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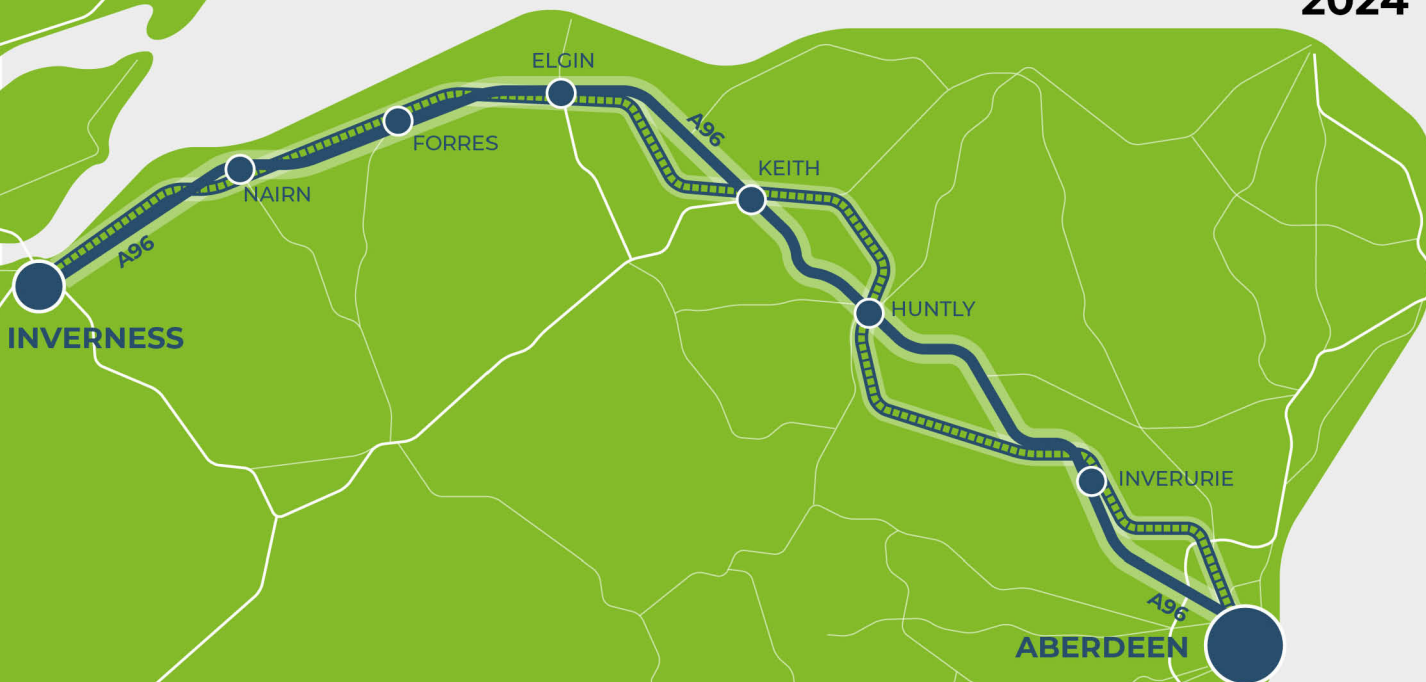
for



# 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](#)<sup>1</sup>.

## 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<sub>2</sub> 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

#### Package 4

This package of interventions is targeted at longer distance journeys along the A96 corridor, with a focus on delivering transport network improvements aiming to encourage a shift to sustainable modes and improve road safety.

The interventions included in Package 4 are shown in Figure 1.1.



Figure 1.1: Interventions Included in Package 4

The locations of the interventions considered within this package in relation to the wider A96 Corridor Review transport appraisal study area (as defined within [A96 Corridor Review Case for Change<sup>ii</sup>](#)) are illustrated in Figure 1.2.

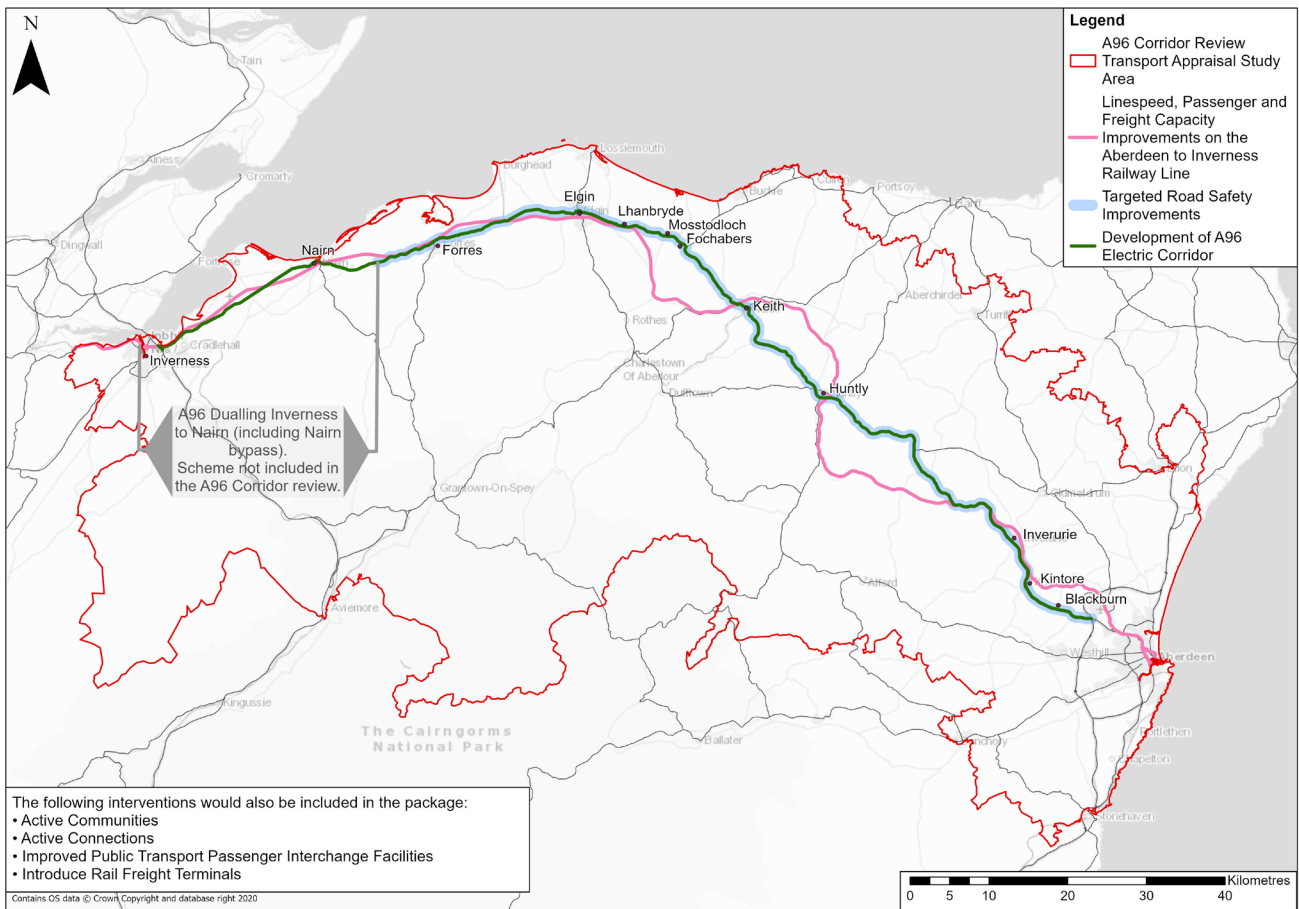


Figure 1.2: Package 4 Extents

The package would provide high quality active travel routes and facilitate placemaking improvements within settlements along the A96 Trunk Road through the provision of '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 school and encouraging more inclusive environments for people walking, wheeling and cycling. This would enhance the sense of place and encourage the local communities to spend more time within their local areas.

High quality active travel routes between settlements along the A96 corridor also form part of this package, which would be intended to be combined to form a continuous motorised traffic-free route between Aberdeen and Inverness. By connecting communities, this element of the package would also address the need for junction improvements to enhance the provision for active modes along the route and the creation of safe crossings in rural areas, providing safe, attractive, and convenient choices for many functional and recreational journeys, enabling people to benefit from improved access to key trip attractors in neighbouring settlements, using sustainable travel modes.

A number of public transport interventions targeted at delivering faster and more reliable journey times as well as improving the overall passenger experience form part of this package. Journey time and capacity improvements would be achieved through the inclusion 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.

The package also contains the introduction of rail freight terminals, with associated gauge enhancement which would encourage freight to be transported by rail.

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.

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.

## 1.2 Relevance

### Relevance to the A96 Corridor

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

The package aims to reduce 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 the [Scottish Government's target of reducing the number of kilometres travelled by car by 20% by 2030](#)<sup>iii</sup> as well as the [commitment to achieve net zero by 2045](#)<sup>iv</sup>.

Furthermore, accompanying the mode shift achieved, the provision of alternative fuelling stations throughout the A96 corridor would also contribute towards the 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](#)<sup>v</sup> and [all sales of Heavy Goods Vehicles \(HGVs\) in the UK](#)

[to be zero emission by 2040](#)<sup>vi</sup>, 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 [National Transport Strategy 2 \(NTS2\)](#)<sup>vii</sup>, 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.

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 particularly for 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](#)<sup>viii</sup> as well as the emissions reductions targets of the [Climate Change Plan](#)<sup>ix</sup>, and aiding in the [transition away from traditional HGVs](#)<sup>x</sup>.

Improving and creating active travel connections between settlements is relevant to encourage modal shift and sustainable trips along the A96 corridor. This package would provide efficient, safer, sustainable travel choices on routes segregated from traffic, which would be particularly relevant for medium distance functional and recreational inter-urban journeys. With increasing use of e-bikes, which are proven to be successful in enabling longer distance cycling journeys over varying topographies<sup>xi</sup>, providing direct active travel routes to facilitate inter-urban active travel journeys is of increasing relevance. Active Communities interventions in this package are relevant to key settlements along the A96, though the specific measures undertaken in each would be dependent on community needs and aspirations.

