could improve air quality, especially within Air Quality Management Areas covering parts of the city as well as contributing towards reduced carbon emissions from the transport sector generally. In light of the expected minimal requirement for new land-take associated with electrification and track dualling, potential effects upon biodiversity, water, landscape, geology and archaeology are considered to be negligible. Any noise effects are expected to be temporary and local in nature.
Safety:	**Minor Benefit**	Provision of additional rail services into Edinburgh would result in a degree of modal shift from the car which could contribute to a reduction in accidents on the road network. A 5 per cent mode shift to rail would be expected to contribute to a small reduction in accidents.
Economy:	**Major Benefit**	**Transport Economic Efficiency (TEE):** The provision of additional rail services into Edinburgh from Livingston, the Fife Circle, Dunbar and Newcraighall would result in a modal shift from road to rail up to 5 per cent with approximately 1,100 new rail passengers in each peak hour. Journey times would reduce for journeys transferring from road to rail on the congested routes serving Edinburgh, such as the M8. These time saving benefits contribute towards a benefit to cost ratio in the order of 0.75 to 1.25, indicating that the intervention would provide value for money. **Wider Economic Benefits (WEBs):** This intervention would support wider economic impacts through improving public transport provision and accessibility into and across Edinburgh, increasing the labour catchment area that can commute into Edinburgh in 60 minutes by 5-10 per cent. **Economic Activity and Location Impacts (EALIs):** This intervention would support the designated areas of economic activity of West Edinburgh and South East Edinburgh by providing cross city links to these areas.
Integration:	**Major Benefit**	**Transport Integration:** This intervention would provide significantly improved links between services, due to the increased frequencies at Haymarket and Edinburgh Waverley which are recognised as important interchanges. The areas in which the proposed services would operate are all within the area of operation of the integrated One-Ticket. **Transport and Land-Use Integration:** Considerable additional housing requirements have been identified in the Edinburgh and Lothians Structure Plan 2015 at the South East Wedge, West Lothian, East Lothian and Midlothian. Travel patterns from these areas include significant commuter journeys to the areas of economic activity in Edinburgh. The increased rail services and capacity would support these journeys and reduce the need to travel by car. **Policy Integration:** The Edinburgh and Lothians Structure Plan 2015 identifies key transport investment interventions to increase rail services and capacity between West Lothian, East Lothian, Midlothian and Edinburgh. This intervention also supports national policies by encouraging modal shift to more sustainable means of travel.
Accessibility and Social Inclusion:	**Major Benefit**	**Community Accessibility:** This intervention would significantly improve the public transport network coverage and increase the availability and capacity of rail services on existing routes. New opportunities are likely to be provided for trips to the areas of economic activity in Edinburgh. **Comparative Accessibility:** The main beneficiaries of this intervention would be commuters between Fife, West Lothian, East Lothian, Midlothian and Edinburgh.

Table D23.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Major Benefit**	Public transport connectivity from Livingston, the Fife Circle, Dunbar and Newcraighall to Edinburgh City Centre would be significantly improved through the provision of additional services. Increasing rail service frequencies across much of the east of Scotland would help to improve connections for longer distance journeys by reducing the wait time between services. For example, doubling the frequency between Edinburgh and Newcraighall would half the average wait time of fifteen minutes. Connections across Edinburgh would be further improved as services from Dunblane, Bathgate and Cowdenbeath would run across Edinburgh to Newcraighall, Tweedbank and Dunbar. Journey times on some journeys from Fife would improve significantly through the introduction of additional faster running services from Inverkeithing to Edinburgh Haymarket, saving approximately five minutes.
Reduce Emissions:	**Minor/Moderate Benefit**	This intervention would provide additional rail capacity on some of the busiest rail lines in Scotland, resulting in a transfer of up to five per cent modal shift from car to rail. The reduction in car journeys could positively contribute towards improved air quality within air quality management areas, and a reduction in CO_2e emissions.
Improve Quality, Accessibility and Affordability:	**Major Benefit**	This intervention would significantly improve the quality of service and accessibility, and would offer significant improvements in rail capacity on routes from Fife, Dunbar, Newcraighall and Livingston to the areas of economic activity in Edinburgh. Improved car parking would improve overall quality of service, and make rail a more competitive option. This intervention will not impact on affordability.

Table D23.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Moderate Benefit**	This intervention would improve the quality and accessibility of public transport between Edinburgh and Fife, Dunbar, Newcraighall and Livingston. The improved public transport services could result in an increase in modal shift from road to rail for passenger traffic, resulting in reduced accidents on the roads.
Smarter:	**Minor Benefit**	This intervention would have a minor benefit towards improving access to higher educational facilities through improving service frequency on rail services across the east of Scotland.
Wealthier and Fairer:	**Moderate Benefit**	This intervention would result in improved journey opportunities and journey time reliability for commuters and other passengers. This would result in increased productivity and increase opportunities for employment, business, leisure and tourism and would provide improved links between the towns on the routes.
Greener:	**Minor/Moderate Benefit**	Rail enhancements promote public transport use and have the potential to result in modal shift away from the car to rail providing potential marginal improvements in the air quality and reductions in CO_2e emissions.
Healthier:	**Moderate Benefit**	This intervention would encourage modal shift from road vehicles to more sustainable rail trips for passenger journeys. It would not impact on trips through specific services to health and community services; however there would be improved service frequency to and through Edinburgh therefore including access to services within the city.

Table D23.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	This intervention would require significant engineering works on various parts of the rail network. Remodelling of Portobello Junction and upgrading the line to Newcraighall would significantly disrupt services on the East Coast Mainline and freight entering and departing Millerhill from the west. The works at Brunstane Station would require major realignment of the tracks. The line between Portobello and Newcraighall is underlain by limestone beds and limestone coal measures for about 1km, where there is a high risk of old mine workings. There are no major technical issues relating to the implementation of the Fife Circle service frequency enhancements. However, significant areas of Fife are underlain by coal mining, and depending on the location of loops, stabilisation measures may be required.
Operational:	Increased service frequencies across the east of Scotland would bring capacity enhancement and additional seating. However, greater disruptions would occur when things go wrong due to limited recovery times and lack of free paths in the timetable caused by this increased service frequency.
Public:	It is considered that the package of improvements would be supported by the public with no significant objections anticipated.