Transport Scotland - Major Projects

A9 Dualling Programme

Outline Business Case

November 2023

Business Case Owner: [redacted]

Business Case Inception Date:

Business Case Version Control

Title	Version	Stage of Development of Programme	Date of Issue	Author(s)
Outline Business Case	1		November 2023	

Contents

Figures

Tables

1 Introduction

1.1 Investment Decision Making Processes

Transport Scotland is an Agency of the Scottish Government accountable to Parliament and the public through Scottish Ministers and focused on delivering the Scottish Government's vision for transport. Transport Scotland has clear investment decision and business case requirements in place, which apply to all major capital projects. As set out in Transport Scotland's Guidance on the Development of Business Cases[1], there are three main decision points before the construction phase of any project. At each of these three decision points, Scottish Ministers review and approve Business Case stages as follows:

- The **Strategic Business Case**: this provides the strategic context for the proposal. By approving the Strategic Business Case (SBC), Scottish Ministers give Transport Scotland the authority to invest in further developing project proposals.
- The **Outline Business Case**: this stage identifies the preferred option for getting the best value for the money available, affordability and feasibility of the project. The Outline Business Case (OBC) also includes details of the delivery strategy, the approval of which provides Transport Scotland with the authority to further invest in the development of the preferred option and to commence procurement.
- The **Full Business Case**: this provides the opportunity to review the Case for Investment, with approval of the Full Business Case (FBC) providing the basis for entering into a contract with a preferred supplier.

The Guidance supports the Scottish Government's objectives by providing a clear framework to assess evidence-based transport problems and opportunities. It does so by promoting robust, objective-led analysis that can be consistently applied in all transport appraisal contexts.

The A9 Dualling Programme OBC has been developed following Transport Scotland's Guidance on Business Cases and also aligns with best practice on Business Cases as outlined by HM Treasury and the Department for Transport.

1.2 A9 Dualling Programme Overview

At approximately 433km in length, the A9 is the fifth longest Trunk Road in the United Kingdom and the longest in Scotland, where it acts as the strategic North - South connection between the North and North-West regions and the Central Belt. The section of the A9 between Perth and Inverness is 179km long, of which a small proportion is of dual carriageway standard, and the remainder is single carriageway or wide single WS2+1 carriageway. The A9 Dualling Programme seeks to upgrade these existing single carriageway sections and deliver over 141km of new dual carriageway and is designed to deliver economic growth through improved road safety and reliable and quicker journey times, as well as better links to pedestrian, cycling and public transport facilities.

The preferred route option of the A9 Dualling Programme has taken shape over a considerable time period and is made up of eleven individual projects that span various extents of the A9 between Perth and Inverness. The lengths of each project and their current status are set out in Table 1 below.

[1] Guidance on the Development of Business Cases in Scotland, Transport Scotland – Finance, Corporate and Analytical Services, March 2016 https://www.transport.gov.scot/publication/guidance-on-the-development-of-business-cases-march-2016/

Table 1. A9 Dualling Programme Projects and their current status

Project	Length to be Dualled (km)	Current Status
A9 Luncarty to Pass of Birnam	9.5	Construction complete, open to use
A9 Pass of Birnam to Tay Crossing	8.4	In preparation for selection of preferred route option, statutory processes still to commence
A9 Tay Crossing to Ballinluig	8.2	Made Orders published, land still to be vested
A9 Pitlochry to Killiecrankie	6.4	Made Orders published, land still to be vested
A9 Killiecrankie to Glen Garry	22.0	Ministerial decision confirmed, Made Orders still to be published
A9 Glen Garry to Dalwhinnie	9.5	Made Orders Published, land still to be vested
A9 Dalwhinnie to Crubenmore	11.0	Made Orders Published, land still to be vested
A9 Crubenmore to Kincraig	16.5	Ministerial decision confirmed, Made Orders still to be published
A9 Kincraig to Dalraddy	7.5	Construction complete, open to use
A9 Dalraddy to Slochd	25.0	Ministerial decision confirmed, Made Orders still to be published
A9 Tomatin to Moy	9.6	Made Orders published, land vested, in procurement

Source: Transport Scotland

1.3 Business Case Overview

The Strategic Business Case for the A9 Dualling Programme was set out in the Strategic Transport Projects Review, published in 2008, and further information on the Case for Investment, comprising the then applicable Strategic and Socio-Economic Cases for the A9 Dualling Programme, was published in 2016.

This document sets out the Outline Business Case (OBC) the A9 Dualling Programme between Perth and Inverness and has been prepared to assist with decision making on the selection of the preferred approach to procurement of the eight sections of the A9 Dualling Programme which are not yet in preparation for procurement or completed construction.

This Outline Business Case follows the Five Case Model and comprises:

- **The Strategic Case** for the A9 Dualling Programme;
- **The Socio-Economic Case** for the A9 Dualling Programme;
- **The Commercial Case** for the options considered for procurement of the remaining eight sections of the A9 Dualling Programme, the Commercial Cases for the other three sections having been considered in Outline Business Cases for each individual project;
- **The Financial Case** for the options considered for procurement of the remaining eight sections of the A9 Dualling Programme, the Financial Cases for the other three sections having been considered in Outline Business Cases for each individual project; and
- **The Management Case** for the options considered for procurement of the remaining eight sections of the A9 Dualling Programme, the Management Cases for the other three sections having been considered in Outline Business Cases for each individual project.

Subject to decision making on the preferred approach for procurement of the remaining eight sections of the A9 Dualling Programme, at the appropriate time further Outline Business Cases will be prepared for each individual project or package of projects to assist with decision making on whether such individual projects or packages should commence procurement.

In a similar manner, at the appropriate time Full Business Cases will be prepared for each individual project or package of projects to assist with decision making on whether contract award should be made in respect of procurements of such individual projects or packages.

1.4 Procurement Options Overview

Two options for procurement of the remaining eight sections of the Programme were initially identified for consideration in this Outline Business Case:

- **D&B Option**: Delivery via a series of capitally funded D&B contracts, broadly similar to the approach adopted to date for the three projects that are either in preparation for procurement or have completed construction, with each project being procured as a stand-alone contract; and
- **MIM Option**: Delivery via a series of resource funded Design, Build, Finance and Operate (DBFO) Mutual Investment Model (MIM) contracts, similar to that used by the Welsh Government for the A465 Heads of the Valleys Sections 5 and 6 project, with groups of individual projects being bundled together into ‘packages’, reflecting the scale of contract preferred by this market sector.

Subsequently an additional **Hybrid Option** combining elements of the initial two options was developed for comparison with the initial options considered. The Hybrid Option entails delivery via the combination of two MIM contracts and three D&B contracts.

As noted above, once the preferred procurement route has been identified, at the appropriate time further consideration will be given to the most appropriate procurement process and an updated analysis will be set out in the Outline Business Cases prepared to assist with decision making when each project or package is ready to commence procurement.

2 The Strategic Case

2.1 Introduction

2.1.1 A9 Dualling Programme Overview

At approximately 433km in length, the A9 is the fifth longest Trunk Road in the United Kingdom and the longest In Scotland where it acts as the strategic North - South connection between the North and North West regions and the Central Belt. The A9 between Perth and Inverness is 179km long, of which a small proportion is of dual carriageway standard, and the remainder is single carriageway or wide single WS2+1 carriageway. The A9 Dualling Programme seeks to upgrade these single and wide single carriageway sections to dual carriageway and is designed to deliver economic growth through improved road safety and more reliable and reduced journey times, as well as better links to pedestrian, cycling and public transport facilities.

The development of the A9 Dualling Programme has taken shape over a considerable time period whereby this process and its associated key milestones and outputs relating to option development in particular are detailed further in the Project Development Process.

The A9 Dualling Programme is made up of eleven separate Projects which are set out in Table 2 below.

The core of the A9 Dualling Programme design is to deliver a transformational transport intervention that not only enhances a strategic asset of the Scottish and UK road networks, but also one that better serves local communities that live and work along the length of the corridor between Perth and Inverness and a programme of interventions that improve the overall perception of the route itself.

The aspiration to deliver a high-quality transport asset is demonstrated through the programme's design process which in addition to seeking to dual sections of current single carriageway has sought to significantly improve the safety performance through elimination of right turn access points directly off the A9 in addition to, where possible, the replacement of at-grade junctions with grade separated junctions.

This junction rationalisation strategy, in addition to safeguarding and enhancing connections for Non-Motorised Users (NMUs), also forms a key element of the design strategy to ensure that the A9 Dualling Programme provides noticeable betterment to the Core Path and National Cycle Route Networks.

Table 2. A9 Dualling Programme Projects

Project	Length to be Dualled (Km)
A9 Luncarty to Pass of Birnam	9.5
A9 Pass of Birnam to Tay Crossing	8.4
A9 Tay Crossing to Ballinluig	8.2
A9 Pitlochry to Killiecrankie	6.4
A9 Killiecrankie to Glen Garry	22.0
A9 Glen Garry to Dalwhinnie	9.5
A9 Dalwhinnie to Crubenmore	11.0
A9 Crubenmore to Kincraig	16.5
A9 Kincraig to Dalraddy	7.5
A9 Dalraddy to Slochd	25.0
A9 Tomatin to Moy	9.6

Source: Transport Scotland

The key elements of each Project that forms part of the A9 Dualling Programme are shown overleaf in Table 3.

Table 3. A9 Dualling Programme Constituent Project Details

Project	Project ID	Elements	Status
A9 Luncarty to Pass of Birnam[2]	P1	9.5km of new dual carriageway Junction improvements include the new Stanley/Tullybelton Junction and the significant upgrade of Bankfoot North and Bankfoot South Junctions. A number of new access roads and tracks have also been constructed to provide properties with safe access to the local road network and the new and improved grade separated junctions. Four new overbridges have been constructed to maintain local access across the A9. These are known as Pitlandie, Stanley/Tullybelton, Coltrannie and Gelly overbridges. The project also included the widening of one existing underbridge at Hunter's Lodge, which carries the A9 at Bankfoot North Junction, and a new side road bridge on the U32. The project also includes: • Two new northbound lay-bys and one new southbound lay-by • 4km of new and upgraded paths to encourage active travel for pedestrians, cyclists and equestrians, including a new link between Luncarty and Bankfoot	Orders were published in March 2014 with construction started in February 2019 and the new dual carriageway became operational in August 2021.
A9 Pass of Birnam to Tay Crossing[3]	P2	8.4km of new dual carriageway Online route, largely following the horizontal and vertical alignment of the existing A9 single carriageway with variations between the 4 shortlisted options Junctions at Murthly/Birnam, Dunkeld, The Hermitage and Dalguise; Layout and location varies between the 4 shortlisted options Direct access provision to Dunkeld & Birnam railway station varies between the 4 shortlisted options Provision of NMU facilities varies between the 4 shortlisted options	The Preferred Route Option has not yet been confirmed, following which the DMRB Stage 3 Assessment will be progressed to support commencement of statutory processes.

[2] A9 Luncarty to Pass of Birnam Environmental Statement, Transport Scotland, 2014, https://www.transport.gov.scot/publication/draft-orders-compulsory-purchase-order-and-environmental-statement-luncarty-to-pass-of-birnam-a9-dualling/
[3] A9 Pass of Birnam to Tay Crossing Identification of DMRB Stage 2 Whole Route Options, Transport Scotland, 2013, https://www.transport.gov.scot/media/45839/identification-of-dmrb-stage-2-whole-route-options-report-oct-2019-a9-dualling-pass-of-birnam-to-tay-crossing.pdf

Project	Project ID	Elements	Status
A9 Tay Crossing to Ballinluig[4]	P3	8.2km of new dual carriageway A new at grade roundabout at Dalguise. The provision of two new bridges over the River Garry referred to as the Essangal Underbridge near Aldclune and the River Garry Underbridge near Pitaldonich. The project also includes: • Through consultation with residents and landowners, four at-grade left in left-out accesses are to be provided as part of the proposed scheme • Three left-in left-out Junctions at the Dunkeld to Rotmell Road Junction, Guay South Junction and at the Guay to Kindallachan Side Road Junction	Orders were published in March 2021. Vesting of land still to be undertaken.
A9 Pitlochry to Killiecrankie[5]	P4	6.4km of new dual carriageway A new grade separated junction at the Pitlochry North Junction as well as significant enhancements to the existing Pitlochry South Junction. The provision of two new underbridges at the Tummel Crossing and at Clunie over Loch Faskally. Four at-grade left-in left-out junctions/accesses to be provided as part of the proposed scheme for local accesses.	Orders were published in March 2021. Vesting of land still to be undertaken.
A9 Killiecrankie to Glen Garry[6]	P5/06	22.0km of new dual carriageway Two new grade separated junctions at Aldclune and at Bruar/Calvine.	A Public Local inquiry was held in January 2020. Ministerial decision to make the Orders was received in November 2022. Orders are expected to be published in 2024.

[4] A9 Tay Crossing to Ballluig Environmental Statement, Transport Scotland, 2018, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-a9-tay-crossing-to-ballinluig/
[5] A9 Pitlochry to Killiecrankie Environmental Statement, Transport Scotland, 2017, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-pitlochry-to-killiecrankie-a9-dualling/
[6] A9 Killiecrankie to Glen Garry, Environmental Statement, Transport Scotland, 2017, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-killiecrankie-to-glen-garry-a9-dualling/

Project	Project ID	Elements	Status
A9 Glen Garry to Dalwhinnie[7]	P7	9.5km of new dual carriageway A new grade separated junction with an underbridge at Dalnaspidal. Four new northbound lay-bys and three southbound will also be delivered.	Orders were published in July 2021. Vesting of land still to be undertaken.
A9 Dalwhinnie to Crubenmore[8]	P8	11.0km of new dual carriageway. A new grade separated junction with an underbridge at Dalwhinnie and improved access for Cuaich linked by a local underpass. A new link road between the new Dalwhinnie Junction and Dalwhinnie, crossing the River Truim on a new bridge which will connect with a new junction on the A889. A bus turning circle will be provided on the link road, which will bring the bus stop for Dalwhinnie some 1km closer to the village than the existing bus stop. Three new northbound lay-bys and four southbound lay-bys The existing temporary powerline access track at Drumochter Lodge, running north for 1.8km, will be made permanent to allow access to the Drumochter Estate.	Orders were published in July 2021. Vesting of land still to be undertaken.
A9 Crubenmore to Kincraig[9]	P9	16.5km of new dual carriageway. Two new grade separated junctions at Newtonmore and Kingussie. Near Kingussie, the proposals include a localised section of offline widening, taking the Spey bridge crossing and embankment offline to the east of the existing structure. New junctions onto the A9 with access tracks will be provided at Glen Truim / Catlodge Road junction, Raila-Nuirde road and at Balavil. Five new northbound and southbound lay-bys A new NMU route from Kingussie to Kincraig, forming part of the Kingussie to Aviemore Route	A Public Local Inquiry was held in March 2021. Ministerial decision to make the Orders was received in January 2022. Orders are expected to be published in 2024.

[7] A9 Glen Garry to Dalwhinnie, Environmental Statement, Transport Scotland, 2017, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-glen-garry-to-dalwhinnie-a9-dualling/
[8] A9 Dalwhinnie to Crubenmore Environmental Statement, Transport Scotland, 2017, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-dalwhinnie-to-crubenmore-a9-dualling/
[9] A9 Crubenmore to Kincraig, Environmental Statement, Transport Scotland, 2018, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-crubenmore-to-kincraig-a9-dualling/

Project	Project ID	Elements	Status
A9 Kincraig to Dalraddy[10]	P10	7.5km of new dual carriageway Improvements to the existing Leault Farm road junction to allow appropriate access to Dunachton Estate as well as providing a new access to Easter Delfour to provide access to Alvie and Dalraddy estates. Alternative access will be provided via the provision of upgraded underpasses to the B9152 local road. The project also includes: • Removal of eight existing lay-bys with the provision of two new southbound lay-bys • A new NMU route adjacent to the northbound carriageway • A drainage scheme developed in accordance with Sustainable Drainage Systems (SUDS) and Scottish Environment Protection Agency (SEPA) guidance	Orders were published in September 2014 with construction started in September 2015 and the new dual carriageway became operational in September 2017.
A9 Dalraddy to Slochd[11]	P11	25.0km of new dual carriageway New junctions at Craigeallachie National Nature Reserve, Slochd and at Lethendry. Two new bridges will be delivered at Slochd Beag and at the River Dulnain Crossing in Carrbridge for the new southbound carriageways. Other structures, such as retaining walls and culverts have also been constructed. Realignment of National Cycle Route 7 through Slochd onto the soutbound side of the A9 and the existing segregated NMU route from Kincraig to Dalraddy will be extended north to Aviemore Six new northbound lay-bys and five southbound lay-bys	Ministerial decision to make the Orders was received in November 2021. Orders are expected to be published in 2024.

[10] A9 Kincraig to Dalraddy, Environmental Statement, Transport Scotland, 2013, https://www.transport.gov.scot/publication/environmental-impact-assessment-kincraig-to-dalraddy-a9-dualling/
[11] A9 Dalraddy to Slochd, Environmental Statement, Transport Scotland, 2018, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-dalraddy-to-slochd-a9-dualling/

Project	Project ID	Elements	Status
A9 Tomatin to Moy[12]	P12	9.6km of new dual carriageway. New junctions at Tomatin South, Lynebeg and at Forestry Road. A new single track link road will run parallel with the A9 from the new Tomatin grade separated junction in the south to the existing B9154 to the north of Dalmagarry Farm to maintain local accesses. The project also includes: • Two new bus turning facilities at south of Clune Road junction and at the Tomatin grade separated junction to allow local and intercity services to exit/egress the A9. Two new bus lay-bys are to be delivered on the B9154 at the Moy and Lynebeg Junctions. • Realignment of National Cycle Route 7 under the A9 at Tomatin via a new underpass. Replacement of existing footbridge at Tomatin Distillery with a new footpath to connect the site with the new Tomatin junction. • A new rail bridge over the Highland Main Line railway will be provided at Moy and a replacement of the rail arch at Lynebeg to facilitate access to the A9 from Moy.	Orders were published in January 2021. No award was made for a procurement which commenced in March 2021, and a new procurement commenced in September 2023. Contract award from the new procurement is expected in early Summer 2024.

[12] A9 Tomatin to Moy, Environmental Statement, Transport Scotland, 2018, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-tomatin-to-moy-a9-dualling/

2.1.2 Phasing of the A9 Dualling Programme

As highlighted in Table 3, each Project that forms the wider A9 Dualling Programme is at a varying stage of maturity. Throughout the development of the A9 Dualling Programme, consideration has been applied to whether any Projects could be delivered earlier than envisioned to capitalise upon their maturity and deliver transformational change over a shorter time scale in some locations.

Notwithstanding the individual status of each Project, for the modelling purposes for this Strategic Case, and for the Socio-Economic Case, of this OBC the construction phasing schedule for the A9 Dualling Programme and each constituent element is shown in Figure 1, which is based on the MIM Option described in Section 1.4 and indicates that the A9 between Perth and Inverness is expected to be fully updated to Category 7A All Purpose Dual Carriageway (renamed D2APc - Dual 2 lane All-purpose road – sub-category c in DMRB March 2020 update[13]) and open to traffic by the end of 2033.

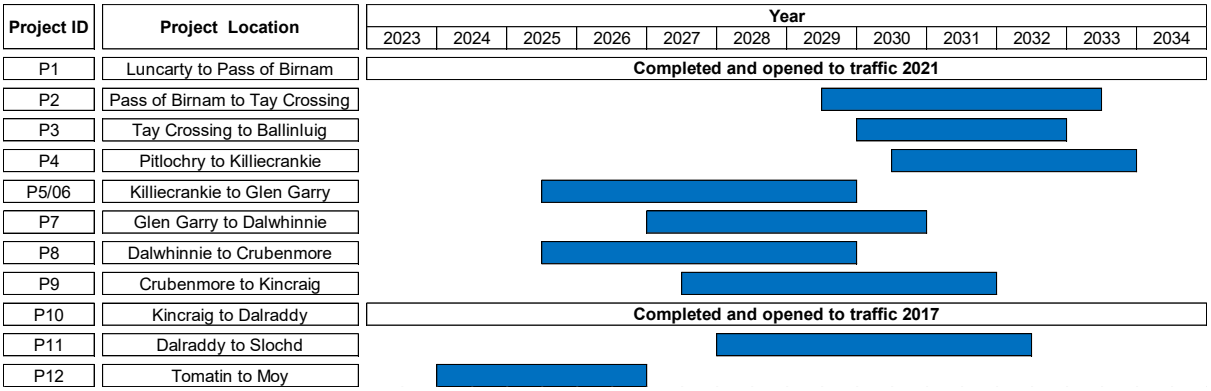

Figure 1. A9 Dualling Programme Construction Phasing Schedule for the modelling purposes of the Strategic Case, and the Socio-Econmoic Case, of this OBC

Source: Transport Scotland

[13] CD 109 - Highway link design, DMRB, 2020, https://www.standardsforhighways.co.uk/dmrb/search/c27c55b7-2dfc-4597-923a-4d1b4bd6c9fa

2.1.3 Strategic Case Overview

This chapter presents the Strategic Case stage of the OBC for the A9 Dualling Programme between Perth and Inverness. The Strategic Case forms the first component of the wider OBC suite.

The **Strategic Case** summarises the findings of the SBC and revisits the strategic context of the scheme, including the rationale for intervention as identified at the SBC stage. It also demonstrates how the preferred option will satisfy the objectives of the scheme as well as the overall objectives of the Scottish Government. The Strategic Case also summarises both the existing route arrangements and the potential changes as a result of the preferred option. Additionally, it identifies the key stakeholders, constraints, dependencies and strategic risks that are associated with the project and outlines how the realisation of the scheme benefits will be measured.

