

Draft Forth Valley Region Appraisal Summary Table

A draft Appraisal Summary Table (AST) has been developed for each of the eleven STPR Regions alongside the National AST. The ASTs are set out to provide:

- Regional/National Context, Problems and Opportunities - drawing on data presented in the Initial Appraisal: Case for Change reports¹ this summarises geographic, social, economic, environmental and transport matters in the region as well as the identified problems and opportunities. In line with STAG, appraisals are expected to explore location-specific problems and opportunities. Local problems and opportunities have been considered and presented to gain a full understanding of the regional and national issues, however some options to address these may not be within the scope of this strategic study.
- Package description – this presents the groupings (interventions) that were included in the detailed appraisal for the region.
- Fit with Policy – provides a summary of how well the appraised packages fit with key national policies including the second National Transport Strategy, Climate Change Plan Update, the draft National Planning Framework 4 and relevant regional policies.
- Transport Planning Objectives (TPO) Assessment - An assessment against each of the five TPOs is provided with quantified metrics provided, where appropriate, under the low traffic / emissions demand and high traffic / emissions demand scenarios (further information about these scenarios is provided in Appendix F). A seven-point scoring scale is adopted for each TPO which is:
 - + + + = major positive (3 plus signs)
 - + + = moderate positive
 - + = minor positive
 - 0 = neutral
 - - = minor negative
 - - - = moderate negative
 - - - - = major negative (3 minus signs)
- STAG Criteria assessment - as above for the TPO assessment, key points regarding the performance of the package against each of the STAG criteria is presented with quantified metrics provided where appropriate.
- Deliverability – commentary is provided on the assessment of the package in terms of its feasibility, affordability and public acceptability. Note that due to the nature of a number of the STPR2 interventions, and this presenting the Strategic Case it has not been possible to derive cost estimates on a regional basis. However, broad capital spending ranges have been estimated over the period 2022 to 2042 at a national level.

¹ <https://www.transport.gov.scot/our-approach/strategy/strategic-transport-projects-review-2/>
<https://www.transport.gov.scot/publication/borders-transport-corridors-pre-appraisal/>
<https://www.transport.gov.scot/publication/north-east-region-option-sifting-update-report-feb-2021-stpr2/>
<https://www.transport.gov.scot/publication/south-west-scotland-region-option-sifting-update-feb-2021-stpr2/>

- Other Criteria Assessment – a summary of the performance of the packages against the Strategic Environment Assessment (SEA), the Equalities Impact Assessment (EqIA), Island Communities Impact Assessment (ICIA), Fairer Scotland Duty Act (FSDA), Child Rights and Wellbeing Impact Assessment (CRWIA) is provided. The seven point scale is adopted in these assessments where appropriate.

The assessments contained in the ASTs assume all interventions in the packages are progressed. However, it should be noted that not all interventions taken through the detailed appraisal will form a recommendation within STPR2.

The National AST is broadly similar to the regional documents but presents the performance of the full package of interventions taken through detailed appraisal, relying on a combination of quantitative and qualitative information.

Summary of Assumptions

Quantification of the costs and benefits in the packages has been provided through a modelling exercise. Further information has been provided in Appendix F to Technical Report on the modelling scenarios that have informed the assessment of the STPR2 interventions. A summary of key assumptions is provided here:

- Population projections are based on the NRS Population Projections (2018-based).
- Economic projections are a combination of projections by Oxford Economics bought in 2019, the Scottish Fiscal Commission forecasts and more recently the OBR post-COVID estimates
- Land-use plans are based on data collected for Transport Scotland's Assembly of Planning Policy Inputs in 2018 from Scotland's 34 Planning Authorities.
- Permitting of vacant office and retail floorspace to be converted or redeveloped as housing post 2030.
- Working age is taken to be 16-64 (as a constant) to avoid difficulties with changing state pension age (and to reflect non-mandatory retirement)
- The economic results are presented, as is standard within appraisal as discounted values in 2010 prices. As a simple rule of thumb, presenting the numbers in current (2022) prices and discounted to 2022 only would cause the values to approximately double.

Modelling Tools

For the purposes of modelling accessibility by public transport, NaPTAT (National Public Transport Accessibility Tool) has been used. This allows an assessment of journey time to be compared between with and without STPR package.

Due to the strategic and national nature of STPR2, the national Transport Model for Scotland (TMfS) has been used. TMfS is a national scale mode with a focus on inter-urban trips. As such, whilst TMfS provides a suitable level of robustness at this stage of the appraisal for the larger infrastructure based interventions, there are limitations associated with modelling of smaller/discrete

interventions and those that are more urban in nature. As the recommended interventions are developed through the business case process, more detailed modelling will be undertaken using regional and / or local models as appropriate.

When considering the outputs presented in this AST the following should be considered

Metric	Comment/Consideration
CO ₂ emissions	Likely to underestimate the benefits associated with public transport interventions due to the more limited representation of transport systems in urban areas and a degree of insensitivity to mode shift in TMfS.
Mode Share	Likely shift to public transport modes underestimated in the urban areas due to the more limited representation of urban transport systems and a degree of insensitivity to mode shift mode in TMfS.
Change in veh-km travelled	Likely to underestimate the benefits of reducing vehicle-kilometres travelled particularly for short distance journeys due to the more limited representation of urban transport systems and the relative coarseness of the model zone system.
Lost Time due to congestion	Likely to underestimate the benefits associated with interventions that would reduce roadspace due to the under-representation of the local/secondary road network in TMfS
Change in accidents	Likely to underestimate the benefits associated with mode shift to public transport interventions due to the more limited representation of urban transport systems and a degree of insensitivity to mode shift in TMfS.
Present Value of Benefits	Likely to underestimate the benefits to public transport users due to the more limited representation of urban transport systems. Likely to overestimate the dis-benefits to car-based trips due to the under-representation of the junctions and local/secondary road network in TMfS.

Draft Detailed Appraisal Summary Table

Region: Forth Valley Region

Regional Context

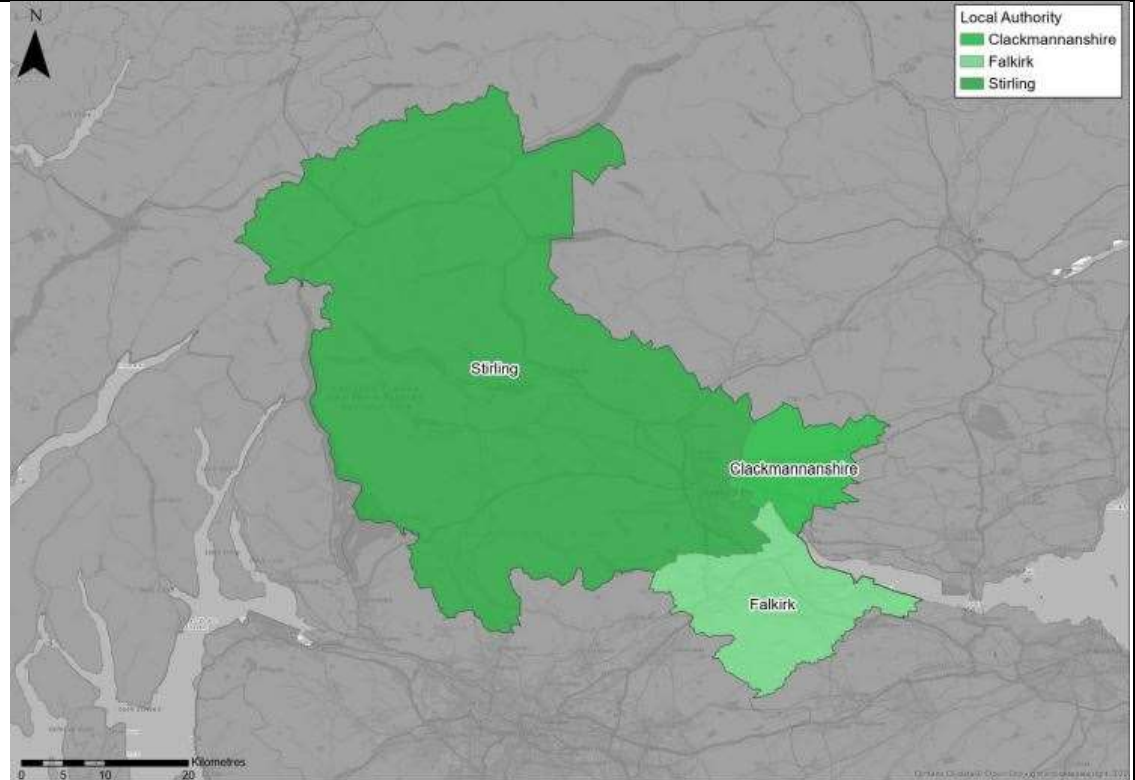
Geographic Context: The Forth Valley Region comprises the three local authorities of Clackmannanshire, Falkirk and Stirling and is a mix of urban and rural settlements and areas.

The Scottish Government Urban Rural Six-Fold Classification identifies the regional population residing in each category as follows: Other Urban Areas (70%), Accessible Rural (15%), Accessible Small Towns (13%), and Remote Rural (2%). The majority of the region's population reside in the larger settlements in the south and south east (e.g. Stirling, Falkirk and Alloa) with a sizeable proportion in accessible small towns (e.g. Clackmannan, Dunblane and Callander). The classifications highlight the mix between rural and urban in the region, particularly in the Stirling local authority, and the importance of connectivity between rural northern areas and less rural central and south.

The region has an extensive transport network, including active travel, rail, bus and road networks and park and ride facilities. Several motorways, including the M9, M80 and M876, route through the region and facilitate connections to travel hubs in Edinburgh and Glasgow. Grangemouth is identified as a major port on the context of STPR2.

Social Context: In 2019, Forth Valley had a population of 306,640, which was an increase of 6,240 (2.1%) from 2014. This represented 5.6% of Scotland's total population. In 2019, approximately 63.6% of people were of working age, 17.1% were aged 15 and under and 19.3% were aged over 65 (a similar profile to Scotland).

The net migration figures show that between 2011 and 2016, just under 12,000 people moved into Forth Valley, with just under 8,750 moving out - a total net increase of almost 3,250. All three council areas recorded an increase in population due to net migration.



Access to a car or van varies across the region, with access to 1 car or van in the Forth Valley area similar to the national average, although the percentage of households without access to a car or van is 6 percentage points lower than the national average (24% vs 31%), and the percentage of those with 2 cars is 4 percentage points higher than the national average (26% vs 22%). Households in Stirling recorded the highest (77.7%) access to one or more cars / vans, followed by Clackmannanshire (75.1%) and Falkirk (74.8%).

At a regional level, travel to work mode share is largely consistent with the national average with residents who work from home (10%), cycle to work (1%) or travel to work by train (4%). A higher proportion of residents in the region use car or van as their main mode of commuting (70%) compared to the Scottish equivalent (62%). A lower proportion of residents in the region walk (7%) or travel to work by bus (5%) compared to the Scottish equivalent (10% for each).

The Scottish Index of Multiple Deprivation (SIMD) rankings highlight that 16.7% of all data zones in the region were within the 20% most deprived in Scotland. The main pockets of deprivation are most evident within Alloa, Stirling, Falkirk and Bonnybridge. SIMD Health rankings indicate that health quality throughout Forth Valley is similar to Scotland as a whole, with 19.3% of the population limited in their day-to-day activities by a disability or long term health problem (Scotland is 19.6%).

