Prepared by

Jacobs AECOM

for

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

A96 Corridor Review

Strategic Business Case – Transport Appraisal Report (Draft) Appendix D: Detailed Appraisal Summary Tables

2024

A96 Corridor Review Detailed Appraisal Summary Table

An Appraisal Summary Table (AST) has been prepared for each of the packages developed for the A96 Corridor Review and for A96 Full Dualling. The package ASTs are set out to provide:

- Detailed Package Description – this presents the interventions that were included in the package for the detailed appraisal, their relevance to transport users in the corridor, the estimated cost of the package, the position in the Sustainable Investment and Sustainable Travel Hierarchies and an overall summary of the appraisal.
- Problems and Opportunities Context – drawing on data presented in the Case for Change report, this summarises the identified problems and opportunities in the corridor that are relevant to the package, and sets out where the package complements wider Scottish Government policies and strategies.
- Transport Planning Objectives (TPO) Assessment – an assessment against each of the five TPOs is provided with quantified metrics, where appropriate, under the 'With Policy' Scenario that includes the 20% reduction policy ambition on car kilometres (hereon referred to as the 'With Policy' Scenario) and a 'Without Policy' Scenario with no policy ambition on car kilometres reduction (hereon referred to as the 'Without Policy' Scenario). Further information about these scenarios is provided in Appendix A. A seven-point scoring scale is adopted for each TPO, as follows:
  - + + + = 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 interventions, and this AST presenting the Strategic Case it has not been possible to derive a single cost estimate. However, broad capital spending ranges have been estimated for each package.
- Statutory Impact Assessment Criteria – a summary of the performance of the packages against the Equalities Impact Assessment (EqIA), Child Rights and Wellbeing Impact Assessment (CRWIA) and Fairer Scotland Duty Assessment (FSDA) is provided. The seven-point scoring scale is adopted in these assessments where appropriate. Note that the separate Strategic Environmental Assessment (SEA) has provided input to the STAG Environment and Climate Change criteria, with the full SEA including scoring and

narrative for each of the Preliminary Appraisal interventions, the Detailed Appraisal packages and for A96 Full Dualling presented in the SEA Draft Environmental Report[i].

Summary of Assumptions

Quantification of the costs and benefits in the packages has been provided through a modelling exercise. Further information is provided in Appendix A of the Technical Report on the modelling scenarios that have informed the assessment of the A96 Corridor Review packages. A summary of the key assumptions is provided here:

- Population projections are based on the National Records of Scotland (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 Office for Budget Responsibility (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).
- In line with appraisal standards, the present value of benefits within the economic assessment are presented as discounted values in 2010 prices.

Modelling Tools

For the purposes of modelling accessibility by public transport, the National Public Transport Accessibility Tool (NaPTAT) has been used. This allows an assessment of accessibility to be compared between the with package and without package scenarios. Results for key services (such as healthcare and education) are generally reported in the context of the additional number of people able to access their closest facility within a defined public transport journey time band.

Due to the multi-modal appraisal process, the national Transport Model for Scotland version 2018 (TMfS) and the A96 Corridor Road Assignment Model version 1.6 (A96CRAM) have been used. TMfS is a national scale multi-modal transport model with a focus on inter-urban trips and as such has been used to inform the appraisal of the larger scale public transport interventions. The A96CRAM is a strategic highway assignment model which covers the A96 corridor (between Inverness and Aberdeen) and parallel routes and has been used to inform the appraisal of the roads-based options. Whilst TMfS and A96CRAM provide for a suitable level of robustness at this stage of the appraisal there are nevertheless limitations associated with modelling of smaller/discrete interventions and those that are more urban in nature, particularly where the calculation of benefits of an intervention depends upon an accurate representation of the existing urban congestion. Separate forecasts of the potential impacts of active travel recommendations on walking and cycling mode share have therefore been

made. As the recommended interventions are progressed through the next stages of development, it is anticipated that more detailed modelling will be undertaken using local models as appropriate.

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

- **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 more urban areas due to the more limited representation of urban transport systems and a degree of insensitivity to mode shift in TMfS.
- **Change in vehicle kilometres 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, the relative coarseness of the model zone system and the lack of direct representation of walk/cycle modes in the transport models.
- **Lost time due to congestion:** Likely to underestimate the benefits associated with mode shift to public transport and walk/cycle modes due to a degree of insensitivity to mode shift in TMfS and the lack of direct representation of walk/cycle modes in the transport models.
- **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.

1. Detailed Appraisal Summary

1.1 Package Description

Refined Package

The Refined Package is focused on primarily delivering transport network improvements to both settlements and rural sections throughout the A96 corridor, by providing enhancements which would aim to encourage a shift to sustainable modes, increase opportunities for residents and businesses and improve road safety. It should be noted that the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme does not form part of the A96 Corridor Review as it has successfully progressed through a Public Local Inquiry and has Ministerial consent. Interventions within Nairn itself, similar to those proposed within the other bypassed towns, however, have been included in this package for appraisal.

The interventions included in the Refined Package are shown in Figure 1.1.

Figure 1.1: Interventions Included in the Refined Package

The location of the settlements and interventions considered in relation to the wider A96 Corridor Review transport appraisal study area (as defined within A96 Corridor Review Case for Change[ii]) is illustrated in Figure 1.2.

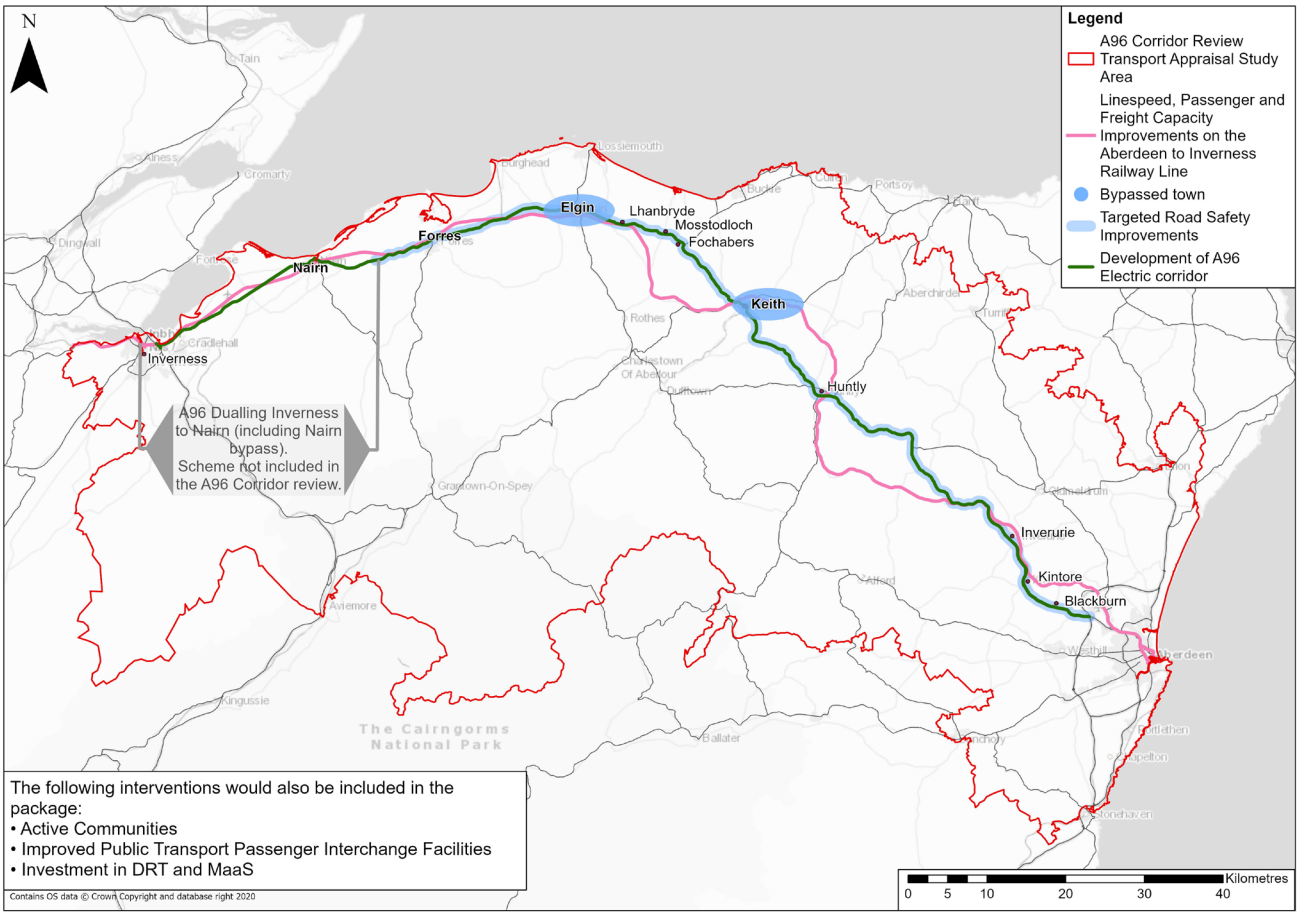

Figure 1.2: Refined Package Extents

This package focuses on delivering networks of high quality active travel routes and facilitating placemaking improvements within the settlements of Nairn, Forres, Elgin, Lhanbryde, Mosstodloch, Fochabers, Keith, Huntly, Inverurie, Kintore and Blackburn by creating 'Active Communities', where more space would be provided for people rather than traffic, which could reduce the need to travel unsustainably. Active Communities draws from the '20-minute neighbourhood' concept (10 minutes there, 10 minutes back) and is built around an approximate radius of 800m from the centre of each town or settlement, whilst also creating safer routes to schools and encouraging more inclusive environments for people walking, wheeling and cycling. This would enhance the sense of place and encourage local communities to spend more time within their local areas.

This package also aims to improve the safety, resilience and reliability of the A96 Trunk Road through the provision of a bypass at Elgin and Keith, whilst also addressing real and perceived severance within these communities by removing through trips. This element of the package is seen as a key enabler to maximising the benefits associated with Active Communities in these towns. As noted above, the provision of a bypass at Nairn is not included within this package as it forms part of the separate A96 Inverness to Nairn (including Nairn Bypass) scheme.

Targeted safety improvements also form part of this package, aiming to address both real and perceived safety concerns on the A96 Trunk Road. It is envisaged that this would be achieved through the provision of improved overtaking opportunities, junction improvements and improvements to the alignment of the carriageway at targeted locations along the route.

A number of public transport interventions targeted at delivering faster and more reliable journey times, as well as improving the overall passenger experience also form part of this package. Journey time and reliability improvements would be achieved through rail improvements delivered by means of linespeed and capacity interventions on the Aberdeen to Inverness rail line, reducing end-to-end journey times to two hours (currently approximately two hours and 25 minutes). This would be facilitated through the provision of passing loops, new rolling stock and freight opportunities.

This package also includes interventions to improve accessibility and quality of public transport interchange facilities such as bus and railway stations throughout the corridor. Improvements are most likely to include smaller scale interventions such as placemaking enhancements, improved wayfinding, enhancements to the waiting environment and/or improved accessibility, including lifts and step-free access. The intervention may also include the construction of new interchange facilities.

Improvements to the public transport network coverage are also proposed through the use of flexible services, such as Demand Responsive Transport (DRT) or Community Transport (CT), supported by Mobility as a Service (MaaS) or smart technology where appropriate, at a corridor level.

Development of the A96 Electric Corridor is also included within this package to encourage a shift away from internal combustion engine (ICE) vehicles. This intervention would seek to improve the provision of alternative refuelling infrastructure and facilities within the A96 transport corridor and its interfacing local roads.

1.2 Relevance

Relevant to all transport users in the A96 Corridor

The multi-modal interventions included within this package mean different aspects are relevant to different travel users. Geographically, the options included within this package would be relevant across the corridor for any trips made within and between settlements, as well as for those travelling along the corridor to make connections with other routes for onward travel to other parts of the country. The package would benefit private travellers as well as businesses and industries required to move freight.

A key element of this package would reduce traffic volumes on the existing A96 through Elgin and Keith by providing bypasses. This would improve connectivity between selected origins and destinations within the region by avoiding interaction with local traffic and junctions. As this package would deliver sections of new high quality carriageway to remove through traffic from communities, in addition to the provision of targeted road safety improvements, it is anticipated to improve road safety and would therefore be directly relevant to Scotland's Road Safety Framework to 2030[iii]. The framework sets out the vision for Scotland to have the

best road safety performance in the world by 2030 and the long-term goal of Vision Zero where there are zero fatalities and serious injuries on Scotland's roads by 2050, with ambitious interim targets for the number of people killed or seriously injured to be halved by 2030. The framework is aligned with the Second National Transport Strategy (NTS2) and embeds the Safe System approach to road safety delivery, which consists of five key pillars focusing efforts not only on road traffic casualty reduction (vulnerability of the casualties) but also on road traffic danger reduction (sources of the danger).

In conjunction with the provision of bypass infrastructure, this package focuses on reducing the reliance on private car through the provision of interventions to encourage a mode shift to sustainable transport. These types of interventions are directly relevant to the Scottish Government's environmental targets, and would be anticipated to support reducing the number of kilometres travelled by car by 20% by 2030[iv] as well as the commitment to achieve net zero by 2045[iv].

Furthermore, accompanying the mode shift achieved, the provision of alternative fuelling stations throughout the A96 corridor would also contribute towards the climate emissions targets. With the phasing out of new petrol and diesel cars and vans by 2030 set out in the Scottish Government's Climate Change Plan[iv] and all sales of Heavy Goods Vehicles (HGVs) in the UK to be zero emission by 2040[v], this intervention would contribute to the rapid decarbonisation of the transportation sector required to help meet these targets.

Interventions within this package also align with the NTS2[vi], in particular with the key priority of Takes Climate Action, which sets out the ambition to both help support delivery of net zero targets and promote greener and cleaner travel choices. Encouraging more people to engage in active travel is relevant in terms of reducing carbon emissions; reducing inequalities by improving access to jobs, services and leisure; delivering more pleasant communities; improving health and wellbeing; and supporting sustainable economic growth. Better active travel provision creates particular opportunities for people vulnerable to social exclusion such as disabled, young and older people, and those without access to a car. Active Communities interventions in this package are relevant to key settlements along the A96 corridor, though the specific make-up of this intervention in each settlement would be dependent on local needs and aspirations.

The implementation of rail options included within this package could help facilitate the mode shift of freight from road to rail, particularly for longer distance movements as well as for shorter distance materials such as freight movements including timber and aggregates. This package is relevant to the continued development of Scotland's strategic transport network, contributing to Scotland's Rail Freight Strategy[vii] as well as the emissions reductions targets of the Climate Change Plan[viii], and aiding in the transition away from traditional HGVs[ix].

1.3 Estimated Cost

£501m - £1,000m Capital

Costs for each individual element of the package are dependent on the location, scale and complexity of providing infrastructure or services. The anticipated costs of the individual

interventions within this package place the estimated capital cost of this package as a whole between £501m and £1,000m (not discounted), with the percentage contribution of each intervention shown graphically in Figure 1.3. The percentages are based on the mid-point of the cost range of each intervention.

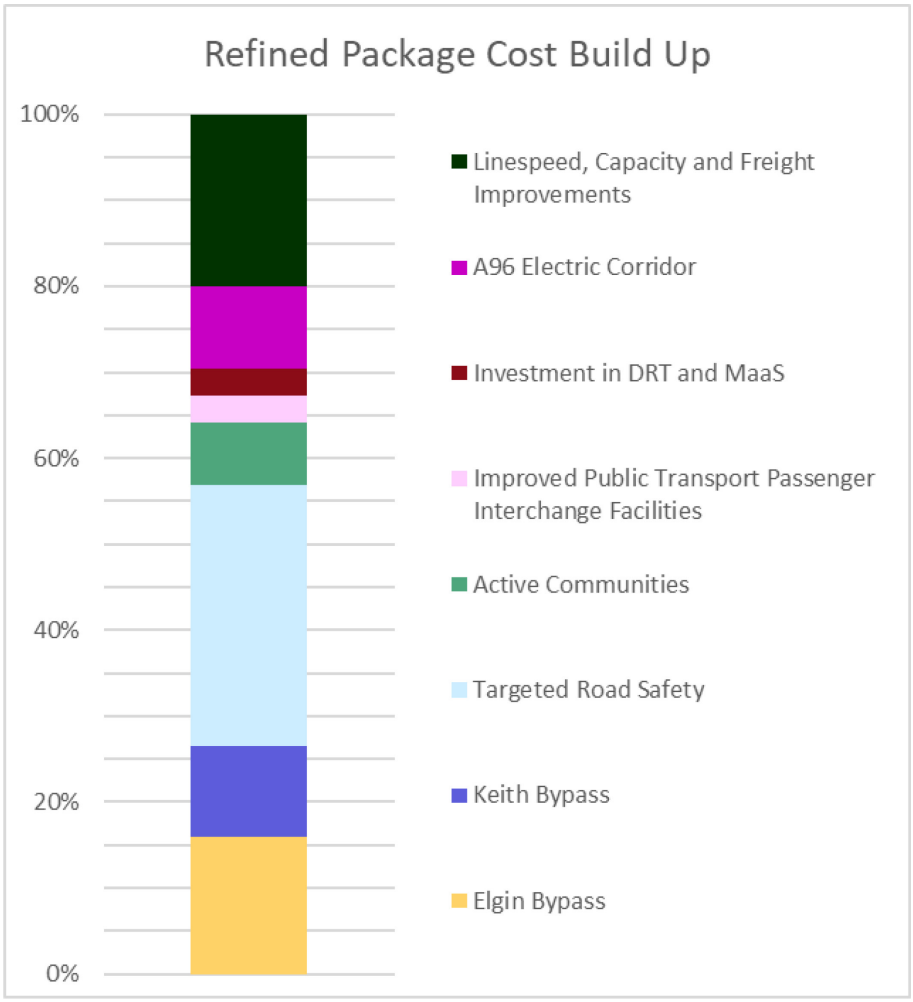

Figure 1.3 Percentage Contribution of Each Intervention to the Overall Cost

Transport Scotland is identified to be the responsible asset owner for any intervention introduced on the trunk road network, whereas local authorities would be responsible for assets on local roads. Private and social enterprises, and Regional Transport Partnerships may also be asset owners, particularly for the A96 Electric Corridor and public transport interventions. It is anticipated that the asset owners would take on the operation and maintenance associated with any intervention, which would have ongoing costs, though third parties or a collaborative approach between asset owners may also be utilised.

