Detailed Appraisal	**E19 – Glasgow Subway Upgrade and Modernisation**
Estimated total Public Sector Funding Requirement:	***Capital Costs/grant*** £250m - £500m ***Annual Revenue Support Present*** - ***Value of Cost to Gvt*** £100m - £250m ***BCR/PVB*** <0.75 / £10m - £50m

Summary Impact on STAG Criteria

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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 targets the objectives in Glasgow to increase rail capacity and improve connectivity between economic growth areas and areas of regeneration.

The intervention would consist of:

- Upgrading and modernisation of rolling stock to permit driverless operations;
- Additional rolling stock to allow for an increase in frequency; and
- Station upgrades.

Summary:- Rationale for Not Recommending

This intervention consists of improvements to rolling stock, frequency of service and station facilities and would therefore not provide a step change in benefit to existing users. In addition it is anticipated that any transfer from road to rail as a result of this intervention would be negligible.

Table E19.1.1 STPR Objectives

STPR Objectives	
STPR Objective 1: To increase the public transport access to and between areas of economic activity and regeneration with minimal need for interchange.	**1: Slightly Positive –** This intervention envisages the modernisation of the existing Glasgow Subway, with an increase on the existing service frequency, but no new lines. Thus the intervention is not likely to have a significant increase in accessibility. However, increasing service frequencies will reduce overcrowding and improve overall journey times on journeys to and from the city centre and other areas served by the subway.
STPR Objective 2: To improve the efficiency of the M8 motorway during periods of peak demand with a focus on reducing the conflict between longer distance and local traffic, increasing the people carrying capacity and freight carrying capacity of existing road and demand management.	**2: Slightly Positive –** This intervention envisages the modernisation of the existing Glasgow Subway, with an increase on the existing service frequency. This may encourage drivers who currently cross the Kingston Bridge when accessing the city centre to use the Park-&-Ride facilities at Shields Road, reducing the volume of traffic on the M8. However, this benefit is unlikely to be significant and will only impact on a short section of the motorway.
STPR Objective 3: To address rail capacity and connectivity issues in central Glasgow.	**3: Slightly Positive –** The increase in service frequency on the Subway will help to increase rail capacity into central Glasgow from the southwest of the city centre and the west end.
STPR Objective 4: To promote continuing reduction in accident rates and severity rates across the strategic transport network.	**4: Neutral –** This intervention would not to have any significant effect in promoting a reduction in accident rates and severity rates across the strategic transport network.
STPR Objective 5: To promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when traveling between these centres.	**5: Neutral –** This intervention does not positively or adversely impact the objective to promote journey time reductions, particularly by public transport, between the Central Belt and Aberdeen/Inverness primarily to allow business to achieve an effective working day when travelling between these centres.
STPR Objective 6: To promote efficient and effective transport links to support the development and implementation of the proposed national development at Glasgow Airport identified in the NPF2.	**6: Neutral –** This intervention does not positively promote or impact on the development at Glasgow Airport.

Table E19.1.2 STAG Criteria

STAG Criteria		
Criteria:	**Assessment Summary:**	**Supporting Information:**
Environment:	**Neutral**	The upgrade and modernisation of the Glasgow Subway would not have any significant environmental impacts.
Safety:	**Minor Benefit**	The primary safety benefit is likely to accrue from the deployment of platform gates on stations which would stop passengers accidentally, or otherwise, being injured by trains or falling onto the track. Some safety benefit would result in modal shift from road transport; however, this would be negligible. The level of personal security would be maintained, through the provision of Closed Circuit Television (CCTV) surveillance and appropriate lighting.
Economy:	**Minor Benefit**	**Transport Economic Efficiency (TEE):** Economic benefits from a modernised subway would be realised as a result of a more frequent service and better interchange facilities. This would make travelling on the subway and interchange with other modes more efficient and therefore reduce travel times and travel time variability. This intervention could promote modal shift from car to public transport, which would result in reduced vehicle operating costs for drivers. **Wider Economic Benefits (WEBs):** Modal shift from car use may help the transport network in Glasgow function more efficiently. This would have additional economic benefits to the economy of the area. **Economic Activity and Location Impacts (EALIs):** This intervention would not have a significant impact on the location of economic activity in a regional or wider context, however the existing economic areas would benefit from a more efficient transport network.
Integration:	**Minor Benefit**	**Transport Integration:** An increased frequency of service would improve integration with other modes. **Transport and Land Use Integration:** There would be minimal impact on transport land use integration with the implementation of this intervention. **Policy Integration:** Any new infrastructure included within this intervention would be fully compliant with the Disability Discrimination Act (DDA). It is anticipated that this intervention would have no impact on policies related to rural affairs or social inclusion. It is considered that modernisation of the Subway would help meet a number of Strathclyde Partnership for Transport's Regional Transport Strategy objectives namely: safety and security; modal shift; an excellent transport system; effectiveness and efficiency; access for all; and the need for integrated transport provision (*A Catalyst for Change: The Regional Transport Strategy for the west of Scotland 2007-2021 – Final Draft).*
Accessibility and Social Inclusion:	**Neutral**	**Community Accessibility:** This intervention would not have any effect on community accessibility as it does not improve public transport network coverage. However, the intervention does promote non-motorised trips and access to local services. **Comparative Accessibility:** It is anticipated that there would be no significant impact on comparative accessibility from the intervention, as there would be no new stations or new lines proposed.