This package is also directly relevant to [Scotland's Road Safety Framework to 2030](#)<sup>xii</sup>. 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 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).

### 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.

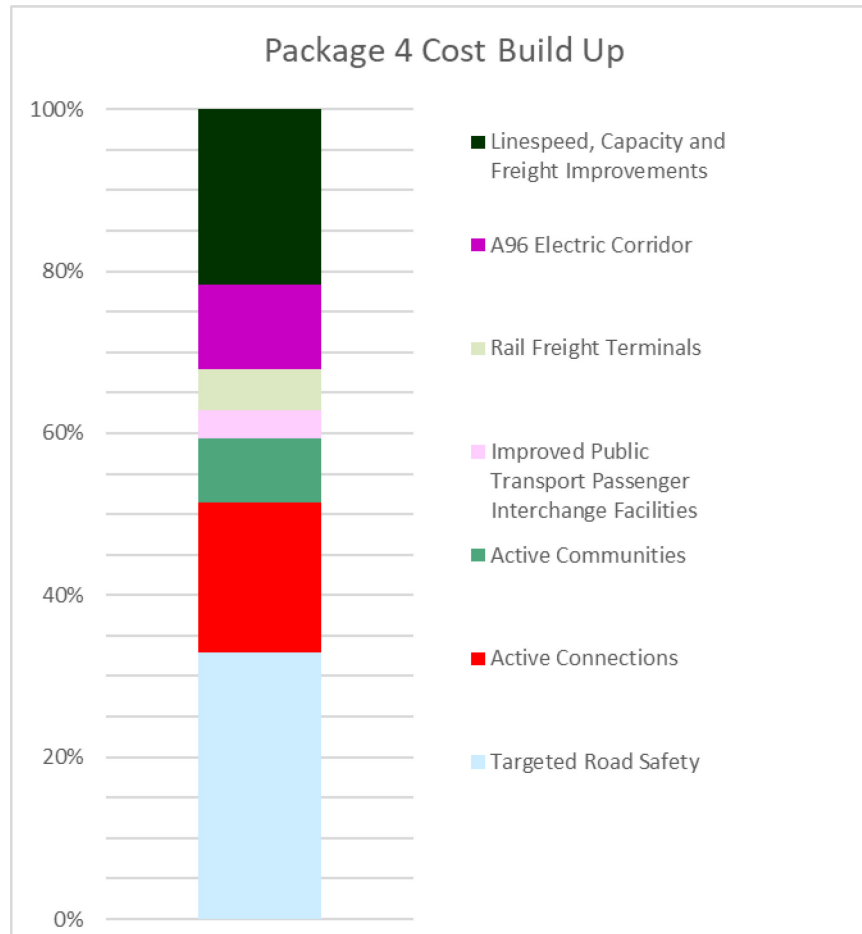


Figure 1.3: Percentage Contribution of Each Intervention to the Overall Cost

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. Package 4 would also sit across multiple tiers of the Sustainable Travel Hierarchy, specifically Walking and Wheeling, Cycling, Public Transport and Private Car.

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 to 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	HS W	Eco	EqA	EqIA	CR W	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 minor negative impacts specifically concerning the Environmental and Climate Change criteria. The following paragraphs provide additional detail on the scoring of Package 4.

The package is anticipated to have a moderate positive impact on A96 Corridor Review TPOs in relation to contributing to the Scottish Government’s net zero targets (TPO1), enhancing communities as places to support health, wellbeing and the environment (TPO3), and providing a safe, reliable and resilient transport system (TPO5). The package is also anticipated to have a minor positive impact on the A96 Corridor Review for improving inclusion through the accessibility of public transport (TPO2) and contributing to sustainable inclusive growth (TPO4). For the STAG Criteria, the package is anticipated to have a moderate positive impact in relation to Health, Safety and Wellbeing, with a minor positive impact on the Economy and Equality and Accessibility. Of the SIAs scored as part of the A96 Corridor Review, the package is anticipated to have a minor positive impact on the Equality Impact Assessment (EqIA), the Childs Rights and Wellbeing Impact Assessment (CRWIA) and the Fairer Scotland Duty Assessment (FSDA).

This package is anticipated to encourage more sustainable travel choices to be made by people and businesses along the A96 corridor through the creation of a fully connected long distance active travel network between Aberdeen and Inverness, promoting public transport through rail improvements to linespeed and capacity and interchange infrastructure improvements, encouraging a shift to more sustainable rail freight and facilitating the growth in electric vehicles (EVs) and hydrogen vehicles through increased public charging and alternative refuelling infrastructure. However, the package is still expected to negatively impact on environmental considerations such as biodiversity, landscape and visual amenity and agriculture and soils due to infrastructure improvements required, resulting in a minor negative impact on the STAG Environmental criterion. Whilst this package is estimated to decrease road user greenhouse gas (GHG) emissions in the long term, these could be outweighed by emissions arising during the construction stage, therefore the impact on the STAG Climate Change criterion is considered to be minor negative.

As the package focuses on longer distance travel, the impacts would predominantly affect those who travel between communities along the A96 corridor or into Aberdeen and Inverness at either end of the route. Those who travel internally within settlements would see some benefits to local placemaking where active travel routes are introduced or enhanced to facilitate the fully integrated route between Aberdeen and Inverness, or to connect with local transport hubs and public transport interchanges. The overall impact on the problems and opportunities identified in the [A96 Corridor Review Case for Change](#)<sup>ii</sup> may therefore be limited.

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 other disagreeing with the measures included. There are certain user groups who are likely to welcome this package, given the focus on active and sustainable modes of travel as an alternative to car. Real and perceived safety concerns are also 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, therefore the inclusion of targeted road safety improvements is anticipated to be particularly welcomed. Any

landowners who 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](#)<sup>ii</sup>.

#### 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 Killed or Seriously Injured (KSI) is also significantly higher in these two towns compared to 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 route 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 Inch 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, Inch 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<sub>2</sub> 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. There are a number of sections of the road where the 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). Reducing the level of car-based kilometres travelled would also contribute to a reduction in accident numbers.

**Health and Environmental 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. Fewer vehicle kilometres travelled would also improve the local air quality, with associated health benefits in communities along the A96.

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 and between 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](#)<sup>xiii</sup> (a UK Government scheme, with details also provided by [Network Rail](#)<sup>xiv</sup>)
- [Active Travel Framework \(2020\)](#)<sup>xv</sup>
- [Bus Partnership Fund](#)<sup>xvi</sup>
- [City Region Deals](#)<sup>xvii</sup>
- [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#)<sup>xviii</sup>
- [Climate Change Plan 2018-2032 Update](#)<sup>xix</sup>
- [Cycling Framework for Active Travel - A plan for everyday cycling \(2023\)](#)<sup>xx</sup>
- [Infrastructure Investment Plan 2021/22 – 2025/26 \(IIP\)](#)<sup>xxi</sup>
- [Mission Zero for Transport](#)<sup>xxii</sup>
- [National Planning Framework 4 \(NPF4\)](#)<sup>xxiii</sup>
- [National Transport Strategy 2 \(NTS2\)](#)<sup>xxiv</sup>
- [National Walking Strategy \(2014\)](#)<sup>xxv</sup>
- [Rail Enhancements and Capital Investment Strategy](#)<sup>xxvi</sup>
- [Rail Services Decarbonisation Action Plan](#)<sup>xxvii</sup>
- [Regional Growth Deals](#)<sup>xxviii</sup>
- [Scotland's Accessible Travel Framework – Annual Delivery Plan 2021-22](#)<sup>xxix</sup>
- [Scotland's National Strategy for Economic Transformation](#)<sup>xxx</sup>
- [Scotland's Rail Freight Strategy](#)<sup>xxxi</sup>
- [Scotland's Road Safety Framework to 2030](#)<sup>xii</sup>
- [Strategic Road Safety Plan \(2016\)](#)<sup>xxxii</sup>
- [Strategic Transport Projects Review 2 \(STPR2\)](#)<sup>xxxiii</sup>.



### 3. Appraisal

#### 3.1 Appraisal Overview

This section provides an assessment of Package 4 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 \(69%\)](#)<sup>xxxiv</sup>.

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](#)<sup>xxxv</sup>. Air quality modelling has shown that this package is estimated to reduce road user GHG emissions by approximately 2,100 tonnes CO<sub>2</sub>e (tCO<sub>2</sub>e) and 14,100 tCO<sub>2</sub>e in the 'With Policy' and 'Without Policy' scenarios respectively over the 60-year appraisal period.

Data presented in the [A96 Corridor Review Case for Change](#)<sup>xxxvi</sup> 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 fewer 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. Connecting settlements with a fully integrated long distance active travel route could encourage longer distance trips to be made by active modes, and in particular cycling. The advent of e-bikes is also likely to increase the number of people able to participate in cycling as a practical mode of transport, especially for longer distance trips. Research conducted in Norway found that people who purchased an e-bike tended to increase their daily cycle distance from 2.1 km to 9.2 km per day on average<sup>xxxvii</sup>. Furthermore, evidence suggests the usage per km of the National Walking and Cycling Network (including the National Cycle Network, Scotland's Great Trails and Scottish Canals towpaths) in Scotland steadily increased over the period from 2014 to 2019 for both pedestrians and cyclists, which highlights its attractiveness; 145.1 million trips were made on the National Walking and Cycling Network in Scotland in 2019, which was an [increase of 27% on 2014](#)<sup>xxxviii</sup>, indicating an increase in propensity to travel actively.

The package is anticipated to increase the proportion of journeys undertaken by active modes along the corridor. Assuming all the active travel interventions are fully implemented within and between the 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. It should be noted that the 'with package' mode shares for Forres, Elgin, Keith and Inverurie assume that the settlements are not bypassed as the provision of bypasses is not included within this package.