1.4 Position in Sustainable Hierarchies

Sustainable Investment Hierarchy / Sustainable Travel Hierarchy

Given the variety of different interventions included within this package it sits across multiple levels within the Sustainable Investment Hierarchy, but is mostly aimed at reducing the need

to travel unsustainably. The various interventions included within the Refined Package would also sit across all tiers of the Sustainable Travel Hierarchy.

This package would contribute to all of the 12 NTS2 outcomes as follows:

- Provide fair access to services we need
- Be easy to use for all
- Be affordable for all
- Help deliver our net zero target
- Adapt to the effects of climate change
- Promote greener, cleaner choices
- Get people and goods where they need to get to
- Be reliable, efficient and high quality
- Use beneficial innovation
- Be safe and secure for all
- Enable us to make healthy travel choices
- Help make our communities great places to live.

1.5 Summary Rationale

Summary of Appraisal

	TPO					STAG					SIA		
	1	2	3	4	5	Env	CC	HSW	Eco	EqA	EqIA	CRW	FSD
'With Policy' Scenario	++	+	++	+	++	-	-	++	++	++	++	++	+
'Without Policy' Scenario	++	+	++	+	++	-	-	++	++	++	++	++	+

This package makes a positive contribution to all A96 Corridor Review Transport Planning Objectives (TPOs) and Statutory Impact Assessment (SIA) criteria. However, the package has both positive contributions and negative impacts to the STAG criteria with negative impacts specifically when considering the Environment and Climate Change criteria. The following paragraphs provide additional detail on the scoring of the Refined Package.

The package is anticipated to have a moderate positive impact on the A96 Corridor Review TPOs in relation to contributing to net zero targets (TPO1), enhancing communities as places (TPO3) and safety and resilience of the trunk road network (TPO5) while there is a minor positive impact on TPO2 relating to improving the accessibility of public transport in rural areas and TPO4 relating to sustainable inclusive growth. The package is also anticipated to have a moderate positive impact on the STAG Health, Safety and Wellbeing, Economy and Equality and Accessibility criteria. Of the SIAs scored as part of the A96 Corridor Review, the package is anticipated to have a moderate positive impact on the Equality Impact Assessment (EqIA) and Child Rights and Wellbeing Impact Assessment (CRWIA) and a minor positive impact in relation to the Fairer Scotland Duty Assessment (FSDA).

This package is anticipated to encourage more sustainable travel choices through enhanced active travel networks within communities, promoting public transport use through improved interchange and improved rail linespeed, and facilitating the growth in electric vehicles (EVs) and hydrogen vehicles through increased public charging and refuelling infrastructure. However, there is likely to be a negative impact on the environmental considerations such as biodiversity, landscape and agriculture and soils as a result of the infrastructure improvements required, resulting in a minor negative impact on the STAG Environment criterion. The proposed infrastructure including the bypasses of Elgin and Keith, are seen as key enablers to enhancing sustainable travel within these communities. Although these benefits are likely to be offset by an anticipated increase in greenhouse gas (GHG) emissions at a corridor level both during the construction and operational phases. In operation there is the potential for increased car kilometres travelled due to an increase in distance travelled as a result of the bypasses, resulting in a minor negative impact on the STAG Climate Change criterion.

As the package delivers wide ranging interventions along the A96 corridor, benefits achieved are expected to positively impact those who reside in settlements, particularly the bypassed towns Elgin and Keith where there would also be benefits for the wider economy and through traffic. Those who travel internally within settlements along the A96 corridor would see some benefits to local placemaking where active travel routes are introduced, enhanced, or connected with local transport hubs and public transport interchanges. Rail improvements to linespeed and capacity would provide further benefits to settlements with rail connectivity while also delivering some corridor-wide benefits. This package is anticipated to actively address a number of the problems and opportunities identified in the A96 Corridor Review Case for Change.

The majority of interventions included within this package are considered to be readily feasible and would likely be delivered by Transport Scotland or Network Rail, who have extensive experience of delivery and implementation across the country, with local authorities or Regional Transport Partnerships likely to deliver interventions on the local road network. However, the feasibility of delivery at specific locations considered within this package remains to be tested, and detailed development work and local decision-making is required to identify the most appropriate solutions.

The capital cost of this package is estimated to be between £501m and £1,000m at this stage of the assessment process. The relatively high-level nature of a number of the interventions within the package makes capital costs and the operation and maintenance costs more difficult to estimate. Therefore, at this stage an appropriate level of risk has been included in the overall affordability of the package. Strategic partnerships between relevant parties and asset owners can help spread the burden of costs, particularly for ongoing maintenance and operation.

Overall, public acceptability is anticipated to be mixed, with some groups supporting the package and others disagreeing with the interventions included. There are certain user groups who are likely to welcome this package, given the focus on active and sustainable modes of travel across the corridor. Real and perceived safety concerns are evident on the corridor, with improving road safety being the second most popular priority and suggestion theme

identified in the A96 Corridor Review public consultation survey, so the inclusion of targeted road safety improvements is anticipated to be welcomed. Some groups are likely to oppose this package on, for example, environmental grounds as the bypasses would likely be constructed in greenfield sites, whilst any landowners have land acquired to enable interventions to be developed may not be receptive to the proposals.

2. Context

2.1 Problems and Opportunities

This package could help to address the following problem and opportunity themes. Further detail on the identified problems and opportunities is provided in the published A96 Corridor Review Case for Change[x].

Relevant Problem and Opportunity Themes Identified in the A96 Corridor Review Case for Change

Safety and Resilience: From the analysis of accident data, the rural sections of the A96 Trunk Road have overall Personal Injury Accident (PIA) rates lower than or similar to the national average based on all trunk A-roads of the equivalent type. There are, however, particular urban sections of the A96 Trunk Road for which the accident rate is higher than the national average, with specific locations in Forres and Keith. The rate of those Killed or Seriously Injured (KSI) is also significantly higher in these two towns than the national average, nearly five times the national average in Keith and just above three times the national average in Forres. A number of rural sections of the A96 Trunk Road also have a rate of KSIs higher than the national average, these being between Hardmuir and Forres, Fochabers and Keith, Keith and East of Huntly and Kintore and Craibstone.

The A96 Trunk Road is affected by closures and delays due to accidents, maintenance and weather events. Recommended diversion routes can be lengthy throughout the corridor, up to approximately 65km depending on where the closure occurs. The economic impact of closures can be significant for HGVs and the movement of goods.

The rail network also demonstrates a certain level of unreliability. Services at key destinations such as Aberdeen, Inverness and Inverurie all had a Public Performance Measure (PPM) percentage pre-COVID worse than equivalent stations and the Scotrail defined target for this period. This is likely to contribute to the relatively low levels of rail mode share.

Socio-Economic and Location of Services: Employment and other key services tend to be found in the three most populous and key economic locations within the study area: Aberdeen, Inverness and Elgin. Considering the travel distances between these three key economic centres and the other settlements in the transport appraisal study area, travelling by sustainable modes is relatively unattractive.

The key economic centres contain essential facilities such as major hospitals as well as a much greater density of education facilities. In addition, almost half of the total jobs in the transport appraisal study area are found within these three locations. Outside of these three areas, people making a trip to a workplace are more likely to travel over 10km, therefore limiting the potential for active travel.

Public Transport Accessibility: Evidence across the transport appraisal study area suggests that outside of Aberdeen, the level of public transport use is low in comparison to the rest of the country. Outside of Aberdeen City, the use of bus for commuting to work is significantly lower than the national average, as it is for rail, with only Insch having a mode share above

national average. The Scottish Accessibility to Bus Indicator (SABI) demonstrates that across the transport appraisal study area, the accessibility to bus is low outside of the urban areas of Aberdeen and parts of Inverness.

Rail station accessibility is also an issue, as raised by stakeholders and the public, with Nairn, Huntly, Insch and Inverurie stations specifically noted for not having completely step-free access to all platforms, potentially limiting patronage.

Large sections of the population in the transport appraisal study area cannot access key services such as emergency department hospitals or higher education within two hours by public transport. Moray and Aberdeenshire both have low accessibility to these services which are often centralised in more urban areas such as Inverness, Elgin or Aberdeen. As such, public transport is not an option for many trip purposes within the transport appraisal study area.

Competitiveness of Public Transport with Other Modes: Bus journey times are not competitive with train and car for longer distance trips across the transport appraisal study area. The cost of rail and some longer distance bus trips is high in relation to car fuel costs (as at March 2022). Public consultation has also revealed that the perception of delay and a lack of multi-modal integration combined with the perceived high cost of fares, particularly for rail, makes public transport across the transport appraisal study area unattractive to users.

Travel Choice and Behaviour (Problem): The number of homes without access to a private vehicle in the transport appraisal study area is consistently lower than the Scottish average. Aberdeenshire has a high level of access to a private vehicle, with approximately 90% of households located in the transport appraisal study area having access to at least one vehicle and over half have access to multiple vehicles. There is a greater availability of car in the rural areas across the transport appraisal study area. This combined with the travel to work mode shares, indicates a reliance on private vehicles for travel.

Health and Environment: Transport is a major contributor to CO_2 emissions along the corridor, particularly in the Aberdeenshire and Highland Council areas. Transport contributes over 35% of the total GHG emissions in both Aberdeenshire and Highland Council areas and between 25% and 30% in Aberdeen City and Moray. This is potentially an outcome of high dependence on cars for travel, long travel distances and the levels of road-based freight movements.

The route of the A96 travels through the centre of towns along the corridor including Elgin and Keith, which puts a relatively large proportion of the population in close proximity to potential noise pollution and pollutants from transport emissions that affect local air quality.

Sustainable Economic Growth: There is an opportunity to support and enhance sustainable economic growth across the transport appraisal study area. The key industries in the region, including food and drink production and agriculture, forestry and fishing have a high proportion of goods movement, as evidenced through the relatively high proportion of HGVs on the A96. A shift to more sustainable transport modes could improve journey time reliability, resulting in economic and environmental benefits, with trials being undertaken in recent years to increase the proportion of rail freight movements. Alternatively fuelled

vehicles would also reduce transport emissions and the contribution to air quality issues from the road-based movement of goods.

The transport appraisal study area has shown growth in tourism spend in recent years with the rise of whisky tourism and the Speyside Whisky Trail being a major component of the economy in this sector. There are opportunities to change the way in which visitors travel to, from and around the region through improvements to the public transport network and active travel infrastructure. Walking and cycling tourism is one such opportunity and has the potential to create further economic growth by attracting new visitors to the region.

Improving Safety: There is the opportunity to reduce the number and severity of accidents on the A96 Trunk Road on those sections where the PIA and/or KSI accident rates are high when compared to the national average for equivalent urban or rural trunk A-roads. Improving safety for road users would contribute to meeting the targets set out in Scotland's Road Safety Framework to 2030 to achieve the 50% reduction in people killed or seriously injured (60% reduction for children).

Health and Environment Impacts of Travel: Reducing the use of car travel throughout the transport appraisal study area, particularly for short trips that could be undertaken by active modes, would help reduce the transport contribution to GHG emissions, an important requirement of the Scottish Government's net zero target.

The transition to EVs is underway and progressing rapidly but could be enhanced along the A96 by increasing the quantity, and improving the quality and reliability, of charging infrastructure. EVs would reduce road user GHG emissions and improve local air quality through the lower tailpipe emissions. Alternatively fuelled vehicles for freight and buses would also reduce GHG emissions, along with the electrification of rail.

Travel Choice and Behaviour (Opportunity): Travel choices throughout the transport appraisal study area would be increased through better integration of modes and the provision of more demand responsive interventions. Physical accessibility and interchange opportunities at rail stations could also be improved to reduce the reliance on cars. Increasing digital connectivity and technology advancements can result in opportunities to help integrate public transport and provide better information systems to improve the quality of journeys and enhance the travel experience.

Active travel will continue to play a key role in the transition to sustainable and zero carbon travel by reducing the reliance on private vehicles. Within towns along the A96 corridor, there is the potential to increase active travel with connections by safe walking and cycling infrastructure.

2.2 Interdependencies

This package would complement many other areas of Scottish Government activity. Of particular note are:

- Access for All[xi] (a UK Government scheme, with details also provided by Network Rail[xii])

- Active Travel Framework (2020)[xiii]
- Bus Partnership Fund[xiv]
- City Region Deals[xv]
- Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[xvi]
- Climate Change Plan 2018-32 Update[xvii]
- Cycling Framework for Active Travel - A plan for everyday cycling (2023)[xviii]
- Infrastructure Investment Plan 2021/22 – 2025/26 (IIP)[xix]
- MaaS Investment Fund[xx]
- Mission Zero for Transport[xxi]
- National Planning Framework 4 (NPF4)[xxii]
- National Transport Strategy 2 (NTS2)[xxiii]
- National Walking Strategy (2014)[xxiv]
- Rail Enhancements and Capital Investment Strategy[xxv]
- Rail Services Decarbonisation Action Plan[xxvi]
- Regional Growth Deals[xxvii]
- Scotland's Accessible Travel Framework – Annual Delivery Plan 2021-22[xxviii]
- Scotland's National Strategy for Economic Transformation[xxix]
- Scotland's Rail Freight Strategy[xxx]
- Scotland's Road Safety Framework to 2030[xxxi]
- Strategic Road Safety Plan (2016)[xxxii]
- Strategic Transport Projects Review 2 (STPR2)[xxxiii].

3. Appraisal

3.1 Appraisal Overview

This section provides an assessment of the Refined Package against:

- A96 Corridor Review TPOs
- STAG criteria
- Deliverability criteria
- Statutory Impact Assessment criteria.

The seven-point assessment scale has been used to indicate the impact of the package when considered under the 'With Policy' and 'Without Policy' Travel Behaviour scenarios (which are described in Appendix A of the Transport Appraisal Report).

3.2 Transport Planning Objectives

1. A sustainable strategic transport corridor that contributes to the Scottish Government's net zero emissions target.

Sub-objectives:

Reduce transport related emissions through a shift to more sustainable modes of transport.

Increase the active travel mode share for shorter everyday journeys.

'With Policy' Scenario	'Without Policy' Scenario
++	++

Aspects of this package are focused on providing or improving sustainable travel provision with the aim of promoting a mode shift to sustainable modes. Car ownership across the transport appraisal study area is high, with 78% of households having access to at least one vehicle, almost 10 percentage points greater than the national average (69%)[xxxiv]. Encouraging a mode shift and reducing the reliance on private car would contribute to both the Scottish Government's net zero emission target, as well as the target of reducing the number of kilometres travelled by car by 20% by 2030[xxxv].

Data presented in the A96 Corridor Review Case for Change[xxxvi] suggests that active travel is a popular mode of travel for journeys under 2km throughout the A96 corridor and therefore an opportunity exists to increase the amount of walking, wheeling and cycling, particularly within settlements. Over half of all trips to work under 2km are made by walking, however, only 6% are made by the same mode for trips between 2km and 10km. Similarly, cycling makes up 4% of trips to work for under 2km and 2km to 10km, but less than 1% of trips over 10km. This sharp decline in the number of trips made by active modes over longer distances could be due to the time taken to make longer distance trips when travelling actively and, to a lesser extent, the active travel provision in rural areas, with terrain and climatic factors also influencing individual choices to travel actively.

The package is anticipated to increase the proportion of journeys undertaken by active modes within the settlements included. Assuming all the active travel interventions are fully implemented within settlements along the corridor, the anticipated increase in mode share of walking and cycling are shown in Table 3.1. If this mode share was realised, it would be anticipated that road-based travel could reduce, positively contributing to net zero targets.

Table 3.1: Walking and Cycling Mode Share

Settlements / Local Authority Area	Walking Without Package	Walking With Package	Cycling Without Package	Cycling With Package
Nairn (Highland)	17%	23%	3%	15%
Elgin, Keith (Moray)	18%	24%	3%	14%
Forres, Lhanbryde, Mosstodloch and Fochabers (Moray)	15%	20%	3%	14%
Inverurie, Huntly, Kintore and Blackburn (Aberdeenshire)	19%	26%	1%	13%

Note that separate methods have been used in the calculation of the potential walking and cycling mode share. The baseline and forecast percentages for walking were developed using Census data zone level information to apply a percentage mode share uplift to each settlement or area. The baseline data for cycling was developed as a single percentage for each local authority, and the forecast data was developed using an adapted Propensity to Cycle Tool which applies a percentage mode share uplift to each local authority's baseline.

There is further potential to encourage a significant modal shift from car to public transport resulting from the inclusion of DRT and MaaS, combined with improved public transport interchange facilities within these settlements, particularly for longer distance trips towards key economic hubs such as Inverness and Aberdeen. Furthermore, the introduction of DRT and MaaS is anticipated to improve connectivity in locations that do not currently have access to public transport, or where service frequency is low. This is likely to increase the attractiveness of public transport as a more flexible service is introduced, as evidenced from a survey of those who participated in the NaviGoGo MaaS trial in Dundee, which indicated that

50% of respondents agreed or strongly agreed that NaviGoGo made public transport more attractive[xxxvii].

For rail passenger services, a reduction in end-to-end journey time between Aberdeen and Inverness is supportive of this TPO by providing enhanced opportunities to travel by rail, encouraging mode shift and therefore contributing to the target for a 20% reduction in car kilometres by 2030. The rolling stock replacement in this intervention is also likely to assist in the rail decarbonisation strategy, providing further benefits in support of this objective.