Economic Context: In 2018, unemployment rates in the region stood at 2.7% which is lower than Scotland (at 4.4%). In terms of Gross Value Added (GVA), the Forth Valley region contributed £7.8 billion which accounts for 5.5% of Scotland's GVA. This was an increase of 14.4% between 2013 and 2018. In the same period the national figure increased by 14.6%. The level of income deprivation in Forth Valley indicates that 51% of data zones are classed as 'high risk' for Transport Poverty which compares to 50% of data zones nationally. The proportion of 'medium risk' data zones (14%) is below the national proportion (18%), with the proportion of 'low risk' data zones in the Forth Valley region (35%) higher than the national proportion (31%).

Environmental Context: Within the Forth Valley Region, there are many areas classified as environmentally sensitive, with varying levels of statutory protection. Environmental designations within the region include biodiversity, landscape and heritage designations which fall either wholly or partly within the region. In addition, the region contains a significant number of designated areas, including one National Park (Loch Lomond and the Trossachs) and four National Nature Reserves. In addition, the Antonine Wall World Heritage Site stretches across the Central Belt, encompassing Forth Valley. The greatest modelled noise levels are located in the south of the region, primarily associated with the trunk road and motorway corridors around Stirling, Larbert and Grangemouth (i.e. M9, M80, M876 and A9) and the rail routes through this area. Settlements at greatest risk of coastal flooding are located along the Firth of Forth and River Forth, including Stirling, Grangemouth and Culross. Areas at medium and high risk of river flooding are predominantly located in the vicinity of the River Forth, River Devon and River Teith. These include Stirling, Aberfoyle, Callander and Alloa. Areas at high and medium risk of surface water flooding are typically associated with Lochs within The Loch Lomond and the Trossachs National Park. These are typically associated with surface water features, such as lochs, and are located predominantly within less populated areas of the region. There are four Air Quality Management Areas (AQMAs) within Forth Valley, concentrated in the industrial areas around the Grangemouth oil refinery and the cement and plastics factories. In 2018, CO₂ emissions from transport within Forth Valley equated to 6.9% of Scotland's total transport emissions overall.

Problems:

- **Accessibility:** this has been identified as a problem across the region, but most significantly in the areas outwith urban centres, predominantly to the northwest of the region. Much of the region is ranked in the bottom 50% for geographic access, in terms of accessibility to services and transport modes, with 29% of Stirling's data zones in the bottom 20%, compared to 18% of Falkirk's and 14% of Clackmannanshire's. This highlights the inequality of access between the region's rural and urban locations.
- **Connectivity:** public transport context has highlighted a lack of connectivity in parts between settlements in Forth Valley and to neighbouring areas like Edinburgh and parts of Lanarkshire. Rail travel is a key problem in the northwest of the region due to limited accessibility to Tyndrum and Crianlarich stations which have only a limited service to Glasgow and Fort William or Oban and no direct connections to the southwest of the region, such as Stirling and Dunblane, which are well served by rail in comparison to the north.
- **Road user experience:** has been identified primarily in relation to the quality and maintenance of existing infrastructure, slow journey times and network 'pinch-points'.
- **Barriers to Active Travel:** where cycle routes are available, they are frequently classified as on-road routes, leading to perceived safety issues. Physical constraints such as the A91 act as barriers to walking and cycling from eastern villages and there are limited safe walking and cycling routes in the countryside to local facilities and services.

Opportunities:

- **Publicity around the Climate Emergency** is considered to provide a base upon which sustainable interventions that do not favour private car use would be more publicly acceptable.
- **Active travel** with a focus on realising the potential of connecting settlements which are located in close proximity of each other and in so doing fulfilling the strong political and policy environment for travel which helps people make healthy living choices and reduce their dependence on the private car.
- **Technology** offers potential for better ways to work, connect and inform people of transport choices, alongside advances in lower emission fuels.
- **Public transport interchange**, accessibility and connectivity through which making it easier for people to choose more sustainable modes of transport. The region's proximity to the trunk road, motorway and rail networks offers an opportunity to facilitate direct interchange.
- **Grangemouth Investment Zone** contains important infrastructure, high value employment and manufacturing of materials that are currently vital for everyday life. As this role will continue in the long term, the zone must seek to decarbonise to contribute to the significant reduction of industrial carbon emissions required to meet Scotland's net zero targets. There are opportunities to improve sustainable transport access to contribute towards this aim for both people and freight, in consultation with the Grangemouth Futures Industry Board (GFIB).
- **Grangemouth Port** constitutes a major port in the context of the Strategic Transport Projects Review 2. A background review of port connectivity issues in Scotland has been undertaken that has reinforced the important economic and social role contributed by our

maritime links to key markets. The diverse range of ports around our coastline play a fundamental role in supporting economic activity at the local, regional and national level. Grangemouth has the largest freight volume of all major ports and as such there is an opportunity to increase the sustainability of freight movements regionally but also nationally.

Package Description

Package Groupings: Refer to Annex A for further grouping details

Active Travel	<ul style="list-style-type: none"> Improving Access to Bikes Connected Neighbourhoods Improving Active Travel on Trunk Roads through Communities 	<ul style="list-style-type: none"> Increasing Active Travel to School Active Freeways Village – Town Active Travel Connections 	<ul style="list-style-type: none"> Long-distance Active Travel Network Connecting Towns by Active Travel Cycle Parking Hubs
Bus	<ul style="list-style-type: none"> Bus Priority Infrastructure Decarbonisation of the Bus Network Demand Responsive Transport (DRT)/Community Transport 		
Rail	<ul style="list-style-type: none"> Inter-7-Cities Strategic Corridor Enhancements Corridor Enhancements: Central Belt Decarbonisation of the Rail Network 		
Interchange	<ul style="list-style-type: none"> Mobility Hubs and Multi-modal Interchanges Regional Passenger Facilities/Station Enhancements 		
Behaviour Change	<ul style="list-style-type: none"> Behavioural Change Initiatives Expansion of 20mph Zones and Limits 		
Freight	<ul style="list-style-type: none"> Decarbonisation of Freight Deliveries Railway Freight Terminals and Facilities Freight Reliability and Efficiency Improvements 		

Package Description

Package Groupings: Refer to Annex A for further grouping details

	<ul style="list-style-type: none">• Freight Consolidation and Last-Mile Logistics• Freight Incentives and Freight Best Practice• Rail Freight Enhancements
Resilience	<ul style="list-style-type: none">• Improve Access to Major Ports and Airports• Trunk Road and Motorway Network Renewal for Reliability, Resilience and Safety• Trunk Road and Motorway Climate Change Adaptation and Resilience
Technology	<ul style="list-style-type: none">• Incident Management Software (IMS) Upgrade• Control Centre of the Future• Intelligent Transport Systems (ITS) Roadside Infrastructure• Integrated Public Transport Ticketing
Road	<ul style="list-style-type: none">• South East Trunk Road and Motorway Network Improvements• North West Trunk Road and Motorway Network Improvements• North East Trunk Road and Motorway Network Improvements• A National Action Plan to support the transition to Low Emission/Ultra Low Emission/Electric Vehicles• Changing Road User Behaviour

Fit with Established Policy

Package Performance Against NTS2 Priorities and Outcomes:

Reduces inequalities	Reduces inequalities	Moderate Positive
	Will be easy to use for all	Moderate Positive
	Will be affordable for all	Minor Positive
Takes climate action	Will help deliver our net-zero target	Major Positive
	Will adapt to the effects of climate change	Minor Positive
	Will promote greener, cleaner choices	Major Positive
Helps deliver inclusive economic growth	Will get people and goods where they need to get to	Major Positive
	Will be reliable, efficient and high quality	Major Positive
	Will use beneficial innovation	Major Positive
Improves our Health and Wellbeing	Will be safe and secure for all	Major Positive
	Will enable us to make healthy travel choices	Moderate Positive
	Will help make our communities great places to live	Major Positive

The interventions included within this package support a wide range of national, regional and local policy documents in which transport improvements play a key role in both the enabling and delivery of outcomes.

Key policies supported include the Programme for Government, Infrastructure Investment Plan, NTS2, the Climate Change Plan Update 2018-2032, Tactran and Sustran Regional Transport Strategies (2008-21 and 2008-23); as well as non-transport-specific plans, such as the Stirling and Clackmannanshire City Region Deal and Falkirk Growth Deal (in development) that include transport elements.

Interventions included in this package will also support more resilient and sustainable connections to the draft National Planning Framework 4 national development at Grangemouth Investment Zone for people and freight.

The policy framework for the Region has a strong emphasis on delivering strengthened connectivity to support a sustainable economy. This includes providing travel choices which promote equality and social inclusion and which promotes modal shift away from private car, increases walking and cycling opportunities, and provides an attractive place for visitors and businesses to invest and grow; the package thereby closely aligns with established policy directives.

STPR2 Transport Planning Objectives (TPOs) Assessment

STPR2 TPOs	Appraisal Metrics			Performance Summary
	Metric	Low	High	
A sustainable strategic transport system that contributes significantly to the Scottish Government's net-zero emissions target.	Change in CO ₂ eq (non-traded and traded emissions from regional road transport inc. grid emissions from charging light-duty vehicles).	<p>27.7 thousand tonnes decrease of 0.5% in 2030</p> <p>21.6 thousand tonnes decrease of 2.8% in 2045.</p> <p>1.3m tonnes reduction, of which -1.1m were traded, for the 60-year appraisal period from 2030 to 2089.</p> <p>The net economic benefits for the 60-year appraisal period in 2010 prices and values would be in the range £10m to £25m for the Low Travel Demand scenario.</p>	<p>31.3 thousand tonnes decrease of 0.4% in 2030</p> <p>65.3 thousand tonnes decrease of 1.3% in 2045.</p> <p>3.7m tonnes reduction, of which 452 thousand were traded, for the 60-year appraisal period from 2030 to 2089.</p> <p>The net economic benefits for the 60-year appraisal period in 2010 prices and values would be in the range £100m to £250m for the High Travel Demand scenario.</p>	<p>CO₂eq is treated as a nationally important pollutant so it has not been appraised for individual regions.</p> <p>National CO₂eq emissions decrease year-on-year. This is due to decreasing vehicle exhaust (non-traded) emissions as numbers of internal combustion engine vehicles reduces. This is reflected in increasing traded grid emissions from charging increased numbers of battery-electric vehicles, and specifically in the Low Travel Demand scenario.</p> <p>The electricity grid is expected to be using predominantly renewable sources in the future and so increasing adoption of electric vehicles and a shift from direct, non-traded, emission to traded grid-based technology (i.e. battery) will support reducing CO₂eq emissions.</p> <p>Across both scenarios the interventions would reduce emissions of CO₂eq.</p> <p>There are predicted to be significantly higher overall emissions in the High Travel Demand scenario, either with, or without, the package.</p> <p>There is a relatively smaller overall reduction of emissions due to the interventions in the Low Travel Demand scenario due to the lower overall emissions.</p>
	Change in mode share by active travel (all journeys)	<p>Potential increase in walking from 18% mode share to 23% mode share (5 percentage points)</p> <p>Potential increase in cycling from 0.5% mode share to 21% mode share (20.5 percentage points)</p>		