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%
Forres, Elgin, Keith (Moray)	17%	19%	3%	6%
Inverurie (Aberdeenshire)	18%	20%	1%	5%
Lhanbryde, Mosstodloch and Fochabers (Moray)	12%	13%	3%	14%
Huntly, Kintore and Blackburn (Aberdeenshire)	21%	28%	1%	13%
Rural Sections Moray	12%	13%	10%	11%
Rural Sections Aberdeenshire	13%	14%	2%	6%

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 induce a mode shift from car to public transport through a combination of improved public transport interchange facilities and quicker rail journey times, particularly for longer distance trips towards key economic hubs, thus contributing to the [target for a 20% reduction in car kilometres by 2030<sup>xxxix</sup>](#). The rolling stock replacement is also consistent with the aims of the [rail decarbonisation strategy<sup>xl</sup>](#) and enhanced freight facilities,

combined with the faster linespeed, would help make moving freight by rail a more attractive option when compared to moving by road.

Evidence suggests rail freight is the most sustainable option for longer distance movement of goods, particularly for trunk haul routes, with each freight train [estimated to remove up to 76 HGVs off the road](#)<sup>xli</sup>. The provision of rail freight terminals is therefore anticipated to enhance the opportunity for mode shift for strategic trunk freight movements, enabling the rail network to support the reduction of transport based GHG emissions associated with the movement of freight. [There are also examples within Scotland where rail freight is and has been viable for shorter distances](#)<sup>xlii</sup> which could also help reduce the contribution of HGVs and freight on GHG emissions along the A96 corridor.

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 internal combustion engine (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 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. This could be particularly impactful in remote rural areas and would make the prospect of owning alternatively fuelled vehicles feasible for longer distance trips.

Through reducing the overall frequency of road traffic collisions and therefore the associated disruption, there may be slight benefits to road user 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](#)<sup>xliii</sup> as a prevalent issue, but is anticipated to change moving forward 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 the package in place by less than 1% in both the 'With Policy' and 'Without Policy' scenarios compared to a 'without package' scenario, in 2045. This could result in a very small, localised benefit to road user GHG emissions where congestion occurs as traffic should be slightly more free flowing.

There is potential for this package to induce a mode shift to active travel and public transport and to reduce vehicle GHG emissions further. Whilst traffic modelling has suggested that this package would result in a very minor reduction in vehicle kilometres of less than 1% in both the 'With Policy' and 'Without Policy' scenarios in 2045, this may not reflect the true potential for the level of mode shift achievable by the measures considered within this package.

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 for both local and longer distance trips to be made via active travel, along with the

provision of alternative refuelling opportunities and an improved rail service for both passengers and freight 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](#)<sup>xliv</sup> which is likely to be a result of the frequency and integration of public transport services in the corridor. This is due to the largely rural nature of the region, where providing public transport can be a challenge due to dispersed population and settlement patterns.

This package supports health and wellbeing through the provision of active travel infrastructure within and between settlements, encouraging longer and shorter trips to be made by walking, wheeling and cycling. [Keeping physically active can improve both physical and mental health and wellbeing](#)<sup>xlvi</sup>. 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](#)<sup>xlvi</sup>. Furthermore, [adults who cycle regularly can have the fitness levels of someone up to 10 years younger](#)<sup>xlviii</sup> and [people living in walkable, mixed-use neighbourhoods have higher levels of social capital](#), 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<sup>xlix</sup>.

The provision of active travel interventions within and between the settlements along the A96 corridor would enhance inclusiveness by improving sustainable travel connections to healthcare, employment and education facilities. 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.

Reducing journey times for rail journeys to key destinations would provide greater accessibility to key services such as healthcare, employment and education throughout the corridor which are often found in the larger cities and towns in the region. Although this is likely to predominantly provide benefits to those with access to the rail network, it could provide some benefits to anyone without access to a car, providing a more inclusive transport system. Improvements to interchange facilities should also provide benefits to vulnerable users as accessibility at stations could be enhanced, encouraging multi-modal trips to be made more frequently by all members of the population.

Providing reliable and efficient public transport services within the corridor can be a challenge due the rural nature and the low population, which can limit demand. Results from the National Public Transport Accessibility Tool (NaPTAT) show that for Aberdeenshire and Moray in particular, there are significant proportions of the population with no or limited access to key services such as emergency department hospitals, GP surgeries or higher education sites by public transport. This indicates a large proportion of people may have no real alternative to private car for accessing key services, especially over longer distances.

Modelling undertaken using 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 higher education sites, where it is anticipated that an additional 6,500 people aged 16 and over in the study area would be able to access the nearest site within a 60 minute public transport journey time compared to the 'without package' assessment. This represents a 1.4 percentage point increase in accessibility levels from approximately 78% in the 'without package' assessment to approximately 79% with the package in place. These improvements would be reflected in the journey time reduction to the two cities, Inverness and Aberdeen, where higher education sites are generally located in the study area.

Improvements for public transport access to higher education as a result of the interventions in Package 4 would be found predominately 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:

- Inverurie, where it is anticipated an additional 3,900 people would be able to access higher education within a 60 minute public transport journey time.
- Inch, where it is anticipated an additional 850 people would be able to access their nearest site within a 60 minute public transport journey time.

Many settlements demonstrate public transport journey time improvements 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 9,600 people would be able to travel to Aberdeen from Elgin within two hours by public transport compared to the 'without package' assessment.
- 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 hospitals. Improved access to the nearest emergency department hospital is anticipated in some settlements, including Huntly, as shown by the map in Figure A.4 in Annex A. NaPTAT Maps. Parts of Huntly would have a journey time reduction of up to six minutes to the nearest emergency department hospital with the package in place.

The benefits to those living in rural areas within the corridor are limited as this option does not improve the public transport network coverage. Improvements to active travel infrastructure between settlements along the A96 corridor could provide a small benefit to those who live within the vicinity of the new infrastructure, as it would provide a high quality active travel route to connect to services within the nearest settlement; however, this is anticipated to be negligible. 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
++	++

This package supports health and wellbeing through the provision of active travel infrastructure to create a connected long distance route between Aberdeen and Inverness,

with associated placemaking interventions within settlements, encouraging both shorter and longer distance trips to be made by walking, wheeling and cycling. [Keeping physically active can improve both physical<sup>i</sup> and mental health and wellbeing<sup>li</sup>](#). 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<sup>lii</sup>](#). Furthermore, [adults who cycle regularly can have the fitness levels of someone up to 10 years younger<sup>liii</sup>](#) and [people living in walkable, mixed-use neighbourhoods have higher levels of social capital](#), 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<sup>liv</sup>](#).

The inclusion of active travel infrastructure is anticipated to improve connectivity between settlements along the A96 corridor. UK-wide, each traffic-free mile of the National Cycle Network (NCN) is [estimated to be used for 77,000 walking trips and 23,000 cycling trips per annum<sup>lv</sup>](#), giving confidence that improved inter-urban routes would increase physical activity. Furthermore, the Pont y Werin Bridge connecting Cardiff and Penarth, which are approximately 6km apart, has seen active travel trips between the city and the town increase by 86%, with 85% of users stating that the scheme had helped them increase their levels of physical activity. [The health benefits arising from the intervention equate to over £4m<sup>lvi</sup>](#). Furthermore, delivering high quality active travel routes could also directly improve access to local health and wellbeing infrastructure as a result of improved active travel provision.

This package is anticipated to increase the proportions of journeys undertaken by active modes along the corridor. Assuming all the active travel interventions are fully implemented within and between the settlements along the corridor, 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. It should be noted that the target mode shares for Forres, Elgin, Keith and Inverurie assume that the settlements are not bypassed as the provision of bypasses is not included within this package.



Table 3.2: Walking and Cycling Mode Share

<b>Settlements/ Local Authority Area</b>	<b>Walking Without Package</b>	<b>Walking With Package</b>	<b>Cycling Without Package</b>	<b>Cycling With Package</b>
Nairn (Highland)	17%	23%	3%	15%
Forres, Elgin, Keith (Moray)	17%	19%	3%	6%
Inverurie (Aberdeenshire)	18%	20%	1%	5%
Lhanbryde, Mosstodloch and Fochabers (Moray)	12%	13%	3%	14%
Huntly, Kintore and Blackburn (Aberdeenshire)	21%	28%	1%	13%
Rural Sections Moray	12%	13%	10%	11%
Rural Sections Aberdeenshire	13%	14%	2%	6%

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

The health benefits associated with the above increased rates of active travel 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 measures considered as part of this package could reduce premature deaths by 1.31 a year, which equates to a benefit of up to approximately £30m-£40m 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 across the whole corridor.

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. Both of these elements could reduce severance, enhancing the sense of place within rural communities and areas 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 and cycling, encouraging a mode shift to active modes for longer and shorter journeys, 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 in close proximity to 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.

Infrastructure improvements on the A96 within the vicinity of the rural areas are likely to be within the existing carriageway boundaries, limiting impacts on the natural environment. There is, however, the potential for targeted road safety improvements and the creation of large scale public alternative refuelling facilities to require land take and result in a net loss of green space. Delivery of the long distance active travel route is likely to have some adverse impacts on the natural environment and heritage. The construction of a long distance active travel route as well as large scale public charging for electric vehicles, would require land take and is highly likely to result in some loss of natural greenspace. Given the scale of these works, there is also the potential to affect environmental designations within the region, such as but not limited to, Historic Battlefields, Sites of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC). However, active travel interventions would look to create more pleasant and visually attractive transport links that would likely introduce more local greenspaces and promote a healthier local air quality, which would positively impact on the natural environment. Additional, active travel interventions within communities would look to create more pleasant and visually attractive town centres. Any reduction in vehicle travel could also improve the local air quality and reduce road user GHG emissions.

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. Traffic modelling suggests this package would reduce both the time lost due to congestion and delay experienced by general traffic by less than 1% in both the 'With Policy' and 'Without Policy' scenarios, in 2045. Though minor in relation to the whole corridor, reducing the impact of congestion may induce confidence in the reliability of the trunk road network and encourage inclusive growth in the region.

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. Traffic modelling undertaken indicates that this package is anticipated to reduce both time lost to congestion and delay to business vehicles by less than 1% compared to the 'without package' scenario in both the 'With Policy' and 'Without Policy' scenarios, in 2045. This suggests minor improvements would be anticipated for the reliability of commercial traffic on the A96 Trunk Road, which can be critical for those industries that transport perishable goods, such as food and drink that equates to over £100m of goods annually<sup>lvii</sup>.