This Strategic Case builds upon the outcomes of the Strategic Transport Projects Review (STPR) which recommended the A9 is brought up to a continuous standard of dual carriageway between Perth and Inverness[14] and forms the SBC for the A9 Dualling Programme. This Strategic Case is also informed by the A9 Dualling Case for Investment published in 2016[15]. Furthermore, the Strategic Case has been developed considering none of the A9 Dualling Projects have been materialised, even those that have already been constructed.

2.1.4 Reporting Structure

The sections below outline how the key evidence relating to the Strategic Case for the A9 Dualling Programme has been structured in this report. This includes:

- **Section 2.2** details the context of the A9 Dualling Programme in relation to identified Plans, Strategies and Policies of relevance at a National, Regional and Local level and how they align with the A9 Dualling Programme;
- **Section 2.3** highlights the key identified Spatial Planning Drivers for Growth both along and across the wider region of the A9 Dualling Programme;
- **Section 2.4** sets out the identified problems, opportunities and challenges for the A9 Dualling Programme from a Socio-Economic, Environmental and Network Performance perspective in addition to highlighting the major outcomes of stakeholder and community engagement activities undertaken across the development lifecycle of the A9 Dualling Programme;
- **Section 2.5** provides an overview of the projected impacts of the A9 Dualling Programme not coming forward, particularly from a Network Performance perspective;
- **Section 2.6** sets out the Objectives of the A9 Dualling Programme;
- **Section 2.7** summarises the key processes and milestones of the development process of the A9 Dualling Programme and its constituent Projects;
- **Section 2.8** presents a qualitative assessment of the A9 Dualling Programme against the Programme Objectives in the context of the contents presented within the Strategic Case; and
- **Section 2.9** provides a summary of the Strategic Case of the A9 Dualling Programme.

[14] Strategic Transport Projects Review, Transport Scotland, 2016, https://www.transport.gov.scot/our-approach/strategy/strategic-transport-projects-review/
[15] A9 Dualling Case for Investment, Transport Scotland, 2016, https://www.transport.gov.scot/media/6727/a9-dualling-programme-case-for-investment-main-report-september-2016.pdf

2.2 Business Strategy

2.2.1 Introduction

In accordance with the Scottish Government's Guidance on Business Cases, the Strategic Case demonstrates how the objectives and visions of the Scottish Government are satisfied. The scale and strategic importance of the A9 Dualling Programme also requires consideration of relevant National, Regional and Local Policies and Strategies.

2.2.2 Strategic Transport Projects Review (STPR)

In addition to key Policies and Strategies at a Local, Regional and National level which are further detailed within this section, a key enabling mechanism for the A9 Dualling Programme is the 2008 Strategic Transport Projects Review (STPR) process. STPR was completed using the Scottish Transport Appraisal Guidance (STAG) and was a comprehensive, multi-modal assessment of the transport network across Scotland, taking into account current and future problems and opportunities.

In reviewing network performance across Perth to Inverness Corridor, the STPR process identified that the corridor performs three key roles:

- It provides a strategic link connecting Inverness and the Highlands to Perth and onwards to the Central Belt;
- It serves settlements within the corridor providing access to local services, employment and tourism; and
- It caters for commuting to the nodes at either end of the corridor.

In relation to the Perth to Inverness corridor, this led to the development of the following list of multi-modal options:

- A9 Upgrading;
- Rail Enhancements on the Highland Mainline between Perth and Inverness; and
- Rail Freight Enhancements between Mossend, Grangemouth and Inverness.

The STPR recommended that the A9 should be dualled to deliver a combination of road safety, reliability and strategic economic objectives. Identified opportunities and challenges during the STPR process in relation to the A9 Dualling Programme are detailed further in the Problems and Opportunities section.

Transport Scotland has completed the second Strategic Transport Projects Review (STPR2) which will inform investment opportunities over the next 20 years (2022-2042) and was reported across two distinct phases. The first phase made recommendations on transport interventions to be delivered in the short term to enable Scotland to successfully navigate a green recovery through the COVID-19 pandemic. Phase 1 reporting of STPR2 was published in February 2021[16] which provided an insight into the objectives and was followed by the publishing of recommendations for Public Consultation in January 2022[17] in which one relating to the area of the A9 Dualling Programme was proposed enhancements to the Highland Mainline Rail Corridor for both passengers and freight. The STPR2 Final Technical Report[18] was published in

[16] STPR2 Update and Phase 1 Recommendations, Transport Scotland, 2021, https://www.transport.gov.scot/publication/update-and-phase-1-recommendations-february-2021-stpr2/
[17] STPR2 Summary Report, Transport Scotland, 2022, https://www.transport.gov.scot/publication/summary-report-january-2022-stpr2/
[18] STPR2 Final technical report, Transport Scotland, 2022, https://www.transport.gov.scot/publication/final-technical-report-december-2022-stpr2/

December 2022. The A9 Dualling Programme is treated as a committed infrastructure development in STPR2.

Of relevance to the A9 Dualling Programme are recommended interventions that align with the Theme of 'increasing safety and resilience on the strategic transport network' and in particular, Recommendation 32 which proposed investment on the trunk road network asset. This recommendation sets out a case for "continued and increased investment in the Trunk Road network over and above current maintenance levels" and include Carriageways, Structures and Ancillary Assets. The programme would include schemes which are developed for the Removal of Accessibility Barriers to assist pedestrian and wheeling access on the trunk road pedestrian network and for access to public transport, supporting equality.

2.2.3 Policy and Strategy

At the time of the A9 Case for Investment publication in 2016, the Policy and Strategy review undertaken highlighted a strong desire on the development and promotion of economic growth throughout Scotland's cities and across their wider regions. These aspirations are reflected by the significant levels of planned development as set out within their respective Local Development Plans as well as Economic Strategies and ambitions as set out by Scottish Enterprise.

Connectivity between the Highlands and the Islands to the Central Belt and further beyond which opens up access to distribution and labour markets is identified as being essential to ensuring the continued economic success of the region. Delivering critical infrastructure that supports economic growth is seen as pivotal in providing additional leverage to support inwards investment and migration into the region, which in turn will support the delivery of transformative growth. It is within this context that the A9 Dualling Case for Investment for the A9 between Inverness and Perth was developed in 2016, to address existing and emerging economic and transport pressures along the A9 corridor.

Since the publication of the A9 Dualling Case for Investment, there have been several updates to existing Policies and Strategies as well as new publications. The majority of these recent updates and publications have focussed on navigating a sustainable inclusive economic recovery from the COVID-19 pandemic as well as increasing impetus on reaching a Carbon Net Zero society to meet legally binding Climate Change targets.

Figure 2 below highlights the relevant and appropriate policy and strategy documents as well as important pieces of Scottish legislation which have been reviewed for the purpose of this Strategic Case.

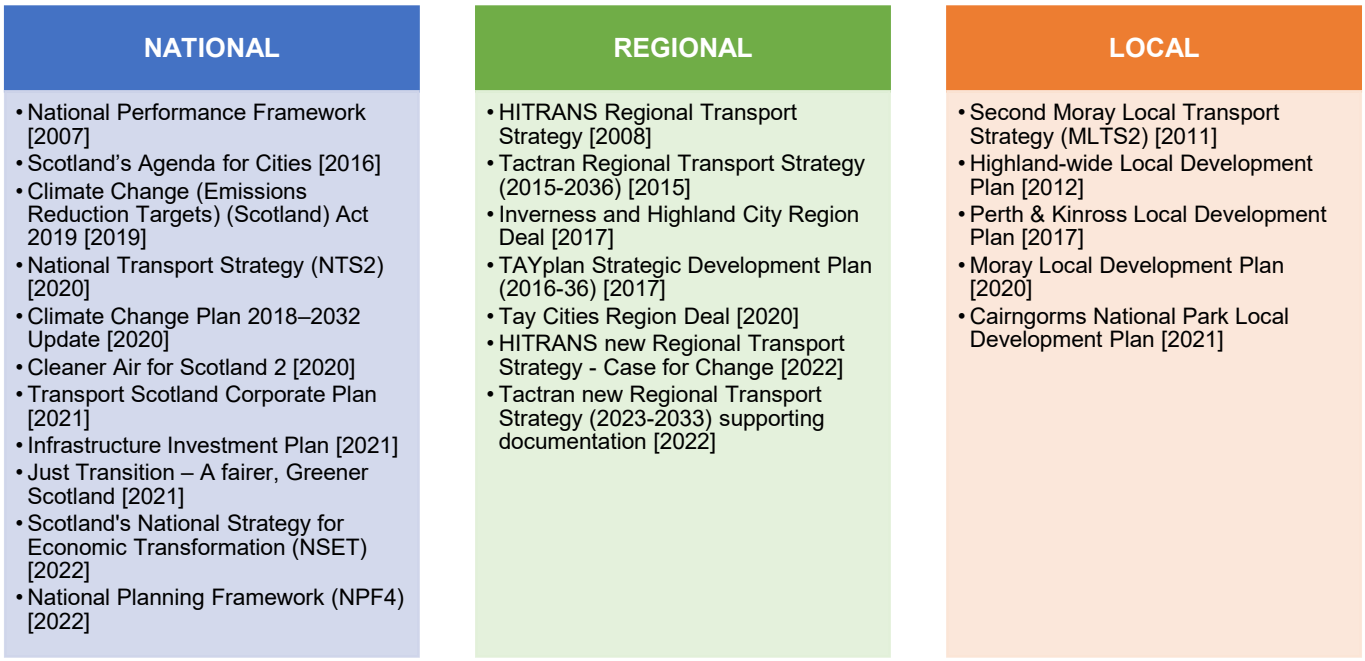

Figure 2. Overview of Policy and Strategy Context

These identified policies, strategies and plans and their relevance to the A9 Dualling Programme are discussed further below:

National

National Performance Framework[19]: The National Performance Framework underpins delivery of the Scottish Government's agenda, and sets out the strategic outcomes which, collectively, set out an ambition for delivering a kind of Scotland that people would like to live in. The Scottish Government's purpose is defined as "*Creating a more successful country, giving opportunities to all people living in Scotland, increasing the wellbeing of people living in Scotland, creating sustainable and inclusive growth, and reducing inequalities and giving equal importance to economic, environmental and social progress".* The National Outcomes recognise the positive contribution transport can make to maximising opportunities for economic growth and how it contributes to the prosperity and quality of life of every person in Scotland. Of the indicators used to monitor the performance of the National Performance Framework, International Exporting, Productivity and Economic Growth are identified as being of relevance in that the A9 Dualling Programme is expected to contribute towards, through improving local and strategic connectivity, increasing competitiveness across National and wider international markets.

Scotland's National Strategy for Economic Transformation (NSET) [20]: The Strategy, published in 2022, sets out the vision for Scotland's economy to significantly outperform the last decade both in terms of economic performance and tackling structural economic equalities. On the International front, Scotland will be recognised as a nation of entrepreneurs and innovators who embrace the opportunities of new technologies. This overarching vision will be underpinned by achieving a fairer, wealthier, and greener economy that builds on the internationally competitive economy Scotland currently has whilst

[19] National Performance Framework, Scottish Government, Accessed May 2023, https://nationalperformance.gov.scot/
[20] Scotland's National Strategy for Economic Transformation, Scottish Government, 2022, https://www.gov.scot/publications/scotlands-national-strategy-economic-transformation/documents/

demonstrating leadership towards the net zero transition. Of the Six Policy Programmes established to deliver this strategy, the third policy seeks *Productive Business and Regions* which is underpinned by three projects of which improving connectivity infrastructure is prominent. This is expected to be contributed through delivery of the A9 Dualling Programme in addition to recognising that the scale and significance of the infrastructure proposals are likely to allow Scotland's regions to realise their potential which has also been identified as one of the three new projects.

National Transport Strategy: The **National Transport Strategy (NTS2)**[21] published in February 2020, sets out an ambitious and compelling vision for Scotland's transport system for the next 20 years - *"We will have a sustainable, inclusive safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors"*. In support of this vision, the strategy sets out four priorities: reduces inequalities, takes climate action, helps deliver inclusive economic growth and improves our health and wellbeing. Identified as able to contribute towards the delivery of this Vision, the associated second NTS Delivery Plan[22] reaffirms the commitment to progress delivery of the A9 Dualling programme between Perth and Inverness.

In terms of the A9 Dualling Programme, the reduction of severance through the provision of grade separated junctions and dedicated facilities for Non-Motorised Users will seek to reduce inequalities. The enhancement and safeguarding of existing NMU routes, particularly National Cycle Route 7 and the reduction of direct interfaces with the A9 will contribute towards increased health and wellbeing through increased Active Travel levels. At an economic level, completing the full dualling of the A9 between Perth and Inverness will significantly increase competitiveness through improving business access to local and international markets as well as enabling further spatial growth of settlements along the corridor.

Transport Scotland Corporate Plan[23]: With its Vision mirroring that as set out within NTS2, delivery of the A9 Dualling Programme will enable the organisation to fulfil one of its strategic objectives, which seeks to maintain momentum of the programme of road improvements on the Scottish Trunk Road Network, further strengthening the resilience of the road network.

Infrastructure Investment Plan[24]: The Infrastructure Investment Plan (IIP) sets out the Scottish Government's plan for infrastructure over a five year period from 2021/22 to 2025/26, recognises the importance of infrastructure to recovery from the COVID-19 pandemic and details the £24bn in major projects which are being planned. The IIP which draws in inputs from the work of the Infrastructure Commission for Scotland, is forecasted to support 45,000 jobs as well as crucially supporting and enabling an inclusive net zero mission country. Having the largest estimated capital investment, the A9 Dualling Programme is recognised as critical to directly supporting Theme 2 – Driving Inclusive Economic Growth with an overarching aspiration to improve international competitiveness. The IIP also includes a commitment to develop an 'investment hierarchy' which prioritises enhancing and maintaining existing assets over new build.

National Planning Framework: Scotland's Fourth National Planning Framework (NPF4) [25] was published in November 2022 and presents the Scottish Government's spatial strategy for Scotland up to 2045. It sets out the Government's spatial principles, regional priorities, national developments and national planning policy, and considers a need to "embrace and deliver radical change to tackle and adapt to climate change,

[21] National Transport Strategy 2, Transport Scotland, 2020, https://www.transport.gov.scot/our-approach/national-transport-strategy/
[22] National Transport Strategy (NTS2) Second Delivery Plan 2022 to 2023, Transport Scotland, 2022, https://www.transport.gov.scot/publication/national-transport-strategy-nts2-second-delivery-plan-2022-2023/
[23] Transport Scotland Corporate Plan 2020 – 2021, Transport Scotland, 2021, https://www.transport.gov.scot/publication/transport-scotland-corporate-plan-2020-21/
[24] A National Mission with Local Impact: Infrastructure Investment Plan for Scotland 2021-22 to 2025-26, Scottish Government, 2021, https://www.gov.scot/publications/national-mission-local-impact-infrastructure-investment-plan-scotland-2021-22-2025-26/
[25] National Planning Framework 4, Scottish Government, 2023, https://www.gov.scot/publications/national-planning-framework-4/

restore biodiversity loss, improve health and wellbeing, build a wellbeing economy and create great places". To support the spatial strategy a number of policy changes are set out within NPF4, such as embedding the NTS2 Sustainable Travel Hierarchy and Sustainable Investment Hierarchy into the appraisal and assessment of development proposals. The new spatial strategy also sets out an approach whereby future places, homes and neighbourhoods will be better, healthier and more vibrant places to live. Building quality places that work for everyone through the concept of 20 minute neighbourhoods would aim to reduce the overall need for travel. NPF4 advocates the infrastructure-first approach in planning for future development to provide communities with the opportunity to travel in a sustainable manner from the outset. One of the Spatial Principles – Balanced Development – details an aspiration to create opportunities in areas of decline and enable more people to stay and migrate to rural areas. The A9 Dualling Programme is noted to align with the Spatial Strategy as set out within the NPF4 as improving connectivity between rural and urban areas is a key objective as well as improving NMU connections to encourage more sustainable travel behaviours communities and its residents along the length of the A9 between Perth and Inverness.

Responding to the declaration of a **Climate Emergency** by the Scottish Government in 2019, the **Climate Change (Scotland) Act 2009** was amended through the **Climate Change (Emissions Reduction Targets) (Scotland) Act 2019**[26] as well as updating the **Climate Change Plan** in 2020[27] to set out how Scotland will meet its emissions reduction targets up to 2032. The **Climate Change (Emissions Reduction Targets) (Scotland) Act 2019** sets targets to reduce Scotland's emissions of all greenhouse gases to net zero by 2045 at the latest, with interim targets for reductions of 75% by 2030 and 90% by 2040 as well as annual targets for other years. The transport related components of the Plan build upon NTS2, with a specific commitment to reduce car kilometres by 20% by 2030. A **route map to achieve a 20% reduction in car kilometres by 2030**[28] was published in 2022 for consultation. In 2021, the Scottish Government published **Cleaner Air for Scotland 2: Towards A Better Place For Everyone** and an associated Delivery Plan[29], setting out how the Scottish Government will deliver further air quality improvements over the next five years to secure the vision of Scotland having the best air quality in Europe – a quality of air that aims to protect and enhance health, wellbeing and the environment. It recognises the need for a reduction in the need to travel unsustainably, making the most of existing transport strategic systems and supporting strategic investments in sustainable, smart and cleaner transport options. A positive approach to minimising the environmental impact is shown through the calculation of a Carbon Baseline for the Preferred Route Option and each constituent Project to enable the assessment of the embodied carbon which will be used to inform the development of SMART Carbon Reduction targets to be met by those responsible for construction and delivery. The road-based elements of the A9 between Perth and Inverness may not necessarily alone contribute towards supporting the target to reduce car kilometres by 20% by 2030 as delivery of the road proposals could increase the overall attractiveness of using the A9 Route Corridor for journeys and competitiveness for the movement of people and goods by road. However, there are elements of the A9 Dualling Programme which are expected to positively contribute towards delivery of the current Climate Change Plan, namely from an active travel perspective. Through enhancing existing and delivering new active travel facilities along the length of the A9 Route Corridor, the increased accessibility and connectivity at a local level could support a positive mode shift onto active modes.

A further element which details the wider response of the Scottish Government to its declared Climate Emergency is set out within its initial response to the final report of the Just Transition Commission in **Just**

[26] Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, Scottish Government, 2019, https://www.legislation.gov.uk/asp/2019/15
[27] Securing a green recovery on a path to net zero: climate change plan 2018–2032 – update, Scottish Government, 2020, https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/
[28] A route map to achieve a 20 per cent reduction in car kilometres by 2030, Transport Scotland, 2022, https://www.transport.gov.scot/publication/a-route-map-to-achieve-a-20-per-cent-reduction-in-car-kilometres-by-2030/
[29] Cleaner Air for Scotland 2 – Towards a Better Place for Everyone, Scottish Government, 2020, Cleaner Air for Scotland 2 - Towards a Better Place for Everyone - gov.scot (www.gov.scot)

Transition – A fairer, Greener Scotland[30] which highlights a framework for how Scotland, by 2045, will deliver a fair and green transition for everyone as the Country seeks to reach its Net Zero targets and legal obligations. At the heart of this framework is ensuring that the transition provides positive and long lasting benefits through facilitating new educational and economic opportunities, transforming the built environment by enhancing existing and delivering infrastructure that will aid rapid decarbonisation whilst also ensuring that the associated cost of delivery is not bore by those who are least able to pay. From a transport infrastructure perspective, the framework highlights the ongoing development of 20 Minute Neighbourhoods and the aspiration to deliver sustainable communities through targeted improvements to Active Travel and Public Transport modes, which the Active Travel components of the A9 Dualling Programme are expected to contribute towards, particularly in instances where new infrastructure and facilities are to be delivered to expand coverage of the network.

Scotland's Agenda for Cities:[31]: Published in 2016, Scotland's Agenda for Cities sets out the Scottish Government's strategic framework for future interaction with Scotland's cities and sets out the changes in context since the original Scotland's Cities: Delivering for Scotland strategy was published in 2011. The strategy recognises the need for collaborative working between cities to maximise growth to benefit Scotland as a whole. It is highlighted that infrastructure investment "is a key driver of both short term and long term economic growth and performance". All of Scotland's cities (Aberdeen, Dundee, Edinburgh, Glasgow, Perth, Stirling and Dunfermline) are connected by continuous dual carriageway with the notable exception of Inverness. As the only Scottish city not connected by continuous dual carriageway, there are opportunities to improve the connectivity of Inverness and Perth, via the A9 Dualling Programme, and to provide better linkages between the settlements along the A9 corridor. Many of the investments planned as part of City Region Deals at either extent of the A9 Route Corridor are likely to complement the A9 Dualling Programme and will directly benefit from the increased connectivity and accessibility to / from the Region as well as boosting competitiveness across Scotland's economic hubs.

Regional

Inverness and Highland City Region Deal[32]:Signed in 2017, the City Region Deal has a total package of up to £315m which will consist of UK Government, Scottish Government, The Highland Council and its regional partners funding This investment is projected to leverage £800m in additional private sector over the life span of the deal. At the heart of the Deal is to increase the attractiveness of the region to both attract and retain talent, primarily young people, to increase growth in the private sector as well boosting the region's growing sectors such as tourism and life sciences. Of the interventions proposed, the funding package will support the development of significant transport improvements, most notably the A9/A96 Inshes to Smithton Link Road and the A9/A82 Longman Junction Improvement Scheme, which are likely to complement the A9 Dualling Programme.

Tay Cities Region Deal[33]: The 2020 Region Deal's package of £300m from the UK and Scottish Government is expected to secure over 6,000 quality jobs and leverage an additional £400m in investment across the region. With an aspiration to deliver inclusive growth forming the foundation of the Deal's Vision, several of the identified challenges relate to the existing inequalities between rural and urban communities. A key enabler to delivering this Vision is to address existing transport infrastructure constraints across the region that restricts access to employment, educational and leisure opportunities. As the A9 provides connectivity

[30] Just Transition – A Fairer, Greener Scotland, Scottish Government, 2021, Just Transition - A Fairer, Greener Scotland: Scottish Government response - gov.scot (www.gov.scot)
[31] Scotland's Agenda for Cities, 2016, Scottish Government, https://www.gov.scot/publications/scotlands-agenda-cities/
[32] Inverness and Highland City-Region Deal, UK Government, Scottish Government and The Highland Council, 2017, https://www.highland.gov.uk/cityregiondeal
[33] Tay Cities Region Deal, UK Government, Scottish Government and Tay Cities, 2020, https://www.taycities.co.uk/

between Perth and rural communities and settlements in North Perthshire, the improved connectivity and accessibility to these opportunities provided by the A9 Dualling Programme is expected to contribute towards delivery of this ambitious Vision.