STPR2 Transport Planning Objectives (TPOs) Assessment

STPR2 TPOs	Appraisal Metrics			Performance Summary																																				
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		<p>The package will increase the proportions of journeys undertaken by active modes, this is similar across Clackmannanshire, Falkirk and Stirling areas.</p> <table border="1"> <thead> <tr> <th colspan="3">Walking</th> </tr> <tr> <th>Local Authority</th> <th>Without package</th> <th>With Package</th> </tr> </thead> <tbody> <tr> <td>Clackmannanshire</td> <td>18%</td> <td>24%</td> </tr> <tr> <td>Falkirk</td> <td>18%</td> <td>23%</td> </tr> <tr> <td>Stirling</td> <td>17%</td> <td>21%</td> </tr> <tr> <td>Regional average</td> <td>18%</td> <td>23%</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Cycling</th> </tr> <tr> <th>Local Authority</th> <th>Without Package</th> <th>With Package</th> </tr> </thead> <tbody> <tr> <td>Clackmannanshire</td> <td>0.6%</td> <td>23%</td> </tr> <tr> <td>Falkirk</td> <td>0.4%</td> <td>21%</td> </tr> <tr> <td>Stirling</td> <td>0.5%</td> <td>18%</td> </tr> <tr> <td>Regional average</td> <td>0.5%</td> <td>21%</td> </tr> </tbody> </table> <p>Note that the cycling and walking growth forecasts have been developed independently. Growth in use of one active mode is likely to abstract at least some trips from the other, but this effect is not accounted for within these forecasts.</p>		Walking			Local Authority	Without package	With Package	Clackmannanshire	18%	24%	Falkirk	18%	23%	Stirling	17%	21%	Regional average	18%	23%	Cycling			Local Authority	Without Package	With Package	Clackmannanshire	0.6%	23%	Falkirk	0.4%	21%	Stirling	0.5%	18%	Regional average	0.5%	21%	<p>The economic impacts associated with air quality were assessed using the Department for Environment Food & Rural Affairs (DEFRA) Damage Costs Appraisal Toolkit. The larger benefit from the High Travel Demand scenario is due to the greater overall emissions with, or without, the package, although the proportional change is lower.</p> <p>The package overall will contribute to the net-zero emissions target by:</p> <ul style="list-style-type: none"> • Enabling more passenger journeys to be made by active modes and public transport • Decarbonising some public transport operations • Facilitating uptake of electric vehicles • Enabling some road freight to switch to rail or other low carbon modes
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STPR2 Transport Planning Objectives (TPOs) Assessment

STPR2 TPOs	Appraisal Metrics			Performance Summary
	Metric	Low	High	
	Change in motorised veh-kms travelled	32.5million veh-km 2% decrease	29.9million veh-km 1% decrease	
	Scoring	+	+	
	Change in transport poverty risk	Although the STPR2 interventions don't impact on the direct costs of travel (e.g. fares, fuel price), the package of interventions would see a small reduction in transport poverty nationally, due to the overall improvements to access and connectivity between modes.		<p>The package will improve the inclusiveness of the transport system by:</p> <ul style="list-style-type: none"> Improving conditions for people walking, wheeling, and cycling, the most inclusive transport modes, with particular benefits for people most often excluded (including children,

<p>An inclusive strategic transport system that improves the affordability and accessibility of public transport.</p>	<p>Change in Accessibility - population catchments increases to key services by journey time by public transport.</p>	<p>Major Hospital Accessibility: The largest change in population accessibility of all the destination types considered was observed for major hospitals, with an additional 5,100 people in the region able to access a major hospital under a journey time of 60 minutes by public transport compared to the without package.</p> <p>Higher Education Accessibility: Population accessibility of higher education sites by public transport also observed to have improved accessibility in the region, with an additional 1,400 people able to access the nearest site in under 30 minutes by public transport compared to the without package.</p> <p>Major Shopping Centre: A population of around 1,700 are now able to access a large food store by public transport, compared to that in the without package.</p> <p>Accessibility to Major Food stores was also assessed but the impacts were found to be negligible.</p> <p><i>(see Annex B – NaPTAT mapping)</i></p>	<p>older and disabled people, and people on low incomes)</p> <ul style="list-style-type: none"> • Improving active travel connections between settlements • Improving inclusive accessibility to public transport stops/stations • Seeking to promote public transport use and reduce operating costs, hence enhancing network sustainability
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STPR2 Transport Planning Objectives (TPOs) Assessment

STPR2 TPOs	Appraisal Metrics			Performance Summary								
	Metric	Low	High									
	Scoring	+	+									
A cohesive strategic transport system that enhances communities as places, supporting health and wellbeing.	Change in mode share by active travel for all journeys	<p>Potential increase in walking from 18% mode share to 23% mode share (5 percentage points)</p> <p>Potential increase in cycling from 0.5% mode share to 21% mode share (20.5 percentage points)</p> <p>These forecasts are subject to all active travel interventions being delivered in all relevant areas of the region.</p>		<p>The package will improve communities as places, supporting health and wellbeing by enabling more journeys to be made by active and sustainable modes, and by improving road safety. This will:</p> <ul style="list-style-type: none"> • Improve many people's physical health and mental wellbeing, with particular benefits for people most often excluded (including children, older and disabled people, and people on low incomes) • Reduce the adverse impacts of car use on communities and health (including reduced air pollution, noise, accident risk and perceived road danger) • The health benefits of increased rates of walking and cycling as a result of the package have been quantified to reduce premature deaths by around 15 people per annum. 								
	Potential for Change in 'Place'	<p>The package will tend to improve the quality of the region's places by improving local accessibility and reducing the adverse impacts of road traffic.</p> <p>Particular benefits may arise in neighbourhoods where active travel allows easier walking and cycling such as Alloa, Falkirk and Stirling.</p>										
	Change in Health Benefits	<p>The health benefits of increased rates of walking and cycling as a result of the package have been quantified using HEAT. This shows the following benefits by Local Authority:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Local Authority</th> <th style="text-align: left;">Premature deaths prevented per annum</th> </tr> </thead> <tbody> <tr> <td>Clackmannanshire</td> <td>2.9</td> </tr> <tr> <td>Falkirk</td> <td>7.7</td> </tr> <tr> <td>Stirling</td> <td>4.2</td> </tr> <tr> <td>Regional total</td> <td>14.7</td> </tr> </tbody> </table>	Local Authority		Premature deaths prevented per annum	Clackmannanshire	2.9	Falkirk	7.7	Stirling	4.2	Regional total
Local Authority	Premature deaths prevented per annum											
Clackmannanshire	2.9											
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Regional total	14.7											

STPR2 Transport Planning Objectives (TPOs) Assessment

STPR2 TPOs	Appraisal Metrics			Performance Summary
	Metric	Low	High	
		The Region is expected to benefit from a reduction of around 15 premature deaths per annum.		
	Scoring	++	++	
An integrated strategic transport system that contributes towards sustainable inclusive growth in Scotland.	Increased labour catchment by sustainable travel (PT/Active Travel)	<p>Access to local employment, which represents accessibility of employment located in the surrounding area of an origin, showed improvements in parts of the region. Such improvements were located particularly in places such as Larbert, Grangemouth, Dunblane and Bridge of Allan with around 2,000 additional jobs within a 40-minute journey by public transport.</p> <p>Access to regional employment (employment located in Stirling, Glasgow or Edinburgh) showed a level of improvement in all local authorities within the region, but particularly Falkirk. The modelling shows that an additional around 5,000 jobs can be accessed within an hour's journey time on average across the region by public transport.</p> <p>Rural Employment: The rural population observed no direct change in journey times to the nearest employment site by public transport.</p> <p>(See Annex B for mapping)</p>		<p>The package will contribute to sustainable inclusive growth in Scotland by:</p> <ul style="list-style-type: none"> Improving integration of transport modes (especially between active modes and public transport) and between transport and major developments Improving journey time reliability Enabling more people to travel by improving the accessibility and affordability of the transport system, so enabling more people to access local retail and services, and opportunities for employment and education/training <p>Encouraging modal shift to sustainable modes and reducing the volume of vehicles on network is anticipated to improve journey time reliability for all vehicles, providing benefits to businesses across the regions. A reduction in vehicles hours of between 40,000 and 52,000 hours is anticipated in the respective growth scenarios for business and commercial travel, contributing towards sustainable inclusive growth in Scotland</p>
	Change in lost time due to congestion (for business/commercial transport)	Reduction in lost time 40,000 (hrs), a 4% reduction	Reduction in lost time 52,000 (hrs), a 3% reduction	

STPR2 Transport Planning Objectives (TPOs) Assessment

STPR2 TPOs	Appraisal Metrics			Performance Summary
	Metric	Low	High	
	Scoring	++	++	
A reliable and resilient strategic transport system that is safe and secure for users.	Change in accidents (PIA and Damage only)	A 3% accident reduction due to reduced veh-km is forecast.	A 2% accident reduction due to reduced veh-km is forecast.	<p>The package will improve reliability, safety and personal security on the transport system by:</p> <ul style="list-style-type: none"> • Improving journey time reliability, including through reduced likelihood of significant network disruptions • Reducing the risk of road accidents at hotspot locations on the Trunk Road network e.g. through targeted infrastructure improvements such as carriageway realignment and widening, the provision of overtaking opportunities and junction improvements. • Reducing perceived risks to road safety and to personal security, so enabling more people (particularly children, women and older people) to travel independently • Changing attitudes of road users, through behavioural change campaigns. This is anticipated to increase awareness of interactions with those walking, wheeling and cycling • Improving active travel provision and providing more dedicated and segregated routes for walking, cycling and wheeling
	Percentage accident change for Targeted Infrastructure Improvements over 60 years, using default accident rate (PIA only)	<p>Sections of Realignment/Widening - reduction of 23% to 59%</p> <p>Sections of Overtaking Opportunities - reduction of 35% to 73%</p> <p>Locations of Junction Improvements – change of 42% (increase) to 64% (decrease)</p>		
	Change in lost time due to congestion	Reduction of 122,000 hours	Reduction of 198,000 hours	

	<p>Journey Time Reliability/ Availability of alternatives (modes/routes)</p>	<p>The package is forecast to reduce overall motorised vehicle kilometres by 2% and 1% under the Low and High travel demand scenarios respectively, thus reducing the risk of accidents occurring as a result of travel reduction, whilst improving resilience by reducing the number of road closures associated with accidents.</p> <p>Targeted improvements on the trunk road and motorway network where safety is a problem is forecast to reduce accidents and the associated reduction in road closures from such incidents would also help improve reliability. Improvements in terms of renewals and climate change adaptation to protect the operation of the trunk road and motorway network would also positively impact on the reliability of the network.</p> <p>Targeted infrastructure improvements such as carriageway realignment and widening, the provision of overtaking opportunities and junction improvements, are anticipated to reduce the number and severity of accidents on the trunk road network. It should be noted that replacing a priority junction with a signalised junction could increase the overall number of accidents, however the severity of accidents occurring should reduce.</p> <p>Encouraging modal shift to sustainable modes and reducing the volume of vehicles on network is anticipated to improve journey time reliability, as indicated by reducing time lost to congestion by 122,000 and 198,000 hours in the Low and High travel demand scenarios respectively.</p>		
	<p>Scoring</p>	<p>++</p>	<p>++</p>	