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 rail journey times and improve passenger experience through enhanced facilities. These interventions are also anticipated to improve sustainable access to labour markets and key centres of employment, education and training, particularly for those from more 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 deprivation tends to be relatively low. However, there are areas that exhibit varying degrees of deprivation within the cities at either end of the A96 corridor and in most of the larger towns along the route who may travel longer distances and have reasonable access to a rail station. Further information on the deprivation profile of the corridor is presented in the [A96 Corridor Review Case for Change](#)<sup>ii</sup>.

Modelling undertaken using the 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) they can access within a 60 minute journey by public transport. 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 Inch 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 Inch 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 interventions would be expected to provide and contribute to journey time improvements in the case of multi-modal journeys.

By improving residents' access through active modes to key trip attractors in neighbouring towns and larger urban areas, for example Forres, Elgin, Fochabers, Huntly, Inverurie and Kintore, as well as the key attractors in Inverness and Aberdeen, [this package could enhance social mobility, uptake of employment and training opportunities, and access to goods and services](#)<sup>lviii</sup>. Services and employment tend to be concentrated in Inverness, Elgin and Aberdeen and therefore improving connections to these cities and towns from the surrounding rural areas would contribute towards economic growth. Evidence from active travel schemes which link communities elsewhere in the UK demonstrate a significant increase in commuters travelling actively, highlighting the potential benefit of connecting communities with high quality active travel infrastructure has on sustainable access to labour markets.

Reallocating road space and prioritising active modes can have economic benefits and provide better spaces for people to live, work and shop locally. [Case studies show typical increases in footfall in retail areas of up to 20-30%<sup>lix</sup> from such schemes](#). Regeneration of the public realm within settlements could [boost commercial trade, increase local retail sales, raise rental rates and property values and provide opportunity for cost-saving cycle freight](#)<sup>lx</sup>.

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<sup>lxi</sup>, 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 therefore 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 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 introduction of a rail freight terminal could also encourage a mode shift from road to rail, providing more sustainable options for transporting freight, and avoiding potential delays on the road network and therefore improving reliability. Benefits are more likely to be realised for longer distance movements 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.

Similarly, additional alternative refuelling infrastructure for electric and/or hydrogen vehicles would increase confidence in making trips across the region and through the towns in this package by alternatively 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.

The package does little to directly improve road freight journey times and reliability. However, improvements to the rail network and the creation of a rail freight terminal could encourage a transfer of freight from road to rail across the wider context of the A96 corridor. This could not only result in an increased mode share by sustainable modes, but also improved journey time reliability for commercial transport accessing key markets.

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.

**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 PIA rate on the A96 Trunk Road as a whole is lower than the national average](#)<sup>lxii</sup>. However, the PIA and KSI rate is significantly higher within the urban areas of Forres and Keith than the national average for equivalent trunk A-Roads in Scotland. 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 Trunk Road with a KSI rate slightly higher than the national average. 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.

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. There may also be accident benefits associated with mode shift that may occur as a result of active and sustainable travel interventions for private users and freight that are implemented within the corridor, through a reduction in overall vehicle kilometres. However, modelling indicates the impact across the wider corridor of this package is very minor in terms of reducing overall vehicle kilometres.

Evaluations of road schemes following the Scottish Trunk Road Infrastructure Project Evaluation (STRIFE) framework provide an illustration of the potential benefits, 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 <sup>lxiii</sup>.
- [A9 Ballinluig grade-separation](#) resulted in over a 90% reduction in accidents <sup>lxiv</sup>.
- [A9 Helmsdale widening scheme](#) (including the provision of climbing lanes) resulted in a 60% reduction in accidents <sup>lxv</sup>.
- [A76 Glenairlie overtaking scheme](#) resulted in a reduction in accidents of 75% <sup>lxvi</sup>.

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 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 the 'With Policy' Scenario and £15m-£20m in the 'Without Policy' Scenario, 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 a total of almost 400 casualties in the 'With Policy' Scenario and nearly 500 in the 'Without Policy' Scenario over the 'without package' scenario, including approximately 50 and 70 KSI casualties respectively. Similarly, over the 60-year appraisal period the package could save approximately 250 PIAs in the 'With Policy' Scenario and over 300 PIAs in the 'Without Policy' Scenario. It should be noted 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 to 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.

[Research by Cycling Scotland](#) suggests safety concerns are a significant barrier to the uptake of active travel<sup>lxvii</sup> and that [perceived safety is more influential on active travel behaviour than journey time reliability or speed](#)<sup>lxviii</sup>. Providing a direct and fully connected long distance active travel route in this package, which would aim to offer uninterrupted journeys between and within settlements with adequate provision at junctions and safe crossing points, could significantly 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](#)<sup>lxix</sup>.

The introduction of the public transport elements, including both rail and bus, as part of this package could encourage a mode shift to public transport, 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. This includes 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 improve 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 targeted safety improvements are identified.

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
-	-

This package aims to promote a shift to sustainable modes of travel which could see a reduction in road traffic, with positive effects in terms of noise and vibration within and around settlements. There may be a reduction in noise (from both engines and road-tyre interaction) and vibration from reduced vehicle use in the short term. 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. [Scotland's Noise Map](#)<sup>lxx</sup> illustrates that the A96 Trunk Road is a significant noise contributor in the area. This package does, however, have the potential to have localised minor negative effects within the vicinity of the railway and any associated rail freight facilities as a result of the increase in rail freight and an associated increase in noise and vibration. The significance of the effect would depend on the location of such facilities. The modal shift to sustainable modes of transport and away from the private car should help reduce vehicle noise and vibration along the A96 and within settlements. 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. Overall, in the operational phase, the modal shift to rail freight, sustainable modes of transport and away from the private car should result in positive effects in terms of noise and vibration through the reduction of vehicles on the A96.

This package has the potential to have positive effects on air quality. The inclusion of infrastructure interventions within settlements to promote walking and 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. Additionally, the creation of continuous high quality active travel connections could help reduce reliance on vehicles for travelling between settlements. There would also be a reduction in HGV traffic through a modal shift in freight to the rail network. 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 GHG emissions and thereby reduce overall air pollution.



Following the introduction of the package, total emissions of nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM) are predicted to decrease, under both the 'With Policy' and 'Without Policy' scenarios over a 60-year appraisal period. This is due to a decrease in traffic flows and emissions as a result of the potential interventions, which are anticipated to reduce congestion as users are encouraged to transfer to more sustainable modes and reduced emissions from low emission vehicles which would benefit from new alternative refuelling infrastructure along the A96 Trunk Road. The package would decrease GHG emissions over the 60-year appraisal period. There is a predicted decrease in NO<sub>x</sub> of two tonnes and three tonnes for PM of 2.5 microns or less (PM<sub>2.5</sub>) emissions in the 'With Policy' Scenario; and a decrease of 12 tonnes of NO<sub>x</sub> and four tonnes of PM<sub>2.5</sub> in the 'Without Policy' Scenario.

The physical works associated with implementing the package, including new active travel, road safety, electric corridor and public transport infrastructure have the potential to have an overall minor to moderate negative effect on the physical environment (i.e. the water environment, biodiversity and habitats, landscape, the historic environment, geology and soils, and agriculture 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 depend on the siting of the interventions. 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.

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 also 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 Battlefields Sites
- 236 Scheduled Monuments
- 2 Royal Society for the Protection of Birds Reserves.

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 SSSI
- 3 SAC
- 4 SPAs.

Whether there would be any impacts on these designations is not known at this stage. Moreover, the scale of the effects would be dependent on the design and location of the works and further environmental assessment would be undertaken as the designs progress. 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 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, 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 and between settlements, promoting walking, wheeling and cycling which could result in a positive impact on human health through improved physical fitness.

Overall, while this package is likely to have a lot of positive environmental effects, the likely negative effects from some of the physical works, particularly the continuous active travel links and targeted road safety improvements, would result in the package having a **minor negative** impact on the Environment criterion under both the 'With Policy' and 'Without Policy' scenarios. This is a cumulative effect, that considers the range (minor, moderate and major) of negative effects predicted for various environmental topics. However, the extent of impact would depend on the extent 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**

<b>'With Policy' Scenario</b>	<b>'Without Policy' Scenario</b>
-	-

The existing A96 Trunk Road is considered vulnerable to the effects of climate change, particularly in areas with a high risk of flooding or locations where current or future ground stability issues are known or anticipated.

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, current 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 are expected to become more frequent in the coming decades, exacerbating flooding and landslide incidents](#)<sup>lxxi</sup>. 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 active travel infrastructure and 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 '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 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 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 are estimated to be in the range of approximately 140,000 tonnes CO<sub>2</sub>e (tCO<sub>2</sub>e) to approximately 280,000 tCO<sub>2</sub>e.

Traffic flows and road user GHG emissions along the A96 are predicted to decrease as a result of this package, due to an increase in sustainable travel mode share, resulting in a net decrease in road user GHG emissions over the 60-year appraisal period. The estimated decrease in road user GHG emissions over the appraisal period between the 'with package' and 'without package' scenarios is approximately 2,100 tCO<sub>2</sub>e under the 'With Policy' Scenario and approximately 14,100 tCO<sub>2</sub>e under the 'Without Policy' Scenario. The Net Present Value of tCO<sub>2</sub>e of the package, calculated using the DfT GHG Workbook following the Transport Analysis Guidance (TAG) Unit A3 for the appraisal period, indicate an estimated net benefit under the 'With Policy' Scenario of approximately (+) <£0.5m and (+) £1m-£5m 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 although there is an estimated decrease in road user GHG emissions in the long term, these could be outweighed by GHG emissions

arising during the construction stage. Further assessment should take into consideration mitigation to reduce the GHG impact of construction activities.

**3. Health, Safety and Wellbeing**

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

Generally, [the PIA rate on the A96 is lower than the national average](#)<sup>lxxii</sup>; however, the PIA and KSI rate is significantly higher within the urban areas of Forres and Keith than the national average for equivalent trunk A-Roads in Scotland. 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. 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 measures for private users and freight that are implemented within the corridor, through a reduction in overall vehicle kilometres. However, modelling indicates the impact across the wider corridor of this package is very minor in terms of reducing overall vehicle kilometres, less than 1% in both scenarios in 2045.