TAYplan Strategic Development Plan (2016-36)[34]: As the Strategic Development Planning Authority that operates on behalf of Dundee, Perth & Kinross, Angus and North Fife, TayPlan, the 2017 plan sets out a vision for the region to be more sustainable, attractive and competitive alongside an area that is attractive to both inwards migration and investment. One of the Strategic Policies to deliver this mission is that of 'A Connected TAYplan' which seeks to provide good connectivity that increases access to jobs, services and facilities. Of the transformational projects identified within the plan, the A9 Dualling Programme is highlighted as an intervention where major change will happen and significantly improve connectivity in Northern Perth & Kinross and further afield.

HITRANS Regional Transport Strategy[35]**:** Published in 2008 by HITRANS, the Regional Transport Strategy (RTS) highlighted that congestion is becoming an increasing issue across the region and that without investment in maintenance and upgrading of the Trunk Road Network such issues are likely to be exacerbated to the detriment to communities and businesses. A Draft RTS, published in 2017, built upon the themes set out in the 2008 publication to set out an aspiration to maintain and improve lifeline transport networks and services. A key element to achieving this aspiration is promoting efficient business connectivity to improve the movement of goods, people and services and that there is good connectivity from local centres to the main Scottish gateways of Inverness, Aberdeen, Edinburgh and Glasgow. HITRANS are currently developing its future transport strategy and is currently at the Case for Change[36] stage of the strategy development process. The Case for Change notes the A9 is the only route to exceed 50mph average speed, however, has among the largest variability in average journey times and the greatest number of accidents of any route in the region.

Tactran Regional Transport Strategy[37]**:** At the heart of the RTS published in 2015 by Tayside and Central Scotland Transport Partnership (Tactran) is the theme of strategic connectivity and the role that this plays in facilitating the efficient movement of goods, people and services and that connectivity directly impacts the competitiveness of business across the region. A key priority from a TACTRAN perspective is for continued engagement with Transport Scotland to support the delivery of STPR projects, most notably the enhancement and upgrade of the A9 between Dunblane and Inverness. Tactran are currently developing a new Regional Transport Strategy (2023-2033) and have completed consultation on draft objectives, outcomes, scale of required change and potential measures in November 2022. Published supporting documentation so far have noted the main issues of transport within the Tactran region are poor weather resilience, unreliable journey times, limited options for sustainable transport and accidents hotspots, with junctions and single carriageway sections of the A9 emphasised.

Local

Moray Local Development Plan[38]: The 2020 publication has put Placemaking at the heart of the Council's Vision which aims to deliver well connected and distinctive places, deliver housing growth and deliver a framework for investment that support economic growth, with tourism being a notable growth sector. The key regional economic hubs towards the western end of the A96 corridor in Moray such as Elgin and Forres

[34] TAYplan Strategic Development Plan (2016-36), TAYplan, 2017, https://www.tayplan-sdpa.gov.uk/strategic_development_plan
[35] HITRANS Regional Transport Strategy, HITRANS, 2008, https://hitrans.org.uk/Strategy/Regional_Transport_Strategy
[36] HITRANS Regional Transport Strategy: Case for Change and Supporting Documents, 2022, https://hitrans-case-for-change-consultation-stantec.hub.arcgis.com/pages/case-for-change-and-supporting-documents
[37] TACTRAN Regional Transport Strategy 2015-2036, TACTRAN, 2015, https://tactran.gov.uk/projects/regional-transport-strategy/
[38] Moray Local Development plan, Moray Council, 2020, http://www.moray.gov.uk/moray_standard/page_133431.html

are likely to benefit from the A9 Dualling Programme as a result of improved connectivity between these areas, the Central Belt of Scotland and further afield. Moray Council are at early stages of preparing Moray Local Development Plan 2027.

Highland-wide Local Development Plan[39]: The 2012 HwLDP sets out strategy to support the growth of all communities across the Highland Council area. The vision of the strategy is that 'by 2030, THC will be one of Europe's leading regions. The region will create sustainable communities, balancing population growth, economic development, and the safeguarding of the environment across the area and whilst building a fairer and healthier Highland region. The region has been able to diversify its economy, with Ports at Inverness and Invergordon supporting the growth in tourism and renewable energies significantly contributing to this. Additionally, there has been significant growth around Inverness and the A96 corridor within the area of the northern extent of the A9. To maximise the potential of the Inner Moray Firth region, there is an identified need for the area to have resolved its infrastructure constraints with improvements to the A9 being seen as essential to remove this barrier to growth. A review of the 2012 HwLDP commenced in 2016 but was then put on hold due to potential changes to the Scottish planning system. This is anticipated to recommence in spring 2023 and will consider the Planning (Scotland) Act 2019 and NPF4.

Perth & Kinross Local Development Plan[40]**:** Mirroring the regional vision as set out within the 2017 TAYplan, the 2019 Perth & Kinross LDP has similar strategic policies to help deliver this aspiration. The Spatial Strategy seeks to make Perth & Kinross one of the best connected areas in Scotland which will primarily be delivered through building on existing excellent transport links. The LDP recognises the A9 trunk road dualling from Perth to Inverness as a means to strategically improve connectivity on the local and strategic transport network and significantly contributed towards supporting the strategic policy of 'A Connected Place'.

Moray Local Transport Strategy[41]**:** The Second Moray Local Transport Strategy (MLTS II) was published in 2011 and detailed the Local Authorities' vision for delivering high quality connections and accessibility through the provision of a safe, reliable, affordable and integrated transport network. Moray's relatively low population density in relation to the Scottish average, results in car dependency being higher than other region which can also be attributed to the high frequency of rural primary industries. Currently, access to the Central Belt is further from Moray than from either Inverness or Dingwall by both road and rail and as a result, businesses are at a considerable disadvantage in competing with wider UK and International markets. The A9 Dualling Programme will improve connectivity between Moray and the Central Belt and further afield.

Cairngorms National Park Local Development Plan[42]**:** The 2021 Local Development Plan for the National Park recognises the unique infrastructure challenges that are faced by its communities as a result of the challenging topographical and geographical constraints, with the A9 and Highland Main Line transport corridor between Perth and Inverness being of strategic importance. The LDP recognises the significant investment of the A9 Dualling Programme and that it will strength and improve these existing connections as well as the localised improvements for Non-Motorised Users which will contribute to functional transport on a safe off-road route between numerous communities.

[39] Highland-wide Local Development Plan, The Highland Council, 2012, https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan
[40] Perth & Kinross Local Development Plan, Perth and Kinross Council, 2019, https://www.pkc.gov.uk/ldp2
[41] Second Moray Council Local Transport Strategy, Moray Council, 2011, http://www.moray.gov.uk/moray_standard/page_75724.html
[42] Cairngorms National Park Local Development Plan, The Cairngorms National Park, 2021, https://cairngorms.co.uk/planning-development/ldp-2021/

2.3 Drivers for Growth

2.3.1 Introduction

This section provides an overview of appropriate and identified key Spatial Planning Drivers for Growth in the context of the A9 Route Corridor. These drivers have been identified through interrogation of Land-Use growth proposals as set out within respective Local Development Plans (LDPs) for the Local Planning Authorities (LPAs) of the Highland, Perth & Kinross and Moray. In addition to analysis and evaluation of this Spatial Planning data, relevant Strategic Economic Plans as well as other key land-use attractors have also been examined to better understand economic and land-use drivers along the A9 and throughout the wider region.

2.3.2 Spatial Planning

The A9 Route Corridor between Perth and Inverness spans two LPAs, The Highland and Perth & Kinross, as shown in Figure 3. In addition to these two LPAs, Moray, located due east of the northern extent of the A9 Route Corridor, has also been identified within the Spatial Planning area of wider influence due to its relative proximity to the A9 and travel impacts from interfacing A96 corridor on the A9 and has therefore also been included. Consideration was also given to the Cairngorms National Park Authority (CNPA), which manages the planning system in the Cairngorms National Park together with the five local authorities which participate in the CNPA board: Aberdeenshire, Angus, Highland, Moray and Perth & Kinross.

Each of the LDPs for the three identified LPAs of interest and Cairngorms National Park have been interrogated to identify the key land-use drivers for growth in regard to their size, scale and location in relation to the A9 Route Corridor. These have been assessed to identify the planned Spatial Development Strategies to better understand the potential road and traffic impacts at an individual and cumulative scale over the duration of their respective Local Plan periods.

Notable development sites within each LPA have been identified and are discussed further within this section. A full list of the site allocations across each identified LPA that the A9 Route Corridor runs through is included in Appendix A – Identified Key Development Sites.

Figure 3 Local Authorities in the Context of the A9

2.3.2.1 Moray Local Development Plan

Moray Council adopted their Local Development Plan in 2020 which covers a plan period up until 2035. Across this plan period, the LPA has allocated land that seeks to deliver 8,368 residential units and 31.8 Ha of employment land[43].

Whilst the A9 Route Corridor does not run through Moray, the development proposals of the LPA and associated impacts based on existing travel demand, travel patterns and transport mode usage are likely to impact the A96, which interfaces with the A9 in Inverness, particularly for longer distance movements. North of Aviemore, the A95 spurs off the A9 Route Corridor which provides connectivity and accessibility to Speyside and the wider North East region.

Of the allocated sites as set out within the LDP, none were identified either adjacent to or within close proximity to the A9 Route Corridor. However, it is noted that a significant amount of the LPA's growth is planned along the western extent of the A96 corridor of which Elgin is expected to accommodate nearly 50% of total planned 8,368 residential units to be delivered during the plan period.

[43] Moray Local Development Plan, Moray Council, 2020, http://www.moray.gov.uk/moray_standard/page_133431.html

2.3.2.2 Cairngorms Local Development Plan

The Cairngorms Local Development Plan was adopted in 2021 and covers a plan period up until 2039. Across this plan period the LPA has allocated land that seeks to deliver 2,744 residential units and 53.2 Ha of employment land[44].

A significant proportion of allocated land is located in and around Aviemore with the town itself accommodating over 50% of the total employment land (over 30 Ha) during the Plan Period.

In addition to allocating land within the existing settlement, a New Town, An Camas Mor, is being planned immediately to the south of Aviemore which will greatly increase the urban environment and deliver 1,500 residential units. This is the largest planned residential site adjacent to the A9 Route Corridor and when fully occupied, has the potential to have a similar population to that of Aviemore. The key development sites are shown in Table 4. The other notable development site (Monaltrie Park) is located in Ballater, situated within the eastern extent of the National Park.

As highlighted in Table 4, a notable proportion of allocated land for development is located within Aviemore and is therefore adjacent to the A9 route corridor. However, outside of Aviemore the majority of these other significantly sized settlements are located outside of the local area of the A9 Route Corridor such as Ballater and Braemar.

Whilst these settlements do not propose growth to such a scale as highlighted in Aviemore and the surrounding area, outside of Ballater they collectively contribute towards a significant proportion of all land allocated for residential (75%) and employment (70%) purposes across the Cairngorms National Park.

Table 4. Notable Cairngorms National Park Allocated Development Sites along the A9 route corridor

Site ID	Site Name	Development	
		Residential (Number of Units)	Mixed Use (Ha)
N / A	An Camas Mor	1,500	
M1	Aviemore Highland Resort		33
H1	Monaltrie Park	250	
	Total	**1,750**	**33**

Source: Cairngorms National Park Local Development Plan, 2021

2.3.2.3 Highlands Local Development Plan

The Highlands LPA adopted their Local Development Plan in 2012 which covers a plan period up until 2031. Across this plan period, the LPA has allocated land that seeks to deliver 8,550 residential units and 3.9 Ha of employment land[45].

An overwhelming majority of all planned residential and employment growth will occur in existing settlements at the northern extent of the A9 Route Corridor. The key development sites within the LPA in relation to the A9 route corridor are shown in Table 5. In residential terms alone, Stratton (29%),

[44] Cairngorms National Park Local Development Plan, Cairngorms National Park, 2021, https://cairngorms.co.uk/planning-development/ldp-2021/
[45] Highland-wide Local Development Plan, The Highland Council, 2012, https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan

Tornagrain (29%) and Nairn (36%) will deliver over 90% of the planned residential growth. These settlements are all located along the A96 corridor, with Stratton and Tornagrain within close proximity to the northern extent of the A9 Route Corridor.

Regarding planned employment growth, again, settlements along the A96 and within proximity to the A9 Route Corridor will accommodate this growth, with Stratton and Tornagrain collectively accommodating all of the planned employment land for development during the plan period, highlighting the attractiveness of existing road connectivity provided by the two major Trunk Road corridors in the Highlands and the role that these transport corridors can play in supporting growth proposals.

Table 5. Notable Highlands Allocated Development Sites along the A9 Route Corridor

Site ID	Site Name	Development	
		Employment (Ha)	Residential (Number of Units)
12	Stratton, East Inverness	1.8	2,500
13	Tronagrain	2.1	2,509
N/A	Nairn Delnies		300
N/A	Nairn South		1,230
N/A	Cawdor		350
17	Delnies		300
22	Cawdor Expansion		285
	Total	**3.9**	**7,474**

Source: Highland Local Development Plan, 2012

2.3.2.4 Perth & Kinross Development Plan

The Perth and Kinross LPA adopted their Local Development Plan in 2019 which covers a plan period up until 2029. Across this plan period, the LPA has allocated land that seeks to deliver 12,979 residential units and 186 Ha of employment land[46].

As the administrative and economic hub of the region, a significant proportion of the council area's total planned growth (51%) is focussed in and around Perth. Whilst this growth is located across numerous site allocations, the majority of the city's growth is being driven by two significant development sites at Bertha Park and Perth West, shown in Table 6 which, collectively, are projected to deliver over 5,000 residential units and 50 Ha of employment land. Both sites are located within close proximity to the southern terminus of the A9 route corridor at the A9 / A912 junction.

In the context of the wider A9 Route Corridor, settlements within a commuting distance to Perth such as Luncarty and Stanley have been allocated a significant amount of land for residential development, when compared to the existing urban fabric of these settlements.

[46] Perth & Kinross Local Development Plan, Perth & Kinross Council, 2019, https://www.pkc.gov.uk/ldp2

This pattern of proposed development is heavily focused to the west and north of Perth as well as within communities of a modest distance to Perth along the southern extents of the wider A9 Route Corridor. The planned concentration of growth in and around Perth is likely to give rise to traffic, which is likely to impact the A9 Route Corridor.

Table 6. Notable Perth & Kinross Allocated Development Sites along the A9 Route Corridor

Site ID	Name	Development		
		Employment (Ha)	Residential (Number of Units)	Mixed Use (Ha)
MU330	Blairgowrie Eastern Expansion			53.1
MU5	Western Blairgowrie			24.6
MU27	Luncarty South		589	
MU345	Bertha Park	25.0	3,000	
MU73	Almond Valley		704	
MU70	Perth West	25.0	2,210	
MU171	Perth Quarry			21.0
E38	Ruthvenfield	23.6		
H29	Scone North		550	
H30-34	Stanley		248	
Total		**73.6**	**7,301**	**98.7**

Source: Perth & Kinross Local Development Plan, 2019

2.3.2.5 Summary

There are significant growth proposals within immediate proximity to the northern and southern termini of the A9 Dualling Programme, near Inverness and at Perth respectively, which when developed are likely to give rise to notable traffic impacts, some of which may require use of the A9 Route Corridor for a proportion of their journey. These highlighted development sites along the A9 Route Corridor are presented in Figure 4 Planned Residential Growth and Figure 5 Planned Employment Growth, for residential and employment growth respectively. The figures also provide the total residential units and employment growth at the local authority level.

The location of a significant amount of employment growth near to the A9 Route Corridor, and the accessibility and connectivity that this route facilitates, are likely to be attractive for land uses associated with warehousing, logistics and distribution which generate a high proportion of goods vehicles, particularly towards the southern part of the corridor around Perth and the Central Belt. These associated trips are likely to use the A9 Route Corridor and the wider Scottish Trunk Road Network to access distribution markets and in some instances, will travel substantial distances (e.g. Perth to Inverness and Inverness to Perth).

In the context of settlements along the length of A9 Route Corridor, the majority of development is sporadically located at a modest scale across these settlements with the exception of Aviemore which is

expected to significantly increase. This level of planned growth is likely to also give rise to traffic impacts along the A9 within the wider region and its interfacing local roads.

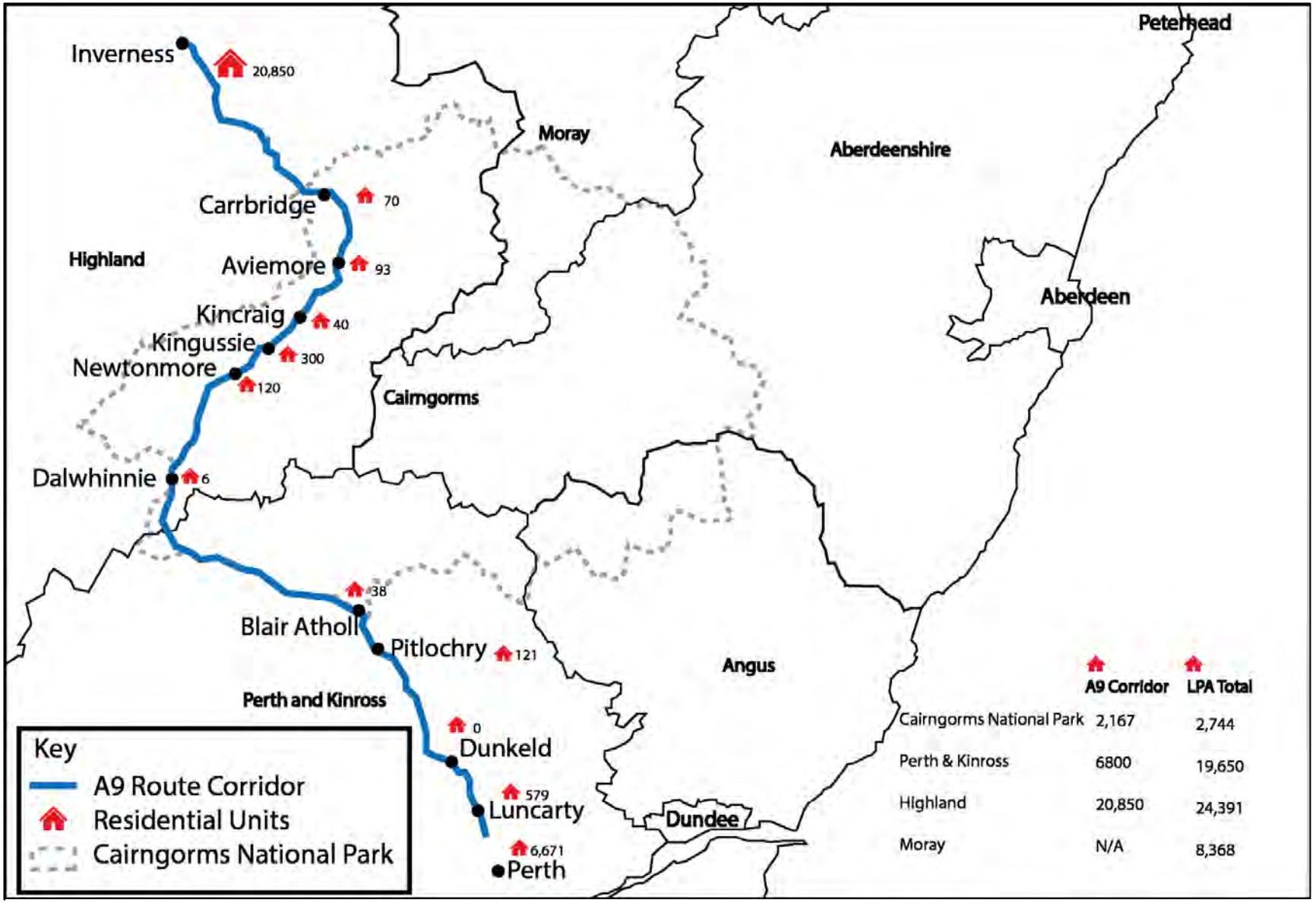

Figure 4 Planned Residential Growth

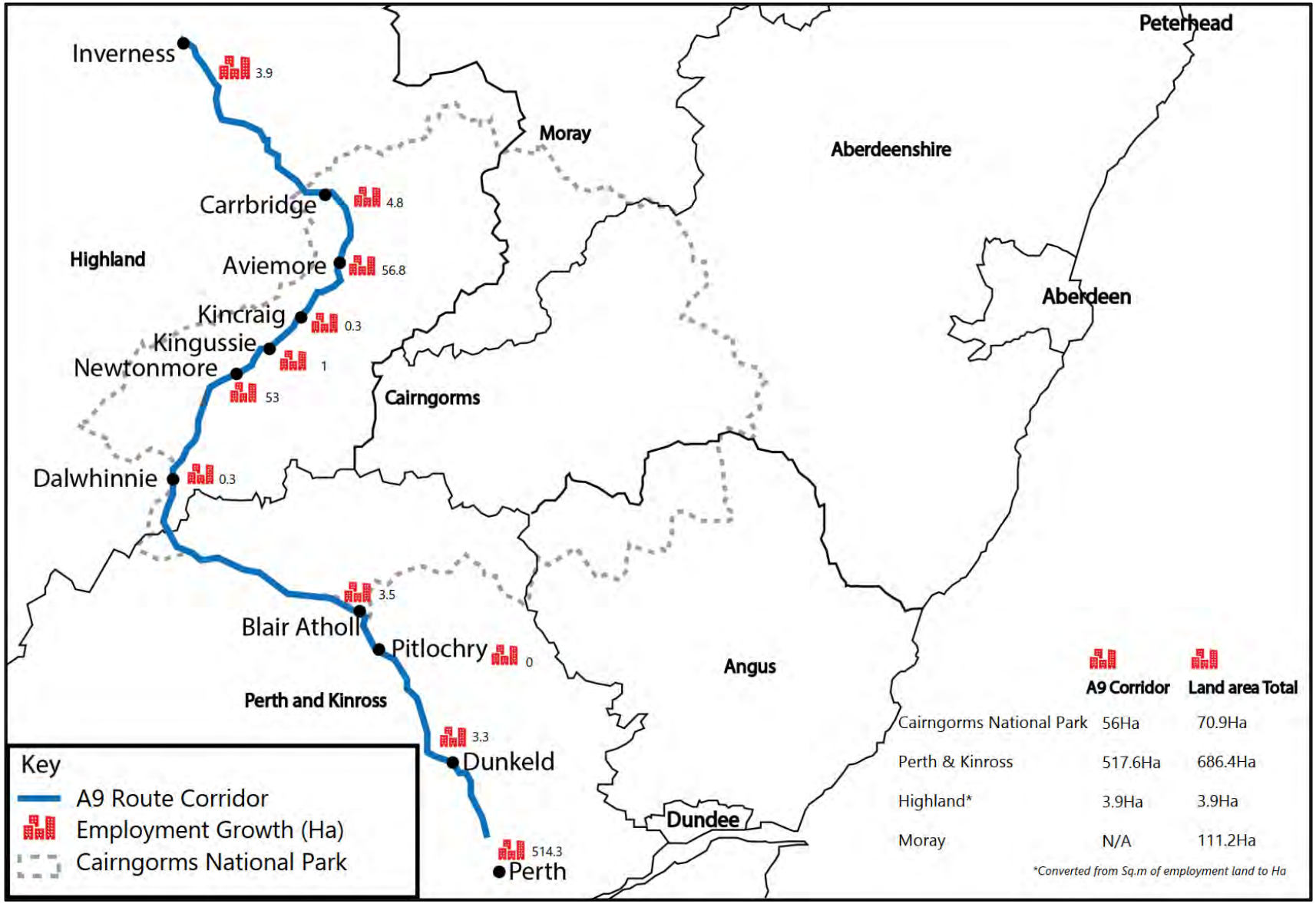

Figure 5 Planned Employment Growth

2.3.3 Economic

In addition to considering Spatial Planning documentation, Economic Plans and Strategies relevant to bodies and institutions that represent the communities in and around the A9 Route Corridor have also been considered. These relevant organisations and their context in relation to the A9 Route Corridor are detailed below.