STAG Assessment

STAG Criteria	Sub Criteria	Scoring		Performance Summary
		Low	High	
Environment	Air Quality	+	+	<p>Total emissions of NO_x were predicted to decrease in future in both the High and Low scenario.</p> <p>Total emissions of NO_x were predicted to be effectively zero in 2045 in the Low scenario, and 2053 in the High scenario either with, or without, the proposed package.</p> <p>Total emissions of PM were predicted to increase in future predominantly due to non-exhaust emissions from road, tyre and brake-wear.</p> <p>However, the package will reduce harmful emissions slightly. Over the 60-year appraisal period there was a predicted 100% reduction in NO_x, 1.4% reduction in PM₁₀ and 1.5% reduction in PM_{2.5} in the Low scenario, and a 2.3% reduction in PM₁₀ and PM_{2.5} in the High scenario.</p>
	Noise and Vibration	+	+	<p>The anticipated modal shift is also expected to reduce levels of noise and vibration associated with the transport network. There is potential for a localised negative effects on noise and vibration due to the construction and operation of specific interventions incl South East Trunk Road, North East Trunk Road, North West Trunk Road and Motorway Network however the magnitude of effect will depend on the design and location of the intervention.</p>
Environment	Biodiversity and Habitats			

	Geology and Soils	Please refer to SEA performance summary text in the 'Other Criteria Assessment' section below. Please note, the scoring has been based on the SEA methodology for scoring, which has been agreed with the SEA Consultation Authorities.		
	Land Use (including Agriculture and Forestry)			
	Water, Drainage and Flooding			
	Historic Environment			
	Landscape			
Climate Change	Greenhouse Gas Emissions	+	+	CO ₂ eq is treated as a nationally important pollutant so it has not been appraised for individual regions. National CO ₂ eq emissions decrease year-on year, with decreasing direct (non-traded) exhaust emissions and increasing traded grid emissions associated with increased adoption and charging of battery-electric vehicles, and specifically in the Low Travel Demand scenario. Across both scenario's the package will reduce emissions of CO ₂ eq, although the change is greater in the High scenario due to overall higher emissions.
	Vulnerability to Effects of Climate Change	+	+	The package provides an opportunity to adapt the transport network to the predicted effects of climate change, with one intervention specifically focused on adaptation.
	Potential to Adapt to Effects of Climate Change	+	+	
Health, Safety & Wellbeing	Change in accidents (PIA and 'damage-only')	Accident reduction related to motorised veh km is forecast to be 3%	Accident reduction related to motorised veh km is forecast to be 2%	The package will reduce the number and severity of accidents through targeted infrastructure improvements and by encouraging modal shift away from private car, resulting in reduced accident risk due to reduced

				conflicts. Mode shift to sustainable modes will, by improving natural surveillance, make paths, stops, stations and services less isolated and this, accompanied by improved quality of facilities will improve perceived security.
	Percentage accident change for Targeted Infrastructure Improvements over 60 years, using default accident rate (PIA only)	Sections of Realignment/Widening - reduction of 23% to 59% Sections of Overtaking Opportunities - reduction of 35% to 73% Locations of Junction Improvements – change of 42% (increase) to 64% (decrease)		The package will improve communities as places, supporting health and wellbeing, by encouraging modal shift away from private car and towards active travel. This will improve placemaking through reduced noise and better air quality due to reduced traffic, and reduced accident risk. It will also benefit many people's physical health and mental wellbeing.
	Security	The package will, by increasing the number of people travelling actively, tend to improve natural surveillance and will, through improvements to lighting and urban realm, tend to reduce the number of locations at which security is a concern.		
	Health Outcomes	The package will, by increasing rates of active travel and hence physical activity, improve both health and wellbeing outcomes. The estimated value of health benefits to the region's population, appraised over a 60-year period, is in the range £500m to £1,000m. The package will also tend, by encouraging car journeys to switch to less polluting modes, to improve local air quality, and hence health outcomes. This may support improving Air Quality Management Areas in Grangemouth, Banknock & Haggs, Falkirk Town Centre and Falkirk AQMA no. 5.		
	Access to Health and Wellbeing Infrastructure	<ul style="list-style-type: none"> Major Hospital Accessibility <p>The largest change in population</p>		

		<p>accessibility of all the destination types considered was observed for major hospitals, with an additional ~5,100 people in the region able to access a major hospital under a journey time of 60 minutes by public transport compared to the without package.</p> <ul style="list-style-type: none"> • Journey times by public transport to the nearest major hospital site showed the most significant improvement to the east of Falkirk in the region, with a reduction up to 10 minutes for some data zones compared to without package assessment. • (see Annex B – NaPTAT mapping) 		
	Visual Amenity	<p>The package should have a positive impact on visual amenity through improvements to walking and cycling opportunities and an improved sense of ‘place’. - Well designed infrastructure and public realm improvements would potentially improve visual amenity but ‘infrastructure’ on their own will not.</p>		
Economy (Transport Economic Efficiency)	User Benefits (2010 prices and values for a 60 year appraisal period)	<p>Present Value of Benefits (PVB) of approximately £100m to £250m</p> <p>Accidents Present Value of Benefits (PVB) of approximately</p>	<p>Present Value of Benefits (PVB) of approximately £100m to £250m</p> <p>Accidents Present Value of Benefits (PVB) of approximately</p>	<p>The majority of economic benefits that accrue are as a result of the sustainable transport interventions in the Region’s package to enable and encourage mode shift to public transport modes. The public transport interventions including Bus Priority Infrastructure, and to a lesser extent the Rail and Interchange interventions, are the main contributors to the public transport user benefits total in the Low scenario. The remainder of the benefits are largely due to the increase in public transport operator revenue as a</p>

		£1m to £10m	£1m to £10m	<p>result of the increased patronage levels arising from the mode shift away from car.</p> <p>The level of public transport user benefits are reduced in the High scenario, although this is partially offset by an increase in road user benefits. Nevertheless, even under this High motorised travel demand scenario the sustainable transport interventions contribute to the majority of user benefits.</p> <p>In terms of accident savings, the level of benefits is similar in both planning demand scenarios. This is due to the reduction in road-based vehicle-kilometres travelled in the region, as a result of the active travel and public transport interventions encouraging a mode shift away from private car.</p> <p>Note that due to the nature of a number of the STPR2 interventions it has not been possible to derive indicative cost estimates on a regional basis.</p>
Equality & Accessibility	Public Transport Network Coverage	<p>The Region is expected to see minor benefits from public transport coverage; however, this will generally be in the less rural areas. Improving the active travel network and interchanges may provide users with access to a wider public transport network, by enabling easier access to multi-modal trips.</p>		<p>The package will improve accessibility to public transport by improving the coverage of the walking, cycling and public transport networks. This will provide particular benefits for people often excluded from transport, including older and young people, women, disabled people, and people living in more deprived communities.</p> <p>The package will also improve affordability by reducing forced car ownership, and situations where taxi is the only viable mode for people without access to a car. By encouraging modal shift to more sustainable modes, the package has the potential to increase demand for public transport, improving commercial</p>
	Active Travel Network Coverage	<p>Improvements to the region's active travel network, both within and between settlements, mean that many more people will have convenient, high-quality and safe infrastructure for walking, wheeling and cycling journeys.</p>		

	Comparative Access by People Group	<p>Improvements to active travel networks and public transport will provide positive impacts on groups who are less likely to have access to cars and more likely to rely on public transport, walking and cycling for their journeys. This includes women, children and young people, older people, some ethnic minority groups and disabled people. Improvements to the region's active travel network, both within and between settlements, mean that many more people will have convenient, high-quality and safe infrastructure for walking, wheeling and cycling journeys.</p>	performance/viability, which could indirectly reduce ticket costs.
	Comparative Access by Geographic Location	<p>Journey Time / Population based increase to key services, including population accessibility and journey times, and access to jobs found locally and regionally (Annex B – NaPTAT mapping)</p> <ul style="list-style-type: none"> • For deprived areas in the region, an additional around around 1,600 people can now access the nearest major hospital site in under 30 minutes by public transport representing a 14% improvement on those in that deprived group who could do so in the without package. <p>For access to employment, deprived areas within Falkirk local authority reported an increase of around 9,200 on average in the number of regional additional jobs (likely located in Edinburgh) that could be reached within an hour by public transport improvements to active travel networks and</p>	

		public transport will provide positive impacts on groups who are less likely to have access to cars and more likely to rely on public transport, walking and cycling for their journeys. This includes women, children and young people, older people, some ethnic minority groups and disabled people.	
	Affordability	Although the STPR2 interventions don't impact on the direct costs of travel (e.g. fares, fuel price), the package of interventions would see a small reduction in transport poverty, due to the overall improvements to access and connectivity between modes.	

Deliverability

Criterion	Summary Assessment
Feasibility	The package has been developed with feasibility considerations in mind. The package mostly makes use of existing, proven technology and would generally be expected to largely operate inside existing design standards. Overall the package is expected to have a minor positive impact against this criterion.
Affordability	The package would require substantial capital and operational funding. Some aspects of the package may generate revenue, which could be used to offset some of these costs. Overall the package is expected to have a moderate negative impact against this criterion.
Public Acceptability	Public acceptability of the package is likely to be mixed. The package is expected to improve accessibility, connectivity, and choice and to make transport cleaner, more efficient and more attractive. There may be concerns in areas of congestion where road space reallocation or priority Interventions are proposed, however the behavioural change elements of the package should also help to mitigate this. There may also be acceptability concerns where construction works are expected to cause disruption or require land-take. Overall the package is expected to have a minor positive impact against this criterion.