Furthermore, evaluations of road schemes following the Scottish Trunk Road Infrastructure Project Evaluation (STRIFE) framework provide an illustration of the potential benefits, 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<sup>lxxiii</sup>.
- [A9 Ballinluig grade-separation](#) resulted in over a 90% reduction in accidents<sup>lxxiv</sup>.
- [A9 Helmsdale widening scheme](#) (including the provision of climbing lanes) resulted in a 60% reduction in accidents<sup>lxxv</sup>.
- [A76 Glenairlie overtaking scheme](#) resulted in a reduction in accidents of 75%<sup>lxxvi</sup>.

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 the 'With Policy' Scenario and (+) £15m-£20m in the 'Without Policy' Scenario. Most of the safety benefits come from the introduction of targeted road safety improvements. The analysis also indicates that over a 60-year appraisal period, the package is anticipated to save a total of almost 400 casualties in the 'With Policy' Scenario and nearly 500 in the 'Without Policy' Scenario over the 'without package' scenario, including approximately 50 and 70 KSI casualties respectively. Similarly, over the 60-year appraisal period the package could save approximately 250 PIAs in the 'With Policy' Scenario and over 300 PIAs in the 'Without Policy' Scenario. It should be noted 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.

Additionally, reducing vehicle trips with greater active travel trips and public transport use would contribute to fewer accidents on the network. A mode shift for freight to reduce the number of HGV trips would also contribute to this.

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 increased physical activity. The interventions would also improve public realm, allowing people to gather and socialise, with Public Health Scotland [linking the quality of public spaces to people's perceptions of attractiveness of an area, positively contributing towards their quality of life](#)<sup>lxxvii</sup>. Furthermore, public realm improvements such as the provision of street lighting can [prevent road traffic collisions and increase pedestrian activity through a reduction in the fear of crime](#)<sup>lxxviii</sup>.

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 health and economic impacts of walking and cycling on premature mortality and on exposure to air pollution. Outputs from the tool show that the measures implemented as part of this package could reduce premature deaths by 1.31 a year, which equates to a benefit of up to £30m-£40m over a 20-year appraisal period. The forecasts that these values are based on assume that all active travel measures are fully implemented to a high standard, and are well maintained on an ongoing basis.

Furthermore, improved pedestrian and cycling infrastructure in this package, including a segregated long distance active travel route together with other interventions in settlements to improve placemaking, can significantly 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](#)<sup>lxxix</sup> [and five](#)<sup>lxxx</sup> times higher when a pedestrian is hit by a car driving at 20mph, compared to 30mph. [Previous studies](#) also suggest that segregated cycle lanes, as would be the preferred intervention delivered in this package for rural sections between settlements along the A96 corridor, can lead to a lower risk of cyclist injury, reduced severity of accidents, as well as fewer accidents involving cyclists in general<sup>lxxxii</sup>. This would address safety concerns, which are a [significant barrier to the uptake of active travel](#)<sup>lxxxii</sup>, with 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<sup>lxxxiii</sup>](#). There could also be a slight beneficial impact on accidents if overall car use was reduced. Active travel infrastructure could also result in improvements of the personal security for vulnerable sections of the community through high quality design and an increase in natural surveillance.

The options within this package could result in 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 healthcare.

Modelling undertaken using NaPTAT indicates a public transport journey time reduction to the nearest emergency department hospital in some settlements across the study area that rely on the rail network. An example would be Huntly, where a journey time reduction of up to six minutes to the nearest emergency department hospital is anticipated in the 'with package' assessment compared to the with the package in place.

Only considering journey times to these largest emergency department hospitals in the region, found in Aberdeen and Inverness, where more facilities and specialist services are available, the NaPTAT modelling indicates that public transport journey times would be reduced from Elgin to Raigmore Hospital located in Inverness. This journey time reduction would be approximately six minutes from most of the town, though could be up to 14 minutes from parts of New Elgin (to the south). This is shown by the map in Figure A.4 in Annex A. NaPTAT Maps.

Enhancements to the active travel network to provide direct routes to public transport interchange points and stations would also benefit accessibility to key health and wellbeing services.

The A96 corridor is identified to have a PIA rate lower than the national average; however, the KSI rate on some rural sections is higher than the national average. Through increasing the overall availability of alternative refuelling assets across the region and expanding coverage, the package should reduce the required distance to reach these assets and therefore the overall number of vehicle kilometres travelled. This could help contribute towards reducing the overall frequency of collisions and their associated casualties; however, this is likely to be minimal.

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 or rail freight terminals. The long distance active travel connection is also likely to remove greenspace and replace it with active travel infrastructure, including potential lighting and signage. 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**

<b>'With Policy' Scenario</b>	<b>'Without Policy' Scenario</b>
+	+

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 would reduce both the time lost due to congestion and delay experienced by business vehicles by less than 1% in both the 'With Policy' and 'Without Policy' scenarios, in 2045.

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 analysis indicates that the implementation of this package is likely to result in user benefits, with journey time savings for public transport users and health benefits associated with increased levels of physical activity being the main sources of benefits. 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. However other benefits such as public transport benefits are greater under the 'With Policy' Scenario due to the higher volumes of rail passengers.

Minor improvements in transport based GHG emissions are forecast as a result of particular interventions included in this package, which includes the Linespeed, Passenger and Freight Capacity improvements on the Aberdeen to Inverness Rail Line, as well as Active Communities and Active Connections. These interventions would encourage mode shift from private car to more sustainable modes of transport (public transport and active travel) for both short and longer distance journeys in particular, leading to a reduction in road user GHG emissions. There is also a minor reduction in vehicle kilometres of less than 1% in 2045 for both the 'With Policy' and 'Without Policy' scenarios as a result of the interventions modelled under the package, which would further contribute to the reduction of road user GHG emissions.

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.

The core present value of benefits, which included the benefits associated with Transport Economic Efficiencies (TEE), changes in GHG and accident analysis are forecast to be (+) £60m-£70m in both the 'With Policy' and 'Without Policy' scenarios. Public transport travel time improvements are the main contributor to the overall present value of benefits, worth approximately 75% of the total benefits in both the 'With Policy' and 'Without Policy' scenarios. 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 as a result of the interventions included as part of Active Communities and

Active Connections are forecast to reduce the economic impact of premature deaths by approximately £30m-£40m 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 estimation of the economic impact on three areas; agglomeration, labour supply and market power. The WEIs for this package are considered to be negligible due to the scale, location and likely population affected by the individual options within the package itself. 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 improvements. 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 also provide reliability and resilience benefits to freight movements and other road users, by reducing the impact of accidents on the network, helping to improve confidence in the trunk road network. Diversions can be lengthy, up to 65km for accidents on the A96 at Huntly, and expensive to businesses due to additional time and fuel costs. Reducing accidents 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. 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<sup>lxxxiv</sup>, highlighting the importance of the road for freight and the wider economy. 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. [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<sup>lxxxv</sup>. 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, additional passing loops and provision of freight terminals. 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.

Additionally, rail terminals can act as a catalyst for additional private sector investment in warehousing and other related industries, leading to industrial agglomerations. Recent examples include investments at [Mossend International Railfreight Park](#)<sup>lxxxvi</sup> and [Port of Grangemouth](#)<sup>lxxxvii</sup> (operated by Forth Ports) and [Highland Spring at Blackford](#)<sup>lxxxviii</sup>. Benefits



associated with this element apply to most sectors of the economy with consumer goods, manufacturing, building and construction and forestry expected to be particularly strong.

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 A96 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.

Tourism is also a key industry within the Inverness to Aberdeen corridor, with significant natural and industrial tourism assets, including the Cairngorms National Park and Royal Deeside. Provision of a long distance and segregated active travel route could allow the region to build upon the opportunity of cycling and walking tourism. [Moray Council](#) has noted the value of cycling tourism in Scotland is estimated to be between £241 million and £362 million per year, and a cumulative annual contribution to Gross Value Added (GVA) of £129m<sup>lxxxix</sup>, indicating the economic potential in this industry that could be realised in the region.

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](#)<sup>xc</sup>. Well-designed active travel infrastructure can improve economic performance of local retail centres, with typical [increases in footfall of 20-30%](#)<sup>xci</sup>, and can facilitate branding initiatives by [raising the profile of towns and cities among consumers and businesses](#)<sup>xcii</sup>. Evidence from active travel schemes which link communities elsewhere in the UK have also show a significant increase in commuters travelling actively, highlighting the potential benefit of connecting communities with high quality active travel infrastructure has on sustainable access to labour markets.

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 may have lower operating costs due to the reduced dependency on fossil fuels.

Overall, it is expected that this package would have a **minor positive** impact on the Economy criterion 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 opportunities and healthcare facilities.

The active travel interventions within this package would improve the active travel network coverage within and between local communities along the corridor on a new segregated long distance active travel route. 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.

Improved safety measures 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 railway line itself to improve speed and capacity alongside freight terminals may contribute to a reduction in harmful transport emissions and improved local air quality. This would benefit public health, particularly for vulnerable groups such as children, disabled people, older people and pregnant women. However, new rail terminals could also lead to increased traffic in the immediate vicinity and the impact on protected characteristic groups would be considered when deciding upon exact locations.

Modelling undertaken using NaPTAT suggests this package would improve access by public transport to key destinations in the study area such as education, healthcare and employment. 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 higher education sites. It is anticipated that an additional 6,500 people aged 16 and over in the study area would be able to access the nearest site within a 60 minute public transport journey time compared to the 'without package' assessment. Included within this group are approximately 700 young people aged 16-24, and 850 people across all age groups with long term health problems or disability, whose day-to-day activities are limited, and whom may be more reliant on public transport for accessing education.

Public transport journey time improvements to the nearest higher education site would be found in rural settlements with access to a rail station along the A96 corridor, including:

- Inch, where 200 young people aged 16-24 would benefit from a journey time reduction of eight minutes.
- Huntly, where 450 young people aged 16-24 would benefit from a journey time reduction of two minutes.

Many of the anticipated benefits from the package would also be reflected in the public transport journey time reduction to Aberdeen, Inverness 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 seen 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 16–64 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.