2.3.3.1 Highlands and Islands Enterprise[47]

Currently, transport connectivity is identified as a major challenge with surveyed businesses identifying poor transport links as one of the main risks to Business across the region. Looking ahead, the long-term economic success of the region is recognised as being partially dependent upon the upgrade and enhancement of existing transport infrastructure across the region, particularly from a road perspective due to the strong reliance on road connectivity and accessibility.

The Inner Moray Firth, which includes the northern section of the A9 Route Corridor between Aviemore and Inverness, has high net migration, is home to growing life sciences and technology sectors as well as major ports capable of serving the world's largest cluster of deep-water offshore wind turbines.

2.3.3.2 Cairngorms National Park[48]

The Cairngorms National Park faces significant challenges regarding infrastructure, including digital and social, but most notably transport infrastructure. The complex geography and the rural character of a significant proportion of its communities and settlements means that providing high quality infrastructure is a significant challenge to the long-term prosperity of the region.

The A9 Dualling Programme has been recognised as a strategic opportunity that can provide better linkages between existing major urban settlements such as Aviemore as well to other regions of Scotland. Furthermore, the significant planned investment in the A9 Dualling Programme is also recognised as a unique opportunity for the National Park authorities to maximise this investment for businesses and communities, as well as those who visit the area.

2.3.3.3 Moray Council[49]

Connectivity is identified as one of the key four pillars that can deliver the ambitious economic strategy for the region, of which transport, and in particular rural transport, plays a crucial role. Currently, a key identified challenge are poorer levels of access to services, facilities and employment opportunities when compared to other geographic regions of Scotland and is recognised as being a barrier to continued economic growth. The economic strategy identifies a necessity for continued major investments in transport to meet the needs of the County.

2.3.3.4 Tay Cities[50]

The Tay Cities Region (Angus, Dundee City, Perth and Kinross, North Fife) suffers from traffic congestion and delays at key roads and junctions. This results in unreliable and lengthy journey times which are

[47] Highlands and Islands Enterprise. Accessed May 2023: https://www.hie.co.uk/
[48] Cairngorms National Park. Accessed May 2023: https://cairngorms.co.uk/
[49] Moray Council. Accessed May 2023: http://www.moray.gov.uk/
[50] Tay Cities, Tay Cities Region Deal: Creating a Smarter and Fairer Region, 2020, Accessed May 2023: https://www.taycities.co.uk/

identified as hindering the effective movement of people and goods and collectively undermining the economic performance of the region.

One of the key mechanisms to deliver continued economic growth over the period 2016 to 2026, has been identified to be the continued support of improvements in transport connectivity and in particular investment in key business infrastructure to improve competitivity.

Rural transport connectivity and accessibility is also an identified challenge, with two-thirds of the population of Perth & Kinross living outside of the City of Perth whereby such communities generally have a higher reliance on road connectivity. An identified sector to further develop is that of Natural Capital which includes tourism as well as food and drink sectors, of which a notable proportion are located near or adjacent to the A9 Route Corridor.

2.3.4 Tourism

In addition to the relevance of Spatial Planning as a key Driver for Growth for the A9 Route Corridor, there is another significant, if not broadly comparable, Driver for Growth which is noted as having a significant impact on the usage of the route and its associated demand: tourism.

Tourism in the UK is an important sector of the economy, both in terms of employment and revenue generated. The sector contributed £127bn to the UK economy in 2013, representing around 10% of Gross Domestic Product (GDP) in Britain and is predicted to be worth £257bn by 2025[51]. In Scotland, a 2018 report commissioned by the Tourism Leadership Group found that tourism accounts for around one in every twelve jobs and contributes around £6bn of GDP to the Scottish Economy, which equates to approximately 5% of Scotland's GDP[52]. Identified as an area of strength in the National Strategy for Economic Transformation, the strategy also recognises the beneficial impacts a just transition can have on the sector through a combination of early action and investment. Eco-tourism is listed in the strategy as a new market opportunity which can strengthen Scotland's position in new markets and industries.

Scotland's and, in particular, the Highland's strong tourism sector can be attributed to the range of tourism assets which provide a wide variety of offerings. These range from culture and heritage to leisure and adventure, as well as more locally specialised offerings such as whisky distillery tours. In the case of the A9 between Perth and Inverness there is a plethora of tourism assets along its route, as well as across the wider region as highlighted in Figure 6 Tourism Assets in the context of the A9 Route Corridor. Notable examples include the Cairngorms National Park, Blair Castle in Perthshire, and the Malt Whisky Trail in Speyside. Regarding the A9 Route Corridor and the wider tourism offering of the surround areas, assets relating to leisure and adventure, culture and heritage as well as those associated with whisky production that allow visitors are identified to be of significant interest.

Of notable interest are clusters of tourism assets within Aviemore and the surrounding area which are predominantly associated with leisure and adventure, reinforcing the role of Aviemore as a crucial tourism hub. Within Speyside along the A95, in which accessibility is primarily provided via the A9 north of Aviemore, is an internationally renowned cluster of whisky distilleries.

[51] Visit Britain, Britain's visitor economy facts. Accessed May 2023: https://www.visitbritain.org/visitor-economy-facts
[52] Tourism in Scotland, Scottish Government, 2018, https://www.gov.scot/publications/tourism-scotland-economic-contribution-sector/documents/

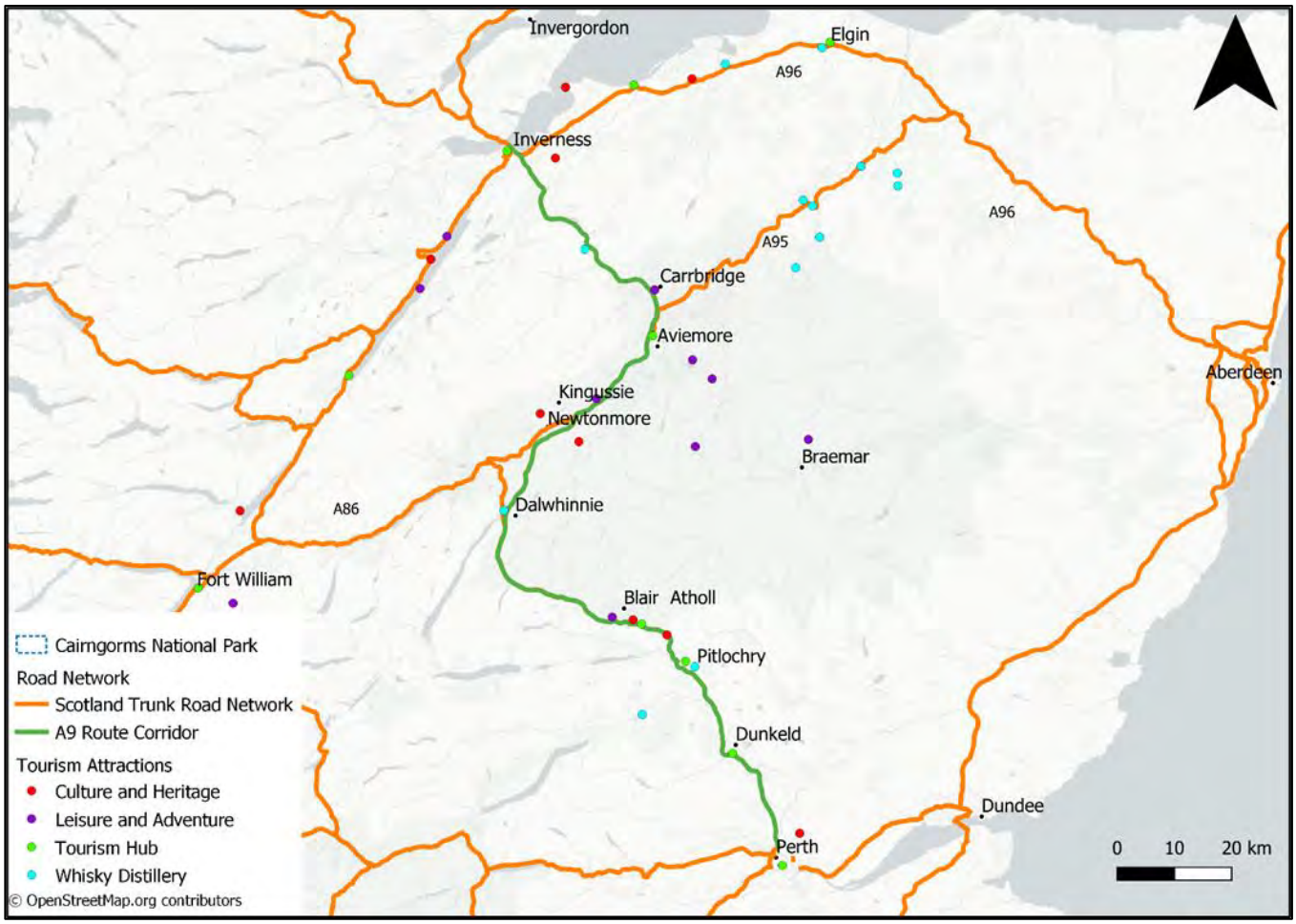

Figure 6 Tourism Assets in the context of the A9 Route Corridor

The attractiveness of Scotland as a destination for both domestic and international visitors is shown in Table 7, which highlights that Scotland attracts a significant number of visitors, of both domestic overnight trips, and international visitors when compared against its existing population.

Table 7. Great Britain Domestic and International Visitors per capita

Destination	Adult Population (million)[53]	Tourism Day Visit (TDV) (per capita)[54]	International Trips (per capita)[55]
Great Britain	51.9	31.8	1.28
England	44.9	31.0	1.24
Scotland	**4.5**	**29.9**	**1.30**
Wales	2.6	34.0	2.50

The largest attractor in the wider region of the A9 Route Corridor is Urquhart Castle beside Loch Ness, which is one of the most visited attractions in Scotland with over 500,000 people visiting the site in 2019[56]. Other notable assets are Loch Ness by Jacobite cruises and Culloden Battlefield. Collectively, Whisky Distilleries are the third most visited attraction in Scotland with 2019 recording 2.2m visitors[57]. Historically, distilleries at Pitlochry, Blair Athol, Dalwhinnie and Tomatin are part of the Top 20 most visited distilleries of Scotland[58], highlighting the connectivity of the A9 in providing easy access to these sites.

In the context of the A9 Dualling Programme, assets such as the Cairngorm Funicular Railway & Ski Resort (Aviemore), Highland Wildlife Park (Kingussie) and Blair Castle (Blair Atholl) mean that the A9 between Perth and Inverness is home to a wide range of tourism offerings whose visitors can be assumed will use the A9 for a proportion of their journey. The Cairngorms National Park alone attracts approximately 2m visitors on an annual basis[59].

The rural location of these assets places a reliance on the importance of connectivity, particularly from a road perspective, due to limited coverage by alternative transport modes such as Public Transport and Active Travel, which is discussed further in the Problems and Opportunities section. Regarding current travel patterns, using the Cairngorms National Park as a reference case[60], an overwhelming majority of visitors travelled to the area by motor vehicle (90%) in 2019, of which 65% of trips were made by private car alone. This figure is noted to have been increasing in recent years, highlighting the continuing demand on the road network across the region. Of these surveyed visitors, nearly half (49%) stayed in settlements along the A9 Route Corridor, with 35% of these overnight stays occurring in Aviemore alone, reinforcing its international reputation as a well-established and attractive tourist hub not only in the Highlands, but also in Scotland.

While there has been a slight downturn in the amount of international tourism in the Highlands between 2018 and 2019, these tourists are staying in the area longer than domestic tourists, with the average stay

[53] Office for National Statistics, Population Estimates Time Series Dataset, 2022, Accessed May 2023, https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatestimeseriesdataset
[54] Kantar, The Great British Day Visitor 2019 Annual Report, Accessed May 2023, Available at: https://www.visitbritain.org/gb-day-visits-survey-archive
[55] Visit Britain, 2019 Inbound Data, Distribution by Area. Accessed May 2023, Available at: https://www.visitbritain.org/2019-inbound-data
[56] ASVA, ASVA & the Moffat Centre release topline figures for visits to Scottish attractions in 2022, http://asva.co.uk/asva-the-moffat-centre-release-topline-figures-for-visits-to-scottish-attractions-in-2022/
[57] Scotch Whisky Association, https://www.scotch-whisky.org.uk/insights/facts-figures/
[58] Visit Scotland, Whisky Tourism – Facts and Insights, 2015 (Updated 2018), https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/policies/whisky-tourism-facts-and-insights.pdf
[59] Cairngorms National Park Facts & Figures, https://cairngorms.co.uk/discover-explore/facts-figures/
[60] Cairngorms National Park Visitor Survey 2019 – 2020, 2020, https://cairngorms.co.uk/wp-content/uploads/2020/07/10304-Cairngorms-Visitor-Survey-2019-20-Final-Report-100720-FINAL.pdf

being approximately four nights where international tourists generally staying between eight and fourteen nights. International visitors are also noted to have a higher average spend per day[61].

In recent years, the Highlands in particular has experienced a surge in domestic tourism, with 2019 recording a significant increase in trips (45%) to the region which was associated with a similar uplift in associated spending (35%) when compared against 2018 levels. Whilst domestic tourists, on average, spend less time and money than international tourists, domestic visitors exceed international visitors fivefold. The rural location of these assets and their spatial distribution across a wide geographic area places a reliance on accessibility and connectivity, particularly from a road and rail perspective[62].

The A9 between Perth and Inverness is also a key arterial route that provides accessibility and connectivity to further afield areas and regions of Scotland, namely the west coast and the Isle of Skye, which are internationally renowned tourism hotspots. In 2019, Skye and Raasay, its neighbouring Isle, attracted 650,000 visitors which in turn supported 2,850 jobs and generated £211m to the local, regional and national economies[63]. With its stunning scenery and key tourism assets such as the Fairy Pools, Cuillin Ridge, and the Old Man of Storr, over 70% of the visitors to Skye and Raasay were international visitors, with day trips making up a small proportion at 7%. The length of these stays, as well as the relative remoteness of these locations, reinforces the role that the A9 Dulling Programme will play in increasing accessibility to these locations in particular, but also Tourism Assets across the Highlands and Islands as well as those directly within the immediate area of the A9 Dualling Programme itself such as Speyside and North Perthshire.

The impacts on Tourism from a transport perspective along the A9 Route Corridor were more pronounced as a result of the COVID-19 Pandemic than other areas of both Scotland and the U.K. This can be partially attributed to the limitations placed on travel and with it being forecasted at the time that the Highlands and Islands would take longer to recover than other areas of Scotland[64]. However, since then a modest period of time has passed with it being noted that the Tourism sector is broadly recovering although not currently at pre-pandemic levels. As this sector continues to recover, travel demand is likely to further increase particularly for road-based journeys to access tourism assets whereby many are challenging to be accessed by alternative modes.

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The A9 between Perth and Inverness is critical for facilitating the delivery of significant planned growth across the Local Authorities that the route traverses through. The strategic road corridor is also key in providing high quality connectivity and accessibility between the North of the Scotland, the Central Belt and further afield with local communities and business being highly reliant on the road corridor for movement. This role is further applicable to the significant Tourism sector with numerous assets being accessed directly by the A9 Route Corridor itself but also providing connectivity and accessibility to popular assets in more rural and harder to reach areas, supporting a significant economic sector for local areas and the wider region of the route.

[61] Insight Department: Highland Factsheet 2019, Visit Scotland, 2020, http://remap-scotland.org/pdf/highland-factsheet-2019.pdf
[62] Visit Scotland, https://www.visitscotland.com/
[63] Glasgow Caledonian University, Skye "highly vulnerable" to international travel slump, 2020, https://www.gcu.ac.uk/aboutgcu/universitynews/2020-moffat-centre-skye-report-211million-covid19
[64] Highlands and Islands Enterprise, The Impact of Covid-19 on the Highlands and Islands, 2020, https://www.hie.co.uk/media/9646/the-impact-of-covid-19-on-the-highlands-and-islands.pdf

2.4 Problems and Opportunities

2.4.1 Introduction

The A9 route that spans the length of the A9 Dualling Programme supports a wide range of activities through facilitating the movement of goods, people, and services between the major urban areas of Perth and Inverness, connecting communities and residents along the route, as well as providing crucial accessibility further afield.

At a strategic level, the majority of goods associated with the Food and Beverage and Forestry sectors tend to travel long distances to distribution markets across the wider United Kingdom and beyond. Additionally, the route also accommodates a notable number of trips made by tourists, of which a significant majority are domestic, to access the multitude of Tourism assets that are located within proximity to the A9 Dualling Programme.

As highlighted in the Business Strategy section, the STPR process in 2008 identified the following problems, opportunities, and constraints for the A9 between Perth and Inverness:

- Socio-economic and environmental context:
  - Population levels, and numbers of households, are expected to increase in the future.
  - The corridor has higher than average car ownership levels and high levels of dependency on the private car.
  - Income levels are slightly lower than the Scottish average.
  - Transport networks are constrained in parts by geographical features.
- Travel patterns:
  - There are a relatively high proportion of trips travelling the entire length of the transport corridor, highlighting the importance of the transport networks on this corridor as linkages between northern and southern Scotland. Modal share by public transport for these longer distance trips is relatively low, and not forecast to change substantially.
- Performance of the corridor:
  - Whilst the A9 accident rate is lower than the Scottish average, the proportion of fatal and serious accidents is significantly higher.
  - The capacity and quality of the transport network (road and rail) are variable.
  - The nature of the A9, with mixed carriageway provision and vehicle composition, leads to platooning of vehicles. Temporary impediments to traffic flow and journey times are common during summer months and holiday periods, while congestion is common near Inverness and Perth.
  - Both the A9 and the rail route in the corridor are subject to closures during bad weather and landslips. There are few reasonable alternative routes.
- Accessibility
  - Accessibility levels are low, with infrequent bus services. Car users outwith the main settlements have long journeys to access social and employment opportunities.

This section therefore seeks to establish whether these identified issues, opportunities and challenges still exist along the corridor as well as identifying further additions through the refresh of the supporting evidence base.

2.4.2 Role and Function

2.4.2.1 Route Standard

The A9 between Perth and Inverness runs through some of the most challenging geography in the UK, with the mountain passes that the A9 runs through at Slochd and Drumochter in excess of 400m above sea level, which present topographical and geographical constraints.

As a result of these challenging topographical conditions, prior to implementation of the A9 Dualling Programme, the A9 between Perth and Inverness consists of a varying standard of sections of single and dual carriageway and wide single WS2+1 carriageway; with only approximately 42km of the 179km is dual carriageway. Links that are WS2+1 carriageway standard are located south of Moy (0.9km), south of Carrbridge (1.2km) and at Newtonmore (1.9km). The remaining 133km are single carriageway sections, primarily located within existing rural areas, particularly in the southern Highlands and northern Perth & Kinross sections of the A9. The longest stretches of single carriageway sections are located north of Blair Atholl, around Dalwhinnie, and between Newtonmore and Carrbridge.

Figure 7 highlights the relatively inconsistent road standard. This varying standard is noted to limit the efficient movement of goods and people through a lack of continuous overtaking opportunities, which is likely to contribute towards unreliable journey times. In addition, the transition between sections of varying standard could potentially have safety implications, particular for road users who are not familiar with the route.

