

| Detailed Appraisal | | D21 – Grangemouth Road and Rail Access Upgrades | | | | | | |
|---|---|---|----|---|---------------|---|----|-----|
| Estimated total Public Sector Funding Requirement: | | <i>Capital Costs/grant</i> | | | £100m - £250m | | | |
| | | <i>Annual Revenue Support Present</i> | | | - | | | |
| | | <i>Value of Cost to Gvt</i> | | | £100m - £250m | | | |
| | | <i>BCR/PVB</i> | | | 0.75 - 1.25 | | | |
| Summary Impact on STAG Criteria | Environment Safety Economy Integration Accessibility and Social Inclusion | --- | -- | - | 0 | + | ++ | +++ |
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| (Judgement based on available information against a 7pt. scale.) | | | | | | | | |
| Intervention Description: | | | | | | | | |
| This intervention supports the objective to improve access to Grangemouth port and the freight hub, by improving access for both road and rail freight. | | | | | | | | |
| Improved road access from Grangemouth onto the motorway network would be provided through upgrades to Junction 6 on the M9. The A801 would be upgraded between Grangemouth and the M8 (including carriageway improvements and a new viaduct) to serve developing industrial and distribution facilities along the M8 corridor. | | | | | | | | |
| Improved rail access would be provided through capacity enhancements at and around Grangemouth Junction, to allow more trains to access the freight facilities at Grangemouth, such as: | | | | | | | | |
| <ul style="list-style-type: none">Committed improvements to the Edinburgh and Glasgow route;Electrification between Coatbridge and Grangemouth;Increased loading gauge to W12 to allow larger containers to be carried;Improved access from the west; andA new curve to permit direct access from the east. | | | | | | | | |
| Summary: Rationale for Selection | | | | | | | | |
| Improving the direct road link from Grangemouth to the developing industrial and distribution facilities along the M8 via an upgraded A801 would make it more suitable for the role that it is currently performing and allow for increased economic growth on this corridor. | | | | | | | | |
| In addition, it would offer significant journey time improvements and a reduction in the accident rate of around a third on the A801. Provision of this high quality route would also offer the opportunity for existing HGVs which use the M8 and M9 to reduce their current journey times by a minimum of 20 minutes. | | | | | | | | |
| This intervention would deliver a small positive impact on the environment as a result of the removal of some HGVs from parts of Grangemouth and rail improvements that include electrification, both of which are envisaged to contribute to reduced emissions. This intervention would; however, impact on the designated environmental sites along the route and this would need to be considered further in the development of any proposed alignment of a new road crossing of the Avon Gorge. | | | | | | | | |
| The economic analysis of this intervention would suggest that overall the intervention offers value for money. | | | | | | | | |
| The rail element would allow more freight trains to run into Grangemouth freight terminal without conflicting with passenger services, which in turn would improve journey time reliability. Electrification would allow freight trains to be operated from the West Coast Mainline by faster electric locomotives. Increasing the loading gauge would allow larger containers to be carried to and from Grangemouth. All of these improvements would also help make rail freight more attractive for hauliers. | | | | | | | | |