However, this package does not improve the bus network, a key mode for many who do not have access to a car for longer distance travel and is seen as more affordable than rail. As such, the provision of rail improvements over bus could negatively impact some user groups, including those in economic deprivation and who suffer from transport poverty. Those with mobility impairments or young children who cannot, or choose not to, travel longer distances by active travel, such as between settlements along the A96 Trunk Road, are also unlikely to see any benefits.

This package is unlikely to impact on comparative geographical access, other than the provision of long distance active travel routes, which would provide access to settlements from the rural areas along the A96, although only by active modes which is likely to be unattractive to some. Improving public transport interchange could provide some benefits to those in more rural areas if they have access to a car or an existing public transport service particularly when combined with the rail network improvements.

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 **minor 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.

The topography surrounding the A96 corridor may also make it difficult to develop active connections that satisfy the vertical geometry design standards and permissible gradients set out in [Cycling by Design](#)<sup>xciii</sup> and [Roads for All: A Good Practice Guide for Roads](#)<sup>xciv</sup>. Due to the active connections interventions expected to interface between trunk and local roads, extensive discussions would likely be required since there is no precedent already in place for this scale of cross-ownership intervention.

It is noted that further investigation of the potential to raise the linespeed on the rail line between Keith and Inch 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 anticipated 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.

For the active travel connection between settlements, the cost of different sections of the route would vary depending on locational constraints and therefore a more detailed review of each section would be required to determine the full cost impact.

The cost to implement active travel improvements within communities is dependent on the nature and location of interventions and facilities. Individually the costs are not anticipated to be excessive and would likely comprise relatively small scale improvements brought together over a period of time.

Costs associated with targeted road safety improvements would be primarily dependent upon the scale, complexity and location of any interventions. More significant 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.

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.

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.

Delivery of rail freight terminals is likely to require a sizable amount of funding to facilitate the land assembly and technical work required to facilitate delivery, in addition to maintaining and operating each site until it is able to recoup initial costs. There is also the potential need to compensate infrastructure providers to access the wider rail network in the first instance. Depending on the overall scale of each site, the potential increase in local road trips as a result of vehicular movements to/from the site, of which a large proportion could be HGVs, may also require revenue funding to enhance existing transport infrastructure and mitigate impacts. Both the private sector facing element and recognition of the commercial activities enabled through delivery of rail freight terminals could potentially generate significant revenues, which over the long term, are likely to exceed the initial investment required.

Some other aspects of the package are also likely to create or increase revenue. Alternative fuelling stations and improvement of public transport interchange hubs, along with rail freight terminals provide an opportunity to recuperate capital costs and cover operation and maintenance costs. However, it is still anticipated that operation and maintenance would require revenue funding for some 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 as an alternative to car travel. This package would see direct benefits to many across the corridor, noting the long travel distances across the region for access to the likes of Aberdeen, Elgin and Inverness.

Active travel improvements are likely to receive a reasonable level of support from the public. Those who travel by active travel over longer distances are highly likely to be in favour of the infrastructure improvements, especially where routes are made safer as this was the top suggestion for people to use walking and wheeling (33%) and cycling (40%) more in the A96 Corridor Review public consultation survey. Just over one fifth of respondents said better interlinking routes between communities would make them cycle (23%) or walk and wheel (23%) more. However, only 16% said they would cycle more if there were more long distance routes, and 14% of people said this would make them walk or wheel more. Therefore, the Active Communities measures of this package, aimed at providing benefits for safety and improving routes to key destinations and interchange points, is an important aspect of this package to gather public support from those who do not travel as far by active modes.

Real and perceived safety concerns are also evident on the corridor, and the inclusion of targeted road safety improvements 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 an option to specifically target this issue.

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 suggested in this 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.

Rail freight improvements would also be expected to generate support from the public, due to the potential reduction in the number of goods vehicles on the road network. A reduction in HGVs on the A96 Trunk Road is likely to be well supported by the public, as the A96 Corridor Review public consultation survey found that a significant number of respondents were either dissatisfied or very dissatisfied with journey time reliability (75%), length of journey times (76%) and the level of traffic congestion (79%), all of which would likely see improvements if a significant amount of HGV traffic was removed from the road. It is anticipated that local businesses and industries would also accept rail improvements, including freight terminals to improve their choices for moving goods and enhancing their local economy.

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 one of 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 more of a priority to car owners in the near future.

Overall, public acceptability is anticipated to be mixed, with some groups supporting the package and other disagreeing with the focus and scale of 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](#)<sup>xv</sup>.

#### 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.

NaPTAT indicates the type of destination with the largest change in population accessibility, as a result of the package, would be higher education, whereby it is anticipated that an additional 6,500 people aged 16 and over would be able to access the nearest site within a 60 minute public transport journey time. This includes:

- 700 young people aged 16-24.
- 3,300 who are female.
- 200 people from non-white ethnic groups.
- 850 people across all age groups with a long-term health problem or disability whose day-to-day activities are limited. Inverurie and Kemnay in particular would benefit from the improved public transport accessibility.

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.

Journey time reductions to the nearest higher education site would be anticipated for rural settlements within Aberdeenshire, including Insch and Huntly with a journey time reduction of eight and two minutes, respectively.

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 people 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.

An uptake in active travel may additionally improve physical health and mental wellbeing outcomes and is also likely to lead to air quality improvements if the uptake is matched by a reduction in private vehicle use and traffic congestion. Air quality modelling forecasts show that as a result of reduced traffic flows as a result of mode shift, NO<sub>x</sub> and PM<sub>2.5</sub> emissions are predicted to decrease over the 60-year appraisal period across the 'With Policy' and 'Without Policy' scenarios. Improved health outcomes as a result of better air quality are of particular benefit to those who are more vulnerable to air pollution, including children, older people and disabled people.

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.

The provision and improvement of rail freight terminals provides a minor positive impact to individuals in terms of equalities. Encouraging modal shift from road freight to rail may contribute to a reduction in harmful transport emissions and improved local air quality. This would benefit public health, particularly for vulnerable groups such as children, disabled people, older people and pregnant women. However, new rail freight terminals could also lead to increased traffic within their vicinity and the impact on protected characteristic groups should be considered when siting.

Construction activities associated with elements of this package that require new infrastructure, such as active connections, the rail linespeed, passenger and freight capacity enhancements and targeted road safety improvements, may result in negative impacts for local communities. The construction of this infrastructure may adversely impact on groups who are more vulnerable to noise, vibration, and air quality such as children, older people, disabled people, and pregnant women. 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 tonnes CO<sub>2</sub>e (tCO<sub>2</sub>e) and 280,000 tCO<sub>2</sub>e.

The extent to which groups with protected characteristics would benefit from the measures in this package would depend on the extent to which all interventions within this package can be adopted, as it is noted that this would depend on local circumstances within each key community. In addition, the extent of benefit would depend on the location and routing of active travel networks and facilities, their proximity to local services and the ability for people to access the network. As this package does not remove through traffic from communities, the potential benefits resulting from active travel interventions may be more difficult to fully realise.

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.

**3. Child Rights and Wellbeing Impact Assessment (CRWIA)**

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

Modelling undertaken using NaPTAT indicates that this package would improve public transport connectivity to higher education for younger aged groups in the study area, and the consequential effects of improved access to services for the whole community (such as parent and carer access to employment).

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

- An additional 700 young people aged 16-24 would be able to access their nearest higher education site within a 60 minute public transport journey time.

These accessibility improvements would be linked to the rail linespeed improvements from the package, combined with interchange enhancements, which would reduce the journey to the cities where higher education sites are largely located.

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

- Inch, with a reduction of approximately eight minutes.
- Kintore, with a reduction of approximately four minutes.
- Huntly, with a reduction of approximately two minutes.

Air quality modelling forecasts that this package would result in improved air quality over the 60-year appraisal period as a result of mode shift, which should contribute towards a reduction in traffic volumes. This would be of particular benefit to children as they are more vulnerable to the adverse health effects of traffic related 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.

The provision of, and improvements to, rail freight terminals are positive for children as they are particularly vulnerable to the effects of poor air quality. Transferring road freight to rail can contribute to a reduction in harmful NOx emissions, which would benefit this group. By reducing the volume of road traffic, safety could also be improved which would benefit children who are more vulnerable to fear of road danger. However, it should be noted that new rail freight terminals could lead to increased localised traffic, which could negatively impact air quality and road safety for children depending on where the rail terminals are located.

The extent to which this package would improve outcomes for children would depend on the extent that the interventions included within this package are adopted (especially in regard to the reallocation of road space and other safety measures), the location of the interventions, and proximity to local services. As this package does not remove through traffic from communities, the potential benefits resulting from active travel interventions may be more difficult to fully realise.

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.

**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 employment and education sites, for socio-economically disadvantaged groups across the region. 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](#)<sup>xcvi</sup>, the beneficial impacts associated with public transport connectivity are likely to 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. An example of these improvements would be:

- Inverurie, where it is anticipated a public transport journey time reduction of between six to seven minutes to the nearest education site would be observed across most of the town, benefitting 100 young people aged 16 to 24 who reside in areas where the gross household income is within the 20% lowest in the study area.

Further benefits in Aberdeenshire would be anticipated for access to existing jobs found in Aberdeen City. The package would enable on average an additional 2,900 existing jobs to be reached within 60 minutes using public transport from Aberdeenshire for people aged 16 to 64 who reside in areas where the gross household income is within the 20% lowest in the study area.

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 some low income households living in the area may have no alternative to car ownership despite financial constraints. Therefore, there could be benefits for those groups with regards to the provision of alternative options to private vehicle use and ownership. However, this would depend on public transport fares being affordable.

One of the alternative options expected to create benefits for socio-economically disadvantaged groups is an improved active travel environment. Including active travel measures in conjunction with safety measures, such as junction improvements, could aid the removal of barriers in communities through an improved sense of road safety and security for those walking, wheeling and cycling.

There is also the potential for a reduction in inequalities of health in disadvantaged and deprived communities through improved air quality at a local level. This is a result of an uptake in active travel being accompanied by reduced congestion and as a result of mode shift to more sustainable modes including public transport and rail services in particular, which could contribute towards a reduction in traffic volumes, as shown in traffic modelling outputs.