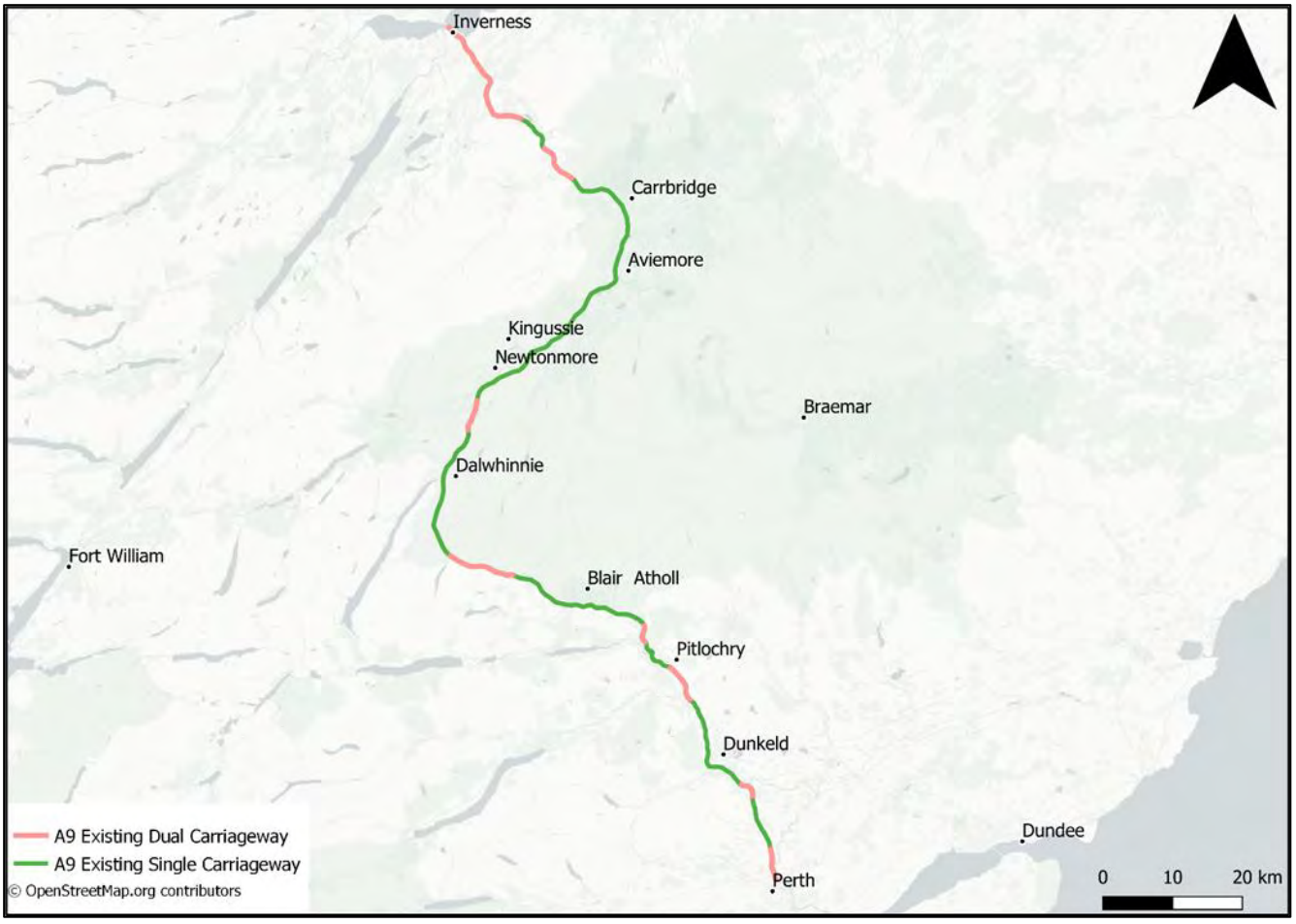

Figure 7 A9 Route Corridor Route Standard

2.4.2.2 Road Network

In the context of the wider road network, Figure 8 Scottish Trunk Road Network and Major Gateways in the context of the A9 Route Corridor highlights the important role and function that the A9 between Perth and Inverness plays in providing a direct connection between the Central Belt and the Highlands. It provides access to other key road connections in the highlands such as the A86 to Fort William and beyond that the Isle of Skye, with the A95 north of Aviemore providing connectivity to Speyside and the wider region which is home to an internationally renowned cluster of whisky distilleries.

In connecting the Highlands and Islands and the Central Belt, the A9 facilitates crucial connectivity and accessibility to International Gateways as well as to ports which provide essential services to Island communities. Some of these ports, most notably at the Port of Invergordon in the Cromarty Firth, which itself hosts multiple other maritime gateways, and Inverness are significant economic hubs and cater for commercial and military activities in addition to supporting major energy assets in the North Sea and Moray Firth.

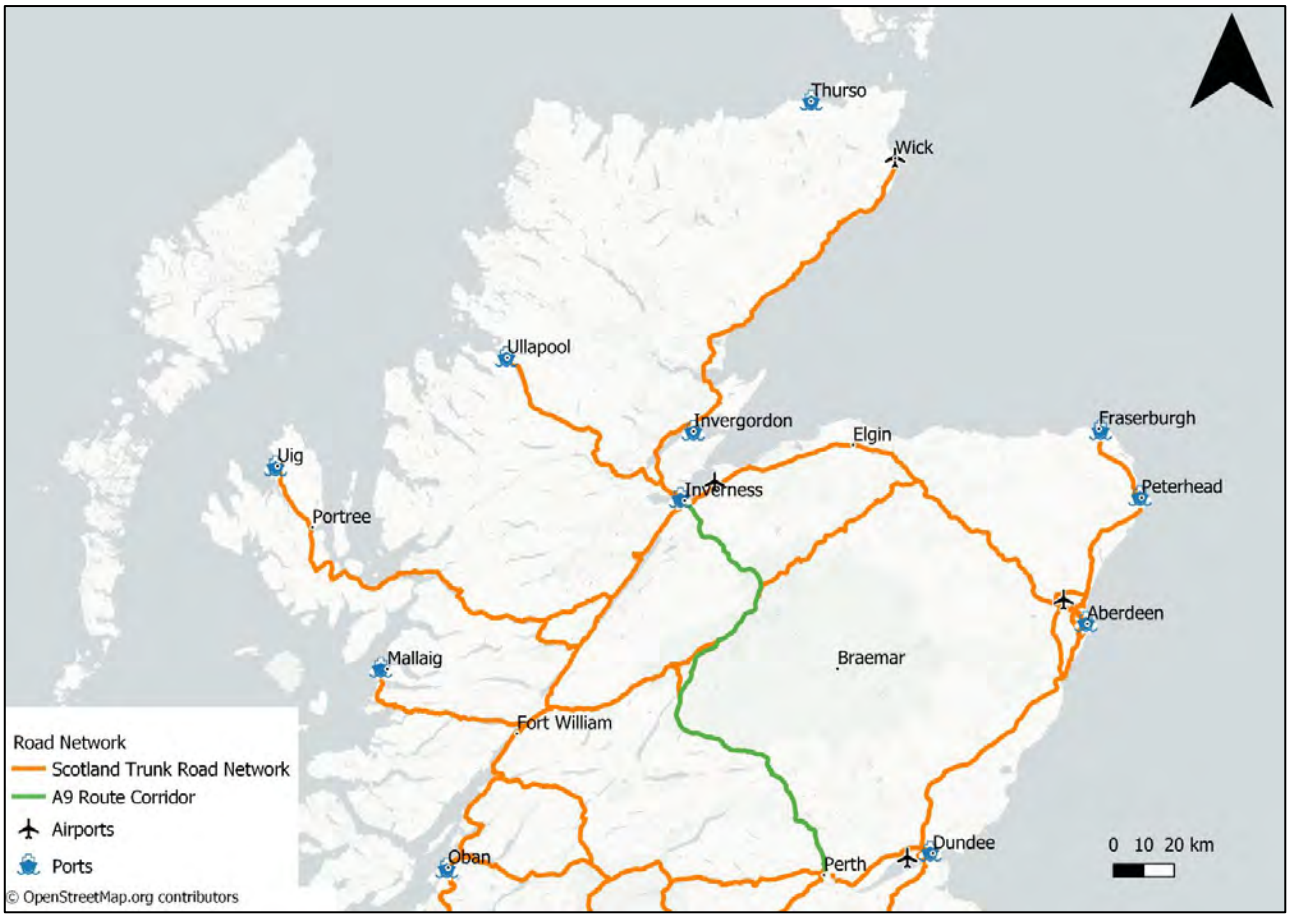

Figure 8 Scottish Trunk Road Network and Major Gateways in the context of the A9 Route Corridor

As the only major Airport in the region, Inverness Airport is a key International Gateway that provides crucial lifeline services to the Outer Hebrides and Orkney Islands as well as connections to London and Continental Europe. The sizable catchment area of the airport means that for many communities along the length of the A9 Dualling Programme it is the principal airport with the A9 facilitating a key role in enabling access to / from this transport hub.

In recent years, the Port at Invergordon has pivoted towards accommodating vessels associated with the Cruise Passenger Industry with over 50 vessels now calling into port on an annual basis. With this International Gateway now seeking the efficient movement of goods and passengers to urban locations as well as popular tourism assets, of which a significant proportion are located directly to and within the vicinity of the length of the A9 Dualling Programme, maintaining high quality transport connections to / from these locations is therefore essential to supporting continued economic growth.

The current A9 between Perth and Inverness varies between single and dual carriageway sections, providing an inconsistent standard for road users, which may have a detrimental impact on the operational and safety performance of the route. As the main North-South road connection across Scotland, the route facilitates the movement of goods, people, and services to / from International Gateways with there being a strong dependency upon the ability to effectively and safely move these elements via road.

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2.4.3 Socio-Economic Context

2.4.3.1 Population

National records of Scotland show that in 2020, using the latest mid-year population estimates[65], over 123,000 individuals lived across the key settlements along the A9 between Perth and Inverness, equivalent to 2.3% of Scotland's total population.

The A9 between Perth and Inverness is characterised by the location of the Inverness and Culloden urban area and Perth at the northern and southern extents of the route respectively, where a significant proportion of the population resides. Between these cities, the corridor is mainly composed of several smaller rural settlements with the larger towns of Aviemore, Pitlochry, Kingussie and Dunkeld being focal points along the corridor. The corridor passes through large areas which are sparsely populated, with the Cairngorms being a notable example of the rural character and associated population. The population spatial portrait of the A9 is highlighted in Figure 9, with a distinct rural character identified within the southern Highlands and northern Perth & Kinross.

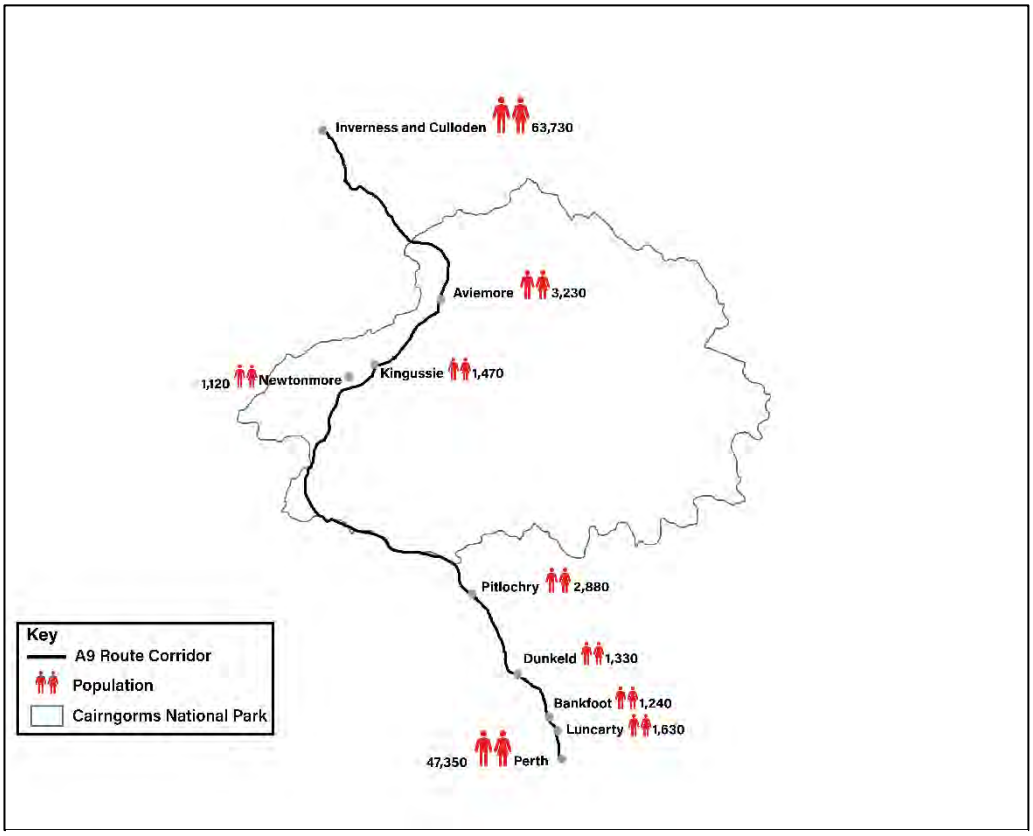


Figure 9 Population along the A9 Route Corridor (2020)

Scotland is a country of widely varying population density, as highlighted in Figure 10, with significant proportions of the current population living within the eight cities of Scotland (Inverness, Perth, Stirling, Dunfermline, Dundee, Aberdeen, Glasgow and Edinburgh) and a majority of the population located within the Central Belt region.

Northern Scotland, including the Highlands, Moray, and Perth and Kinross (excluding Perth) has a low population density (less than 50 people/km^2) as shown in Figure 10. This is one of the lowest population density levels across the entirety of the United Kingdom.

[65] Mid-2020 Population Estimates for Settlements and Localities in Scotland, National Records of Scotland, 2020, https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/settlements-and-localities/mid-2020#:~:text=Mid%2D2020%20Population%20Estimates%20for%20Settlements%20and%20Localities%20in%20Scotland,-Last%20update%3A%2031&text=There%20were%20514%20settlements%20in,settlements%20and%20localities%20was%204%2C974%2C670.

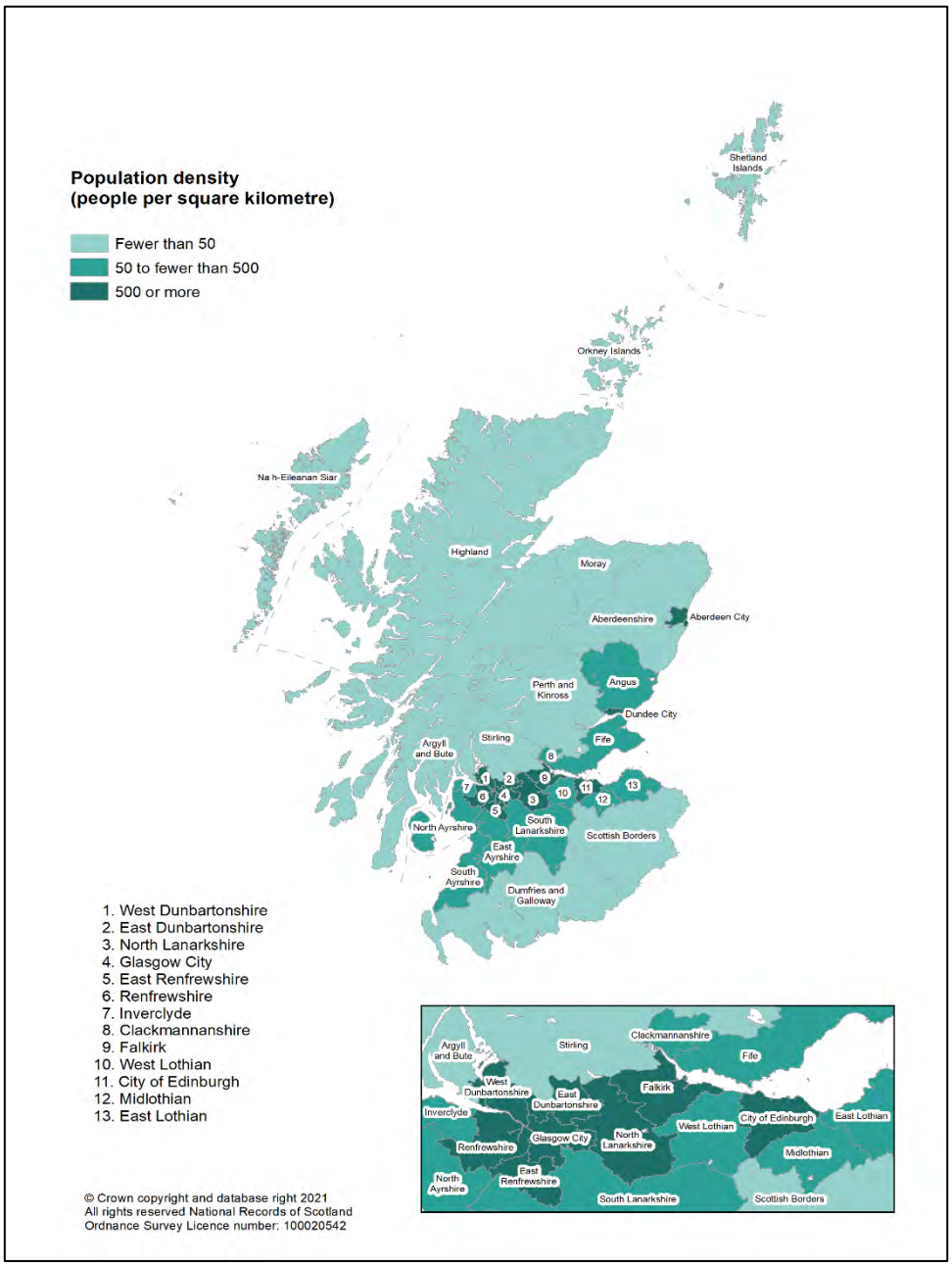


Figure 10 Scottish Population Density Estimates per Council Area, 2020, National Records of Scotland

Population trends between the two reported Scottish Censuses in 2001 and 2011 are detailed in Table 8 which highlights the significant growth that has occurred across the three key Local Authorities in the context of the A9 Dualling Programme, with growth exceeding the Scottish national average in all instances.

Table 8. Population Trends on the A9 Corridor

Local Authority	Pop. Growth 2001-11[66]
Perth & Kinross	+8.7%
Highlands	+11.1%
Moray	+7.3%
Scotland (Average)	+4.6%

Source: Scotland's Census

For the settlements along the A9, notable population increases between 2001 and 2011 were observed to occur within Aviemore (31.2%), Luncarty (31.3%), and Dunkeld and Birnam (28%) – highlighting the growth on the southern and northern extents of the corridor. Furthermore, population in the Greater Inverness area was noted to have increased at a significantly faster rate (49.5%) than other comparable urban settlements such as Perth (8.1%) and Stirling (10.6%) and was the fastest growing city in Scotland across this period.

Population growth across these settlements between the last Census for which figures are available, in 2011, at the time of the assessment and the most recent 2020 mid-year estimates is highlighted in Figure 11. Between 2011 and 2020 population growth occurred at a faster level in Inverness and Culloden (4.1%), Pitlochry (3.8%), Aviemore (2.6%), and Dunkeld and Birnam (3.3%) than the other settlements along the length of the A9 Dualling Programme. However, across the remainder of these settlements it is noted that, with exception of Bankfoot (-1.4%), Luncarty (-1.9%), and Kingussie (-0.4%), which recorded small reductions in population, a positive growth rate was recorded (>1%).

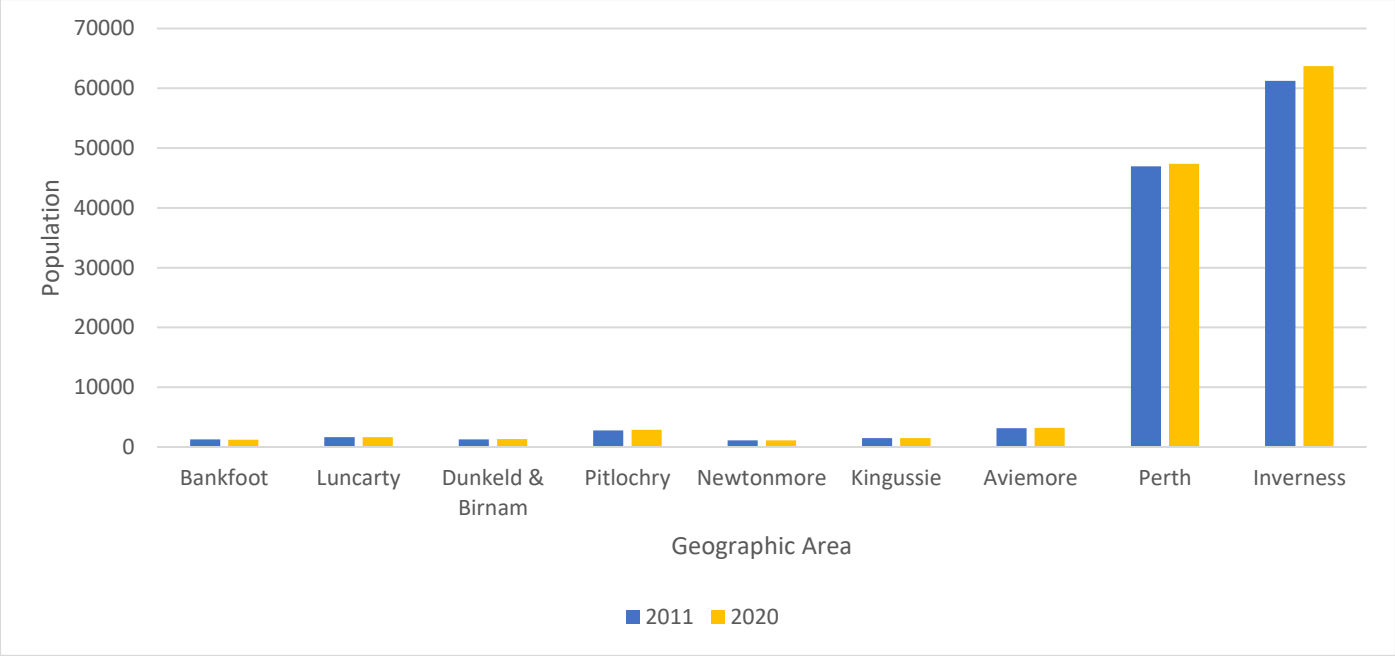


Figure 11 Population Growth Estimates (2011 - 2020)

[66] Scotland's, 2001 and 2011 Census, https://www.scotlandscensus.gov.uk/

As the Scottish Census in 2022 has not yet been reported upon at the time of the assessment, the most recent (2018-based) population projections have been interrogated at the Local Authority level over the medium and long term[67]. Over a ten-year period between 2018 and 2028, as shown in Table 9, population growth is forecast, albeit at a lower rate across all authorities except for Moray, where a slight population decline is indicated. Population levels are forecasted to be lower than the Scottish average over this period.