Table E19.1.3 Key Strategic Outcomes

Key Strategic Outcomes (KSO's)		
Objective:	**Assessment Summary:**	**Supporting Information:**
Improve Journey Times and Connections:	**Minor Benefit**	More efficient interchange and more regular services would have a positive impact on connections and improve overall journey times for journeys which include interchange with other rail services or modes.
Reduce Emissions:	**Neutral**	Modelling outputs indicate an increase in the 2005 CO_2e baseline and a slight decrease in the predicted 2022 CO_2e baseline levels. Despite this, whilst increased frequency and improved service may encourage more people to use the subway, there is unlikely to be a noticeable reduction in car use as a result.
Improve Quality, Accessibility and Affordability:	**Minor Benefit**	The quality and accessibility of the transport system in Glasgow would be improved due to the developments to the Subway and the associated ticketing, interchange and Park-&-Ride enhancements. This intervention would not impact on affordability.

Table E19.1.4 Scottish Government's Strategic Objectives

Scottish Government's Strategic Objectives		
Objective:	**Assessment Summary:**	**Supporting Information:**
Safer and Stronger:	**Minor Benefit**	This intervention would improve the quality and accessibility of public transport in Glasgow, through the associated infrastructure improvements and potentially increasing safety through the provision of Closed Circuit Television (CCTV). Investment in new technologies such as pedestrian gates would assist in improving safety on the Subway. It would have no effect on road safety or affordability of public transport.
Smarter:	**Neutral**	This intervention would provide a better quality of service to the University of Glasgow, Strathclyde University and Glasgow Caledonian University.
Wealthier and Fairer:	**Minor Benefit**	The improvements to the Subway, including developments to integration and interchange, are likely to meet this objective by reducing travel times and increasing reliability which would benefit economic growth and improve travel opportunities for employment, business, leisure and tourism. This intervention would not help link other communities throughout Scotland.
Greener:	**Minor Benefit**	Whilst increased frequency and improved service may encourage more people to use the Subway, there would not be a noticeable reduction in car use as a result, unless Subway services were to be extended. This intervention does, however, support more sustainable forms of transport.
Healthier:	**Minor Benefit**	This intervention would not significantly improve access to health services and community services although the modal shift towards public transport would have a minor benefit to health by encouraging walking to access the public transport network.

Table E19.1.5 Implementability Appraisal

Implementability Appraisal	
Technical:	Technical issues could arise from the use of new ticketing systems and station gates, if untried technologies are used. Upgrading the Subway would take place in a confined environment and access to carry out works would be limited. This would affect how much work could take place at any one time and there is a constant risk of flooding in the Subway tunnels, due to their close proximity to the surface and due to the two crossings under the River Clyde. This water ingress would affect any work taking place and would have to be carefully managed. The Subway would have to close, at least in part, for this intervention to be implemented.
Operational:	The Subway is close to the surface along much of its length and crosses underneath the Clyde at two locations and as a result there is a constant flow of water adjacent to the system. This would mean that any technical systems required too support the new operations would have to be fail safe and resilient to water, otherwise there is the risk that the system could fail.
Public:	There have been a number of studies undertaken which look at options to upgrade the subway. It is expected that any measure which promotes modal shift to more sustainable transport as well as improving passenger safety would achieve public support.