Analysis of Transport Scotland traffic counters on the A96 trunk road indicated that traffic levels in the vicinity of the bypassed towns of Keith and Elgin range from approximately 8,000 vehicles per day (vpd) to 22,000 vpd in 2019, which can increase severance within communities and act as a barrier to active travel. Observed Automatic Number Plate Recognition (ANPR) data collected on behalf of Moray Council in June 2017 indicates that through traffic is approximately 20% of total traffic flow west of Elgin[xxxviii]. A96 CRAM[xxxix] traffic modelling indicates that in the smaller towns through trips on the existing A96 Trunk Road are generally higher, for example between 60% and 75% at Keith. The A96 Trunk Road is also a significant freight route, and many of the freight trips are not destined for these towns, with approximately 90% of HGVs travelling through Keith.

Traffic modelling indicates that, at a daily level, the introduction of a bypass at Elgin is anticipated to reduce traffic on the A96 through the town by between approximately 25% and 35% in both directions in the 'With Policy' and 'Without Policy' scenarios respectively. At Keith, a reduction of through trips of approximately 65% is anticipated eastbound and up to 85% westbound in both scenarios.

Removing traffic from and reducing the volume of HGVs within communities, through the provision of a bypass is also likely to reduce emissions within the settlements. By reducing traffic within the communities, including Nairn, other interventions can be implemented to encourage a mode shift to active modes, particularly for shorter-distance journeys and would have a positive impact on air quality within these settlements. Research carried out in the London borough of Waltham Forest showed that interventions to reallocate road space from general traffic and create low traffic neighbourhoods resulted in a 56% reduction in motor traffic on average[xl]. Evidence also suggests that the interventions put forward in this package would positively encourage people to switch to a more active mode of travel for everyday journeys, with further research finding that respondents were 24% more likely to have used their bike in the previous week following the implementation of interventions[xli]. It is therefore anticipated that the implementation of this package could reduce road user GHG emissions within communities for shorter everyday journeys, resulting in a positive contribution to this objective under both the 'With Policy' and 'Without Policy' scenarios.

Analysis of INRIX traffic data for May 2019 indicates that, while short queues form on approach to junctions within Keith, traffic is generally free flowing through the town. Congestion is slightly more prevalent in Elgin, with traffic speeds reducing to approximately 50% of free flow speeds at certain locations where there are capacity issues. The level of congestion experienced on the corridor is anticipated to increase in future and is likely to be experienced more intensely and for longer periods under the 'Without Policy' Scenario where traffic volumes are likely to be greater, compared to the 'With Policy' Scenario where car

vehicle kilometres are anticipated to reduce. Traffic modelling indicates time lost due to congestion is anticipated to reduce for general traffic with this package in place by approximately 2% and 1% in the 'With Policy' and 'Without Policy' scenarios respectively compared to a 'without package' scenario, in 2045. This could result in a small, localised reduction in road user GHG emissions where congestion occurs as traffic should be more free flowing. However, over the full A96 corridor study area, air quality modelling has shown that this package is estimated to increase road user GHG emissions by approximately 2,300 tonnes CO2e (tCO_2e) and 88,000 tCO_2e in the 'With Policy' and 'Without Policy' scenarios respectively over the 60-year appraisal period.

Through reducing the overall frequency of road traffic collisions and therefore the associated disruption, there may be slight benefits to transport related GHG emissions through a reduction in stationary traffic or a reduction in the frequency of lengthy diversions. Implementing improvements to improve safety could also enhance the operation of the network. Congestion is not identified within the A96 Corridor Review Case for Change[xlii] as a prevalent issue across the majority of the corridor outside of a few isolated junctions within settlements, including within Elgin, and any resulting wider operational benefits are therefore anticipated to be negligible.

It is recognised that there would be a reliance on private car for certain journey types within the study area, and this package encourages a transfer from ICE vehicles to EVs and hydrogen fuelled vehicles through the provision of alternative refuelling infrastructure and facilities along the A96 corridor and its interfacing local roads. Providing alternative and greener fuel sources (that is, electric charging or hydrogen refuelling facilities) to replace highly polluting fossil-fuels would provide the means for low and zero emission vehicles to charge and support the decarbonisation of the transport sector and facilitate further the uptake of these cleaner and greener vehicles, helping to contribute to net zero targets.

Traffic modelling indicates that the introduction of this package would increase overall vehicle kilometres by less than 1% in the 'With Policy' Scenario and approximately 1% in the 'Without Policy' Scenario. It should be recognised, however, that the modelling does not capture all of the elements of this package and may not, therefore, reflect the true potential for the level of mode shift achievable by the measures considered. The increase in vehicle kilometres is linked to the additional distance travelled due to the inclusion of bypasses at Elgin and Keith; however, this is partially offset under the 'Without Policy' Scenario by the sustainable travel interventions which are included within this package, and offset under the 'With Policy' Scenario. Whilst this package is likely to reduce road-based emissions at a local level, GHG emissions are forecast to increase across the corridor as a result of the increased vehicle kilometres, negatively contributing to this objective.

Overall, it is expected that this package would have a **moderate positive** impact on this objective under both the 'With Policy' and 'Without Policy' scenarios. This reflects the potential to encourage a mode shift to sustainable modes and increase active travel mode share for shorter everyday journeys, particularly within bypassed communities. There would also be benefits associated with the rail improvements for both passengers and freight and the provision of alternative refuelling opportunities that contribute towards the positive impacts of reducing transport based GHG emissions.

2. An inclusive strategic transport corridor that improves the accessibility of public transport in rural areas for access to healthcare, employment and education.

Sub-objectives:

Increase public transport mode share by improving connections between sustainable modes of transport.

Reduce the reliance on private car for access to healthcare, employment and education.

Improve mobility and inclusion, recognising the specific needs of disadvantaged and vulnerable users.

'With Policy' Scenario	'Without Policy' Scenario
+	+

An inclusive transport corridor should consider the interconnection between modes of transport, especially those between active travel and public transport, so as to not disadvantage travellers who do not have access to a car. Car availability is generally high across the transport appraisal study area, particularly in rural areas[xliii].

This package is likely to improve the accessibility of public transport throughout the A96 corridor with the provision of DRT and MaaS. DRT and MaaS are anticipated to enhance access by providing a more flexible service that is not fixed to a specific route, allowing services to reach those who need it.

The provision of DRT and MaaS would also deliver improved inclusivity by increasing the accessibility of public transport, particularly for those with reduced mobility, but also for those with impaired vision or hearing and for those who are neurodivergent. This would result in better access to employment, education, healthcare and leisure activities, especially for passengers from more deprived households, who are less likely to own a car and are more reliant on travel by public transport. However, if DRT schemes delivered through the package are dependent on MaaS, this could exclude certain groups without access to the technology or bank accounts, for example, children and older people, and as such, these groups would need to be considered in the design of the DRT schemes to ensure that they benefit.

Improvements to linespeed and capacity on the Aberdeen to Inverness rail line would reduce journey times, providing enhanced accessibility to key services such as healthcare, employment and education throughout the corridor. This part of the package provides benefits to those with access to the rail network, including those without access to a car, providing a more inclusive transport system.

This package would also improve interchange facilities for public transport users. This, combined with enhanced active travel facilities and reduced vehicular traffic within the bypassed settlements, could encourage more people to walk, wheel and cycle further to connect with public transport services, increasing travel choice. Through the delivery of the above interventions, this package should reduce the reliance on private vehicles, particularly

in the towns to be bypassed. More rural areas may remain reliant on private car use due to the challenges in providing public transport services in these areas, although the inclusion of DRT and MaaS may encourage a number of people to transfer onto public transport.

This package supports health and wellbeing through the provision of active travel infrastructure within rural areas, encouraging trips to be made by walking, wheeling and cycling. Keeping physically active can improve both physical[xliv] and mental health and wellbeing[xlv]. The health benefits of increased uptake in active travel with improved activity levels would be expected to reduce future demand on healthcare facilities. Maintaining physical activity has been proven to reduce the risk of heart and circulatory disease by as much as 35% and risk of early death by as much as 30%. It has also been shown to greatly reduce the chances of asthma, diabetes, high blood pressure and cancer[xlvi]. Furthermore, adults who cycle regularly can have the fitness levels of someone up to 10 years younger[xlvii] and people living in walkable, mixed-use neighbourhoods have higher levels of social capital[xlviii], i.e. the extent and nature of our connections with others and the collective attitudes and behaviours between people that support a well-functioning, close-knit society, which positively supports wellbeing.

The provision of active travel interventions within settlements along the corridor would enhance inclusiveness by improving sustainable travel connections to local shops, healthcare, employment and education. This would reduce transport poverty for disadvantaged and vulnerable users and improve mobility and inclusion, particularly for those accessing services within their local area. These interventions could also enable a greater number of people to access public transport nodes (for example bus stops and rail stations where appropriate), making accessing public transport safer and more convenient. It would be anticipated that this element of the package would result in an increase in multi-modal journeys within key communities adjacent to the A96 Trunk Road.

Modelling undertaken using the National Public Transport Accessibility Tool (NaPTAT) indicates that this package would improve the access to key destinations using public transport in the study area.

The largest change in population accessibility would be to emergency department hospitals, where it is anticipated that an additional 8,100 people aged 16 and over in the study area would be able to access the nearest emergency department within a 30 minute public transport journey time compared to the 'without package' assessment. This represents an approximate 1.8 percentage point increase in accessibility levels from approximately 49% in the 'without package' assessment to approximately 51% with the package in place. These population accessibility improvements are reflected in the journey time reduction to the three major settlements (Inverness, Aberdeen and Elgin) where emergency department hospitals are located in the study area.

Improvements for public transport access to emergency department sites as a result of the interventions in the Refined Package would be observed along the A96 corridor, though largest journey time reductions observed in Aberdeenshire, as shown by the map in Figure A.1 in Annex A. NaPTAT Maps. Notable locations of where the improvements are anticipated include:

- Huntly, where an additional 2,700 people would be able to access their nearest emergency department within an 80 minute public transport journey time.

Many settlements demonstrate journey time improvements for journeys to Aberdeen and Inverness, as shown by the maps in Figure A.2 and Figure A.3 in Annex A. NaPTAT Maps. It is anticipated that many of the public transport accessibility benefits resulting from the package would be attributed to rail linespeed improvements, combined with improved public transport interchange facilities, though some settlements further from the rail line may not see benefits due to the absence of bus priority measures in this package. The improvements would be reflected in the journey time reduction to the cities in the study area, for example:

- Insch and Huntly are anticipated to benefit from a public transport travel time reduction of between five and seven minutes, respectively, to Aberdeen.
- An additional 8,700 people would be able to travel to Aberdeen from Elgin within two hours by public transport compared to the 'without package' assessment, with rail improvements in isolation contributing to approximately 40%-50% of this benefit.
- Some areas of Elgin and Forres would see a reduction in public transport journey time to Inverness by up to five minutes.

Population accessibility benefits would also be anticipated for journeys by public transport to higher education sites. An additional 4,500 people aged 16 and over would be able to access their nearest higher education site within a 60 minute public transport journey time, as shown by the map in Figure A.4 in Annex A. NaPTAT Maps. This represents a 1 percentage point increase in population accessibility from approximately 78% in the 'without package' assessment to approximately 79% with the package in place.

The provision of a bypass at Elgin and Keith is unlikely to have a direct impact on bus service frequency and coverage or have an impact on fares. Therefore, the bypasses are not anticipated to have a notable impact on issues relating to the affordability and accessibility of public transport services, which are linked to wider issues related to the provision, frequency, and integration of public transport in the study area. While the provision of bypasses benefits local services through the reduction of traffic flows within the settlements, longer distance bus services are unlikely to travel on a bypass, instead continuing to serve key destinations along the A96 corridor, such as Elgin.

The benefits to those living in rural areas within the corridor are limited outside of the inclusion of DRT and MaaS as this package does not improve the public transport network coverage. Benefits would be realised by those with access to a car, through improved interchange facilities and improvements to the rail network; however, this does little to improve the inclusiveness of the transport network.

Overall, it is expected that this package would have a **minor positive** impact on this objective under both the 'With Policy' and 'Without Policy' scenarios.

3. A coherent strategic transport corridor that enhances communities as places, supporting health, wellbeing and the environment.

Sub-objectives:

Reduce demand for unsustainable travel by enhancing placemaking within settlements along the A96.

Increase active travel mode share for both shorter and longer distance journeys.

Reduce real and perceived severance caused by the strategic transport network both between and within communities.

Protect or enhance the natural environment and heritage.

'With Policy' Scenario	'Without Policy' Scenario
++	++

The package is anticipated to increase the proportion of journeys undertaken by active modes. Assuming all the active travel interventions are fully implemented in the settlements within this package, the anticipated increase in mode share of walking and cycling are shown in Table 3.2. If this mode share was realised, it would be anticipated that road-based travel could reduce, positively contributing to net zero targets.

Table 3.2: Walking and Cycling Mode Share

Settlements / Local Authority Area	Walking Without Package	Walking With Package	Cycling Without Package	Cycling With Package
Nairn (Highland)	17%	23%	3%	15%
Elgin, Keith (Moray)	18%	24%	3%	14%
Forres, Lhanbryde, Mosstodloch and Fochabers (Moray)	15%	20%	3%	14%
Inverurie, Huntly, Kintore and Blackburn (Aberdeenshire)	19%	26%	1%	13%

(For further information on the calculation of the mode share baseline and forecasts, please refer to the text below Table 3.1)

This package supports health and wellbeing through the provision of active travel infrastructure and placemaking interventions within settlements, encouraging shorter distance trips to be made by walking, wheeling and cycling. The removal of through trips resulting from the provision of bypasses at Nairn, Elgin and Keith also allows the delivery of high quality active travel routes and placemaking interventions within communities along the A96 corridor. Active travel is beneficial to physical health and mental wellbeing, and keeping physically active has been proven to reduce the risk of heart and circulatory disease by as much as 35% and risk of early death by as much as 30%. It has also been shown to greatly reduce the chances of asthma, diabetes, high blood pressure and cancer[xlix]. Furthermore, adults who cycle regularly can have the fitness levels of someone up to 10 years younger[l] and people living in walkable, mixed-use neighbourhoods have higher levels of social capital[li], i.e. the extent and nature of our connections with others and the collective attitudes and behaviours between people that support a well-functioning, close-knit society, which positively supports wellbeing.

The health benefits of increased rates of active travel as a result of the package have been quantified using the World Health Organisation's (WHO) Health Economic Assessment Tool (HEAT). HEAT estimates the health and economic impacts of increased walking and cycling, providing assessments of the impacts on premature mortality and on exposure to air

pollution. Outputs from the tool show that the interventions considered as part of this package could reduce premature deaths by 2.75 a year, which equates to a benefit of up to (+) £60m-£70m over a 20-year appraisal period. The forecasts that these values are based on assume that all active travel interventions are fully implemented to a high standard, and are well maintained on an ongoing basis, in all settlements covered by this package.

Furthermore, delivering high quality active travel routes could also directly improve access to local health and wellbeing infrastructure within key communities as a result of improved active travel provision. It could indirectly improve access to health and wellbeing facilities in the wider A96 corridor area, for example Raigmore Hospital in Inverness, Dr Gray's Hospital in Elgin and Aberdeen Royal Infirmary, through improved linkages to public transport services.

The linespeed and capacity improvements on the Aberdeen to Inverness rail line are likely to reduce the number of medium to long distance trips on the trunk road network as they would be expected to encourage mode shift away from car. Freight capacity enhancements are also anticipated to reduce the number of HGVs travelling on the route. These elements could reduce severance, enhancing the sense of place within communities along the corridor, due to improved local air quality and ambience as a result of fewer vehicle movements. This in turn would make communities more attractive for walking, wheeling and cycling, encouraging a mode shift to active modes for shorter, everyday trips, which would enhance health and wellbeing and benefit the environment by reducing GHG emissions related to road-based transport.

The provision of alternative refuelling infrastructure along the corridor would be expected to induce a shift away from ICE vehicles. This shift would improve air quality along the A96 corridor, particularly within settlements where more people reside within a close proximity of the existing route. Where air quality is improved, it is likely to subsequently improve health outcomes, thus reducing the travel demand for healthcare facilities.

Implementation of targeted road safety improvements would reduce the number and severity of accidents as a result of the types of improvements considered in this package, resulting in health benefits to individuals through the provision of a safer environment to travel.

Increased active travel infrastructure within communities along the A96 corridor as well as improved public transport interchange facilities, enhancements to the rail network, investment in DRT and MaaS, and provision of alternative fuelling infrastructure would be expected to enhance communities as places, supporting health, wellbeing and the environment.

The provision of bypasses at Elgin and Keith would result in a reduction in the volume of traffic using the existing A96 Trunk Road through the towns and provides the opportunity to enhance the sense of place through the provision of complementary measures to encourage walking, wheeling, and cycling. Traffic modelling indicates that, at a daily level, the introduction of a bypass at Elgin is anticipated to reduce traffic on the A96 through the town by between approximately 25% and 35% in both directions in the 'With Policy' and 'Without Policy' scenarios respectively. At Keith, a reduction of through trips of approximately 65% is anticipated eastbound and up to 85% westbound in both scenarios. This reduction in traffic

acts as an enabler for many of the positive interventions mentioned above which enhance the sense of place, allowing the provision of measures to encourage walking, wheeling, and cycling. As there would also be a reduction in through traffic in Nairn following the completion of the A96 Dualling Inverness to Nairn (including Nairn bypass) scheme, this package would provide similar placemaking initiatives within Nairn. Furthermore, improved public realm allows for people to gather and socialise. Public Health Scotland has linked the quality of public spaces to people's perceptions of the attractiveness of an area, contributing towards their quality of life[lii].

The removal of through trips by providing bypasses would likely reduce the real and perceived severance caused by the strategic road network within towns. This would be particularly impactful in Elgin and Keith, where the existing A96 Trunk Road alignment routes directly through the towns. However, during operation, the new bypasses could create potential severance, noise, air quality and traffic impacts for any dwellings located within the vicinity of the new alignment.