Table 9 Projected Population Growth 2018 - 2028

Local Authority	Pop. Growth 2018 - 2028
Perth & Kinross	+0.98%
Highlands	+0.48%
Moray	-0.12%
Scotland (Average)	+1.82%

Looking beyond 2028 to 2043[68], population levels within these areas, as shown in Figure 12, are projected to decrease, with the highest rate of decline projected to occur in Moray (-2.8%) followed by Perth & Kinross and Highland, which are both projected to decline by approximately 1%.

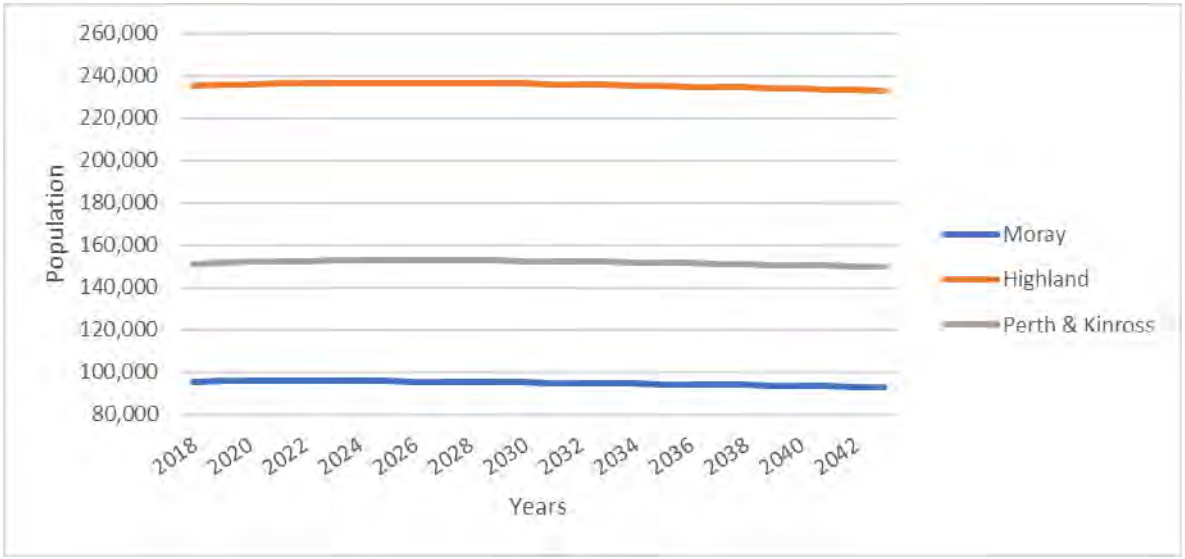


Figure 12 Projected Population Growth 2018 - 2043

At a nationwide level, Scotland's population levels are projected to continue increasing, with a 1% increase forecast between 2020 and 2030, however this is considerably lower than the combined UK forecast increase of 4% over the same period.[69] At a strategic level, Scotland's population growth is observed to be driven primarily by inwards migration which is increasingly becoming the main source of population growth as birth rates continue to gradually decline across both the UK and Scotland as a whole.

[68] National Records of Scotland, Population Projections for Scottish Areas (2018-based), 2020, Accessed May 2023
Population Projections for Scottish Areas (2018-based) | National Records of Scotland (nrscotland.gov.uk)
[69] Office for National Statistics, 2020-based interim national population projections, 2023, Accessed May 2023,
https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/2020basedinterimnationalpopulationprojectionsyearendingjune2022estimatedinternationalmigrationvariant

Regarding the key settlements that are located along the route and within direct proximity of the A9 Dualling Programme, their age profiles from both 2011 census data[70] and the most recent mid-year population estimates from 2020[71] are compared and displayed in Figure 13, where the 2011 and 2020 data sets are on the left and right columns respectively, which highlights the varied proportions of those who are either at retirement or working age and young people. Settlements observed to be in more rural locations such as Pitlochry, Newtonmore and Dunkeld and Birnam are noted to have a higher proportion of those of retirement age and therefore overall, a larger elderly population.

All settlements have seen an increase in the proportion of the population between 16 and 64 and all settlements, with the exception of Aviemore, have seen a decrease in the proportion 65 and over between 2011 and 2020. The greatest changes in population demographics were seen in the more rural settlements, with both Kingussie and Dunkeld and Birnam having around an 8% increase in the 16 to 64 year old population. Dunkeld and Birnam and Kingussie also had the greatest decrease in population of 65 years old and over. Newtonmore saw an increase of residents under 16 years old by 0.4%, whereas the rest of the settlements saw a decrease in the proportion of under 16s, which was again larger in rural settlements.

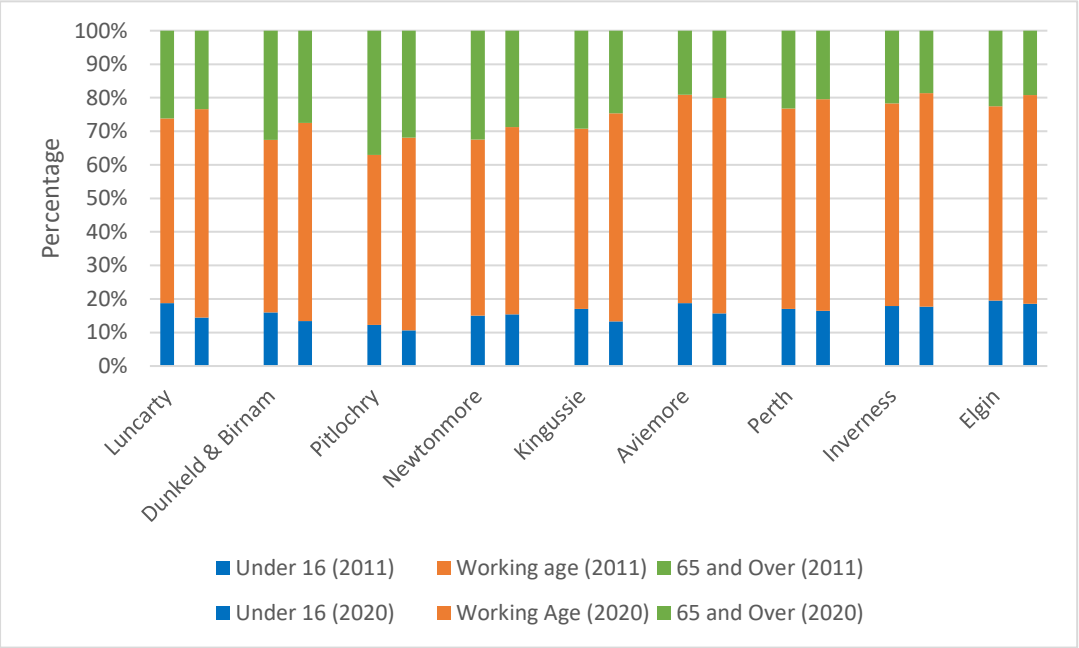


Figure 13 Age profiles of Settlements along the A9 Corridor (2011 and 2020)

At a Regional and National level, as shown in Figure 14, it is noted that the three main Local Authorities of the A9 Dualling Programme, in 2020, have a greater proportion of an elderly population and conversely a lower working age population than Scotland. Elderly population and population younger than 16 across these local authority areas is noted to have decreased between 2011 and 2020. While the working age population (16 to 64) across the three local authorities has experienced a 5.8% increase between 2011 and 2020, the national average for this demographic has decreased by 1%.

[70] Scotland's Census, Table KS102SC, Age Structure, 2011, Accessed May 2023, https://www.scotlandscensus.gov.uk/search-the-census#/
[71] National Records of Scotland, Mid-2020 Population Estimates for Settlements and Localities in Scotland, 2022, Accessed May 2023, https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/settlements-and-localities/mid-2020

Figure 14 National and Regional Age Profiles (2011 and 2020)

The settlements along the route have experienced an increase in the proportion of people of working age, except for Aviemore, as well as having greater proportions of an ageing population in contrast to regional and national levels and a noted reliance on inwards migration. The safeguarding of access to health, educational, leisure and employment opportunities is therefore of paramount importance. Infrastructure improvements such as the A9 Dualling Programme are likely to significantly increase accessibility and connectivity to / from these areas and contribute towards increasing the attractiveness of inwards migration to these existing communities and settlements.

Population levels have grown significantly across the A9 Route Corridor over the last twenty years with Inverness being the fastest growing city in Scotland, with forecasted population growth expected to reduce in alignment with national growth rates. The route is home to variously sized local communities which have an overall higher proportion of an elderly population than Scottish National Averages with there being a noted increase in the share of working age adults over recent years.

2.4.3.2 Deprivation

To better understand the Socio-Economic baseline conditions of the communities that live and work along the A9 corridor, the Scottish Index of Multiple Deprivation (SIMD)[72] for these communities has been analysed. SIMD is the Scottish Government's standard approach to identify areas of multiple deprivation in Scotland. It can help improve understanding about the outcomes and circumstances of people living in the most deprived areas in Scotland. It can also allow effective targeting of policies and funding where the aim is to wholly or partly tackle or take account of area concentrations of multiple deprivation. If an area is identified as 'deprived', this can relate to people having a low income, but it can also mean fewer

[72] Scottish Index of Multiple Deprivation 2020, Scottish Government, https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/?utm_source=redirect&utm_medium=shorturl&utm_campaign=simd

resources or opportunities. SIMD looks at the extent to which an area is deprived across seven domains: income, employment, education, health, access to services, crime and housing. These deprivation indicators are ranked on a scale from one to ten whereby one denotes an area of the highest deprivation and ten denoting an area of the lowest deprivation. These seven domains are amalgamated to calculate an approximate deprivation for a specific zonal area.

When assessed across these seven indicators, with exception of Perth and Inverness, none of the settlements along the A9 are observed to be within the 20% most deprived parts of Scotland. For the major settlements at either end of the A9 Route Corridor, these pockets of deprivation are sporadically located through these urban areas.

However, whilst the majority of all settlements along the A9 score relatively well across the deprivation indicators (Scored One to Ten), all of them have some of the lowest ranked geographic access ranks, with only Aviemore having a score higher than three, and the majority having the lowest score of one. Geographic access is defined through considering the weighted accessibility by motor vehicle (60%), public transport (30%) as well as access to broadband (10%), highlighting the amount of weight given to road connectivity and accessibility.

The SIMD highlights that there is a significant existing inequality in terms of geographic access to services, of which road connectivity, primarily through motor vehicle, is a significant enabler. Significant investment in the transport network in the form of the A9 Dualling Programme is expected to significantly improve access for local communities to key services, facilities and employment opportunities and substantially address this identified inequality.

Local Communities along the A9 Route Corridor have identified high levels of deprivation relating to geographic access to services which are disproportionately experienced for those located at the more rural areas of the route, where road connectivity is seen as a key enabler to improving identified deprivation levels.

2.4.3.3 Economic Performance

The economic landscape and potential opportunities need to be considered to understand whether there is a future need for improved transport connectivity and capacity to impact economic performance. These economic challenges and opportunities have been considered in the context of key identified economic performance indicators of relevance to the A9 Dualling Programme, the industries, and communities that live and work along the length of the route.

2.4.3.3.1 Income

To better understand income levels, Gross Disposable Household Income (GDHI) data, published by the Office for National Statistics has been examined[73]. GDHI per head is a good proxy for material welfare, as it measures individual disposable income, after taxes and benefits.

The broadest level of aggregated data is defined by 'NUTS 1' regions which includes England, Wales, Northern Ireland. As shown in Figure 15, at around £20,000 GDHI per head in 2019, Scotland was lower than the U.K and English averages of £21,000 and approximately £22,000 respectively. Whilst there have been modest growth levels in Scotland over recent years, historically Scotland has one of the lowest

[73] Regional Gross Disposable household income: all ITL level regions 1997 – 2020, ONS, https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/datasets/regionalgrossdisposablehouseholdincomegdhi

average growth rates in GDHI per head at 2.9% between 2017 and 2019 which was the lowest of all the constituent nations of the United Kingdom.

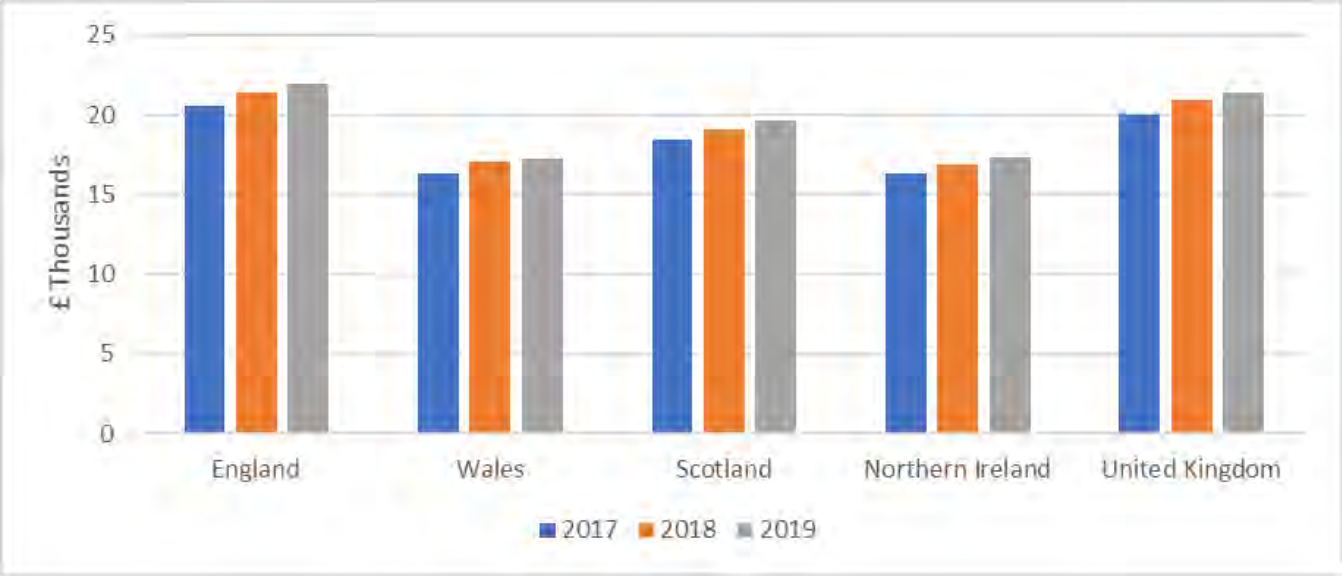


Figure 15 GDHI per head from 2017 - 2019 at 2020 price levels

Examining NUTS 1 level data alone can hide important economic differences at a regional level. In Scotland, as shown in Figure 16 *GDHI per head for NUTS-2 regions in Scotland*, whilst the Highlands and Islands Region is noted to perform better than some regions in Scotland, it still lags behind that of the UK average. The outlier of north eastern Scotland, which includes Aberdeenshire and the City of Aberdeen, is noted to be primarily driven by the strong economic performance of the energy sector and is not typical for the majority of other Scottish NUTS 1 regions.

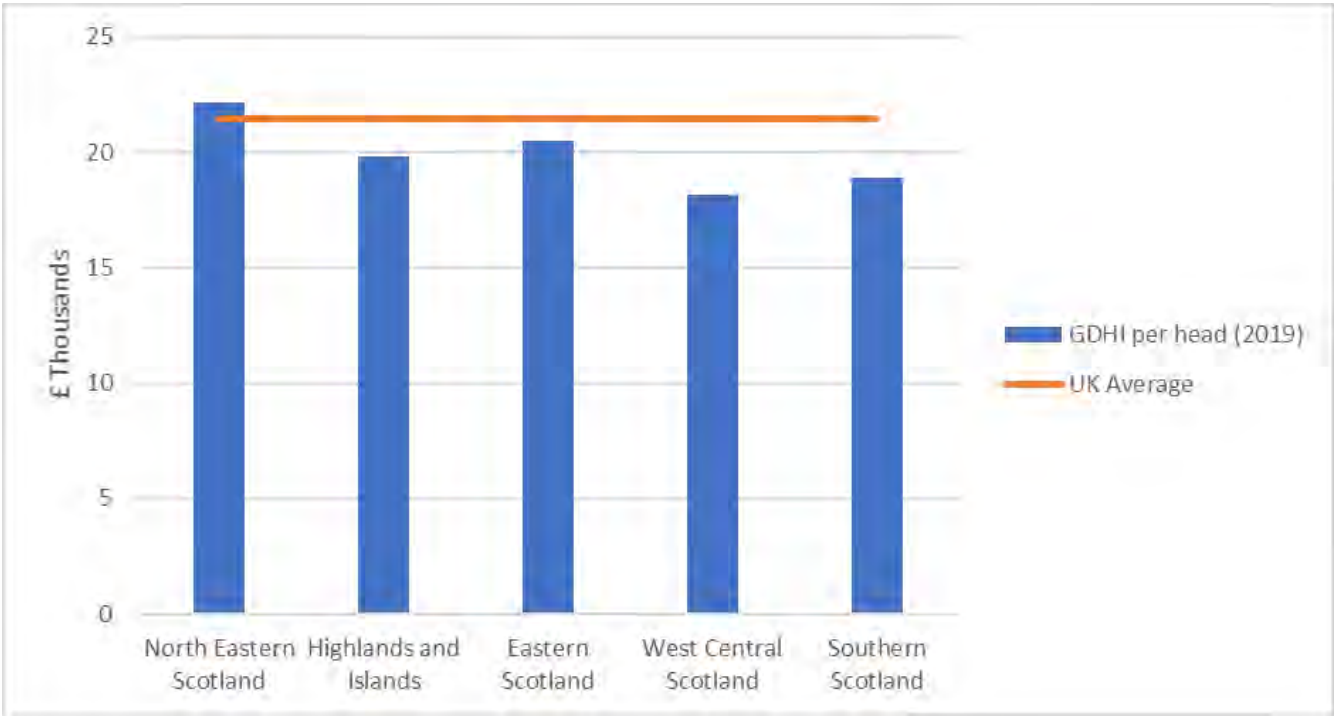


Figure 16 GDHI per head for NUTS-2 regions in Scotland

2.4.3.3.2 Gross Value Added

A further useful economic indicator is Gross Value Added (GVA) which represents the amount that individual businesses, industries, or sectors contribute to the economy. The sector and regional breakdown provided by the GVA measure helps policymakers decide which sectors and geographies need incentives or stimulus, and accordingly formulate specific policies. GDP is a key measure when it comes to making cross country analysis and comparing the incomes of different economies, whereas GVA has limited use in this regard.

In the case of the A9, GVA information can be used to explore the contribution of key Scottish sectors and industries to the economy in addition to analysing the regional spread of economic outputs. The latest this data has been published to is 2021 but has been assessed to 2019 as data published beyond this is prone to COVID-19 related impacts.

In 2019, Scotland's GVA totalled £147bn, which was approximately 7.5% of the UK total. In current basic prices, the Scottish GVA total represented annual growth of 3.5% when compared to 2018. GVA per head (based on the current residential population) was £27,000, an increase of 3% on the previous year. In terms of GVA growth relative to other parts of the UK, Scotland performs relatively well when assessed over a long time period but ranks fairly low when examining recent years alone[74].

At a regional level, Figure 17 highlights the relatively low economic outputs of the Highlands and Islands Region with growth in recent years noted to have stagnated somewhat in terms of growth. Whilst the Highlands and Islands sub-geographic area of Inverness, Nairn, Moray, Badenoch and Strathspey is the biggest contributor (46% of total), its output at £5,620m is comparably less than the southern end of the A9 Dualling Programme with Perth and Kinross and Stirling as an economic area contributing £6,967m, highlighting the significant difference in economic output at both ends of the A9 Dualling Programme.