Other Criteria Assessment

Criterion	Performance Summary
SEA	<p>The package supports modal shift to more sustainable modes of transport. The creation of mobility hubs/interchanges, improvements to the strategic rail network and the improvements to passengers' services and facilities seeks to encourage modal shift, and, as a result, reduce levels of transport related air pollution and carbon emissions. The decarbonisation of the rail and bus network and freight deliveries will also support a reduction in greenhouse gas emissions and improvement in air quality.</p> <p>The package provides an opportunity to adapt the transport network to the predicted effects of climate change, with one intervention focused on this adaptation and promotes a more sustainable usage of the existing transport network</p> <p>Positive effects are anticipated on Population and Human Health due to an expected increase in sustainable access to essential services, increased travel choice and improved connectivity and planning for the future capacity of public transport.</p> <p>Active travel interventions will also have positive outcomes on Population and Human Health through expected improvements in air quality and increased uptake of physical exercise through walking, wheeling and cycling.</p> <p>There is potential for a negative effect on material assets as some freight interventions proposed involve enhancements to rail freight, terminals and facilities and therefore will require the use of natural resources.</p> <p>Road interventions are anticipated to have positive effects on safety. Trunk road improvements which are focused on junction improvements, realignment / widening and overtaking opportunities are also not anticipated to have a notable impact on traffic volumes or mode share and subsequently transport-based emissions in the majority of locations. The construction and operation of these interventions may result in result in minor negative effects on population and human health with the potential for in an increase in noise and vibration during construction and operation. This is dependent on the location and design of individual schemes. There is also potential for a negative effect on material assets due to the use of natural resources.</p> <p>Where new infrastructure is required this could result in negative effects on biodiversity, soil, landscape, water, historic environment however the magnitude of effect is uncertain at this stage and will be determined by the design (and physical footprint) of the interventions.</p>
EqIA	<p>The package could improve public transport and active travel accessibility to key destinations and services including employment, education, healthcare and shopping for people living in the area. This will have a major positive impact on certain protected characteristic groups who are less likely to have access to a car and more likely to depend on public transport and active travel to make their journeys. This includes women, children and young people, older people, disabled people and people from certain ethnic minority groups.</p>

	<p>By encouraging modal shift to more sustainable modes, this package could also contribute to improving local air quality. Improved health outcomes as a result of better air quality are of particular benefit to those who are more vulnerable to air pollution, including children, older people, disabled people and pregnant women.</p> <p>The package will reduce the severity of accidents through targeted infrastructure improvements and by encouraging modal shift away from private car, resulting in reduced accident risk due to reduced conflicts. Some protected characteristic groups are more likely to be involved in road accidents, for example, children as pedestrian casualties and young males involved as car drivers and as such would have positive impacts on these groups.</p> <p>Mode shift to sustainable modes will make paths, bus stops, stations and services less isolated and this, accompanied by improved quality of facilities will improve perceived security. This is likely to provide some benefit to those for whom security is of particular concern including women, the LGBTQ+ community and those from religious backgrounds most subject to hate crime.</p> <p>The package would therefore be anticipated to have a minor positive impact on addressing this criterion.</p>
ICIA	<p>The package is not relevant to islands and would therefore have a negligible impact on addressing this criterion.. However, there could be a minor positive impact for those from island communities visiting the mainland for services through improved accessibility to key services within the region.</p>
CRWIA	<p>By encouraging modal shift to more sustainable modes, this package could contribute to improving local air quality. Improved health outcomes as a result of better air quality are of particular benefit to those who are more vulnerable to air pollution, including children.</p> <p>The package could also improve public transport and active travel accessibility to higher education institutions and employment opportunities for young people living in the area.</p> <p>Safety is a key issue for children with regards to transport with child pedestrian casualties recorded in Scotland in 2019, accounting for 44% of all pedestrian casualties. In particular children from deprived areas and certain ethnic groups are more at risk.</p> <p>The package will reduce the severity of accidents through targeted infrastructure improvements and by encouraging modal shift away from private car, resulting in reduced accident risk due to reduced conflicts.</p> <p>The package would therefore be anticipated to have a minor positive impact overall on addressing this criterion.</p>
FSDIA	<p>The package has the potential to improve public transport connectivity, including through rail corridor enhancements, and can therefore support regeneration and economic development and reduce inequalities caused by socio-economic disadvantage by improving accessibility for deprived communities or communities where transport options are limited. For access to employment, as a result of the package, deprived areas within Falkirk local authority are forecast an increase of ~9,200 on average in the number of regional additional jobs (likely located in Edinburgh) that could be reached within an hour by public transport.</p>

	The package would therefore be expected to have a minor positive impact on addressing this criterion.
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Annex A: Grouping Interventions

Forth Valley Region

Grouping Title	Regional Description
Improving Access to Bikes	Improve access to bikes through a multi-faceted programme of interventions to enable people to cycle (and also to support walking/wheeling as appropriate), and to give them confidence and skills to do so, such that they can make use of new or existing active travel infrastructure. Measures would be designed to meet local community needs, and address inequality.
Connected Neighbourhoods	The transport components of 20-minute neighbourhoods within towns and cities. This would include, for example, packages of improvements to footways, road crossings and urban realm, aiming to make walking, wheeling and cycling more attractive, inclusive and safe.
Improving Active Travel on Trunk Roads through Communities	Packages of measures to reduce the adverse effects of Trunk Road traffic on people walking, wheeling and cycling in those communities that have a Trunk Road passing through them (for example by reducing traffic speed and improving road crossing facilities).
Increasing Active Travel to School	Improved walking, wheeling and cycling routes to schools, accompanied by traffic speed reduction measures and School Streets schemes where appropriate, as well as behaviour change measures. The types of interventions would often be the same as those of Connected Neighbourhoods, but this intervention is distinct because not all schools are within/close to town/neighbourhood centres.
Active Freeways	High-quality segregated infrastructure for people walking, wheeling and cycling on radial routes and other high-demand corridors in Scotland's large urban areas, with priority given initially to the larger cities.
Village – Town Active Travel Connections	Active travel routes, segregated from busy roads but making use of quiet roads where appropriate, to connect smaller communities to nearby towns.
Long-Distance Active Travel Network	Interurban active travel routes, segregated from busy roads but making use of quiet roads where appropriate, connecting Scotland's cities and regions. The grouping would enhance the existing National Cycle Network to create a strategic national network of active travel routes mirroring in part the Trunk Road and rail networks.
Connecting Towns by Active Travel	Segregated active travel routes on interurban connections between adjacent towns in locations where demand is expected to be high. Complements the Long-Distance Network and existing links on the National Cycle Network.
Cycle Parking Hubs	High-quality, high-capacity cycle parking facilities in urban centres and at other key trip attractors to cater for increased demand in locations where Active Freeway networks are implemented (in Scotland's large urban areas, with priority given initially to the larger cities).

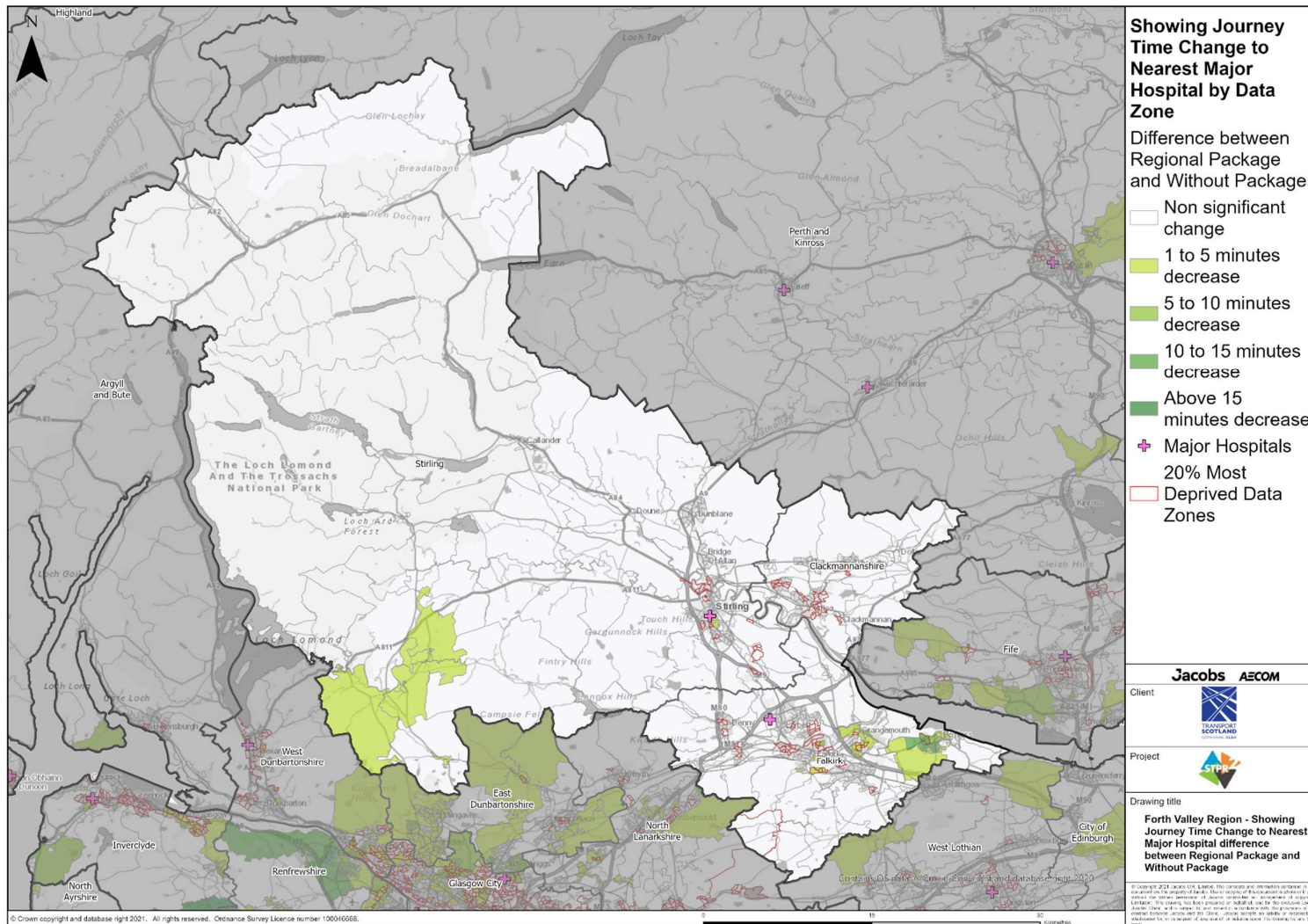
Behaviour Change Initiatives	Delivery of activities which provide encouragement, enablement and incentivisation for more people to make use of active and sustainable transport choices more often. The initiatives would complement many other interventions being considered for implementation by STPR2 by raising awareness of, and encouraging individuals to use, the most appropriate transport choice for their journey.
Expansion of 20mph limits and zones	Provision of new or expanded 20mph schemes across Scotland on appropriate roads in cities, towns and villages. This would reduce traffic speeds and create safer environments which promote and encourage active travel choices.
Bus Priority Infrastructure	Bus priority to deliver faster and more reliable journey times for bus passengers, particularly within Scotland's cities and towns where congestion is highest. -Support for local/regional schemes to improve bus priority, funding for initial appraisal is currently being provided in some areas through the Bus Partnership Fund.
Decarbonisation of the Bus Network	Support the decarbonisation of the bus network through continuation of support funding schemes to introduce zero emission vehicles.
Demand Responsive Transport (DRT) / Community Transport	Consideration of whether the outcomes from pilot studies funded through Phase 1 of STPR2 would enable capital funding to be used to support Demand Responsive Transport/Community Transport in providing improved public transport connectivity in rural, island and peripheral areas.
Decarbonisation of Freight Deliveries	Interventions to support the decarbonisation of freight deliveries, including awareness and education activities, alternative fuel infrastructure and alternative fuel HGV trials.
Railway Freight Terminals and Facilities	Improving the modal shift of freight from road to rail primarily for trunk haul movements (but not exclusively) through a network of rail freight terminals and facilities to include direct connections to manufacturing facilities and warehousing. - Review of potential terminal locations
Freight reliability, resilience and efficiency improvements	Includes options on how the road freight industry can be supported by implementing a variety of hard and soft measures that will reduce overall disruption, improving journey times and reducing costs for operators.
Freight Consolidation and Last-Mile Logistics	Introduction of measures to improve freight connectivity within urban and rural areas, such as improved access to cargo bikes, approaches to consolidation centres to aid 'last-mile' logistics and use of innovative technologies.
Freight Incentives and Freight Best Practice	Evaluation of future of Freight Facilities Grant and Mode Shift Revenue Support to encourage more efficient, environmentally friendly practices within the freight industry, including promoting sustainable transport options
Rail Freight Enhancements	Rail freight enhancements required as outlined as part of the Scottish Strategic Freight Network (SSFN) by the Scotland Freight Joint Board in 2017. This infrastructure enables more efficient mode shift from road to rail.