Construction of the bypasses has the potential for significant negative effects on the natural environment, depending on their alignment. Other infrastructure improvements such as the creation of large-scale public charging for electric vehicles may also require land take and result in a net loss of green space. Active travel interventions would look to create more pleasant and visually attractive town centres that would likely introduce more local greenspaces and promote a healthier local air quality, which would positively impact on the natural environment. Construction of any road infrastructure improvements to improve safety, including widening to provide overtaking opportunities, and providing new rail infrastructure to facilitate capacity improvements would also impact negatively on the natural environment.

Overall, it is expected that this package would have a **moderate positive** impact on this objective under both the 'With Policy' and 'Without Policy' scenarios.

4. An integrated strategic transport system that contributes towards sustainable inclusive growth throughout the corridor and beyond.

Sub-objectives:

Increase sustainable access to labour markets and key centres for employment, education and training.

Increase the mode share of freight by sustainable modes.

Increase competitiveness of key sectors by improving journey time reliability for commercial transport.

'With Policy' Scenario	'Without Policy' Scenario
+	+

The A96 plays an important strategic role in the regional economy of the north-east of Scotland, connecting people to employment and education opportunities as well as providing businesses with access to the labour market. The provision of bypasses is likely to improve

connectivity between certain origin and destinations within the region by bypassing the existing A96 within Elgin and Keith.

This package is likely to provide opportunities to widen the labour market, providing greater access to key centres of employment, education and training for those who can drive. This is achieved through reducing journey times and improving journey time reliability, with traffic modelling indicating both delay and time lost due to congestion for general traffic would reduce by approximately 2% compared to the 'without package' scenario in the 'With Policy' Scenario and approximately 1% in the 'Without Policy' Scenario, in 2045.

The removal of through trips and the reallocation of road space, prioritising active modes, can have economic benefits and provide better spaces for people to live, work and shop. Case studies show typical increases in footfall in retail areas of up to 20-30% can result[liii] from such schemes. Regeneration of the public realm could boost commercial trade, increase local retail sales, raise rental rates and property values and provide opportunity for cost-saving cycle freight[liv]. However, any economic benefits could be negated if reducing through traffic negatively impacts communities as a result of a reduction in passing trade.

The improvement to rail linespeed and improved passenger interchange facilities elements of this package are likely to have a positive impact on this objective. Public transport improvements would aim to reduce public transport journey times and improve passenger experience through enhanced facilities, whilst also improving sustainable access to labour markets and key centres of employment, education and training, particularly for those from the most deprived households and those who are less likely to own a car. The Scottish Index of Multiple Deprivation (SIMD) across the A96 corridor indicates that although deprivation tends to be relatively low, there are areas of deprivation within the cities at either end of the A96 corridor and in most of the larger towns along the route. Further information on the deprivation profile of the corridor is presented in the A96 Corridor Review Case for Change.

Modelling undertaken using NaPTAT indicates that this package would improve public transport access to existing jobs located in the study area, particularly within Aberdeenshire, as shown by the map in Figure A.5 in Annex A. NaPTAT Maps.

Residents living within Aberdeenshire would see a benefit in the number of existing jobs (located within Aberdeen, Inverness and Elgin) that they can access within a 60 minute public transport journey time. In summary:

- On average, an additional 8% (just over 13,000) and 4% (up to 6,000) of existing jobs located in Aberdeen City would be accessible within a 60 minute public transport journey time from Insch and Kintore, respectively.
- On average, an additional 4% (just under 6,500) of existing jobs located in Aberdeen City would be accessible within a 60 minute public transport journey time from Inverurie.

In terms of public transport journey times to existing jobs within Inverness, residents living within some areas of Nairn and Forres would see a reduction of up to five minutes.

Many of the potential public transport journey time benefits for rural settlements such as Insch would be linked to rail interventions by either reducing the travel time to the destination directly or through an onward connection with a local bus service to the destination. Interchange improvements would also be anticipated to provide and contribute to journey time improvements in the case of multi-modal journeys.

The use of DRT and MaaS could improve the efficiency of service provision relative to fixed route timetables if these services can be replaced by a flexible service that is better targeted at demand, both by location and time. Provision of new flexible services could also improve network coverage, which could increase the level of real and perceived integration between services and modes, making it easier for people to travel where they wish to go whilst increasing sustainable access to labour markets and key centres of employment, education and training. When asked "what would make you use public transport more" in the Stakeholder and Public Consultation Report for the A96 Corridor Review[lv], 20% of respondents answered with "better interlinking bus routes between communities". Also, the NaviGoGo trial in Dundee found that 29% of participants said the system had made them travel without a car[lvi], indicating the potential of MaaS and DRT in restricting car use across the corridor and promoting more sustainable choices.

Resilience is a problem on the road and rail network which costs businesses time and money. Between 2016 and 2021, the trunk road maintenance company's Management of Incidents Database suggests that a section of the A96 was closed on average 24 times each year, and a total of 143 times in this six-year period[lvii], with closures due to incidents such as accidents and maintenance work. Recommended diversions for all traffic due to incidents on the A96 can be lengthy, up to 65km for accidents at Huntly, and expensive to businesses due to additional time and fuel costs. Reducing accidents and generally improving road safety along the corridor would improve journey time reliability for commercial transport by reducing the amount of time spent in delays or on diversion routes.

Problems on the rail network are generally related to delays due to rolling stock, staffing or line issues. Provision of passing loops on the rail line in this package would improve the resilience and reliability of the rail network, possibly encouraging a mode shift from road to rail for both passengers and freight.

Furthermore, the reliability of freight journeys would be improved if they transferred to rail as they would avoid congestion and potential accidents. Benefits are more likely to be realised for longer distances where rail freight is both more competitive and advantageous. Overall, the rail enhancements in this package would be anticipated to both support and enhance economic growth.

Through enhancing and expanding the network alternative refuelling infrastructure for electric and/or hydrogen vehicles, and in turn providing operating benefits and improving range confidence, there is the potential to move existing road-based freight onto more sustainable alternative fuelled vehicles. Encouraging the uptake of alternatively fuelled vehicles for both users of private vehicles and freight haulage would increase the mode share of freight by sustainable means and provide more sustainable access to employment opportunities. If elements are delivered where it is possible to integrate other transport

solutions, the introduction of alternative refuelling infrastructure and facilities along the A96 corridor may provide further efficiencies and benefits to wider societal user groups.

Bypasses could support sustainable inclusive growth by improving the connectivity between businesses and the labour market and by improving the efficiency of the movement of goods along the corridor due to the likely associated reliability improvements on the trunk road network.

Industries such as food and drink production and agriculture, forestry and fishing are all prominent in the area and rely on the A96 for the movement of goods to maintain business productivity. Traffic modelling undertaken indicates that this package is anticipated to reduce both delay and time lost due to congestion for business vehicles by approximately 2% compared to the 'without package' scenario in the 'With Policy' Scenario and approximately 1% in the 'Without Policy' Scenario, in 2045, improving the reliability of the trunk road network, which can be critical for those industries that transport perishable goods, such as food and drink that equates to over £100m of goods annually[lviii].

Given the relative scale of the impacts, overall this package is expected to have a **minor positive** impact on this objective under both the 'With Policy' and 'Without Policy' scenarios.

5. A reliable and resilient strategic transport system that is safe for users.

Sub-objectives:

Reduce the accident rates and severity of transport related casualties in line with reduction targets.

Improve resilience to disruption (from climate change events and maintenance activities) through adaptation of the corridor's trunk road and rail infrastructure.

'With Policy' Scenario	'Without Policy' Scenario
++	++

Generally, the accident rate on the A96 is lower than the national average[lix], including most of the urban areas and towns along the corridor. However, the PIA rates on the A96 Trunk Road through Keith is higher than the corresponding accident rates for Built-up Trunk A-roads in Scotland (12.07 MVKm) at 22.4 accidents per million vehicle kilometres (MVKm) [lx]. Furthermore, the KSI rate in Keith is also significantly higher than the national average for routes of a similar type (2.63 MVKm) at 12.8 accidents per MVKm. Some rural sections of the A96 also indicate a slightly higher than average rate of KSIs. The sections of A96 between Hardmuir and Forres, Fochabers and Keith, Keith and East of Huntly and Kintore and Craibstone are all identified as sections of the A96 with a KSI rate slightly higher than the national average[lxi]. At a corridor level, between 2015 and 2019 there were 175 recorded accidents on the A96 between Hardmuir and Craibstone, of which over 40% involved a KSI casualty.

The provision of bypasses at Elgin and Keith could reduce the number and severity of road traffic accidents on the sections of the existing A96 Trunk Road which route through towns

with anticipated traffic flow reductions of between 25% and 85%, depending on location, as a result of the bypasses. The provision of bypasses at Elgin and Keith would also remove the need for through traffic to pass through the at-grade junctions and numerous signalised pedestrian crossings within the bypassed towns, reducing conflict and the potential for accidents, whilst also improving the reliability and resilience of the strategic transport corridor

Evaluations of road schemes following the Scottish Trunk Road Infrastructure Project Evaluation (STRIPE) framework provide an illustration of the potential benefits of a bypass, as demonstrated by the Three-Year After opening project evaluations for the following scheme:

- A68(T) Dalkeith Bypass saw a reduction in the number of accidents within Dalkeith by approximately 30% after opening[lxii]. Additionally, the severity of accidents occurring within the town reduced.

Targeted safety improvements could be implemented at identified accident hotspot locations throughout the corridor, as well as others where there is a perceived safety risk, to reduce accident frequency and severity in line with national reduction targets.

Evaluations of road schemes following the STRIPE framework also provide an illustration of the potential benefits of targeted road safety improvements, as illustrated by the Three-Year After opening project evaluations for the following schemes:

- A9 Bankfoot junction improvement involving the removal of right-turn movement across the main A9(T) carriageway to/from the B867 and Bankfoot village through improvement to the existing A9/B867 and realignment of a minor road to provide a left in/left out junction on the A9 resulted in an 80% reduction in accidents[lxiii].
- A9 Ballinluig grade-separation resulted in over a 90% reduction in accidents[lxiv].
- A9 Helmsdale widening scheme (including the provision of climbing lanes) resulted in a 60% reduction in accidents[lxv].
- A76 Glenairlie overtaking scheme resulted in a reduction in accidents of 75%[lxvi].

There may also be accident benefits associated with mode shift that may occur as a result of active and sustainable travel interventions that are implemented across the corridor, if a reduction in overall vehicle kilometres is achieved. Modelling indicates the impact across the wider corridor of this package is very minor in terms of reducing overall vehicle kilometres, however, this may not reflect the true potential for the level of mode shift achievable by the measures considered within this package.

A combination of a spreadsheet-based process compliant with the Department for Transport (DfT) Cost and Benefit to Accidents – Light Touch (COBALT) software and the software itself has been used to identify the predicted accident impacts of this package. The spreadsheet-based analysis was used to determine accident benefits derived from a change in vehicle kilometres, whilst the COBALT software has been used to calculate accidents benefits associated with the targeted road safety improvements for the link-based options within this package, using default accident rates.

The accident analysis indicates that the number of accidents reduces on the corridor following the introduction of this package, with a safety benefit of (+) £10m-£15m in both the 'With

Policy' and 'Without Policy' scenarios, with most of the benefits associated with the introduction of targeted road safety improvements. The analysis also indicates that over a 60-year appraisal period, this package is anticipated to save over 400 casualties in the 'With Policy' Scenario and nearly 450 in the 'Without Policy' Scenario compared with the 'without package' scenario, including over 50 KSI casualties in both scenarios. Similarly, over the 60-year appraisal period, the package could save approximately 300 PIAs in both the 'With Policy' and 'Without Policy' scenarios. It should be noted that these results are based on default accident rates and that an assessment on the junction related accidents has not been undertaken at this stage due to the level of uncertainty over the types of options that would be implemented.

Reducing the number and severity of accidents could also improve the reliability and resilience of the road network. Fewer and less severe accidents would reduce the risk of road closures and the need for diversions, which can be extremely lengthy in this area. A closure the A96 Trunk Road at Huntly for example, which occurred nine times between 2016 and 2021, results in a 65km recommended diversion route. Any reduction in the number of closures is therefore not only a direct benefit for safety, but also important for the reliability of the network and ensuring people and goods can get to where they need to be on time. Reliability for alternatively fuelled vehicles would also be improved through the development of the A96 Electric Corridor, ensuring fuelling points for these vehicles are readily available along the A96 Trunk Road.

The construction of bypasses should provide enhanced resilience against potential future road closures. The additional roadspace provides alternative travel routes if there is an incident either on the new bypass or in the bypassed town. Furthermore, the bypasses would be designed in such a way to minimise the potential effects of climate change, and limit the potential material degradation caused by it, to reduce the vulnerability at that location.

Research by Cycling Scotland suggests safety concerns are a significant barrier to the uptake of active travel[lxvii]. Evidence suggests that perceived safety is more influential on active travel behaviour than journey time reliability or speed[lxviii]. Providing a direct and fully connected active travel routes within settlements with adequate provision at junctions and safe crossing points, could improve safety conditions and perceptions. This would benefit those who are already keen and experienced cyclists, but would have particular relevance for novice cyclists and walkers, especially children and disabled people[lxix].

The introduction of the public transport elements, as part of this package could encourage a mode shift, and there may be a minor positive impact on accidents as a result of reduced car use. Furthermore, reducing the number of HGVs travelling along the A96 corridor as a result of a shift to rail-based freight would also reduce the potential for platooning, and consequently driver frustration, which could also reduce the number of accidents on the route, further improving reliability. Reducing the number of accidents on the route would also reduce the likelihood of lengthy diversion routes, providing confidence in the trunk road network for both general and commercial traffic and ensuring people and goods can get to where they need to be on time.

The improvements to the rail linespeed, passenger and freight capacity between Aberdeen and Inverness considers three distinct improvements to the route, including the provision of

additional passing loops which would serve to increase the reliability and resilience of the rail infrastructure to mitigate the impacts of trains running not-to-time and other incidents (for example weather-related incidents and maintenance), thus helping to create a network that passengers can rely on. The provision of a modern decarbonised rolling stock on the line is also likely to increase the reliability of services in terms of unit availability. Should the improvements lead to an increase in service frequency, this too would provide a positive impact on resilience by limiting the time delay impact on travel of individual service cancellation.

The infrastructure implemented as part of this package would be designed to be resilient to impacts arising from current and future weather events and climatic conditions, and designed in accordance with current planning, design, engineering practice, and codes. A number of mitigation and adaptation measures would be considered at later design development stages to address potential risks. Significant infrastructure would be required for rail linespeed and capacity improvements but the amount of infrastructure that is constructed on the trunk road is limited to where bypasses and targeted road safety improvements would be created.

Overall, it is expected that this package would have a **moderate positive** impact on this objective under both the 'With Policy' and 'Without Policy' scenarios.

3.3 STAG Criteria

1. Environment

'With Policy' Scenario	'Without Policy' Scenario
-	-

There would be positive effects following the implementation of this package in terms of a potential reduction in noise and vibration within the vicinity of the existing A96 Trunk Road through the settlements of Elgin and Keith, with the provision of bypasses and the associated reduction in the volume of traffic passing through the settlements. Scotland's Noise Map[lxx] illustrates that vehicle noise from the A96 Trunk Road is a significant contributor of noise within these settlements and thereby noise effects could be reduced through both the reduction of vehicles by the interventions within this package and the bypassing of settlements by a large proportion of the vehicles. Noise associated with vehicles would however be prevalent along the bypass routes which could have significant effects depending on their alignment and proximity of receptors although noise mitigation could be incorporated. There could also be a further reduction in engine noise should electric vehicles come to prominence, assisted by the development of the A96 Electric Corridor intervention included as part of this package. However, this package has the potential to have negative effects in terms of noise and vibration through the increase of freight on the railway as a result of capacity improvements. The significance of the effect would depend on the location of such facilities. The construction of interventions included in this package and associated traffic is also likely to lead to minor negative effects on noise and vibration during the construction phase.

Although this package is anticipated to have an overall negative impact in terms of air quality, it also has the potential to have positive effects on air quality within the bypassed settlements. The inclusion of bypasses has the potential to reduce existing air quality concerns within Elgin and Keith by reducing traffic volumes on the existing A96 Trunk Road through each of them. Traffic modelling indicates that, at a daily level, the introduction of a bypass at Elgin is anticipated to reduce traffic on the A96 through the town by between approximately 25% and 35% in both directions in the 'With Policy' and 'Without Policy' scenarios respectively. At Keith, a reduction of through trips of approximately 65% is anticipated eastbound and up to 85% westbound in both scenarios. The bypasses may result in an increase in the use of private vehicles due to the reduction in congestion, which may have a negative impact on air quality in the vicinity of the bypass alignments and indeed the wider A96 corridor itself.

The scale of negative impacts on air quality can be reduced through interventions within the package. The inclusion of bypasses has the potential to reduce existing air quality concerns within the settlements of Elgin and Keith by reducing the traffic passing through them. Furthermore, the inclusion of infrastructure interventions in the settlements to promote walking, cycling and public transport use could help reduce reliance on private vehicles throughout the network, resulting in an overall decrease in vehicles to the betterment of air quality within the settlements. In addition, the promotion of vehicles with lower or zero tailpipe GHG emissions through the inclusion of alternative refuelling infrastructure and facilities should help to reduce vehicle emissions. There would also be a reduction in HGV traffic through a modal shift in freight to the rail network, and thereby a reduction in overall air pollution.