Table D21.1.1 STPR Objectives

| STPR Objectives | |
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| <p><u>STPR Objective 1:</u> Improve access to Grangemouth port and freight hub.</p> | <p>1: Strongly Positive – Improvements to Junction 6 of the M9 and on the A801 would improve access to Grangemouth from the motorway network, providing improved links to Glasgow and the west via the A801 and M8 and to Edinburgh via the M9. Enhanced rail capacity at Grangemouth would allow more trains to access the freight facilities and allow direct access to the East Coast Mainline. Electrification would improve the train speed and efficiency and increasing the loading gauge would allow larger containers to be carried. Overall, this intervention would improve the accessibility and capacity of Grangemouth port and freight hub.</p> |
| <p><u>STPR Objective 2:</u> To address shortfalls in the provision of public transport to and from Edinburgh and increase public transport modal share.</p> | <p>2: Neutral – Currently, there are a limited number of bus services using the M9 and A801. As well as improving conditions for car users, improvements on the M9 and A801 could encourage greater provision of bus services in the areas. However, these are likely to address more localised shortfalls rather than significantly improve provision of services to Edinburgh.</p> |
| <p><u>STPR Objective 3:</u> To promote continuing reduction in accident rates and severity rates across the strategic transport network, recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period.</p> | <p>3: Minor Positive – Improvements on the M9 at Junction 6 and upgrades to the A801 would improve the accessibility of Grangemouth and have a positive impact on the reduction in accident rates and severity rates across the transport network. Upgrades to the A801 could reduce the accident rate, on this route, by around a third. Rail access enhancements to Grangemouth would improve the rail freight network, which may contribute to a modal shift from road freight to rail freight. This modal shift may be minor however; any modal shift contributes towards road based capacity improvements.</p> |
| <p><u>STPR Objective 4:</u> To promote efficient and effective transport links to support the development and implementation of the proposed national developments at Grangemouth and Edinburgh Airport identified in the NPF2.</p> | <p>4: Positive – Enhancement of the M9 and A801 may improve the efficiency and effectiveness of transport links to/from Grangemouth which would improve accessibility and support development in the Grangemouth area in line with NPF2. Rail capacity enhancements in and around Grangemouth, coupled with electrification and an increased loading gauge to the main routes, and would improve the efficiency of the rail freight links. Overall, this intervention would support the development and implementation of proposed national developments at Grangemouth.</p> |

Table D21.1.2 STAG Criteria

| STAG Criteria | | |
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| Criteria: | Assessment Summary: | Supporting Information: |
| Environment: | Minor Benefit/Major Negative Impact | This intervention has potential for major adverse effects on cultural heritage, particularly on the internationally valued Antonine Wall World Heritage Site and associated nationally designated Scheduled Monuments. It could also have possible adverse effects on material assets. However, many of these potential effects are open to mitigation, and effects would depend strongly on the final design and location of works. |
| Safety: | Moderate Benefit | Improved access to the M9 Motorway could reduce traffic flows on the surrounding local road network. The accident rate for single carriageway roads with 30mph speed limits is around 90 per cent higher than the accident rate for two lane Motorways. Therefore, reducing the journey length on the urban roads may result in reduced accidents and casualties. Upgrading the A801 to rural good single (10.0m) or rural dual carriageway could result in a reduction in accident levels as accident rates on these two types of road are around 40 per cent and 50 per cent less than on the existing road type. The improvements on the rail network would not have any significant effect on safety. |

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| Economy: | Major Benefit | <p><u>Transport Economic Efficiency (TEE):</u> The improvements to Junction 6 of the M9 could result in journey time savings by removing the need for vehicles to pass through urban areas of Grangemouth to access the freight hub. Upgrading the A801 would result in journey time savings of around two minutes however; HGVs that currently access Grangemouth via the M8 and M9 could transfer to this route with potential journey time savings of around 20 minutes. These factors have the potential to reduce the impact of increasing journey time variability on the M9. The improvements to the rail links into Grangemouth could result in journey time savings, especially to/from the east with a direct link to the East Coast Mainline potentially reducing journey times by around 30 minutes. Journey time reliability would also improve for road and rail trips.</p> <p><u>Wider Economic Benefits (WEBs):</u> National Planning Framework 2 (NPF2) includes Grangemouth Freight Hub as one of nine proposed national developments. Improvements to road and rail links accessing the site would bring significant benefits to businesses based at Grangemouth and surrounding locations. Benefits would include improved efficiency and productivity, lower operating costs, improved access to customers and suppliers, improved interaction with other businesses and improved competitiveness. Providing a direct link to the East Coast Mainline would improve links from the freight hub to the east coast ports, especially those on the Tees and Humber.</p> <p><u>Economic Activity and Location Impacts (EALIs):</u> The improved road and rail links would encourage growth in the Port of Grangemouth and its surrounding area. Increased accessibility may improve the attractiveness of the area to inward investors and improve the competitiveness of existing businesses. Given the status of the area as a nationally important area of economic activity, such improvements would benefit the Scottish economy as a whole in addition to significant local benefits.</p> |
| Integration: | Moderate Benefit | <p><u>Transport Integration:</u> This intervention would improve the integration between sea freight movement and road/rail based freight movement.</p> <p><u>Transport and Land Use Integration:</u> This intervention would not affect the need to travel, but improvements to road and rail links would enhance development opportunities in the industrial and port areas in Grangemouth in line with local, regional and national policies.</p> <p><u>Policy Integration:</u> This intervention is in line with those detailed in NPF2 that proposes “improvements in road and rail infrastructure to support Grangemouth’s role as Scotland’s largest container port and main freight distribution centre”.</p> |
| Accessibility and Social Inclusion: | Minor Benefit | <p><u>Community Accessibility:</u> Accessibility may be improved for local trips on the urban network currently used for access to the freight facilities.</p> <p><u>Comparative Accessibility:</u> This intervention would specifically benefit freight movements to/from the port and freight hub in Grangemouth. It could improve access to Grangemouth from the rest of the Central Belt and further afield.</p> |