	<p>Rail Freight Enhancements between Mossend, Grangemouth and Aberdeen/Inverness</p> <p>Central Belt - ECML via Edinburgh Waverley</p> <p>Central Belt - Inverness via Fife</p> <p>Central Belt - ECML via Edinburgh South Suburban</p> <p>Increased train length, improved route availability (axle weight), better freight schedules and clearance for taller and wider wagons, access to Grangemouth branch from the east</p>
Improve Access to Major Ports and Airports	Introduction of a series of infrastructure and public transport service improvements that will provide better-quality surface connections to Scotland's major ports and airports by road, rail and public transport to allow Scotland to maximise the potential afforded by all its major ports and airports.
Trunk Road and Motorway Network Renewal for Reliability, Resilience and Safety	Renew and improve the resilience of the trunk road and motorway network. This would include preventative and programmed structural renewals of carriageways and network structures for consideration.
Trunk Road and Motorway Climate Change Adaptation and Resilience	This focuses on the areas on the trunk road and motorway network most at risk of disruption due to weather events. This would involve identification of priorities and measures to strengthen the resilience of Scotland's trunk road and motorway network to adapt to a changing climate and unplanned events.
Mobility Hubs and Multi-modal Interchanges	Construction of new or upgrades to existing mobility hubs, P&R sites and other multi-modal interchanges to improve interchanges between modes.
Regional Passenger Facilities/Station Enhancements	Building on the Phase 1 recommendations, improvements to public transport passenger facilities, focusing on bus stations seeking to improve passenger facilities both in terms of improved quality and in terms of improved accessibility for those with reduced mobility.
South East Trunk Road and Motorway Network Improvements	<p>Improving trunk and motorway network road safety and strategic access to National Developments and Key Gateways.</p> <p>Road safety improvements will focus on route sections where calculated local KSI and/or PIA accident rates are over 2 times greater than the national rates for routes of a similar nature and standard, over the period 2015 to 2019. Improvements are anticipated to include widening / realignment on single carriageway sections, targeted overtaking opportunities and junction improvements, with a primary focus on helping to achieve the Scottish Government's Target of 'Vision Zero' by 2050.</p>
North West Trunk Road and Motorway Network Improvements	<p>Improving trunk and motorway network road safety and strategic access to National Developments and Key Gateways.</p> <p>Road safety improvements will focus on route sections where calculated local KSI and/or PIA accident rates are over 2 times greater than the national rates for routes of a similar nature and standard, over the period 2015 to 2019. Improvements are anticipated to include widening / realignment on single carriageway</p>

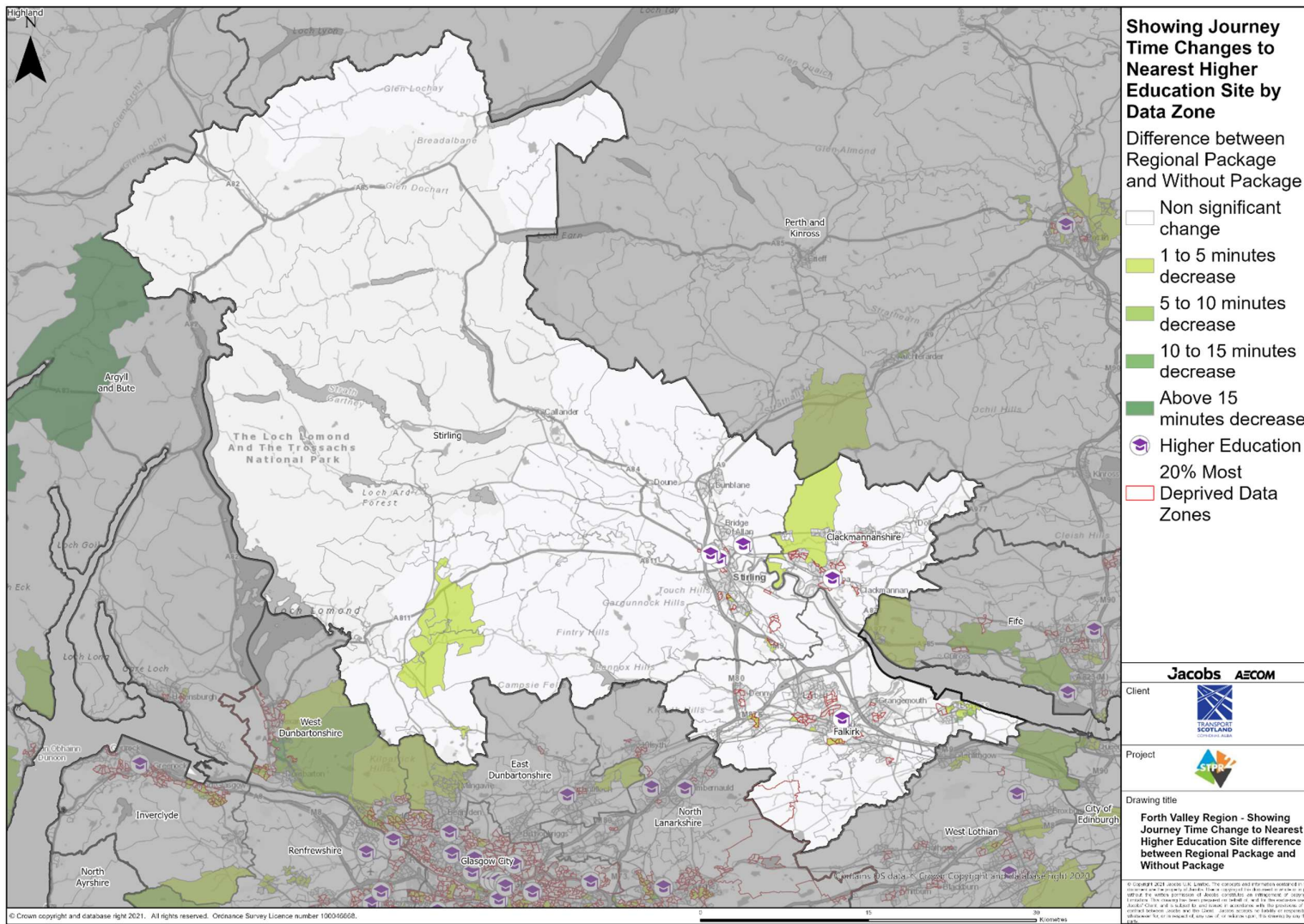
	sections, targeted overtaking opportunities and junction improvements, with a primary focus on helping to achieve the Scottish Government's Target of 'Vision Zero' by 2050.
North East Trunk Road and Motorway Network Improvements	Improving trunk and motorway network road safety and strategic access to National Developments and Key Gateways. Road safety improvements will focus on route sections where calculated local KSI and/or PIA accident rates are over 2 times greater than the national rates for routes of a similar nature and standard, over the period 2015 to 2019. Improvements are anticipated to include widening / realignment on single carriageway sections, targeted overtaking opportunities and junction improvements, with a primary focus on helping to achieve the Scottish Government's Target of 'Vision Zero' by 2050.
A National Action Plan to support the transition to Low Emission/Ultra Low Emission/Electric Vehicles	A National Action Plan to support the transition to Low Emission/Ultra Low Emission/Electric Vehicles to support the delivery of the Scottish Government's net zero targets through a multi-faceted programme of interventions. Measures include funding streams to support the delivery of infrastructure and innovative schemes to allow an equitable transition across the country.
Changing Road User Behaviour	Implementation of speed enforcement technology and national road safety behaviour change campaigns, education and training initiatives to enable all road users to understand their road safety responsibilities, allowing them to improve their attitudes and behaviours for the safety of themselves and others.
Inter-7-Cities Strategic Corridor Enhancements	Provision of enhancements on the Inter-7 Cities strategic rail network seeking to improve connectivity by reducing rail journey times on these corridors. Glasgow to Perth rail corridor enhancements
Corridor Enhancements: Central Belt	Provision of a platform for rail network enhancements within the Central Belt and on cross-border routes. This covers the Central Belt of Scotland (Glasgow-Edinburgh), communities within a commutable distance of these city regions and the two main rail routes for cross-border travel to England (East and West Coast Mainlines). Nothing physical in the region, but improves connectivity to Edinburgh.
Decarbonisation of the Rail Network	Delivery of a continued, rolling programme of rail decarbonisation, including consideration of batteries and alternative fuel sources, in line with Transport Scotland's Rail Services Decarbonisation Action Plan (DAP).
Incident Management Software (IMS) Upgrade	Incident Management System replacement to maintain the current level of service across the trunk road network.
Control Centre of the Future	This would involve investment enhancement of the capabilities of the Traffic Scotland National Control Centre, and how to plan for the future renewal and replacement of equipment, systems and services to maximise network operations.

Intelligent Transport Systems (ITS) Roadside Infrastructure	Investment in ITS which helps to ensure the availability, resilience, safety and quality of the transport infrastructure that is used to actively manage and control traffic during incidents and hazardous weather conditions.
Integrated Public Transport Ticketing	Integration of ticketing across public transport (bus, rail and ferries).