Following the introduction of this package, total emissions of nitrogen oxides (NOx) and particulate matter (PM) are predicted to increase under both the 'With Policy' and 'Without Policy' scenarios over a 60-year appraisal period. This is due to an increase in traffic flows and emissions as congestion is reduced following the inclusion of the proposed bypasses. Emissions are anticipated to reduce within the bypassed settlements as users are encouraged to transfer to more sustainable modes and a proportion of traffic transfers onto the proposed bypass, reducing through traffic within the settlements. The package is predicted to increase NOx by two tonnes and PM of 2.5 microns or less ($PM_{2.5}$) emissions by less than 1 tonne in the 'With Policy' Scenario; and NOx by 43 tonnes and $PM_{2.5}$ emissions by 13 tonnes in the 'Without Policy' Scenario, over the 60-year appraisal period. There are however opportunities for the transport interventions to promote and facilitate sustainable travel and assist in reducing transport related air pollution along the corridor.

Due to the overall scale of the required infrastructure, this package has the potential to have moderate adverse effects on the physical environment (i.e. the water environment, biodiversity and habitats, landscape, historic environment, geology and soils and agricultural and forestry) during construction and operation. Such impacts could either be direct such as demolition/land loss/habitat loss, or indirect such as impacts on setting or views and would be largely dependent on the alignment of the bypasses and location of the various interventions. Furthermore, there could be additional negative effects on the environment depending on the alignment of the bypasses and the design of any required structures. Mitigation could be incorporated where appropriate, such as landscaping and tree planting to

reduce impacts on the landscape or biodiversity. Impacts during construction are likely to be short term and temporary and could be mitigated.

In addition, there are large areas of floodplain around Elgin associated with the River Lossie, some of which have existing flood mitigation. There are areas of flood risk around Keith associated with the River Isla to the north of the town and some flood risk to the west and south-west to a lesser extent. These areas are potential constraints to the bypasses proposed. The construction of the bypasses also has the potential to have a moderate negative effect on the water quality of these watercourses and consideration would be needed as to the alignment of the bypasses in terms of water crossings and bridge design.

The physical works associated with the other interventions within this package are also likely to have effects on the physical environment of varying degrees depending on scale, design and location.

Raw materials required for construction have the potential to cause a negative effect on natural resources and at least a moderate negative effect on greenhouse gas emissions, due to the scale of construction required.

The A96 corridor and its surroundings, contain various local, regional, national, and international designated sites which would need to be considered. The designated sites within the wider area include for example Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Sites of Special Scientific Interest (SSSI). There are large swathes of Long-Established Woodland (of plantation origin), pockets of Ancient Woodland (of semi-natural origin) and areas with Tree Preservation Orders.

The following designated sites are noted in the overall A96 corridor study area:

- 43 SSSIs
- 8 SPAs
- 7 SAC
- 4 Ramsar sites
- 17 Gardens and Designed Landscapes
- 20 Conservation Areas
- 4 Inventory of Historic Battlefield Sites
- 236 Scheduled Monuments
- 2 Royal Society for the Protection of Birds Reserves.

Of these sites, the following designations are noted in and around each bypassed settlement:

<u>Elgin</u>

- 4 Scheduled Monuments
- 2 Conservation Areas.

<u>Keith</u>

- 1 Scheduled Monument
- 2 Conservation Areas.

In addition, interventions along the current A96 route have the potential to affect the following designations:

- 3 Inventory of Historic Battlefields
- 7 Gardens and Designed Landscapes
- 2 Ramsar sites
- 7 Scheduled Monuments
- 12 SSSIs
- 3 SAC
- 4 SPAs.

Whether there would be any impacts on these designations is not known at this stage, as it would be dependent on the alignment selected for the bypasses and other works around the settlements. Moreover, the scale of the effects would be dependent on the design and alignment of the bypasses and further environmental assessment will be required as the design progresses. The statutory environmental bodies in Scotland would be consulted about the need and scope of future environmental assessment.

This package supports a modal shift to more sustainable transport modes including rail, walking, wheeling and cycling. The increased opportunities to travel by these modes would be beneficial and create opportunities for communities to access key services, employment opportunities and healthcare. In addition, the network improvements could reduce disruption and congestion and increase safety and accessibility.

The new active travel infrastructure would provide connections within settlements, promoting active modes of travel, which could result in a positive impact on human health through improved physical fitness.

Overall, while this package is likely to have some positive environmental effects, the likely significant negative effects from some of the physical works would result in the package having a **minor negative** impact on the Environment criterion under both the 'With Policy' and 'Without Policy' scenarios, mainly due to the bypasses and their potential impact on the receiving natural environment. This would be subject to the degree of potential localised negative environmental effects from any new interventions implemented to deliver this package. If environmental constraints, such as designated sites, can be avoided or mitigated, then adverse environmental impacts may be reduced.

2. Climate Change

'With Policy' Scenario	'Without Policy' Scenario
-	-

The existing A96 Trunk Road is considered vulnerable to the effects of climate change, particularly in areas with a high risk of flooding such or locations where current or future ground stability issues are known or anticipated. Such areas identified in the environmental assessment for this package are the floodplains associated with the River Lossie near Elgin,

and flood risk areas around Keith associated with the River Isla, or locations where current or future ground stability issues are known or anticipated.

The transport network improvements are expected to improve the resilience of identified flood risk areas, and other potential climate risks. The enhancements in the transport infrastructure to encourage sustainable transport modes in the area have the potential to partially mitigate road user GHG emissions over time in conjunction with a switch to electric vehicles.

Whilst there is potential to reduce transport based GHG emissions, key long-term climate change trends for Scotland are that average temperatures will increase across all seasons; typically summers will be warmer and drier, and winters will be milder and wetter. These are likely to have an impact on this package of interventions. Heavy rainfall events will become more frequent in the coming decades, exacerbating flooding and landslide incidents[lxxi]. These events have the potential to flood railway lines, or wash sections away, leading to significant disruption on the rail network and a resultant knock-on impact on other transport modes and routes.

Paved surfaces created as part of the bypasses, active travel infrastructure, and targeted road safety Improvements included in this package might incur surface damage or be impacted by surface water flooding during periods of heavy rainfall. There is also an increased risk of thermal expansion and movement of paved surfaces due to increased summer temperatures. Higher summer temperatures might also lead to overheating and damage of electrical equipment developed as part of the A96 Electric Corridor intervention.

In order to account for the effects of climate change, the infrastructure would be designed to be resilient to impacts arising from current and future weather events and climatic conditions, in accordance with current planning, design, engineering practice, and codes. A number of mitigation and adaptation measures would be considered at later design development stages to address potential extreme weather events that may affect the region, and other likely climate risks.

Based on the estimated cost range between £501m and £1,000m for this package, GHG emissions arising from the construction stage of this package are estimated to be in the range of approximately 140,000 tCO2e and 280,000 tCO2e.

Traffic flows and road user GHG emissions within the A96 corridor are predicted to increase as a result of this package, due to reduced congestion and an attraction of traffic onto this part of the network, resulting in a net increase in GHG emissions over the 60-year appraisal period. The estimated increase in road users GHG emissions over the 60-year appraisal period between the 'with package' and 'without package' scenarios is approximately 2,300 tCO2e under the 'With Policy' Scenario and 88,000 tCO2e under the 'Without Policy' Scenario. The Net Present Value of tCO2e, calculated using the DfT GHG Workbook following the Transport Analysis Guidance (TAG) Unit A3 for the appraisal period, indicates an estimated disbenefit under the 'With Policy' Scenario of approximately (-) <£0.5m, and (-) £5m-£10m under the 'Without Policy' Scenario.

Overall, the potential climate change and GHG impacts of the package are considered to have a **minor negative** impact on the Climate Change criterion under both the 'With Policy' and 'Without Policy' scenarios. This is on the basis that road user GHG emissions would increase as a result of this package. Further assessment should take into consideration mitigation to reduce the impact of construction activities.

3. Health, Safety and Wellbeing

'With Policy' Scenario	'Without Policy' Scenario
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The provision of interventions that encourage walking, wheeling and cycling within communities can lead to residents feeling more connected with their local community and improve public health through increase physical activity.

The health benefits of increased rates of active travel as a result of the package have been assessed using the WHO HEAT. HEAT estimates the health and economic impacts of increased walking and cycling, providing assessments of the impacts on premature mortality and on exposure to air pollution. Outputs from the tool show that the interventions implemented as part of this package could reduce premature deaths by 2.75 a year, which equates to a benefit of up to £60m-£70m over a 20-year appraisal period. The forecasts that these values are based on the assumption that all active travel interventions are fully implemented to a high standard, and are well maintained on an ongoing basis, in all settlements covered by this package.

Furthermore, improved pedestrian and cycling infrastructure within communities can reduce road casualties. In 2018, 86% of cycling casualties and 95% of pedestrian casualties in Scotland occurred on built-up roads with a speed limit of 40mph or less. Accident survival rates are between about three[lxxii] and five[lxxiii] times higher when a pedestrian is hit by a car driving at 20mph, compared to 30mph. Previous studies also suggests that segregated cycle lanes can lead to a lower risk of cyclist injury, reduced severity of accidents, as well as fewer accidents involving cyclists in general[lxxiv]. Evidence obtained following the introduction of a Low Traffic Neighbourhood in a London suburb led to a three-fold decline in the number of injuries in the area and estimated that walking, cycling and driving all became approximately three to four times safer per trip[lxxv].

Generally, the PIA rate on the A96 is lower than the national average[lxxvi]; however, the KSI rate on some rural sections is higher than the national average. There are also perceived safety concerns on the route, such as the lack of safe overtaking opportunities, which can result in driver frustration and poor driving behaviours. Targeted safety improvements could be implemented at these locations, as well as others where there is a perceived safety risk, to reduce accident frequency and severity in line with national reduction targets. There may also be accident benefits associated with mode shift that may occur as a result of active and sustainable travel interventions, particularly from those implemented within settlements, if a reduction in overall vehicle kilometres is achieved. Modelling indicates the impact across the wider corridor of this package is very minor in terms of impact on overall vehicle kilometres;

however, this may not reflect the true potential for the level of mode shift achievable by the measures considered within this package.

In addition to the provision of bypasses removing through trips and enabling the introduction of the active travel infrastructure mentioned above, they could reduce the number and severity of road traffic accidents on the road network. Reducing through trips would reduce the number of vehicles interacting at at-grade junctions, and with pedestrians at uncontrolled and signalised pedestrian crossings, reducing conflict and the potential for accidents, whilst also improving the reliability of the strategic transport corridor. Evaluations of road schemes following the STRIPE framework provide an illustration of the potential benefits, as illustrated by the Three-Year After opening project evaluations for the following scheme:

- A68(T) Dalkeith Bypass saw a reduction in the number of accidents within Dalkeith by approximately 30% after opening[lxxvii]. Additionally, the severity of accidents occurring within the town reduced.

Furthermore, evaluations of road schemes following the STRIPE framework provide an illustration of the potential benefits of targeted road safety improvements, as illustrated by the Three-Year After opening project evaluations for the following schemes:

- A9 Bankfoot junction improvement involving the removal of right-turn movement across the main A9(T) carriageway to/from the B867 and Bankfoot village through improvement to the existing A9/B867 and realignment of a minor road to provide a left in/left out junction on the A9 resulted in an 80% reduction in accidents [lxxviii].
- A9 Ballinluig grade-separation resulted in over a 90% reduction in accidents [lxxix].
- A9 Helmsdale widening scheme (including the provision of climbing lanes) resulted in a 60% reduction in accidents [lxxx].
- A76 Glenairlie overtaking scheme resulted in a reduction in accidents of 75% [lxxxi].

A combination of a spreadsheet-based process compliant with the DfT COBALT software and the software itself has been used to identify the predicted accident impacts of the package. The spreadsheet-based analysis was used to determine accident benefits derived from a change in vehicle kilometres, whilst the COBALT software has been used to calculate accidents benefits associated with the targeted road safety improvements for the link-based options within this package, using default accident rates.

The accident analysis indicates that the number of accidents reduces on the corridor following the introduction of this package, with a safety benefit of (+) £10m-£15m in both the 'With Policy' and 'Without Policy' scenarios, with most of the safety benefits coming from the introduction of targeted road safety interventions. The analysis also indicates that over a 60-year appraisal period, this package is anticipated to save over 400 casualties in the 'With Policy' Scenario and nearly 450 in the 'Without Policy' Scenario over the 'without package' scenario, including over 50 KSI casualties in both scenarios. Similarly, over the 60-year appraisal period the package could save approximately 300 PIAs in both the 'With Policy' and 'Without Policy' scenarios. It should be noted that these results are based on default accident rates and that an assessment on the junction related accidents has not been undertaken at this stage due to the level of uncertainty over the types of options that would be implemented.

This package could directly improve access to local health and wellbeing infrastructure following the implementation of improved active travel provision, improved public transport interchange and reduced journey times for rail services. It could therefore improve access to health and wellbeing facilities across the wider A96 corridor, for example Raigmore Hospital in Inverness, Dr Gray's Hospital in Elgin and Aberdeen Royal Infirmary, through improved linkages to public transport services. The removal of through traffic from Elgin is also anticipated to reduce congestion which should provide benefits for accessing local health and wellbeing services, such as Dr Gray's Hospital, whether it be by car, public transport or by active modes.

The options within this package could result in a modal shift to sustainable transport including rail, walking, wheeling and cycling. The increased opportunities to travel by these modes would be beneficial and create opportunities for communities to access key services such as healthcare.

Modelling undertaken using NaPTAT indicates this package would improve the public transport access to health and wellbeing infrastructure. The largest change in population accessibility of health and wellbeing infrastructure would be to emergency department hospitals. It is anticipated that an additional 8,100 people (approximate 1.8 percentage point increase) aged 16 and over in the study area would be able to access their emergency department hospital within a 30 minute public transport journey time.

Population accessibility improvements would be anticipated in settlements along the A96 corridor, with the highest journey time reductions anticipated in Huntly, where an additional 2,700 people would be able to access their nearest site within 80 minutes. This accessibility benefit would be observed for groups who may be more reliant on public transport for accessing such health services, including 900 people aged 65 and over, and 700 people across all age groups with long-term health problems or disability, whose day-to-day activities are limited.

This improvement would also benefit groups who may be more reliant on public transport for accessing healthcare services, such as:

- An additional 2,100 people agreed 65 and over, and 1,900 people across all age groups with long-term health problems or disability, whose day-to-day activities are limited, could access healthcare in under 30 minutes by public transport.
- The population accessibility improvements along the A96 corridor would be found in Aberdeen City (approximately 5,900 people) as a result of interchange interventions which would improve the connection between services, and in Moray (approximately 2,300 people), with a reduction in journey times observed in settlements such as Lossiemouth.

Improvements would be reflected in the journey time reduction to the two cities, Inverness and Aberdeen, as well as Elgin in the study area. Many settlements with access to railway stations show journey time improvements for journeys to Elgin, Inverness and particularly to Aberdeen. This is shown by Figure A.2 and Figure A.3 in Annex A. NaPTAT Maps.

The package is also likely to result in personal security improvements through an increase in people walking, wheeling and cycling in and around key communities along the A96 corridor as there would be an increase in natural surveillance. Furthermore, public realm improvements such as the provision of street lighting can prevent road traffic collisions and increase pedestrian activity through reduction in the fear of crime[lxxxii].

Public transport interchange improvements and DRT/MaaS may also improve personal security and make a safer network for travellers, either directly through improved security facilities at interchanges, such as improved lighting and CCTV coverage or indirectly through better passenger assistance or through minimising wait times. MaaS and DRT can also help those with mobility issues travel, thereby reducing social isolation by allowing trips to be made more easily. These interventions could also deliver better access to healthcare and wellbeing infrastructure, with additional safety benefits where people are currently travelling longer distances to bus stops using roads with poor pedestrian infrastructure.

The active travel improvements within settlements would have a positive environmental effect for the communities and physical fitness. These improvements would help create a sense of place and promote walking, wheeling and cycling to the betterment of the population. Enhanced placemaking, along with reducing demand for unsustainable travel for shorter everyday trips, would also offer improvements to visual amenity in communities where centres become more about a sense of place rather than a connection of roads for the purpose of movement. Improved routes and crossing facilities for walking, wheeling and cycling would also offer better access to existing local green space. Improved public realm allows for people to gather and socialise. Public Health Scotland has linked the quality of public spaces to people's perceptions of the attractiveness of an area, contributing to their quality of life[lxxxiii].

However, there is potential for negative environmental effects on visual amenity during construction and operation of any new road infrastructure, including safety improvements, development of new alternative fuelling stations and any rail line improvements such as the construction of passing loops. This would need to be assessed in more detail during the development of these aspects of the package.

Overall, it is expected that this package would have a **moderate positive** impact on the Health, Safety and Wellbeing criterion under both the 'With Policy' and 'Without Policy' scenarios.

4. Economy

'With Policy' Scenario	'Without Policy' Scenario
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The A96 Trunk Road plays an important strategic role in the regional economy of the north-east of Scotland, connecting people to employment and education opportunities as well as providing businesses with access to the labour market. Traffic modelling indicates that this package is anticipated to reduce both delay and time lost due to congestion for to business vehicles by approximately 2% compared to the 'without package' scenario in the 'With Policy' Scenario and approximately 1% in the 'Without Policy' Scenario, in 2045, improving the

reliability of the trunk road network, which can be critical for those industries transporting perishable goods, such as food and drink.

A high-level economic assessment has been undertaken using a number of tools including the DfT TUBA software (v1.9.17), the DfT GHG Workbook, DfT COBALT and WHO HEAT. The exact details of the alignment of the bypasses and targeted road safety improvements which form part of this package have not been developed and the results of the assessment should therefore be treated as an early indication of the potential benefits of the proposed package. The analysis indicates that the implementation of this package is likely to result in user benefits, with journey time savings for public transport and road users, as well as health benefits associated with the active travel infrastructure being the main sources. Selected benefits are anticipated to be higher under the 'Without Policy' Scenario where traffic volumes are likely to be greater, compared to the 'With Policy' Scenario, such as journey time savings associated with road traffic congestion. However other benefits such as public transport benefits are greater under the 'With Policy' Scenario due to the higher volumes of rail passengers.