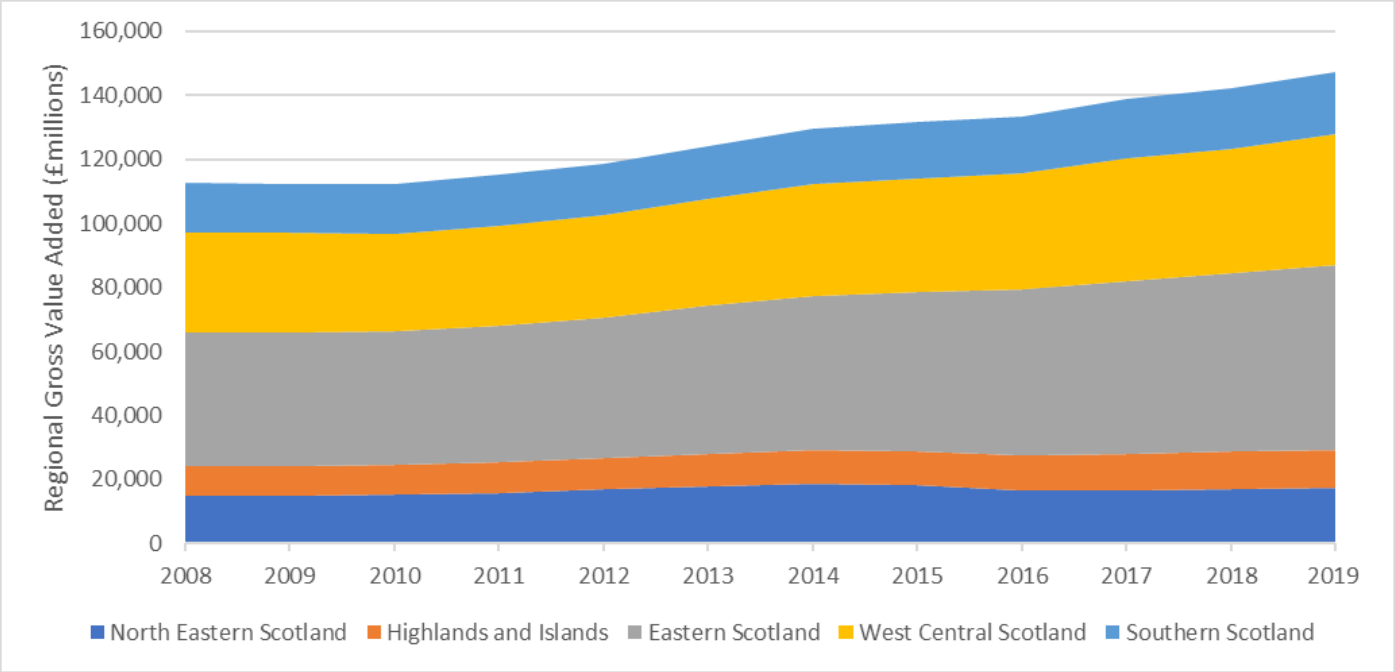


Figure 17 Regional Gross Value Added

[74] Office for National Statistics, Regional gross value added (balanced) by industry: all ITL regions, 2023, Accessed May 2023, https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalandrealregionalgrossvalueaddedbalancedbyindustry

From an industrial output perspective as shown in Figure 18, The Highland Council area has a higher industrial output than those of both Moray and Perth & Kinross. There has been continuous growth in GVA since 2008 which has been accelerating in recent years[75].

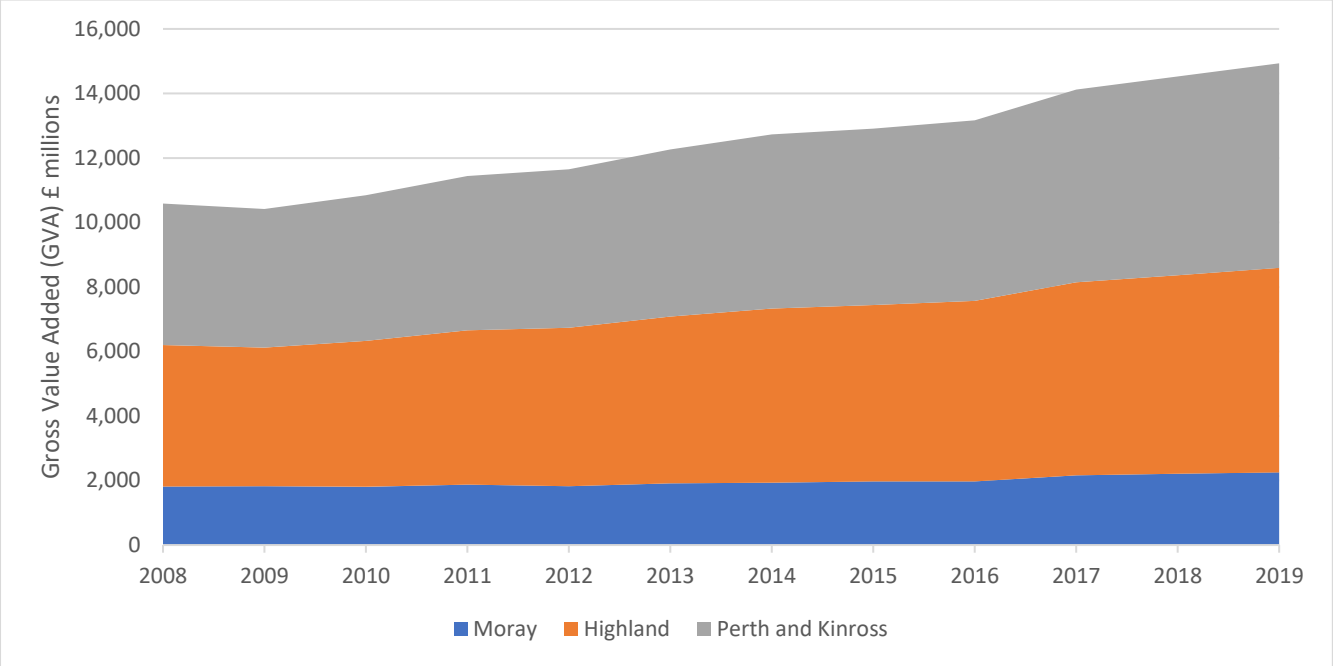


Figure 18 GVA by Council Area

Across these Council Areas, the largest contributors are those associated with agriculture, mineral extraction and utilities with manufacturing, human health and social work activities, public administration and defence, real estate activities and accommodation and food service activities also among the most productive industries.

Highland and Perth & Kinross have a considerably higher proportion of industrial output from accommodation and food service activities in comparison to Moray, which can be partially attributed to the significant tourism offerings within these regions, of which a notable proportion are located along the A9 between Perth and Inverness.

Both Highland and Moray have high output from the manufacturing and production of goods, which account for 10% and 27% of their total respective regional industrial output. These types of industrial activities generally have a higher reliance on transport networks than other industries such as professional services to access distribution markets and to also ensure that their goods can be moved effectively in a timely manner. The presence of a strong manufacturing and production sector has the potential to capitalise upon the improved connectivity and accessibility provided by the A9 Dualling Programme through increasing access to distribution markets.

2.4.3.3.3 Key Sectors

Industrial sectors of manufacturing, retail, logistics, tourism and utilities are identified as being key employment sectors of particular importance to A9 Dualling Programme. Table 10 summarises the importance of these sectors to the local authorities of Highland, Moray, and Perth & Kinross against comparable statistics for Scotland and Great Britain as a whole.

[75] Office for National Statistics, Regional gross value added (balanced by industry: local authorities by ITL1 region, 2023, Accessed May 2023, https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossvalueaddedbalancedbyindustrylocalauthoritiesbyitl1region

Table 10. Key Employment Sectors 2021[76]

Sector	Perth & Kinross, Moray and Highland %	Scotland %	Great Britain %
Manufacturing	8.5	7.1	7.6
Electricity, Gas, Steam and Air Conditioning Supply	2.2	0.7	0.4
Water Supply; Sewerage, Waste Management and Remediation Activities	1.6	0.8	0.7
Construction	7.2	6.1	4.9
Wholesale and Retail Trade; Repair Of Motor Vehicles And Motorcycles	16.4	14.4	14.4
Transportation and Storage	3.9	4.2	5.1
Accommodation and Food Service Activities	10.7	7.6	7.5

Industries associated with manufacturing, retail and logistics are likely to generate a higher volume of trips, primarily goods vehicles (e.g. LGVs and HGVs), which are likely to use the A9 for a proportion of their journey. In addition to these sectors, another key economic employment sector is that relating to tourism (e.g. food services and accommodation) which is highly reliant on road connectivity of which a significant proportion of assets are located either adjacent to or within the region of the A9 Dualling Programme.

These data sets exclude farm-based agriculture, which as highlighted earlier within this section is an important economic contributor in the context of the A9 Dualling Programme, and therefore whilst not fully capturing all key employment sectors is a useful indicator of the role and performance of wider industries across the region.

2.4.3.3.4 Freight

The A9 is a critical corridor in Scotland for facilitating the efficient movement of goods. A Specialised Goods Vehicle Count (SGVC) was undertaken in February and September 2014 which is still identified to be of relevance regarding providing an indication of the usage of the A9 Route Corridor from a freight perspective. The volume of the type of goods transported per year, as estimated by the collected data, are set out in Table 11.

Table 11.

[76] Office for National Statistics (NOMIS), Labour Market Profile, 2021, Accessed May 2023, https://www.nomisweb.co.uk/reports/lmp/la/contents.aspx

Table 11. Estimated Annual Tonnage (Rounded) of Goods Transport along the A9 Route Corridor

Good Transported	Northbound	Southbound	Total
Automotive	155,000	37,000	**192,000**
Grain	884,000	702,000	**1,586,000**
Aggregates	451,000	101,000	**552,000**
Retail	163,000	68,000	**231,000**
General & Container	2,559,000	1,878,000	**4,437,000**
Waste	23,000	145,000	**168,000**
Parcels	402,000	94,000	**496,000**
Logs	59,000	58,000	**117,000**
Whisky	0	197,000	**197,000**
Oil	186,000	19,000	**205,000**
Biomass	0	206,000	**206,000**
Timber	24,000	270,000	**294,000**
Other	536,000	521,000	**1,057,000**
Total	**5,442,000**	**4,296,000**	**9,738,000**

Table 11As shown in Table 11, there is a notably higher volume of goods carried northbound (56%) along the A9 Route Corridor in comparison to southbound movements (44%). This could be attributed to vehicles that travel southbound fully laden may not return with such a high volume of goods and in some instances could be travelling with no goods (i.e. empty running), whisky and biomass movements being notable examples. It is noted that in recent years there has been a concerted effort between freight generating sectors to improve the efficiency of the movement of goods through the sharing of vehicle movements to cater for multiple needs[77].

Factoring the survey data collected to a full year indicates that there is almost 10 million tonnes of goods transported along the A9 Route Corridor on an annual basis. Considering both the date of the survey in 2014 and the significant levels of employment growth at the northern and southern extents of the A9 Dualling Programme and further afield it is expected that the current volume and associated value of goods travelling along the corridor (See Figure 19) has and will continue to increase.

Further assessment of the SGVC also identified the following:

- In freight terms, the A9 does not operate in isolation and is often used in conjunction with the A95, A96 and A90;

[77] The Value of Freight, Vivideconomics for National Infrastructure Commission, 2019, https://nic.org.uk/app/uploads/Future-of-Freight_The-Value-of-Freight_Vivid-Economics.pdf

- Analysis of freight travel patterns indicates a slight, but noticeable imbalance consistent with a number of vehicles operating an anticlockwise circuit from the Central Belt to Aberdeen then returning southbound via the A9;
- There are typically 1,300 lorry movements daily on the A9 Route Corridor with more freight traffic on the southern section of the A9;
- The amount of freight traffic utilising the A9 Route Corridor declines steadily as the route heads north;
- Half of all freight vehicles observed during the SGVC at Pitlochry were seen again at Aviemore;
- Whilst 70% of all freight vehicles observed at Aviemore were seen at Pitlochry;
- A large number of trunking operations (i.e. long distance movements of primary goods) were observed which is consistent with the estimated value of different industry sectors on the A9; and
- A large number of hauliers were regionally based, with a relatively low number of national hauliers. Less than 1% of freight vehicles were foreign registered.

Further evidence of the role of the A9 between Perth and Inverness for the movement of goods is highlighted through Roadside Interviews (RSIs) which were undertaken in 2012 which, as shown in Figure 19, provides an overview to the type of goods that are typically transported.

In view of the A9 being the main North-South road link in Scotland and considering that the locations of key International Gateways for the movement of goods abroad are accessed via the A9, it is not expected that freight volumes on the A9 will significantly change. While the destination for goods vehicles may change towards locations that facilitate the movement of goods to non-EU based markets such as the Americas, Asia and Africa, which are likely to be based on the western and southern coasts of the UK, these vehicles are still likely to require use of the A9 for a proportion of their journey regardless of a potential change of destination. At this stage, it is uncertain how freight movements may be impacted in the longer term as a result of Brexit.

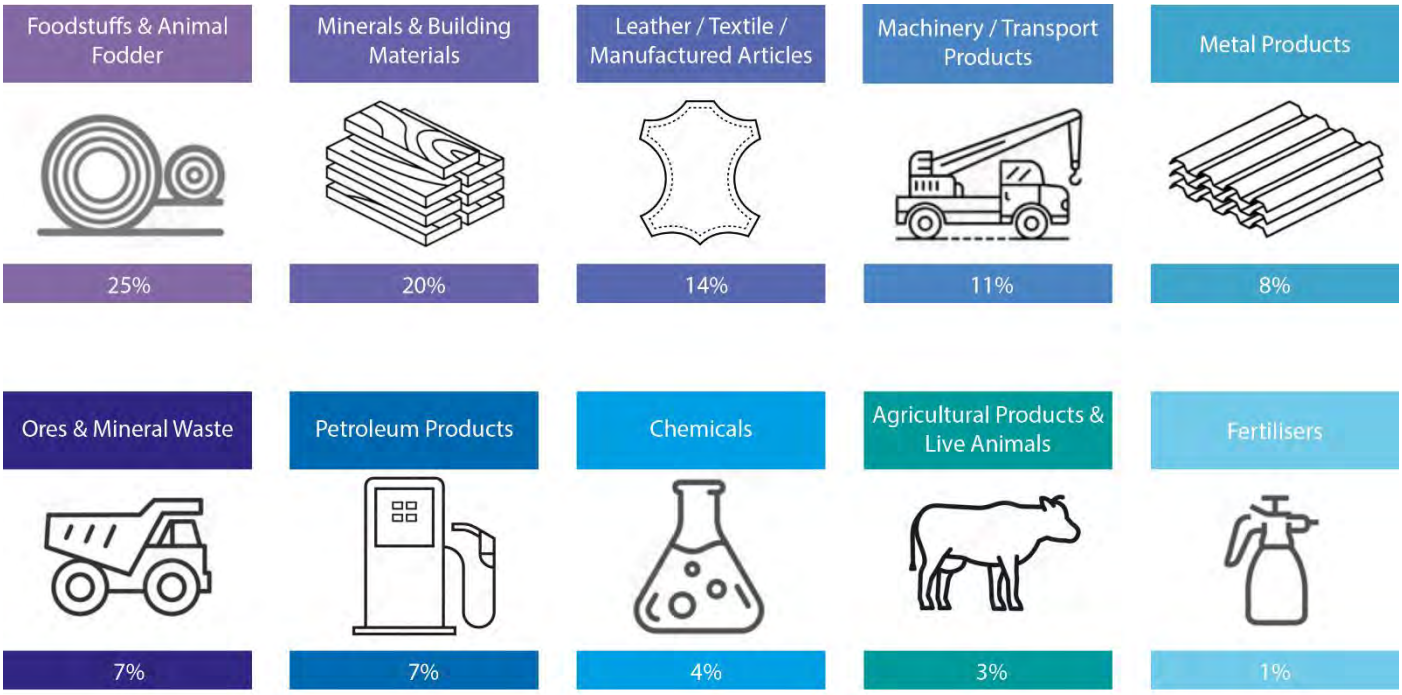


Figure 19: Enterprise Usage of the A9 route corridor

There is a regional disparity in economic performance with the Highlands and Islands region lagging behind other regions in terms of average income per capita. Across the region of the A9 between Perth and Inverness, the key employment sectors are manufacturing, retail, logistics, tourism and utilities in which it is noted that a significant proportion of these sectors are highly reliant upon transport connectivity, particularly from a road perspective to remain economically competitive. Some of these key employment sectors have a strong reliance on the A9 Route Corridor to enable the movement of people, goods and services with there being a significant presence of goods vehicles (i.e. LGVs and HGVs).

2.4.3.4 Business User Surveys

Business consultations conducted in 2013 and 2014 have highlighted the various ways in which transport can impact upon economic performance. Consultations included interviews with a cross section of businesses and interviews with freight industry representatives and hauliers:

- Many products delivered via the A9, such as fishery products, are time critical and can be impacted severely by slow journey times and road closures;
- Staff on business journeys noted the need to factor in additional unproductive travel time to account for current journey time variability;
- Hauliers noted the difficulty in completing return trips to Glasgow in one day within daytime hours;
- Tourism can suffer from road closures and note that visitors are less likely to return following bad driving experiences on the A9; and
- For forestry, haulage time can be critical and delays on the A9 can significantly increase costs.

Figure 20 presents views of businesses that regularly make use of the A9 for transporting goods, business travel, or for commuting, highlighting constraints and problems while travelling on the A9 between Perth and Inverness.

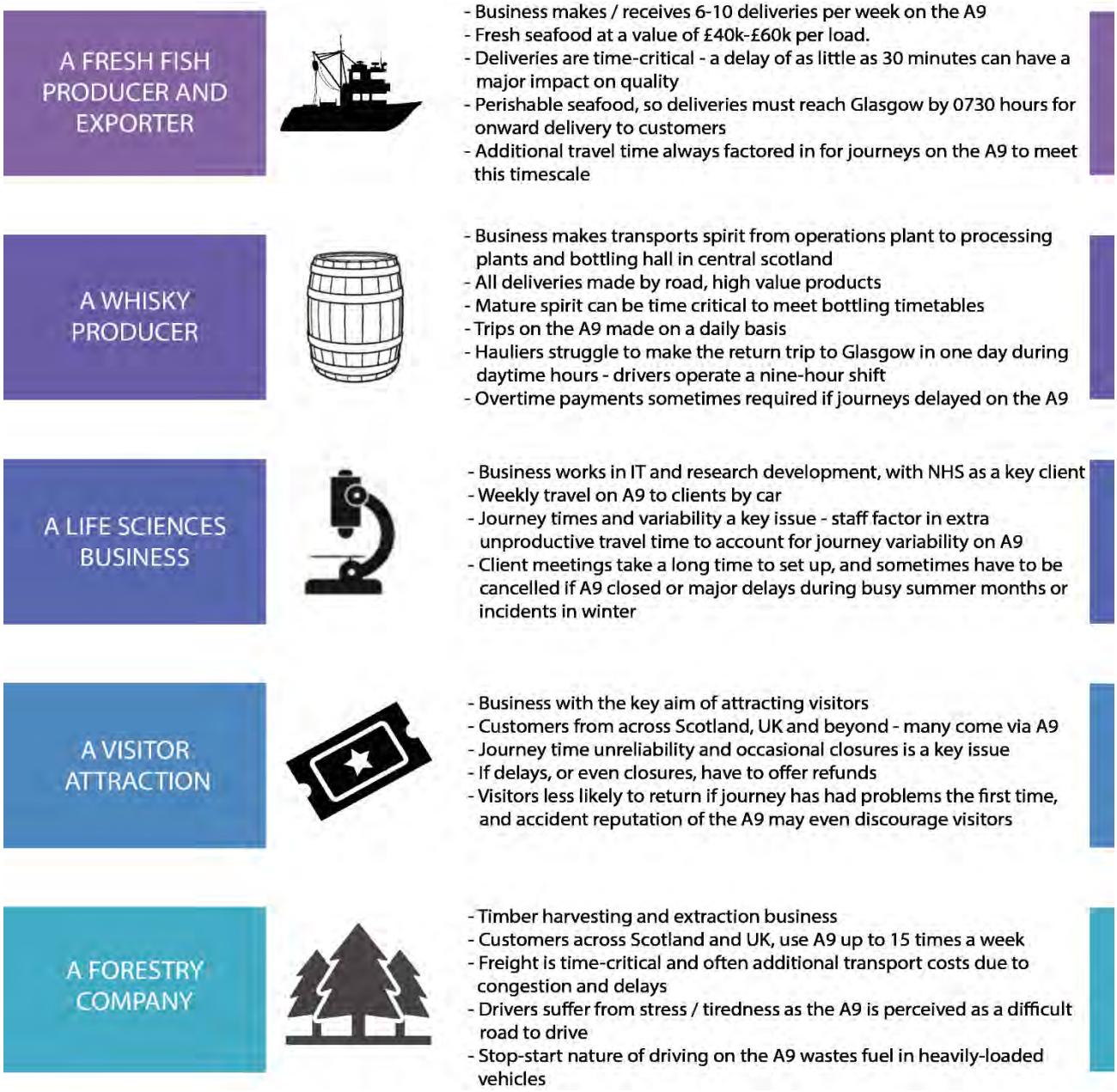


Figure 20 Business Users views of the A9

2.4.3.4.1 Spatial Economic Profiles

Economic profiles for the regions and areas that are both directly and indirectly served by the A9 between Perth and Inverness are summarised in Figure 21 and Figure 22. They highlight the depth and breadth of economic activity, of which a significant proportion is dependent upon the connectivity and accessibility provided by the strategic road network, including the A9.