[Evidence shows that people from deprived neighbourhoods are more likely to be injured or killed as road users](#)<sup>xcvii</sup>. Therefore, improved safety of the trunk road network could benefit those from deprived areas. 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 on people from deprived areas.

Rail freight is a key component of the rail sector's contribution to Scotland's economy. The provision of rail freight terminals is expected to enhance economic growth and private sector investment, thereby creating employment opportunities and potentially reducing socioeconomic disadvantage.

The extent to which this package would reduce inequalities of outcome would depend on the extent that the interventions included within 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. As this package does not remove through traffic from communities, the potential benefits resulting from active travel interventions may be more difficult to fully realise.

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**

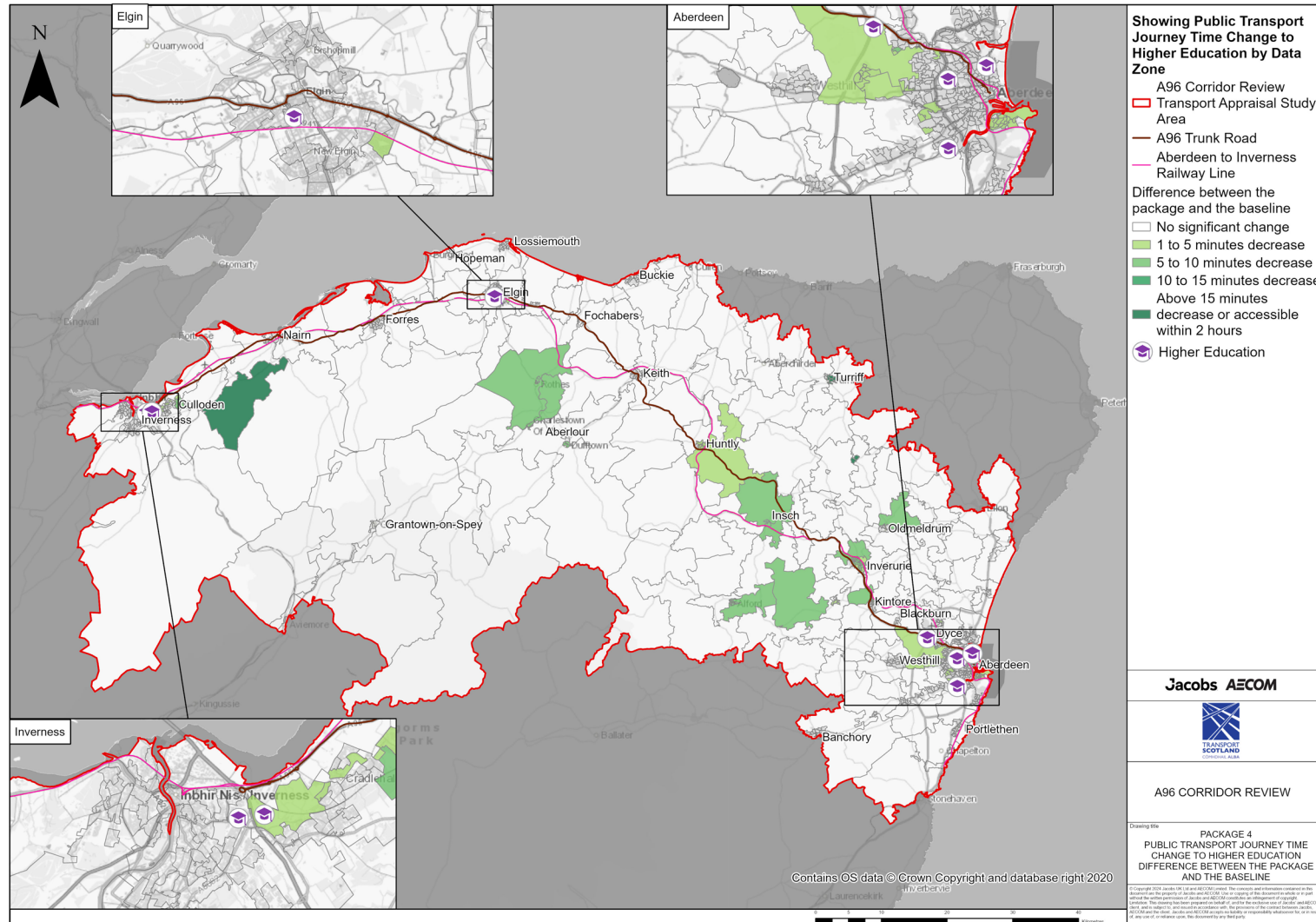


Figure A.1: Public Transport Journey Time Change to Nearest Higher Education Site Showing Difference Between 'With Package' and Baseline

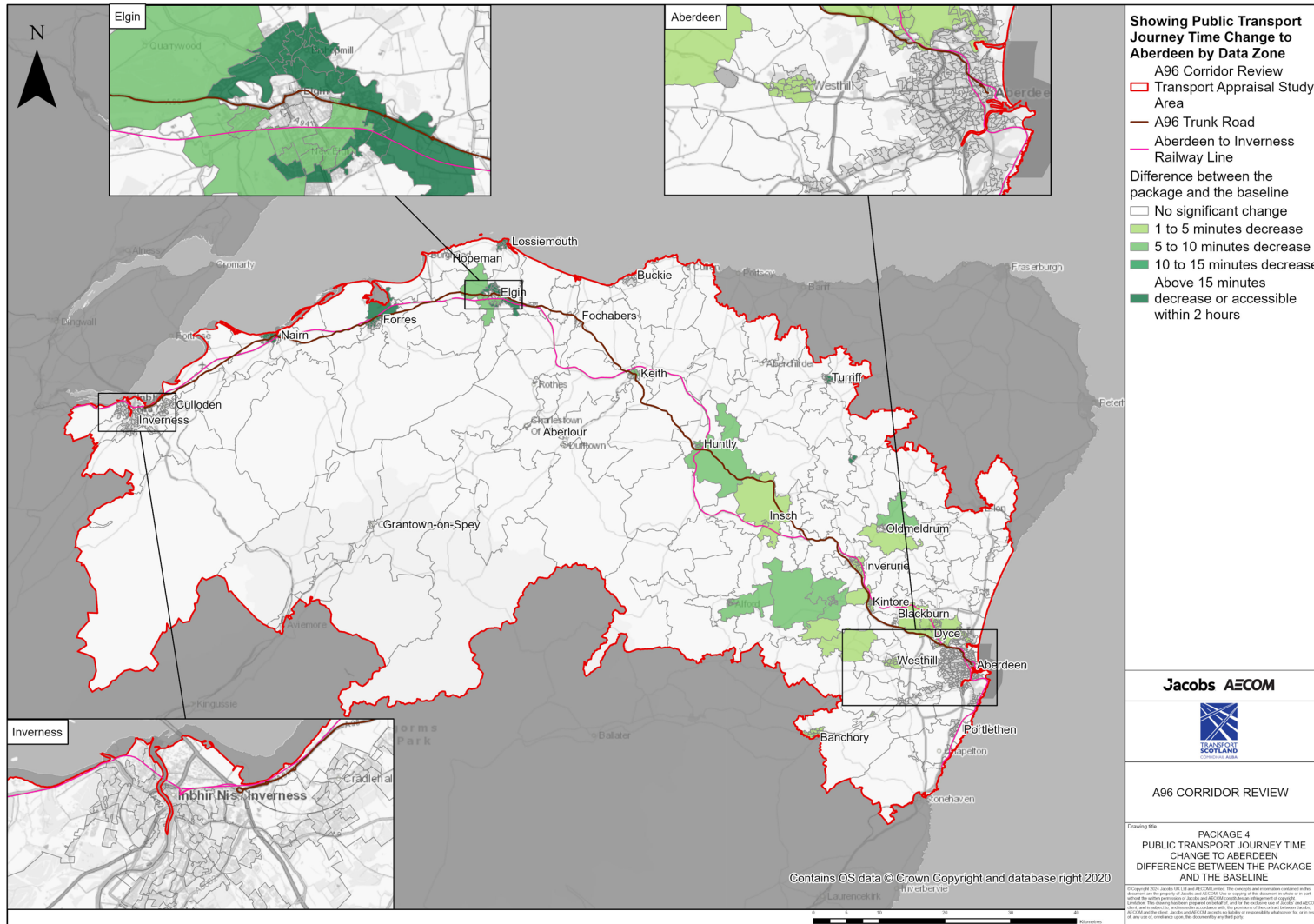


Figure A.2: Public Transport Journey Time Change to Aberdeen Showing Difference Between 'With Package' and Baseline