Minor increases in transport based GHG emissions are forecast as a result of the interventions included in this package, particularly the two bypasses. This package is estimated to result in a small increase in total vehicle kilometres travelled of approximately 1% in the 'Without Policy' Scenario and less than 1% in the 'With Policy' Scenario, in 2045. The increase in vehicles and distance travelled particularly in the 'Without Policy' Scenario is estimated to offset some of the benefits in GHG emissions created through a potential mode shift to public transport and active modes through the other interventions in this package.

There are benefits that relate to the improvements in public transport travel time. The Linespeed, Passenger and Freight Capacity Improvements on the Aberdeen to Inverness Rail Line would reduce rail travel time, benefitting public transport users.

Overall, the interventions that make up this package are anticipated to encourage a mode shift away from car to more sustainable transport options, whilst also providing a level of journey time reliability to road travel through the provision of bypasses at Elgin and Keith. The core present value of benefits, which includes the benefits associated with Transport Economic Efficiencies (TEE), changes in GHG and accident analysis are forecast to be (+) £80m-£90m in the 'With Policy' Scenario and (+) £70m-£80m in the 'Without Policy' Scenario. Public transport travel time improvements are the main contributor to the overall present value of benefits, worth over 60% of the total 'With Policy' Scenario benefits and approximately 50% of the 'Without Policy' Scenario benefits. It should be noted that the monetised benefits are discounted to 2010 prices and values.

The health benefits of this package were measured using the WHO HEAT. Increased levels of physical activity within settlements throughout the A96 corridor as a result of the interventions included as part of Active Communities are forecast to reduce the economic impact of premature deaths by approximately (+) £60m-£70m over a 20-year appraisal period.

Additionally, Wider Economic Impacts (WEIs) have been calculated in line with STAG and consider non-transport markets that may be affected by the introduction or change in the transport infrastructure. WEIs have been calculated to provide an estimate of the economic impact on three areas; agglomeration, labour supply and market power. The WEIs for this package are forecast to be (+) £10m-20m in the 'With Policy' Scenario and (+) £20m-£30m in the 'Without Policy' Scenario, with the majority of this benefit stemming from business agglomeration.

Driver frustration benefits have also been calculated following introduction of additional overtaking opportunities that are included within this package as part of the targeted road safety interventions. This equates to a benefit of approximately (+) £30m-£40m under the 'With Policy' Scenario and (+) £40m-£50m under the 'Without Policy' Scenario.

This package would help to support opportunities to strengthen the reliability of supply chains locally, regionally and nationally through the provision of additional road space at Elgin and Keith, helping to improve the resilience and reliability of the trunk road network, thus supporting the movement of goods. The food and drink industry in Scotland has ambitions to grow significantly by 2030, through increasing output and exports, as well as productivity. The north-east of Scotland accounts for a significant amount of Scotland's food and drink output, with the industry directly and indirectly supporting a large volume of employment in the region. Moray is home to world-renowned brands such as Walkers and Baxters, as well as forming part of the protected region for distilling Speyside whisky, with approximately 44% of all malt whisky distilleries in Scotland being located within the local authority area[lxxxiv]. In 2015, a study estimated that the annual value of food and drink transported on the A96 Trunk Road was over £100m, and that freight values in general would be over £850m[lxxxv], highlighting the importance of the road for freight reliability and the wider economy.

Additionally, interventions within this package are anticipated to reduce the number of incidents on the road network that cause lengthy delays and diversions, up to 65km for incidents on the A96 at Huntly, that are expensive to businesses due to additional time and fuel costs. Reducing accidents at hotspots and generally improving road safety to reduce the PIA and KSI rate on the A96, particularly in rural areas, would improve the resilience and reliability of the road network for all users, including freight movements. Industries such as food and drink production, and agriculture, forestry and fishing are prominent in the area and rely on the A96 for the movement of goods to maintain business productivity. Further resilience benefits are anticipated during periods of routine maintenance, with the provision of bypasses allowing for alternative routeing options in the areas around Elgin and Keith, thus reducing the economic impact of disruption on the A96 Trunk Road. Bypasses would also add a level of journey time reliability, reducing delays accrued as a result of travelling through town centres. The additional or extended passing loops on the rail line in this package would improve the resilience and reliability of the rail network, possibly encouraging a mode shift from road to rail for both passengers and freight.

The Aberdeen to Inverness rail line provides an important economic link between the two cities, within the corridor, and beyond through interchange with other rail services. As well as providing linkages for passenger services, the line is used by freight services. As part of this

package, rail network improvements seek to facilitate the movement of goods via rail freight. Rail freight is a key component in the rail sector's contribution to the Scotland's economy with £670m in Gross Value Added annually, supporting up to 13,000 jobs and facilitating up to a further £650m in wider economic benefits[lxxxvi]. Businesses and enterprises that currently transport goods over medium to long distances via road could benefit from a shift to rail freight as a result of the linespeed increases and additional passing loops. Over longer distances, it is expected that the movement of goods could be more economically competitive than road and therefore the increased attractiveness of rail may encourage further usage and overall investment. If sufficient volumes of freight transfer from road to rail there are likely to be benefits for general road users through the reduction of goods vehicles using the road network.

A reduction in end-to-end journey time for rail services is likely to have a positive impact on this criterion by reducing non-productive time and improving the linkage between economic activity in Inverness and Aberdeen. It is also likely to assist in bolstering the local economies of settlements in the corridor that have railway stations, by making them attractive places to live, work and visit, and would likely improve access to both cities for opportunities for employment, education and access to other key services. The additional or extended passing loops on the rail line in this package would improve the resilience and reliability of the rail network as well, possibly encouraging a mode shift from road to rail for both freight and passengers to access key employment markets.

There could also be a beneficial economic impact through investment in improved passenger interchange infrastructure, as well as DRT and MaaS, as improved connectivity could increase access to employment opportunities, education and other services. In locations where public transport network coverage is currently limited, the economic benefits could be significant if new flexible services are able to provide improved connectivity to key destinations.

The package could develop a more resilient transport network by accommodating the necessary charging infrastructure to enable vehicles, powered by alternative fuels, to operate seamlessly throughout the region. This in turn is likely, with the correct deployment of charging infrastructure points, to improve journey reliability. In addition, this would boost the consumer confidence in alternative fuel vehicles helping to shift to vehicles which have a lower operating cost due to the reduced dependency on fossil fuels.

By improving access to key trip attractors along the A96 corridor, the package could also enhance social mobility, uptake of employment and training opportunities, and access to goods and services[lxxxvii]. Well-designed active travel infrastructure can improve economic performance of local retail centres, with typical increases in footfall of 20-30%[lxxxviii], and can facilitate branding initiatives by raising the profile of towns and cities among consumers and businesses[lxxxix]. Well-planned regeneration of the public realm alongside the enabling of active travel, using interventions of the types proposed in this package, can typically boost local retail trade by up to 20-30%[xc]. Furthermore, cycle parking can deliver five times the retail spend per square metre than the same area of car parking[xci], and over the period of a month, people who walk to local high streets spend up to 40% more than people who drive to the high street.

Overall, it is expected that this package would have a **moderate positive** impact on the Economy criteria under both the 'With Policy' and 'Without Policy' scenarios.

5. Equality and Accessibility

'With Policy' Scenario	'Without Policy' Scenario
++	++

The interventions within this package are likely to induce a modal shift to sustainable transport including bus, rail, walking, wheeling and cycling. The increased opportunities to travel by these modes would be beneficial and create opportunities for communities to access key services, such as employment and healthcare facilities.

The active travel interventions within this package would improve the active travel network coverage within local communities along the corridor through new or improved active travel routes, with an aspiration to provide segregation from motorised transport. Through the provision of improved surfaces and crossing points for active travel in towns and settlements, the infrastructure installed could be designed to improve comparative access and transport inclusivity for commonly disadvantaged groups, providing social and community benefits particularly to young people, older people and people with disabilities through the consideration in design for adapted cycles.

Reducing through traffic within the bypassed towns is also likely to improve the perception of road safety and ultimately encourage sustainable modes of travel through creating environments more attractive for walking, wheeling, and cycling, and/or improving the reliability and attractiveness of public transport services for local trips. This would likely provide some positive effects for protected characteristic groups who are more likely to walk, wheel or cycle, and are more vulnerable to fear of road danger, including children, young people, pregnant women, and older people.

Improved safety measures along the corridor would also reduce road and personal safety concerns for active travel users, including children and women. However, the reallocation of road space could also have potential adverse effects on certain groups, such as disabled people who rely on parking spaces close to essential services.

Encouraging modal shift from road freight to rail through investment in the line itself to improve speed and capacity may contribute to a reduction in harmful transport emissions and improve local air quality. This would benefit public health, particularly for vulnerable groups such as children, disabled people, older people and pregnant women.

The inclusion of DRT and MaaS would result in an improvement to the public transport network, which could lead to improved inclusivity through increased accessibility, particularly for vulnerable groups including those with reduced mobility, impaired vision or hearing and those who are neurodivergent. Increasing the quality of passenger interchange facilities would also improve the travel experience for those who do not have access to a car, particularly those from the most deprived households. This, therefore, would have a positive impact on comparative access for affected groups and affected locations.

Modelling undertaken using NaPTAT suggests this package would improve the access to key destinations in the study area using public transport such as employment, health and education sites. The majority of the benefits would be achieved from the inclusion of the rail improvements as part of the package. In summary, it is anticipated that public transport journey times to cities would reduce, with the benefits being experienced in those settlements with access to both rail stations and bus service provision.

NaPTAT indicates the type of destination with the largest change in population accessibility as a result of the package would be travel to emergency department hospitals. It is anticipated that an additional 8,100 people aged 16 and over in the study area would be able to access the nearest site within a 30 minute public transport journey time compared to the 'without package' assessment. Included within this group are approximately 2,100 aged 65 and over, and 1,900 people across all age groups with long-term health problems or disability, whose day-to-day activities are limited, who may be reliant on public transport for accessing such health services.

Public transport journey time improvements to the nearest emergency department hospital would predominantly be found in rural settlements along the A96 corridor, including:

- Huntly, with a journey time reduction of up to seven minutes.

Many of the anticipated benefits from the package would be reflected in the public transport journey time reduction to Inverness, Aberdeen and Elgin as a result of the rail improvements within the package. This includes an additional 400 people aged 16-64 who reside in areas categorised as income deprived (20% most deprived in Scotland) in Elgin being able to access Aberdeen within two hours by public transport.

Residents living within Aberdeenshire would see a benefit in the number of existing jobs (located within Aberdeen, Inverness and Elgin) they can access within a 60 minute journey by public transport. Improvements would be anticipated in geographically deprived areas, which are known to have relatively poor access to facilities and/or digital connectivity. In summary:

- The package would enable people aged 16 to 64 living in these geographically deprived areas in Aberdeenshire to access on average an additional 1,800 existing jobs in Aberdeen City within a 60 minute public transport journey time.

Journey time benefits would also be anticipated for travel to other destinations in the study area using public transport, including higher education sites. The public transport journey time improvements to higher education sites can been seen in Figure A.4 in Annex A. NaPTAT Maps. In summary:

- 4,500 additional people aged 16 and over in the study area would be able to access their nearest higher education site within a 60 minute public transport journey time. The impacted population includes 550 young people aged 16-24, and 800 people across all age groups with long-term health problems or disability, whose day-to-day activities are limited.

Increased active travel opportunities would provide low-cost travel options (walking, wheeling, cycling) within the bypassed towns. Furthermore, DRT and MaaS are likely to help transport become more affordable to more people, reducing transport poverty in the

communities considered. Parts of Nairn and Elgin fall into the lower half of SIMD deciles [xcii], as do small areas of Keith, indicating a level of poverty and potentially low income. Therefore, transport poverty (relating to aspects such as percentage spend on transport that accounts for both income and accessibility of private and public transport services) is likely felt across these settlements. This package can directly improve this through providing better local access to public transport services, particularly buses thus also improving comparative access by geographic location.

Reference should also be made to the SIAs in Section 3.5 for further evidence on equality and accessibility.

Overall, it is expected that this package would have a **moderate positive** impact on the Equality and Accessibility criterion under both the 'With Policy' and 'Without Policy' scenarios.

3.4 Deliverability

1. Feasibility

Dependent on the nature and location(s) of interventions included within this package, the organisation responsible for delivery and the asset owner on completion is likely to include Transport Scotland, local authorities, Network Rail, Regional Transport Partnerships or private/social enterprises.

As the A96 is a trunk road, Transport Scotland would likely be the promotor and procuring body for any interventions that have an interface with the trunk road network. Interventions could be delivered on a project-by-project basis through the development of a route action plan or as part of a wider strategy. Improvements to interfacing local roads and/or adjacent to the trunk road network may be led by the respective local authorities.

The majority of interventions included within this package are considered readily feasible and would be delivered by Transport Scotland or Network Rail, who have extensive experience of delivery and implementation across the country, with local authorities or Regional Transport Partnerships potentially delivering interventions on the local road network. However, the feasibility of delivery at specific locations remains to be tested, and detailed development work and local decision making is required to identify the most appropriate solutions. If technological advances are required to support any interventions, the availability of the appropriate technology would need to be considered, as would the extent to which it can be accessed.

The engineering constraints are anticipated to vary significantly from location to location along the A96 corridor. This would include various existing residential and business properties, roads, rivers and railways. Geotechnical constraints, potentially poor ground conditions and various other environmental and planning/land use constraints would also have to be considered at each location. More detailed assessment would be required at the next stages of design development to understand the extent of these impacts and to ascertain any appropriate mitigation to reduce potential negative effects.

Bypasses of Elgin and Keith would have to consider topography when determining a recommended route in further design stages. Furthermore, the implementation of some elements of this package, particularly the bypasses, may result in the requirement for Public Local Inquiries.

It is noted that further investigation of the potential to raise the linespeed on the rail line between Insch and Keith would need to be undertaken.

Despite the constraints and challenges outlined above, the work undertaken to date indicates that this package is considered feasible.

2. Affordability

Overall, the estimated capital cost of this package is estimated to be between £501 million and £1,000 million. The relatively high-level nature of a number of the interventions within the package makes capital costs and the operation and maintenance costs more difficult to estimate. Therefore, at this stage an appropriate level of risk has been included in the overall affordability of the package.

The cost to implement active travel improvements within communities for example is dependent on the nature and location of interventions and facilities. However, individually the costs are not anticipated to be excessive, and the cost of a full suite of interventions would be dependent on the combination of interventions needed in specific locations.

The specific elements the road infrastructure improvements have yet to be determined so associated costs are variable at this stage. Costs would be primarily dependent upon the scale, complexity and location of any interventions. The provision of bypasses at Elgin and Keith would potentially have a relatively higher cost. Construction costs can vary significantly based on the potential length, design and preferred route of each bypass. More significant targeted road safety improvement measures such as junction improvements and route realignments are likely to have a higher cost estimate than less intrusive measures such as the closure of access points off the A96 as well as any signage and lighting improvements. Costs for all infrastructure elements would also be dependent on a number of other factors, such as the complexity of construction, the requirement for earthworks and structures, localised ground conditions, the purchase of land and various other engineering and environmental constraints.

Interventions associated with the development of the A96 Electric Corridor such as alternative refuelling infrastructure and facilities can have a wide ranging cost associated with them, ranging from being relatively modest to quite substantial, depending on their scale and size. Depending on the nature of the option, funding may be required for personnel to operate and maintain the sites although it is recognised that this cost could be reduced if the infrastructure is of a self-serve nature.

Public transport interchange improvements may be relatively affordable and, in some cases, may attract part funding from another organisation, such as Network Rail. There may also be income generated through rental of commercial space to cafés and retail outlets if these are included in the enhancements.

Investment in DRT and MaaS may not be affordable if ongoing revenue support is required. However, capital funding provided through a new fund to support an innovative pilot study across the A96 corridor, and/or through new funding targeted at DRT, CT and MaaS, or at supporting growth in rural and peripheral communities may support interventions to improve the efficiency of service provision, reducing the need for ongoing revenue support.

Part of the wider rail line improvements included within this package is related to new rolling stock and this is already anticipated to occur due to both periodic replacement of older stock and the extant decarbonisation programme. Other costs are related to the infrastructure elements and are considered to be of a magnitude that is affordable in the context of rail system interventions.

Some aspects of the package are likely to create or increase revenue. Alternative fuelling stations and improvement of public transport interchange hubs are all opportunities to recuperate capital costs and cover operation and maintenance costs. It is still anticipated operation and maintenance would require revenue funding for multiple aspects of the package.

Strategic partnerships between relevant parties and asset owners can help spread the burden of costs, particularly for ongoing maintenance and operation. Involved parties may include Transport Scotland, Network Rail, local authorities, Regional Transport Partnerships, commercial bodies and private stakeholders.

The decision to fund capital infrastructure projects ultimately rests with Transport Scotland and the Scottish Government.

3. Public Acceptability

There are certain user groups who are likely to welcome this package, given the focus on active and sustainable modes. This package would see direct benefits to many across the corridor, noting the whole corridor approach and benefits to those who travel within key settlements along the A96 Trunk Road as well as for long distance travel throughout the corridor for access to Inverness, Elgin and Aberdeen.

Investment in rail generally is anticipated to have a high level of public acceptability. Passenger rail improvements are typically seen as positive by the public, as they can increase the frequency of services, reduce journey times, improve network resilience (fewer delays and cancellations) and increase accessibility of key locations (for example, employment) by rail. This is backed up with evidence from the A96 Corridor Review public consultation survey, in which 30% of respondents considered improving rail services (including train connections, cost, and comfort of travel) as a priority. Furthermore, 14% of respondents suggested more capacity on trains. Around one third said an increased frequency (35%) and quicker journey times (32%) would make them use public transport more and 20% suggested general public transport improvements (including integration). Therefore, it is likely that the public transport improvements included in the Refined Package would have some public support. However, it is likely that those without access to the rail network, those in transport poverty or economically deprived may not universally accept this particular aspect and would prefer

investment in the bus network instead. Public transport interchange improvements may go some way to benefit these users.