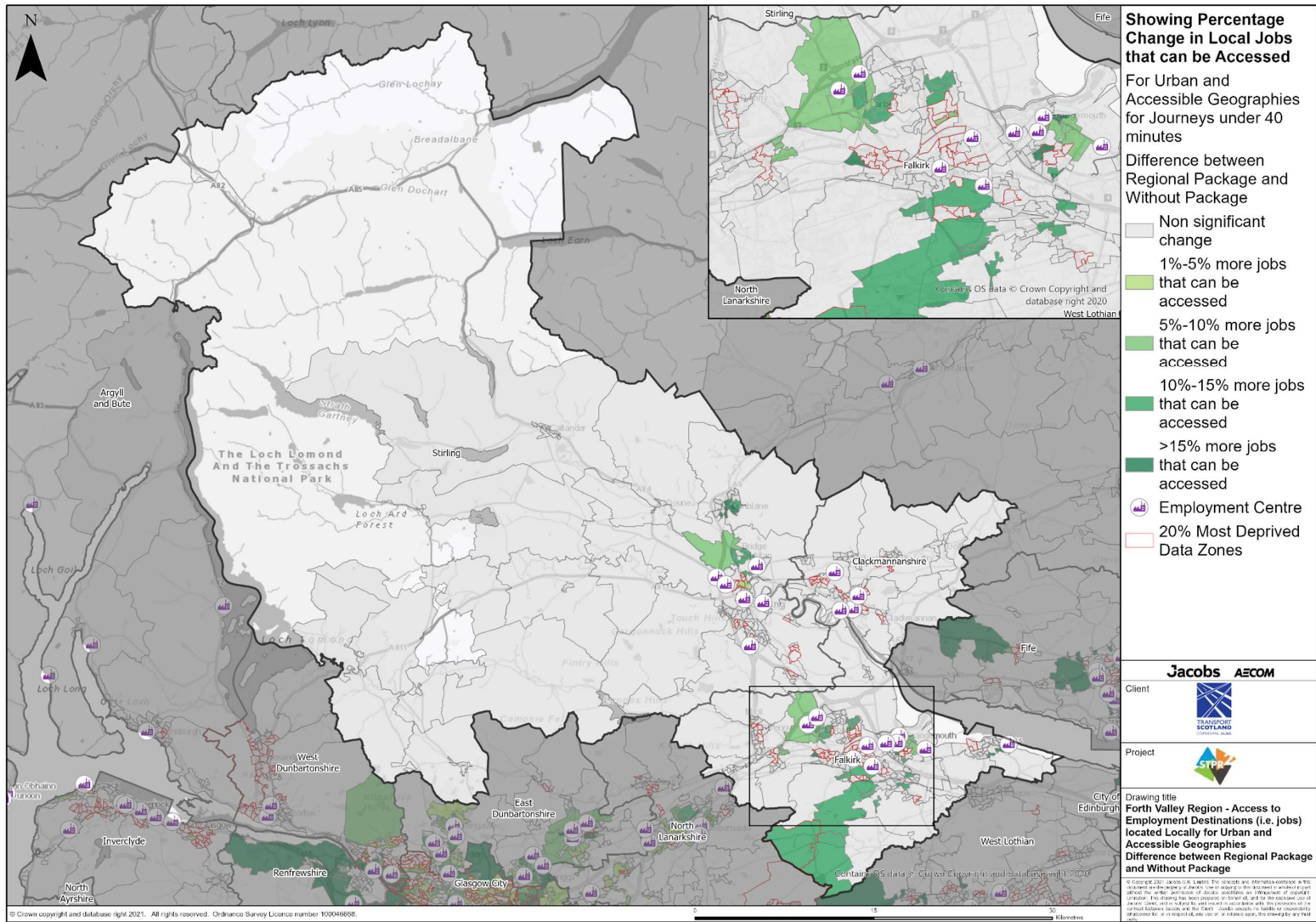
Annex B: NAPTAT MAPPING



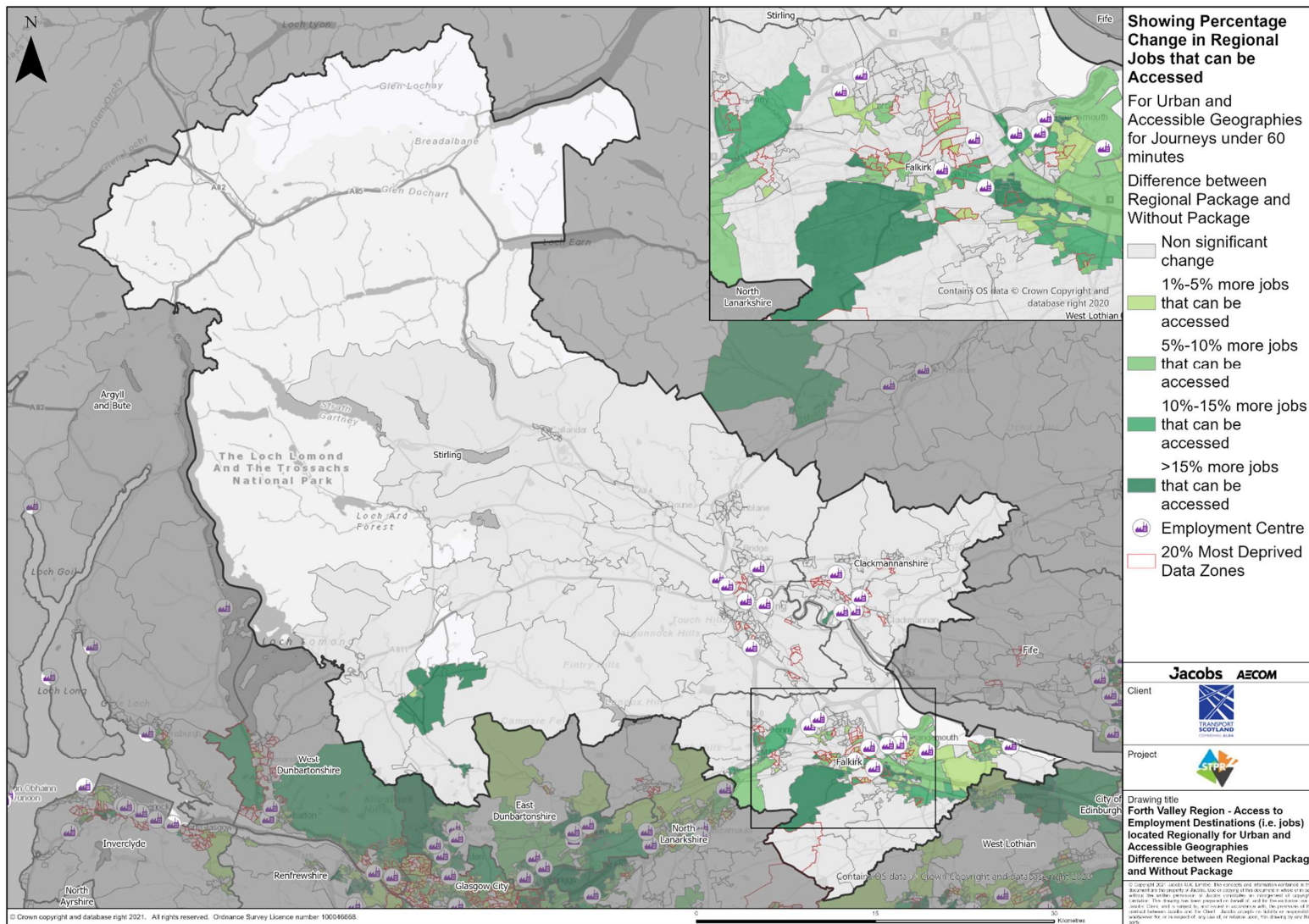
Forth Valley Region – Showing Journey Time Change to Nearest Major Hospital Difference between Regional Package and Without Package



Forth Valley Region – Showing Journey Time Change to Nearest Higher Education Site Difference between Regional Package and Without Package



Forth Valley Region – Access to Employment Destinations (i.e. jobs) located Locally for Urban and Accessible Geographies Difference between Regional Package and Without Package



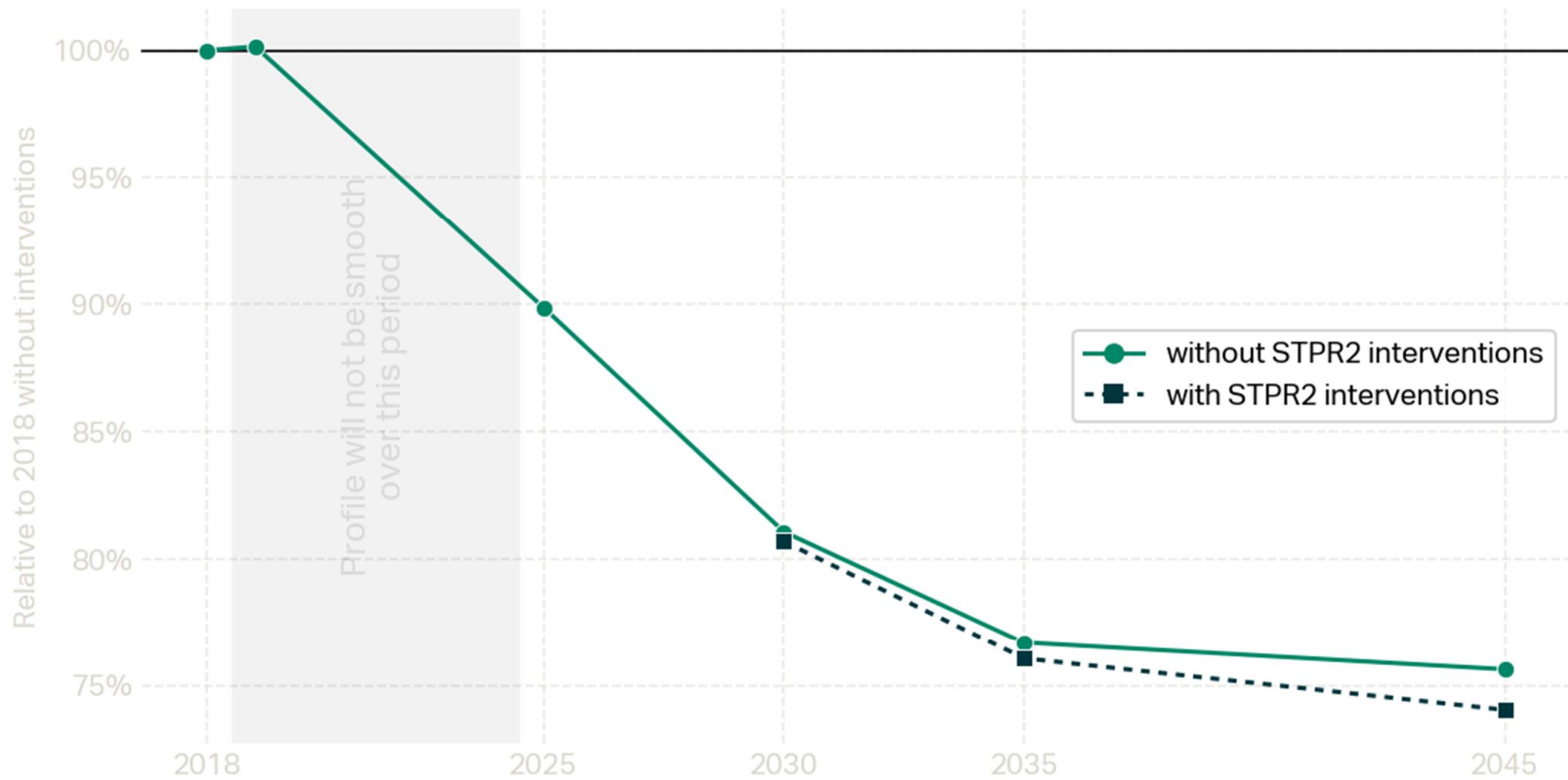
Forth Valley Region – Access to Employment Destinations (i.e. jobs) located Regionally for Urban and Accessible Geographies Difference between Regional Package and Without Package