Table D21.1.3 Key Strategic Outcomes

| Key Strategic Outcomes (KSO's) | | |
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| Objective: | Assessment Summary: | Supporting Information: |
| Improve Journey Times and Connections: | Moderate Benefit | Improvements to the road network would reduce journey times. This intervention would improve connections, mainly for freight, between Grangemouth and Glasgow/Edinburgh/Stirling by road and rail. Improved connections, using the upgraded A801, could result in HGVs transferring from the M8/M9 with potential journey time savings of around 20 minutes. |
| Reduce Emissions: | Minor Benefit | Environmental evaluation outputs indicate a slight decline in CO ₂ e from the 2022 baseline predictions. The possible removal of HGVs from Grangemouth, combined with rail improvements that include electrification, are envisaged to contribute to improvements in local air quality. |
| Improve Quality, Accessibility and Affordability: | Moderate Benefit | The road and rail improvements in this intervention would improve the quality of travel and accessibility to/from Grangemouth port and freight hub. This intervention is not expected to impact on affordability. |

Table D21.1.4 Scottish Government's Strategic Objectives

| Scottish Government's Strategic Objectives | | |
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| Objective: | Assessment Summary: | Supporting Information: |
| Safer and Stronger: | Minor Benefit | The provision of improved access to the M9 may result in a reduction in traffic flows within Grangemouth and a resultant reduction in accidents. This intervention will have no impact on the quality, accessibility and affordability of public transport. |
| Smarter: | Neutral | No impact |
| Wealthier and Fairer: | Moderate Benefit | The road and rail access improvements would increase opportunities for growth and employment within Grangemouth. |
| Greener: | Minor Benefit | This intervention would have a minor benefit to emissions with a slight decline in CO ₂ e emissions envisaged. This intervention does not encourage a modal shift to Public Transport. |
| Healthier: | Minor Benefit | This intervention would improve access to health facilities in the area but would not encourage modal shift from car to public transport. |

Table Corridor D21.1.5 Implementability Appraisal

| Implementability Appraisal | |
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| Technical: | <p>There are a number of issues associated with this intervention. It would require modification of the M9 Junction 6 with the construction of slip roads from the motorway on three approaches. This may be difficult due to the proximity of properties and local roads. Upgrading the A801 to 10m wide carriageway road or dual carriageway standards would mostly take place using the existing road alignment but a new alignment would be required through the Avon Gorge, which would require bridging. Current road users on M9 and A801 and other adjacent roads such as A706 and A905 could be affected during construction.</p> <p>It is expected that no untried techniques would be required when implementing any aspects of this intervention. However, as the design stages progress, localised issues may arise, such as the risk of subsidence due to mining, which may require increased technical capacities to overcome.</p> <p>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.</p> |
| Operational: | <p>Following construction, it is unlikely that any factors would negatively affect the operation of the intervention during its projected life. The A801 is currently a non-trunk road and comes under the responsibility of the local authority. It is not clear if this would remain the case after any upgrade.</p> <p>Running additional rail services places extra pressure on the rail network and can increase the risk of delays. However, it is expected that these issues would be mitigated by ensuring that the works included within the intervention have sufficient capacity for the proposed service levels. No significant operational impacts are anticipated from this intervention.</p> |
| Public: | <p>The upgrade to Junction 6 of the M9 and the rail improvements to Grangemouth are likely to be mainly welcomed by the public since they would reduce flows, especially HGVs, through urban areas. However, the construction and subsequent operation of the junction may impact on surrounding residential properties. The A801 upgrade is also likely to be generally welcomed; however the environmental impacts of crossing the Avon Gorge may be opposed in some communities.</p> |