Active travel interventions are also likely to be seen as a positive within communities themselves, especially if routes are made safer as the A96 Corridor Review public consultation survey revealed that this was respondents most likely reason to use walking and wheeling (33%) and cycling (40%) more. Almost half of respondents also said they were either dissatisfied or very dissatisfied with the availability of cycling infrastructure (46%) and cycle routes (45%), suggesting Active Communities would be welcomed.

Vulnerable users, including the elderly, disabled and those in transport poverty could all benefit from interventions, including investment in DRT and MaaS, and are therefore likely to welcome the package. Furthermore, alternative refuelling stations to encourage the take up of EVs and hydrogen vehicles would likely be well received by those who have access to or are considering purchasing these vehicles, environmental groups and a proportion of the public who are conscious about their environment and air quality. Although the A96 Corridor Review public consultation survey suggested that only 5% of respondents considered providing infrastructure for an electric highway was a priority and 6% suggested that infrastructure for electric highway should be implemented, it is highly likely that with future policy changes and a growing environmental agenda that this would become a bigger priority to a lot of car owners in the near future.

General support for the construction of the bypasses is also anticipated from the communities that are directly affected and stakeholders in the wider business community, in relation to improvements to the safety and journey time reliability of the trunk road and local road network. Bypasses were the fourth most popular priority (30% of respondents) and suggested theme (22% of respondents) identified in the A96 Corridor Review public consultation survey. It is expected that the reduction of through traffic in these communities is expected to be viewed as a significant positive aspect of the bypasses.

There are likely to be some members of the public who do not support the construction of bypasses. This could include landowners, communities, businesses, and other stakeholders who have concerns over the impact of construction/operation of the bypass or the resulting potential impacts to the environment, though mitigation to reduce environmental impacts would be considered in design stages. Only 2% of respondents in the A96 Corridor Review public consultation survey noted their opposition to bypasses, far less than those in support. Other opposition may arise from communities that are not planned to be bypassed in this package.

Real and perceived safety concerns are also evident on the corridor, and the inclusion of targeted road safety interventions is anticipated to be welcomed. The A96 Corridor Review public consultation survey revealed that 73% of respondents were either dissatisfied or very dissatisfied with road safety in general. Also, over half of respondents (58%) said they felt somewhat or very unsafe on the A96 and noted that dangerous overtaking (48%) and a lack of overtaking opportunities (35%) were the top road safety concerns. Improving road safety was the second most popular suggestion (30%) and priority (50%) of all user groups, suggesting a strong public support for a package that targets this issue.

Overall, public acceptability is anticipated to be mixed, with groups supporting the package and others disagreeing with the interventions included.

3.5 Statutory Impact Assessment Criteria

1. Strategic Environmental Assessment (SEA)

An SEA has been prepared and has provided inputs to the 'Environment' criterion of the STAG appraisal. There is also considerable overlap between the SEA and the Climate Change criterion. The SEA utilises a set of SEA objectives that covers a wide range of environmental topics including Climatic Factors, Air Quality, Noise, Population and Human Health, Material Assets, Water Environment, Biodiversity, Geology and Soils, Cultural Heritage, Landscape and Visual Amenity. The full SEA, including scoring and narrative for each of the Preliminary Appraisal interventions and Detailed Appraisal packages is presented in the SEA Draft Environmental Report[xciii].

2. Equalities Impact Assessment (EqIA)

'With Policy' Scenario	'Without Policy' Scenario
++	++

Modelling undertaken using NaPTAT suggests that this package would improve the access to key destinations in the study area such as employment, health and education, especially for groups who may otherwise be socially excluded by limited transport options including children, young people, women, disabled people and older people. Public transport interventions such as step-free access at stations would improve transport choices for people who are currently excluded, and improved facilities may also benefit those with impaired vision or hearing and those who are neurodivergent.

While most accessibility benefits would be concentrated around settlements with rail stations, further benefits are provided by the improvements to public transport interchange resulting in better connecting public transport services. These interventions would improve connections between settlements without rail stations to those that do. This would increase the connectivity of public transport and reduce journey times across the corridor.

NaPTAT modelling indicates the type of destination with the largest change in population accessibility would be emergency department hospital sites, whereby it is anticipated that an additional 8,100 people aged 16 and over would be able to access the nearest site within a 30 minute public transport journey time. This includes groups of people who may be more reliant on public transport to access health services, for example 2,100 people aged 65 and over, and 1,900 people across all age groups with long-term health problems or disability, whose day-to-day activities are limited.

Reduced journey times for travel to higher education sites using public transport would also be anticipated across the study area and would be anticipated to generate benefits for a wide range of protected characteristic groups. The package would enable an additional 4,500 people aged 16 and over to access their nearest higher education site approximately within a 60 minute public transport journey time. This would include:

- 550 young people aged 16-24.
- 2,300 who are female.
- 100 people from non-white ethnic groups.
- 800 people across all age groups with long-term health problems or disability whose day-to-day activities are limited.

Further benefits would be anticipated for access to employment opportunities found in Aberdeen City for residents residing in geographically deprived areas (20% most deprived in the country). The package would enable on average an additional 1,800 existing jobs located in Aberdeen City to be reached within a 60 minute public transport journey time from geographically deprived areas in Aberdeenshire for those aged 16 and over.

Investment in DRT and MaaS in particular could provide benefits for protected characteristic groups due to more flexible public transport options helping improve connectivity to key services, including children, young people, women, disabled people and older people. There could also be a beneficial impact in terms of reduced barriers to travel for those with reduced mobility if improvements in public transport connectivity reduces walking distance in order to use a service. However, MaaS could exclude certain groups without access to relevant technology, bank accounts or the appropriate level of support to apply for entitlement schemes, and as such, these groups would need to be considered in the design of the schemes to ensure that they benefit.

Through the reallocation of road space and improved surfaces and crossing points for active travel, the infrastructure installed could be designed to incorporate adapted cycles and, as such, address mobility issues experienced by commonly disadvantaged groups, such as pregnant women, disabled and older people. Improved safety measures would also reduce road and personal safety concerns for active travel users, including children. However, the reallocation of road space could also have potential adverse effects on certain groups, such as disabled people who rely on parking spaces close to essential services.

While air quality modelling forecasts that this package would result in adverse air quality emissions over the 60-year appraisal period, there is potential for improvements in air quality in bypassed towns through a reduction of through traffic and an uptake of active travel. Traffic modelling forecasts predict that traffic would divert away from the bypassed towns of Elgin and Keith as a result of a bypass in both the 'With Policy' and 'Without Policy' scenarios. Therefore, bypassed towns may potentially create a range of benefits for groups with protected characteristics. A reduction in traffic could result in improved local air quality within these towns which would be a particular benefit to those groups who are more vulnerable to the adverse health effects of traffic related GHG emissions such as older people, disabled people, children and pregnant women. Reduced through traffic on the existing A96 could also help address local severance issues, reduce road safety concerns and improve the active travel environment.

In particular, a reduction of through traffic and the inclusion of Active Communities could result in an increase in active travel. In Elgin, walking to work levels comprise approximately 18% of all trips [xciv]. This package could provide an opportunity to build on this propensity to walk to work by decreasing traffic through Elgin and reducing road safety concerns for those

groups who are less likely to travel by car. This may improve physical health and mental wellbeing outcomes and is also likely to enhance the aforementioned air quality improvements if the increased active travel usage is a result of mode shift from private vehicle use.

An increase in the use of alternative fuels by vehicles, which could be achieved through the development of the A96 Electric Corridor, could also improve local air quality. In turn, this could have positive effects on those groups who are more vulnerable to the adverse health effects of traffic related GHG emissions. However, the attraction of traffic to the network as a result of the wider interventions is predicted to increase total GHG emissions over the appraisal period and could therefore negate this impact.

This package could also result in benefits for certain groups who rely on private vehicle use to access key services due to mobility reasons such as disabled people and older people, or those who make complex journeys involving 'trip chaining' such as women and carers. For example, these groups could experience reduced journey times and an improvement in the reliability of journey times, both locally and when travelling to key services such as employment, education, healthcare and shopping in the bypassed towns and the surrounding area.

Construction activities associated with bypassing Elgin and Keith may result in negative impacts for these communities. The construction of bypasses may adversely impact local groups who are more vulnerable to noise, vibration, and air quality such as children, older people, disabled people, and pregnant women. Furthermore, during operation, bypasses could create potential new severance, noise, air quality and traffic impacts for dwellings along the new alignment. However, the level of direct impact would be dependent on the route alignment selected for the bypass and the types of communities affected. More detailed assessment would be required to understand the extent of these impacts and the appropriate mitigation to reduce any negative effects and enhance benefits for protected characteristic groups. In general, air quality modelling has shown that construction is anticipated to produce between approximately 140,000 tCO2e and 280,000 tCO2e.

The extent of any benefits would depend on the location and routeing of active travel networks and facilities, their proximity to local services and the ability for people to access the network.

Overall, it is expected that this package would have a **moderate positive** impact on this objective under both the 'With Policy' and 'Without Policy' scenarios.

3. Child Rights and Wellbeing Impact Assessment (CRWIA)

'With Policy' Scenario	'Without Policy' Scenario
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Modelling undertaken using NaPTAT indicates that this package would improve public transport connectivity to higher education in the study area, which could have a particular beneficial impact on children and young people given that 16% of children travel to school by

bus[xcv]. Furthermore, children and young people may be more likely to depend on buses for leisure travel, given that those under 17 are unable to drive.

NaPTAT modelling indicates that the package would improve the population accessibility to higher education sites in Aberdeenshire using public transport for young people across the A96 corridor. It is anticipated that:

- An additional 550 young people aged 16-24 would be able to access their nearest higher education site approximately within a 60 minute public transport journey time.

These accessibility improvements would be linked to the rail linespeed improvements included within this package, reducing the travel time to the cities where higher education sites are largely located. Further benefits would be provided from the improved interchange facilities, which would improve the connection between public transport services.

Some of the largest journey time benefits to the nearest higher education site would be anticipated in rural settlements with access to rail stations, including:

- Insch, with a reduction of approximately eight minutes.
- Kintore, with parts of the town expected to have a public transport journey time benefit of approximately six minutes.

In rural areas, children and young people may experience longer walks to bus stops, infrequent services and long waiting times for connecting services. An increase in DRT and MaaS could help to improve connectivity for children and young people, improving access to key services such as education. Improved connectivity could also result in improved personal safety and security through more direct services between origins and destinations. This improved provision would supplement the benefit of free bus travel for those aged under 22 with all young people and children aged 5-21 years eligible to apply for a National Entitlement Card (NEC) entitling access to the Young Persons' (Under 22s) Free Bus Travel Scheme. However, some children may still be excluded without the appropriate level of support to apply for an NEC.

While air quality modelling forecasts that this package would result in adverse air quality emissions over the 60-year appraisal period, there is potential for improvements in air quality in bypassed towns through a reduction of through traffic on the existing A96 and an uptake of active travel, which could reduce traffic noise within the bypassed towns. This would be a particular benefit to children as they are more vulnerable to the adverse health effects of traffic related GHG emissions and traffic noise. Reduced traffic levels could also help to address local severance issues, improve the active travel environment, reduce road safety concerns and improve access to education for children and young people. In addition, the habit-forming effect of embedding active travel at a younger age has the potential to have longer term benefits, in terms of moving to a more active population.

However, the construction of new bypasses could potentially result in negative impacts during both construction and operation stages for children living in, and in close proximity to, Elgin and Keith. This includes noise, vibration and air quality impacts during construction and potential severance, noise, air quality and traffic impacts during operation. However, the level of direct impact would be dependent on the alignment of the bypass and proximity to

children and young people living or attending schools near the route. More detailed assessment is required as the design develops to understand the extent of these impacts and to recommend effective mitigation. Impacts would also depend on the level to which all other interventions included within this package can be adopted, as it is noted that this would depend on local circumstances within each key community.

The extent to which this package would improve outcomes for children would depend on the extent that the interventions listed are adopted, the location of the interventions, and proximity to local services.

Overall, it is expected that this package would have a **moderate positive** impact under both the 'With Policy' and 'Without Policy' scenarios on this criterion for children and young people.

4. Fairer Scotland Duty Assessment (FSDA)

'With Policy' Scenario	'Without Policy' Scenario
+	+

Modelling undertaken using NaPTAT indicates that this package would improve access to essential services and key destinations, including education sites, employment opportunities and healthcare, for socio-economic disadvantaged groups across the study area. There could be a large beneficial impact in tackling inequality, with improved public transport connectivity supporting reduced social isolation and improved health and wellbeing.

Given that 48% of the most deprived households (SIMD quintile 1) do not have access to a car and are twice as likely to use the bus to travel to work as households in the least deprived three quintiles[xcvi], the beneficial impacts associated with public transport connectivity are likely be highest for those from the most deprived households. However, only 6.9% of SIMD datazones within the transport appraisal study area fall into the most deprived quintile. Nevertheless, the barriers created through not having access to a car are likely to be exacerbated in communities where public transport service levels are lower. As such, the positive impact of improved public transport for socially excluded groups in these areas is likely to be greater.

NaPTAT modelling indicates the largest journey time and accessibility benefits would be anticipated to key destinations and essential services in Aberdeenshire. These benefits would be largely linked to the rail interventions within the package and result in reduced public transport journey times between settlements along the rail line, particularly to Inverness and Aberdeen.

The package would provide journey time improvements to the nearest higher education site for young people aged 16-24 who reside in areas where the gross household income is within the 20% lowest in the study area. This would enable:

- An additional 100 people to access the nearest site within 50 minutes.
- A further 150 people to access the nearest site within 65 minutes.
- A further 150 people again to access the nearest site within 100 minutes.

The package is also shown to improve the access to employment opportunities found in Aberdeen City, whereby on average, an additional 3,800 existing jobs would be accessible within 60 minutes using public transport from Aberdeenshire for people aged 16 to 64 who reside in areas where the gross household income is found within the 20% lowest in the study area.

Traffic modelling forecasts predict that traffic would divert away from Elgin and Keith following the introduction of this package in both the 'With Policy' and 'Without Policy' scenarios. This is expected to create benefits for socio-economically disadvantaged groups by improving the active travel environment for those who are unable to afford a car. Including active travel interventions in conjunction with bypasses could aid the removal of barriers in communities through an improved sense of road safety and security for those walking, wheeling and cycling, and the public transport interventions included within this package could encourage modal shift to more sustainable modes. The diversion of traffic would also generate a reduction in equalities of health in disadvantaged and deprived communities through improved air quality at a local level.

There is generally a heavier reliance on the use of the private car along the A96 corridor compared with the rest of the country. This is primarily due to the rural nature of the region, where there is greater dependency on the private car to access employment, education, healthcare and for social purposes. In the absence of viable alternatives to travel, those on low incomes may be 'forced' into car ownership despite financial constraints. However, there could be benefits through reduced journey times and an improvement in the reliability of journey times for these drivers, providing more economical and efficient journeys. Moreover, if schemes delivered through the package are dependent on MaaS, it is likely to exclude certain groups without access to this technology, bank accounts or the appropriate level of support to apply for entitlement schemes, and as such this would need to be considered in the design of the schemes to ensure that they are able to benefit.

The provision of bypasses could reduce the number and severity of road traffic accidents on the sections of the existing A96 Trunk Road which route through towns. This could benefit socio-economically disadvantaged groups, as evidence shows that people from deprived areas are more likely to be killed or injured as road users[xcvii]. However, it is acknowledged that wider factors affect road casualty rates and that more detailed assessment work is required to understand the safety benefits associated with individual schemes and how this might impact people from deprived areas.

The extent to which this package would reduce inequalities of outcome would depend on the alignment of the bypasses, the extent to which all other interventions included in this package are adopted, the location of the interventions, proximity to local services and the ability for those from deprived and disadvantaged communities to access the active travel network. It is noted that this would depend on local circumstances within each key community. This in turn would have an impact on the level of reduction of through traffic within disadvantaged and deprived communities.

The construction works associated with the interventions in this package could result in job opportunities for local communities including those from socio-economically disadvantaged groups.

Overall, it is expected that this package would have a **minor positive** impact under both the 'With Policy' and 'Without Policy' scenarios on this criterion.