Annex C: Detailed Appraisal Outputs

Model Forecasts - TELMoS / TMfS

Forth Valley Low Motorised Traffic / Emission Demand

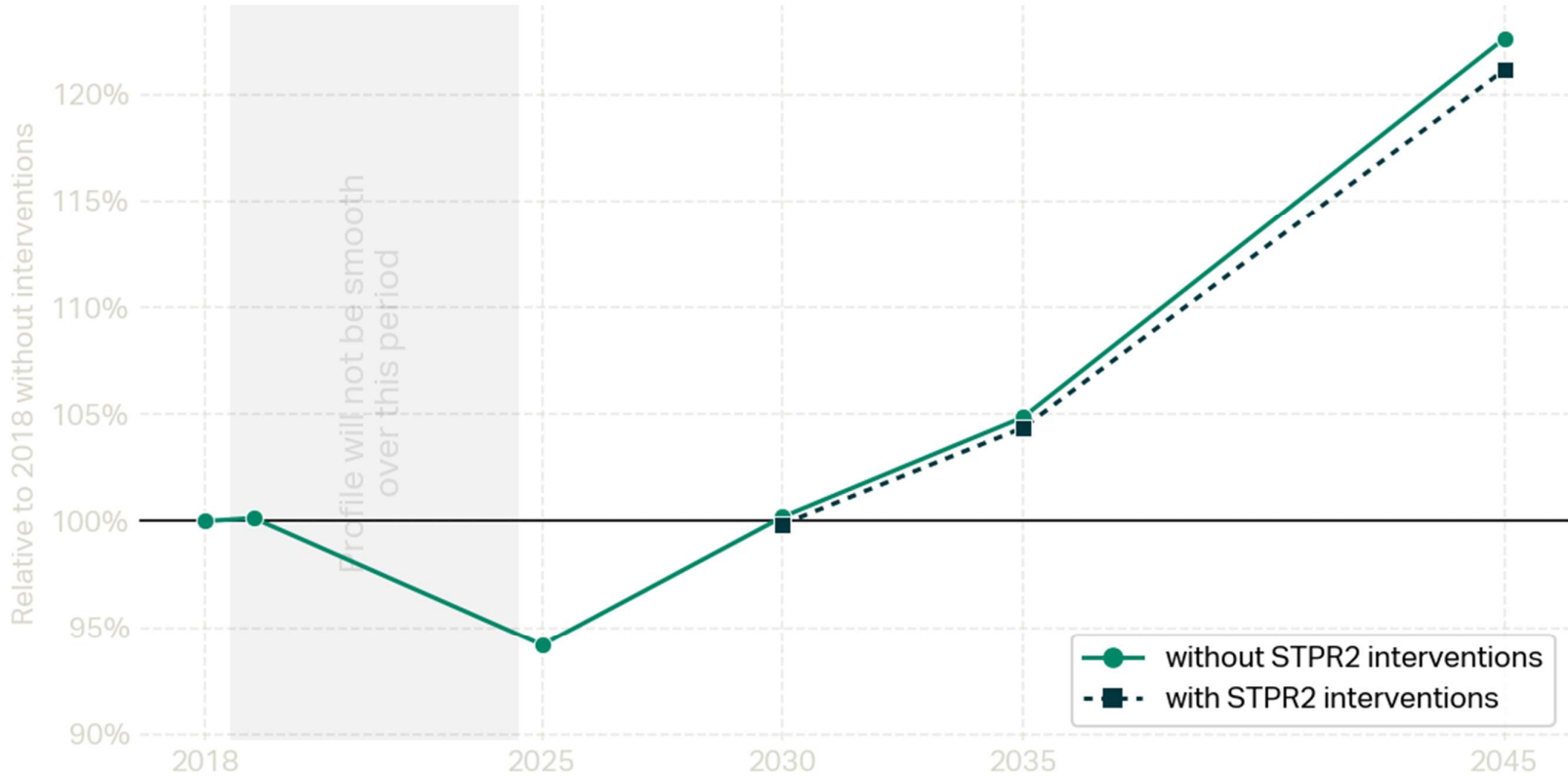
Modelled Annual Road Traffic (vehicle-kilometres)



Analysis undertaken January 2022. "Road" includes both Car and Goods Vehicle trips.

Forth Valley High Motorised Traffic / Emission Demand

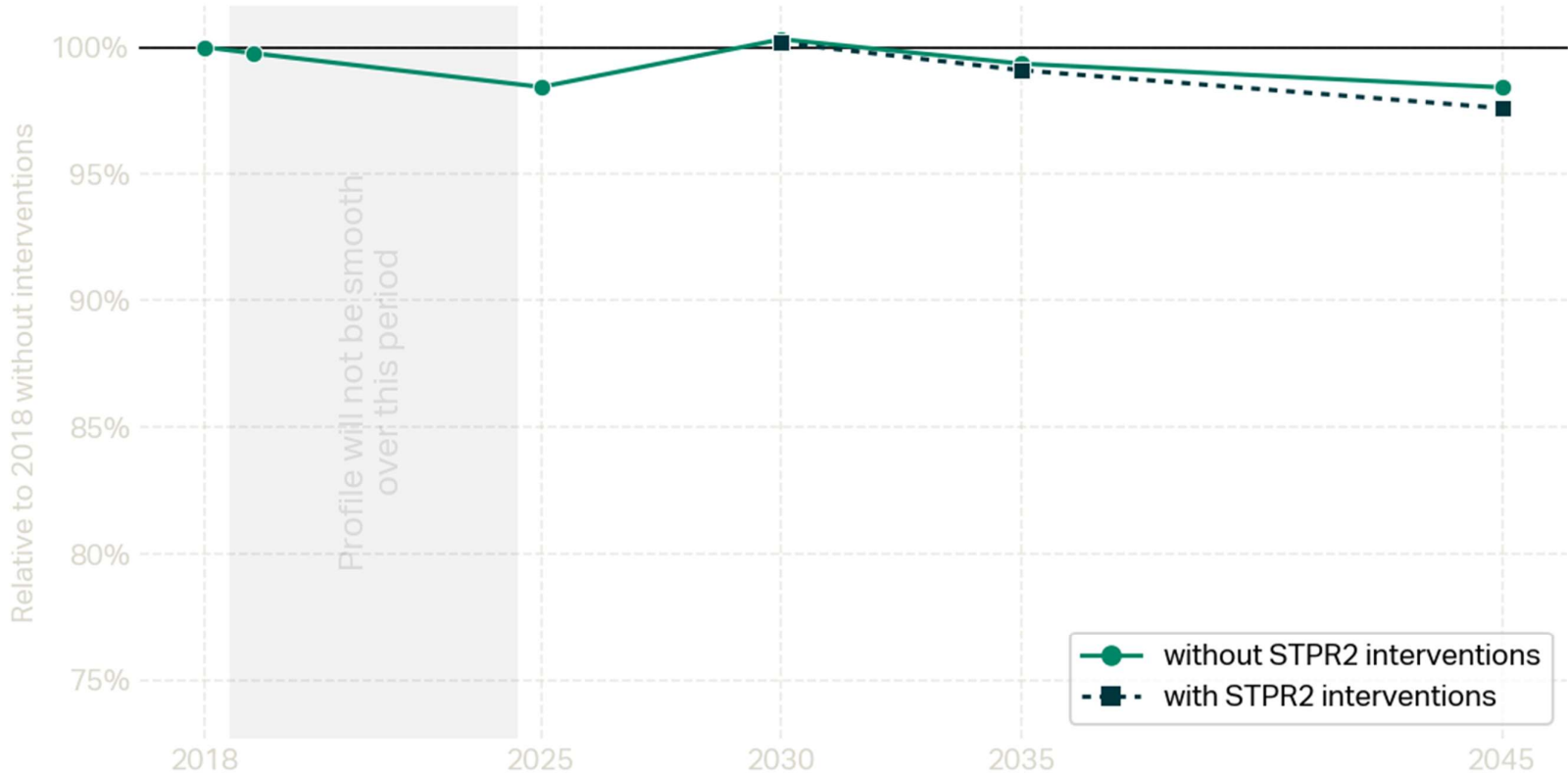
Modelled Annual Road Traffic (vehicle-kilometres)



Analysis undertaken January 2022. "Road" includes both Car and Goods Vehicle trips.

Forth Valley Low Motorised Traffic / Emission Demand

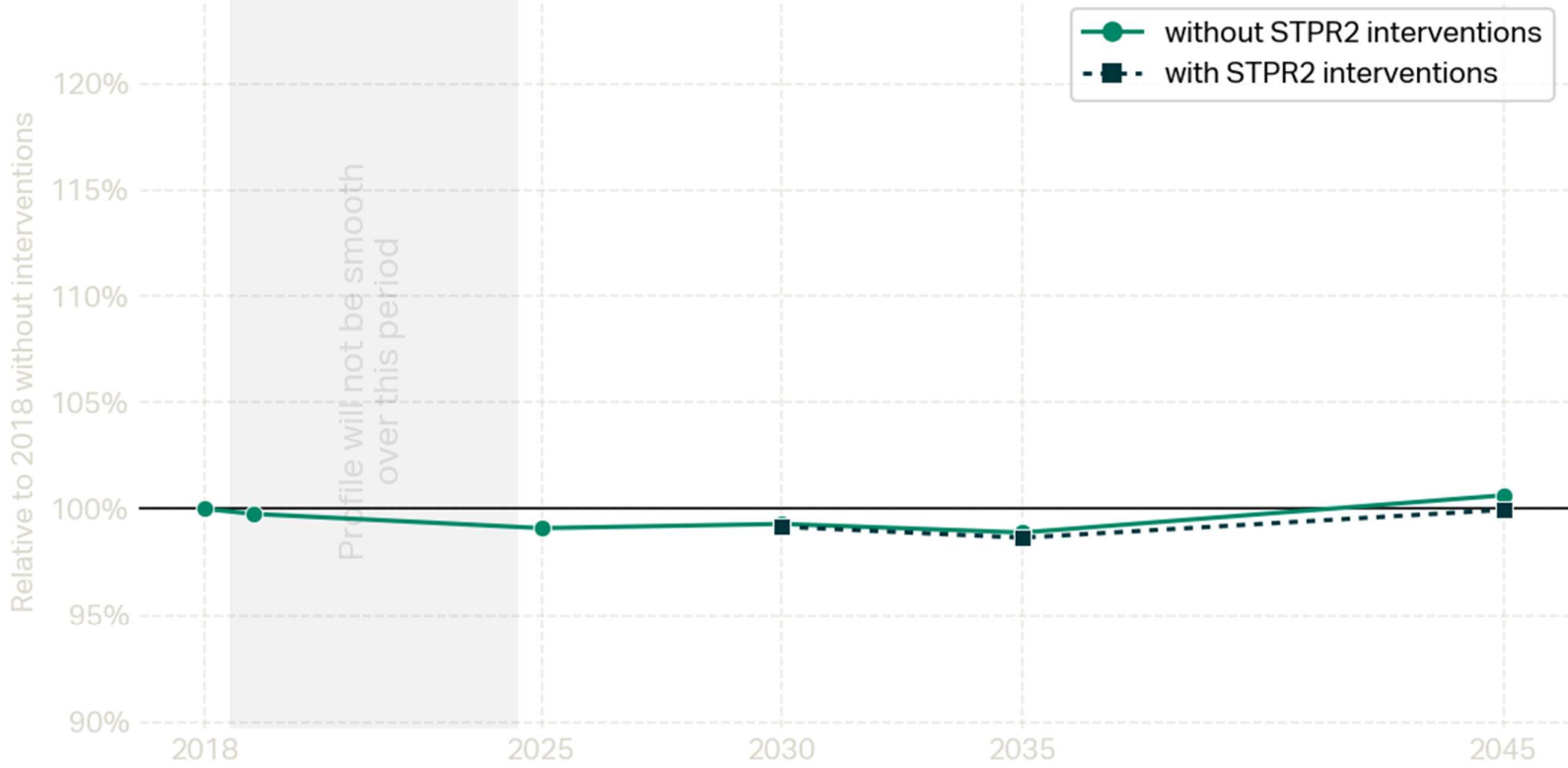
Modelled Road Journey Time (minutes per km)



Analysis undertaken January 2022. "Road" includes both Car and Goods Vehicle trips.

Forth Valley High Motorised Traffic / Emission Demand

Modelled Road Journey Time (minutes per km)



Analysis undertaken January 2022. "Road" includes both Car and Goods Vehicle trips.