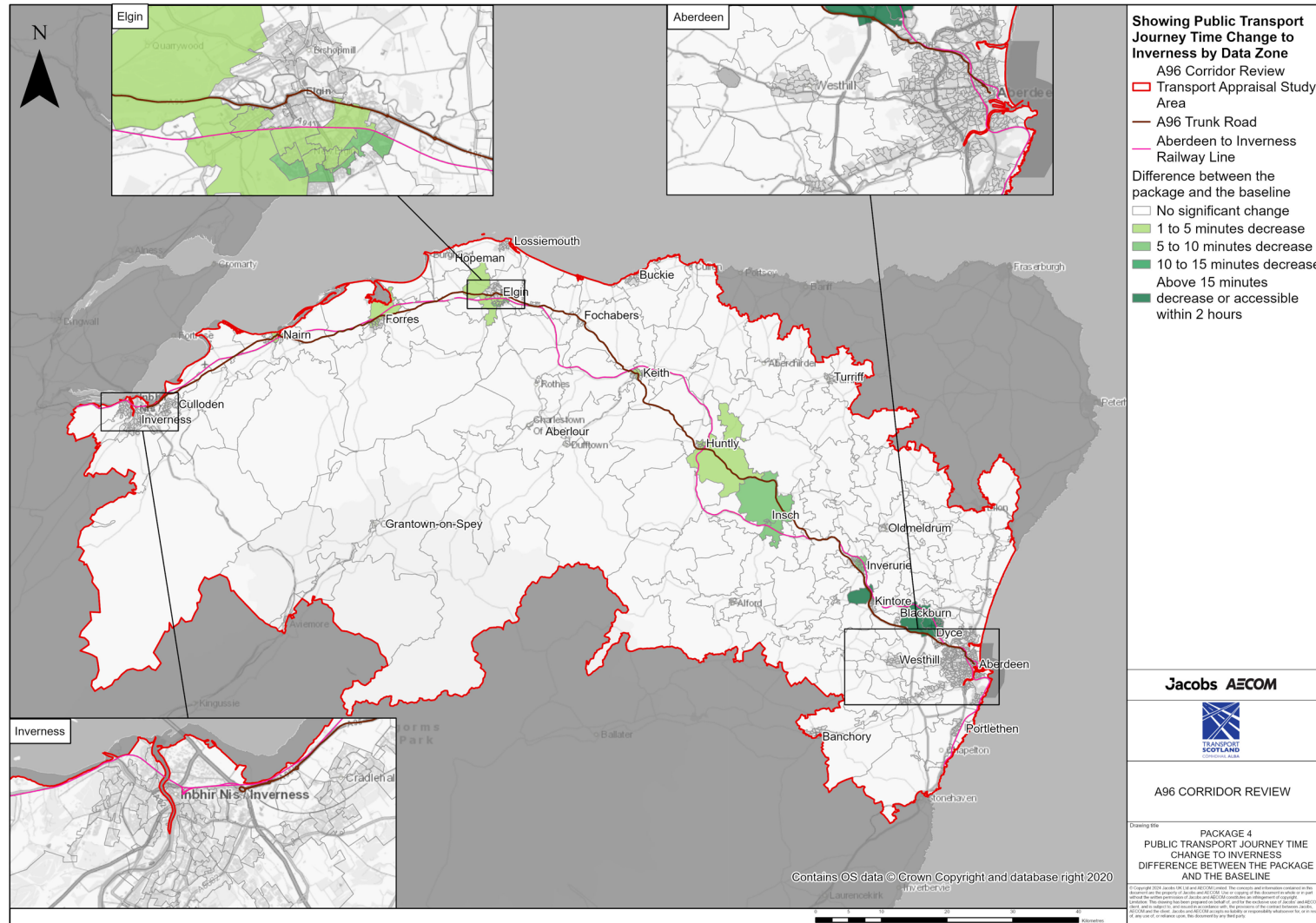


Figure A.3: Public Transport Journey Time Change to Inverness Showing Difference Between 'With Package' and Baseline



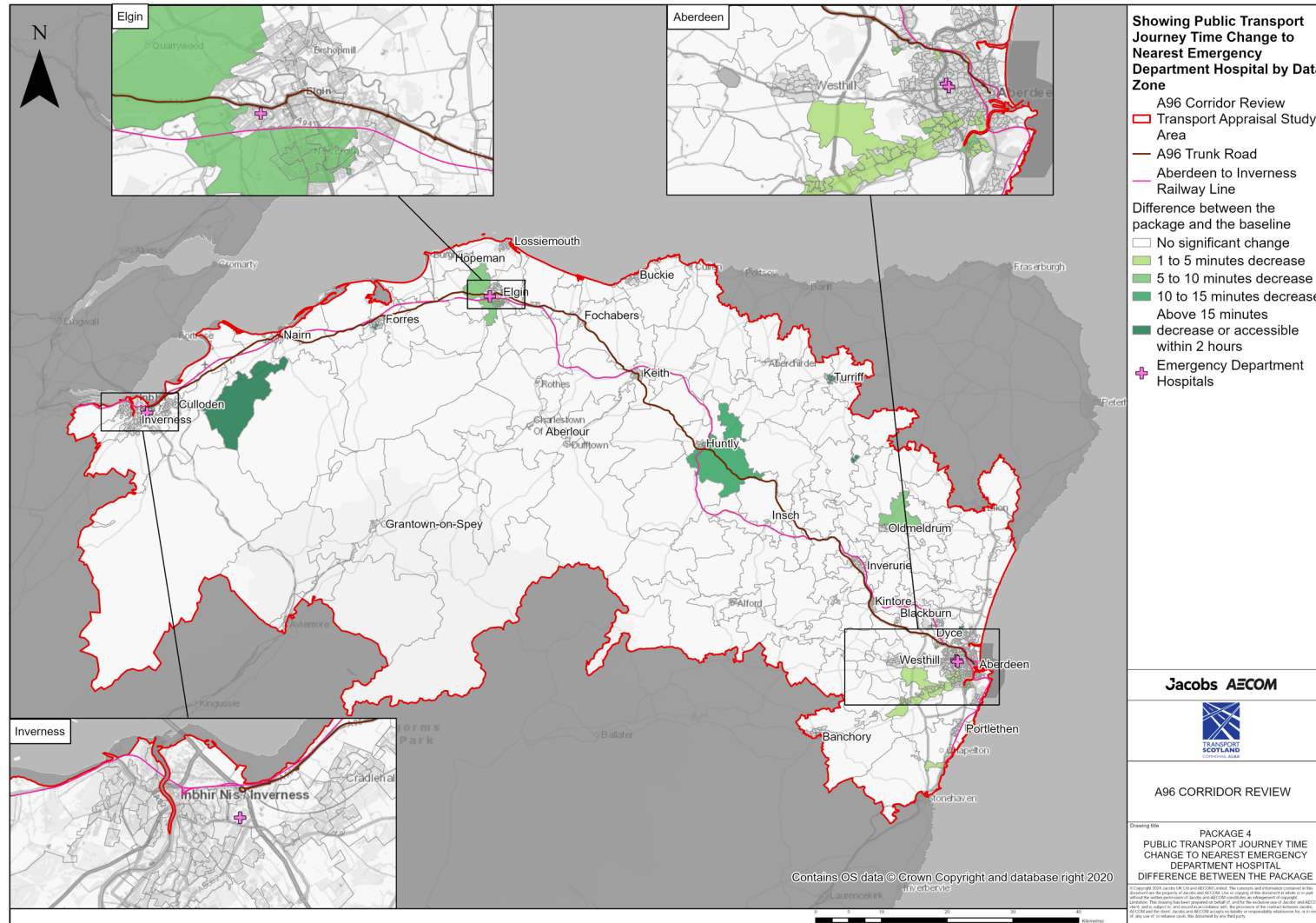


Figure A.4: Public Transport Journey Time Change to Nearest Emergency Department Hospital Showing Difference Between 'With Package' and Baseline

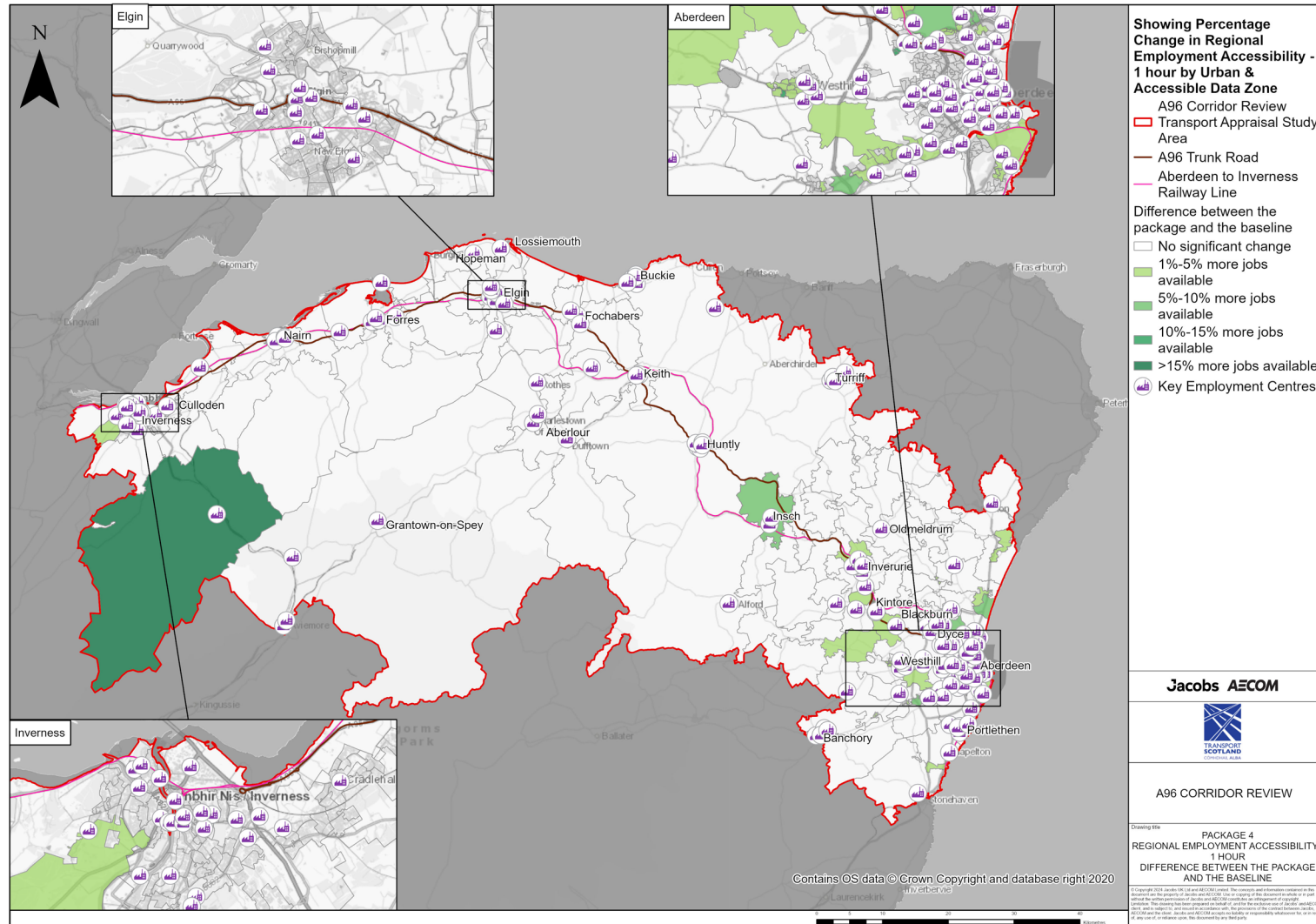


Figure A.5: Percentage Change to Key Regional Employment Centres Showing Difference Between 'With Package' and Baseline

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