Annex A. NaPTAT Maps

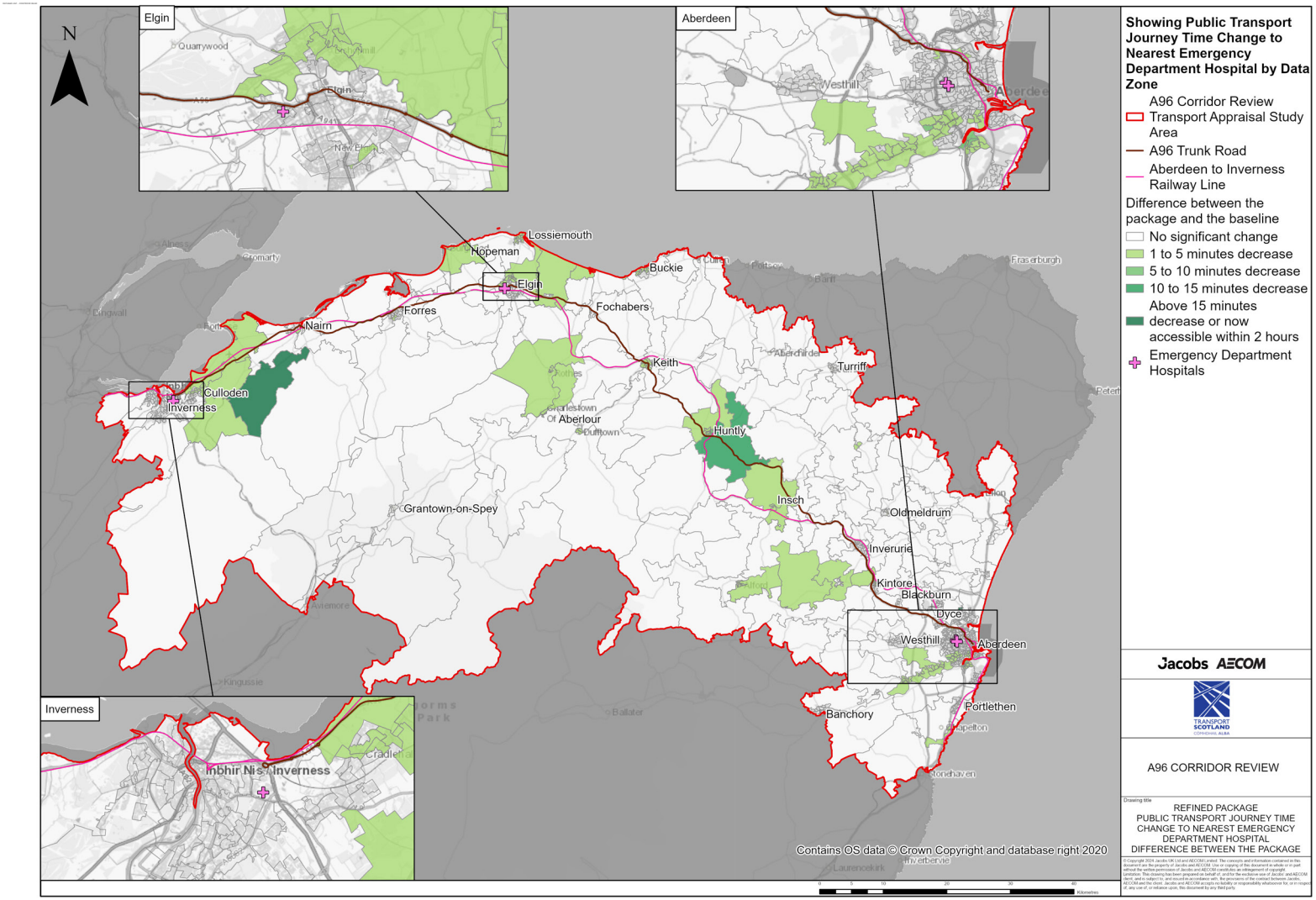

Figure A.1: Public Transport Journey Time Change to Nearest Emergency Department Hospital Showing Difference Between 'With Package' and Baseline

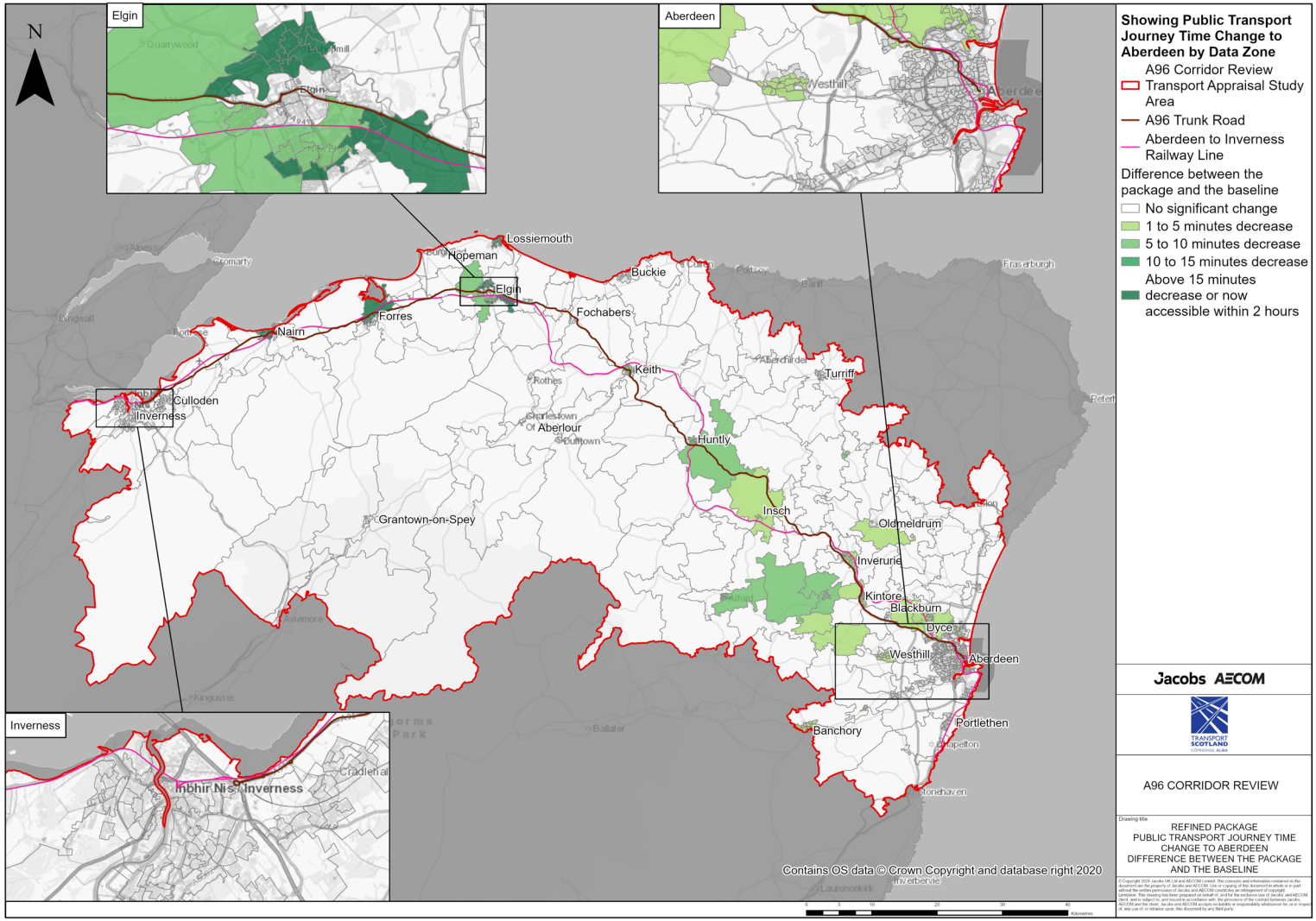

Figure A.2: Public Transport Journey Time Change to Aberdeen Showing Difference Between 'With Package' and Baseline

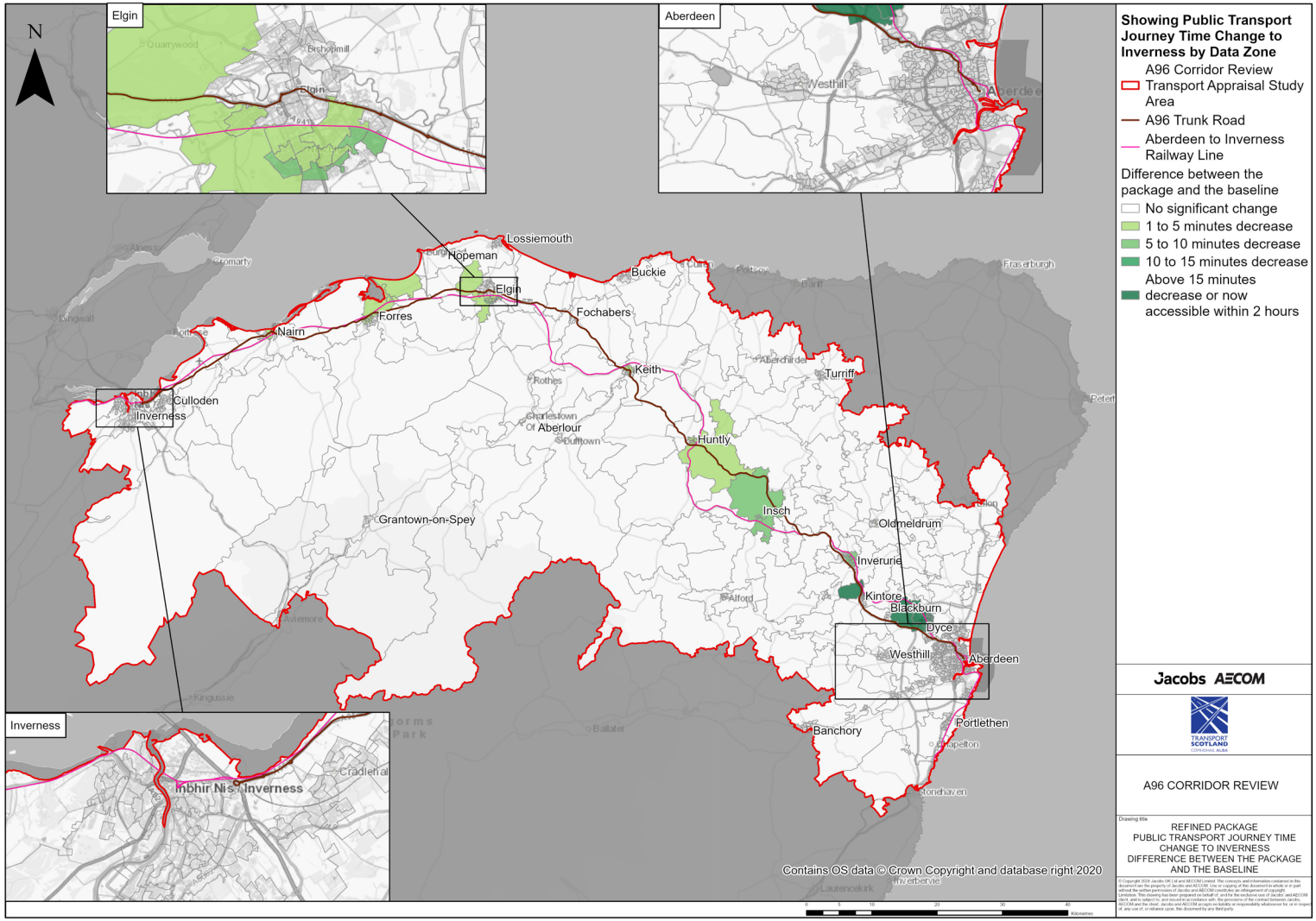

Figure A.3: Public Transport Journey Time Change to Inverness Showing Difference Between 'With Package' and Baseline

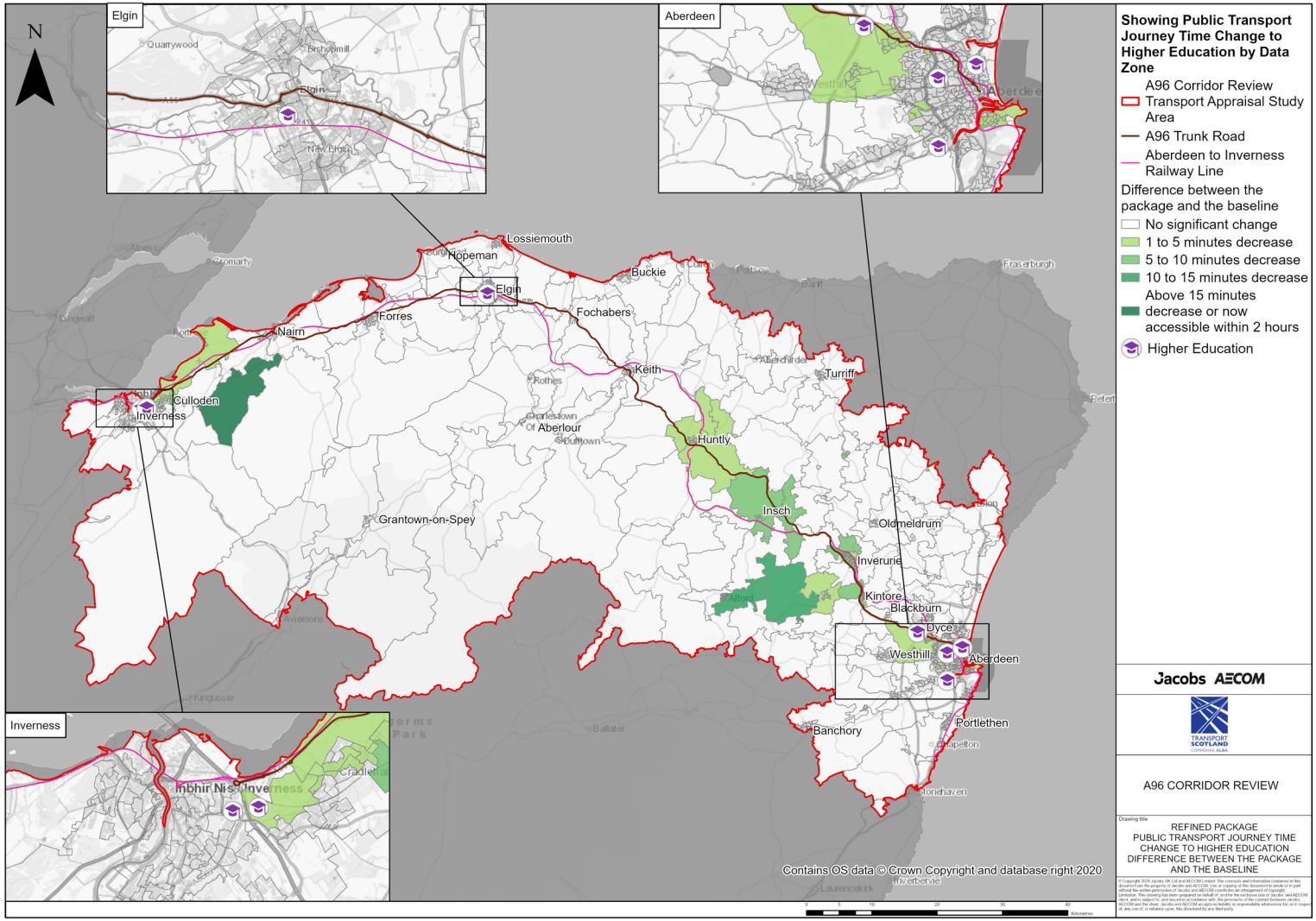

Figure A.4: Public Transport Journey Time Change to Nearest Higher Education Site Showing Difference Between 'With Package' and Baseline

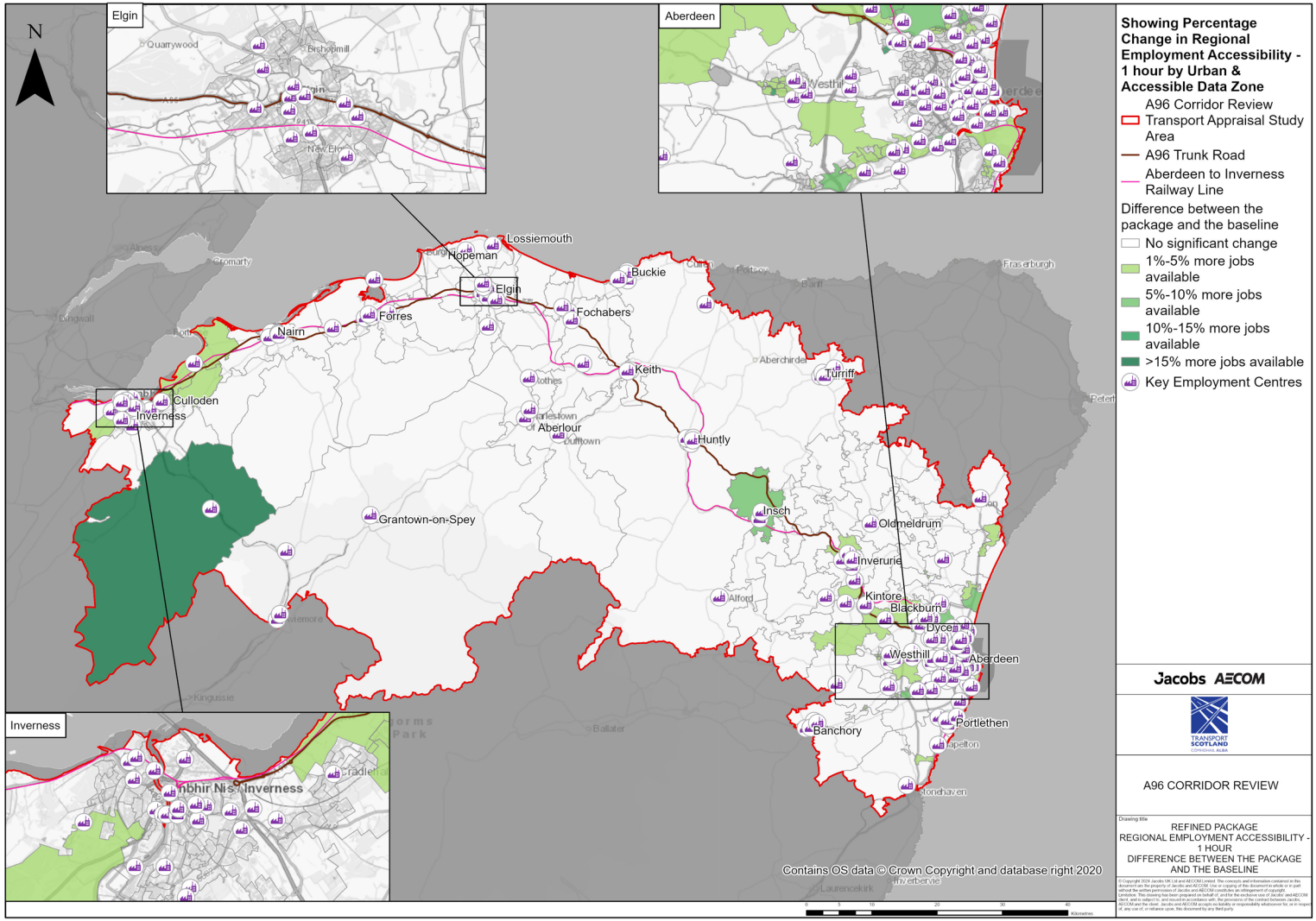

Figure A.5: Percentage Change to Key Regional Employment Centres Showing Difference Between 'With Package' and Baseline

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