Inverness

- Regional hub for employment, retail and leisure activities in the Highlands.
- Is home to burgeoning Life Sciences and Technology sectors
- Acts as a hub for Tourists due to its proximity to major assets such as along the Great Glen such as Loch Ness and closer such as Culloden Battlefield

The Highlands

- Internationally recognised area of excellence for whisky, and is the largest whisky producing region in Scotland
- Is one of the most visited regions in the U.K. outside of London with notable tourism assests such as The Great Glen and Glen Affric

Perth & Kinross

- Is a county of two distinct characters, primarily influenced by its diverse ranging geography
- The southern extent of the county hosts a highly successful and diverse agricultural sector
- Nothern parts are attractive tourism destinations such as Pitlochry and Aberfeldy

Cairngorms National Park

- Is an internationally recognised Tourism destination, particularly for adventure and leisure activities
- Tourism is vital to the local economy which accounts for 30% of its GVA and accounts for 43% of all employment
- An estimated 2 million visitors travel to the area annually

Moray

- Synonymous with the food and drink industry. Home to household brands such as Baxters, Walkers and Glenlivet and Glenfiddich whisky.
- The area has a track record in military aerospace, with RAF Lossiemouth the service's largest air base.
- The area plays an increasingly important role in offshore wind energy

Perth

- Regarded as the Ancient Capital of Scotland, the historic city is the regional hub for agriculture, manufacturing and services
- Acts as a base for tourists, with notable assets such as Scone Palace
- It's unique location caters for both urban and rural needs

Figure 21 Economic Profiles

Outer Hebrides

- Strong prospectus for growth in the renewable energy sector at Arnish and Lewis Castle College, Stornaway
- Breasclete is part of the wider life sciences cluster in the Highlands and Islands region
- Thriving tourism and food beverage sectors

Lochaber, Skye and Wester Ross

- Strong tourism sector, with recent strong growth in adventure tourism, and well established food and drink sector
- Emerging create industry sector and micro-enterprises specialising in I.T

Orkney

- Agriculture, particularly sheep and cattle grazing, is a core of the local economy
- Home to the European Marine Energy Centre with a highly successful renewable energy sector
- Create industries and a thriving tourism sector

Inner Moray Firth

- Home to multiple International Gateways, most notably the Port of Cromaty Firth which supports military, offshore energy and cruise industry sectors
- Thriving tourism and food and beverage sectors

Caithness and Sutherland

- Agriculture, forestry and fishing are dominant economic sectors
- Is home to a burgeoning renewable energy sector
- Will host Scotland's portal to the final frontier in the form of the UKs first space port

Figure 22 Economic Profiles

2.4.4 Travel Demand

2.4.4.1 Car Ownership and Mode Share

Due to the rural character of the A9 and the higher level of dependency on private vehicle access, the number of households with access to a car or van as shown in Figure 23 is greater than the Scotland average (70%) in the Highlands (79%), Perth & Kinross (79%) and Moray (80%)[78].

When examining the proportion of households with access to a higher number of cars or vans, all three Local Authorities in relation to the A9 Dualling Programme have a higher percentage of households that have either two cars / vans or three or more cars / vans compared to Scotland as shown in Figure 23.

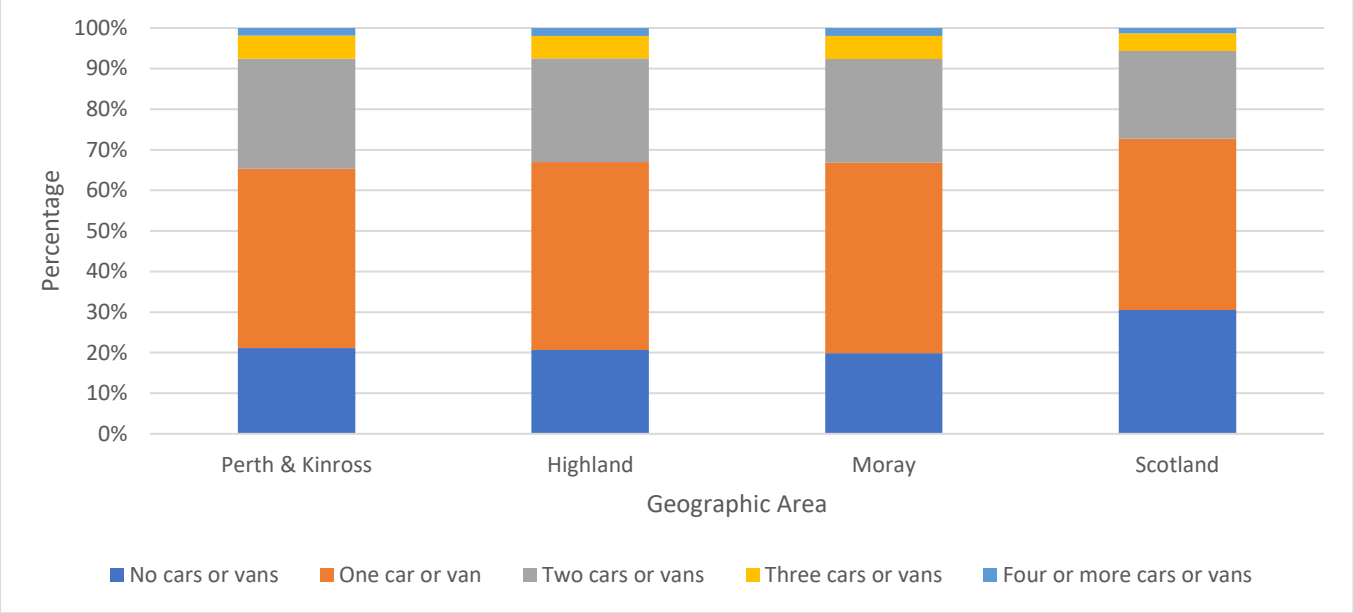


Figure 23 Regional and National Percentages of Households with Access to 2 Cars / Vans and above

At a more local level for settlements along the length of the A9 Dualling Programme, all settlements which are noted to be particularly rural such as Kingussie, Newtonmore and Luncarty have a higher percentage of households that have access to two cars / vans and three cars / vans or more when compared against the Scottish average, as shown in Figure 24. Lower levels within the urban areas of Perth and Inverness are unsurprising due to the wider offering of alternative transport modes within more built up areas.

[78] 2011 Scottish Census, Scotland's Census, 2011, https://www.scotlandscensus.gov.uk/

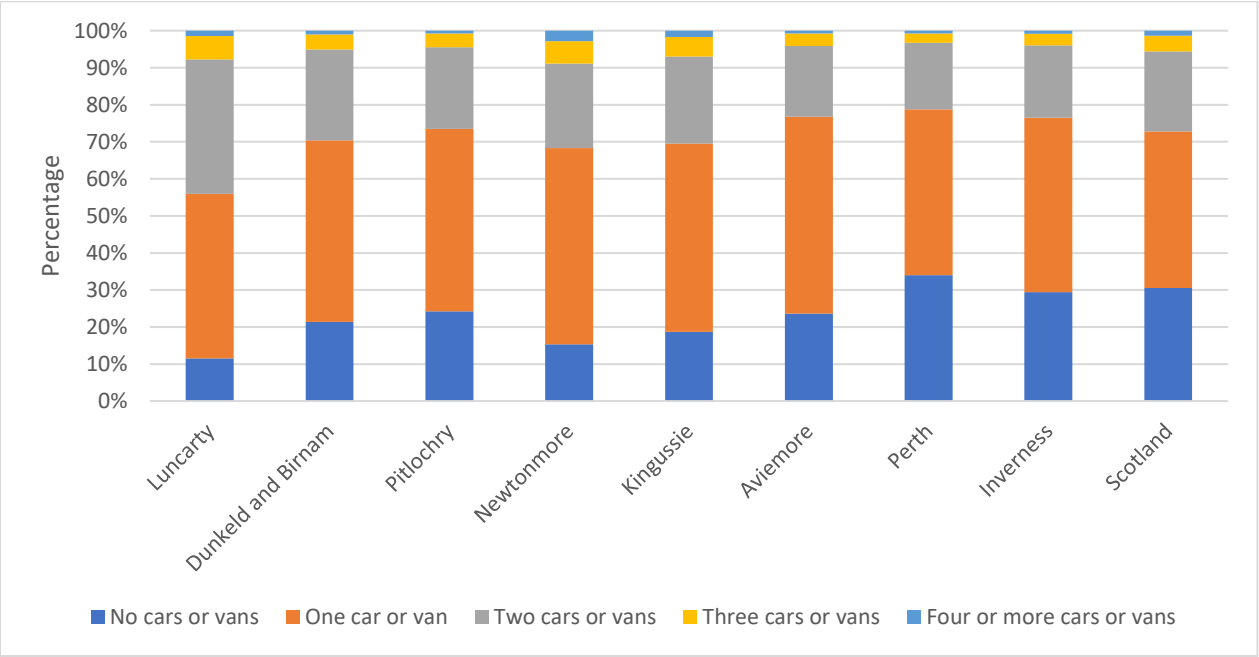


Figure 24 Percentages per Settlement of Households with Access to 2 Cars / Vans and above

Collectively at both a regional and local level, the study area of the A9 Dualling Programme is noted to have a high reliance on road connectivity and accessibility which is demonstrated through higher car / van ownership levels and a higher prevalence of households having access to multiple vehicles compared to the national benchmark.

This identified level of reliance on car / van ownership is further highlighted through interrogation of Method of Travel to Work and Study data from the 2011 Scotland Census[79]. These data sets were analysed and assessed to establish the existing transport mode share for communities and its residents that live within settlements along the A9 as well as to understand this context in relation to wider Scottish and UK comparisons.

The results of assessment of these data sets are presented in Figure 25 and Figure 26 which highlight the following:

[79] Scotland's 2011 Census, https://www.scotlandscensus.gov.uk/search-the-census#/

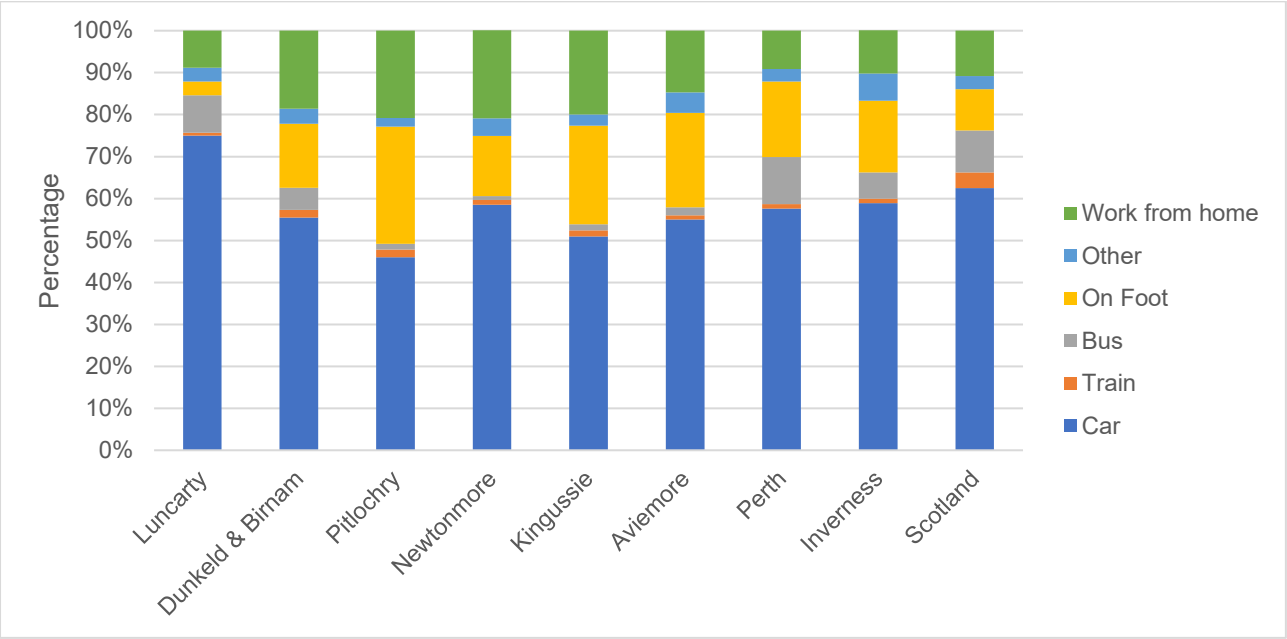


Figure 25 Percentage of People Travelling to Work by Mode

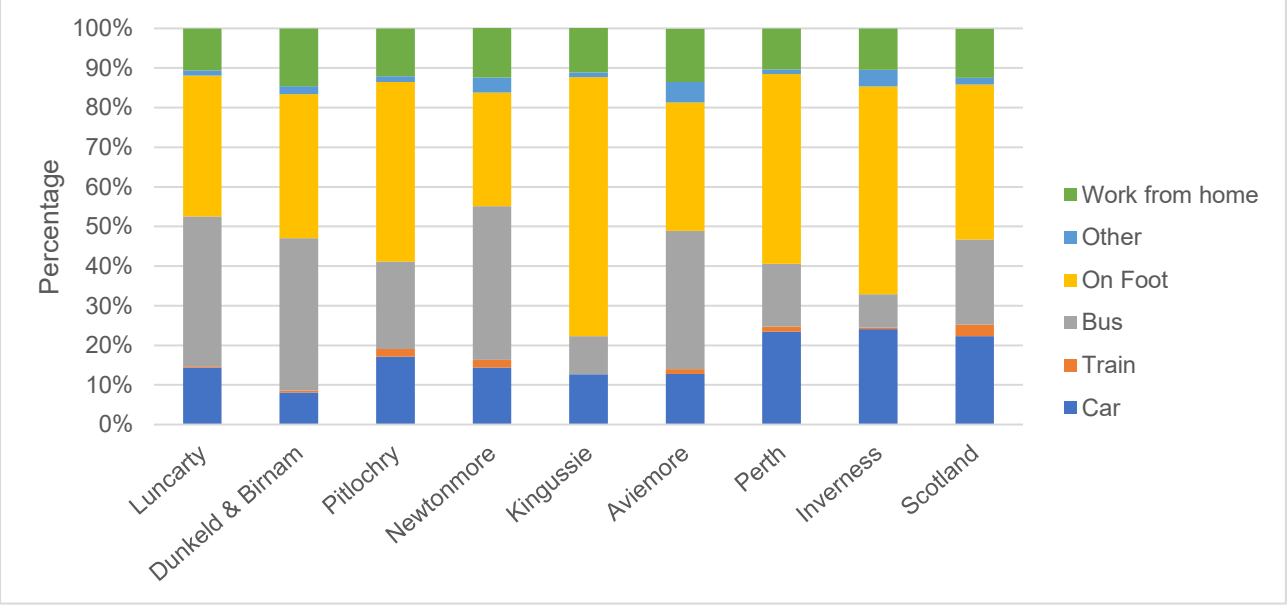


Figure 26 Percentage of People Travelling to Study by Mode

- All of the settlements except Luncarty have lower levels of private car usage for commuting than the Scottish National Average. The highest level of car usage was in Luncarty (75%) which highlights the high levels of commuting via car to Perth and the wider area.
- Active travel (Walking, Cycling and Wheeling) as a mode of travel to work was noted to be, generally, significantly higher in settlements along the A9 corridor than the Scottish average. Across these settlements, the proportion of those who travel via foot are significantly higher with Pitlochry's level (28%) being nearly three times than the Scottish (9%) national average. This active travel trend was also noted to be applicable to Kingussie (24%), Aviemore (23%) as well as Dunkeld and Birnam (15%).
- Travel by public transport (bus, coach and rail) to work is significantly lower within settlements along the A9 corridor, however, travel by bus to educational facilities is significantly higher than Scottish

levels for the majority of settlements. It is also noted that a larger proportion of the workforce within these settlements work from home compared to Scottish national average.

2.4.4.2 Travel Patterns

Information from Roadside Interview Surveys (RSIs) that were carried out at ten locations on the A9 in 2012 has been analysed to examine key places of origin and destination for journeys made along the A9 corridor as well as further afield.

This is shown in Figure 27 overleaf, where the role of the A9 is highlighted with journeys from both across Scotland and the wider United Kingdom making use of the A9 on a typical day, with the highest levels of demand originating from the Central Belt, Moray and North East Scotland. In the figure, arrows with a larger thickness denote higher travel demand than those which are smaller.

Additionally, the RSI survey data indicates a higher proportion of journeys accessing the length of the A9 Dualling Programme from the following areas:

- From the east of Inverness via the A96
- From the A95 which joins the A9 north of Aviemore
- From Fort William via the A86; and
- From the south of Perth, with trips originating from Edinburgh, the West of Scotland and Northern England

Considering current vehicle ownership levels at a regional and local level in addition to considering the role that the length of the A9 Dualling Programme plays in facilitating and accommodating significant journeys, there is an identified opportunity to enhance the current standard of the A9 between Perth and Inverness to improve connectivity and accessibility in addition to safeguarding and enhancing critical transport infrastructure for communities and residents along its length.

The COVID-19 Pandemic has also likely influenced some long term changes in travel behaviors which can be attributed to a change in working patterns and schedules for some individuals. An increase in those working from home is likely to have reduced unnecessary journeys at both a local and strategic level however there are many activities which are likely to have remained unchanged such as those in construction, hospitality, retail and agriculture. Correspondingly, a further shift in consumer behaviors towards increased usage of online retailers is likely to have contributed towards an increase in the movement of goods by transport, particularly road.

Local Communities and settlements along the A9 Route Corridor have both higher car ownership levels and a higher proportion of cars per household than the Scottish National Average which when coupled with there being generally higher levels of commuting via private car for work, highlights the high levels of car dependency across the region and the importance of road connectivity and accessibility.

Figure 27 Origin and Destination of Journeys using the A9 based on 2012 Roadside Interviews

2.4.5 Public Transport

In terms of Public Transport provision, the settlements along the A9 between Perth and Inverness are generally served by rail, bus and coach services which whilst primarily catering for long distance and strategic movements, also provide crucial connectivity and accessibility to key services and facilities.

2.4.5.1 Bus / Coach

The A9 is used by a number of bus and coach services which serve local communities, interurban travel, school travel and organised tours. Only a limited number of services have facilities (i.e. bus stops and lay-bys) along the A9 between Perth and Inverness, with the majority of these assets being located within settlements along the route in addition to those at Perth and Inverness.

The key bus services that use the A9 and serve settlements along the corridor between Perth and Inverness are set out in Table 12 which highlights the relatively low frequency of services on a typical day with there being a lower provision of services on a weekend, particularly on a Sunday. The frequencies stated for Monday to Friday are on school days, reflecting the range of rural bus users and trip purposes. Furthermore, not all existing services that travel between Perth and Inverness stop at all of the key settlements along the corridor such as Kingussie and Newtonmore, highlighting the limited provision of accessibility by bus for those that live and work along the length of A9 Dualling Programme.

In terms of journey times, the more direct services between Perth and Inverness can, at a minimum, complete this journey in approximately 2.5 hours with less direct services taking approximately 3 hours. These faster bus services operate on a notably higher frequency than the more localised services. In comparison the car journey between Perth bus station and Inverness bus station takes approximately 2hrs 11mins[80].

Table 12 Bus Services[81] [82]

Bus Operator	Bus Number	Route	Weekday	Saturday	Sunday
Stagecoach	15	Inverness - Daviot - Moy - Tomatin - Coignashee	5 per day	1 every 2 hours	No service
Stagecoach	23/23A	Perth – Dunkeld – Ballinluig - Aberfeldy	1 per hour	1 per hour	1 every 2 hours
Stagecoach	24	Ballinluig – Pitlochry	1 per hour	1 per hour	No service
Stagecoach	27	Perth – Dunkeld – Ballinluig - Pitlochry	1 per day	1 per day	No service
Stagecoach	34	Perth – Luncarty – Blairgowrie	2 per hour	1 per hour	No service

[80] Google Maps https://www.google.co.uk/maps/ (car journey time on a Thursday afternoon May 2023 journey)
[81] Traveline, Accessed May 2023, https://www.traveline.info/
[82] Stagecoach Badenoch & Strathspey Timetable, Accessed May 2023, https://tiscon-maps-stagecoachbus.s3.amazonaws.com/Timetables/North%20Scotland/Highlands/Badenoch%20and%20Strathspey%20Area%20Guide%20timetable%20July%2022.pdf

Bus Operator	Bus Number	Route	Weekday	Saturday	Sunday
Stagecoach	37	Inverness-Daviot-Moy-Tomantin-Carrbridge	3 per day	3 per day	No service
Stagecoach	X37	Inverness-Tomantin-Carrbridge-Grantown-Aviemore	5 per day	3 per day	No service
Stagecoach	39	Aviemore-Kingussie-Newtonmore	7 per day	4 per day	2 per day
Stagecoach	M39	Inverness-Aviemore-Newtonmore	4 per day	2 per day	1 per day
Stagecoach	83	Aberfeldy – Pitlochry – Blair Atholl	No service	No service	3 per day
Stagecoach	137	Aviemore-Feshiebridge-Kingussie	1 per day	No service	No service
Stagecoach	138	Aviemore-Kincraig-Kingussie	6 per day	No service	No service
Stagecoach	139	Aviemore-Kincraig-Kingussie-Dalwhinnie	2 per day	No service	No service
Stagecoach	140	Aviemore-Kincraog-Kingussie-Strathmashie	2 per day	No service	No service
Citylink	M10	Glasgow - Perth - Pitlochry - Dalwhinnie - Aviemore - Inverness	1 every 2 hours	1 every 2 hours	1 every 2 hours
Citylink	M90	Perth - Pitlochry - Dalwhinnie - Aviemore - Inverness	1 every 2 hours	1 every 2 hours	1 every 2 hours
Citylink	M91	Perth - Birnam - Kindallachan - Ballinluig - Pitlochry - Blair Atholl - Bruar - Dalwhinnie - Newtonmore - Kingussie - Lynchat - Kincraig - Alvie - Aviemore - Tomatin - Inverness	1 per day	1 per day	1 per day
Elizabeth Yule Transport	87/887	Pitlochry – Blair Atholl – Old Struan	5 per day	5 per day	No service
D&E Coaches	300A	Inverness – Culloden – Meallmore	4 per day	4 per day	4 per day

As well as conventional bus services along the A9 between Perth and Inverness, the A9 also accommodates coach trips which are primarily associated with the tourism sector with a majority of these tours travelling significant distances such as from Edinburgh and Glasgow in the Central Belt but also from other parts of the UK as well.

The COVID-19 Pandemic significantly reduced overall bus patronage levels as a result of travel restrictions and the temporary closure of a variety of health, employment, leisure and education facilities which in some instances, would be accessed by bus. Although journeys increased as restrictions were relaxed and ultimately removed, bus patronage levels overall across Scotland continue to decline with rural areas in particular less likely to use buses for journeys[83].

2.4.5.2 Rail

The Highland Main Line is the main and only railway line that runs along the A9 Route Corridor between Perth and Inverness and runs parallel to the A9 for the majority of its length. At a wider level, it is one of only two railway lines that connect the central and northern parts of Scotland with the Highland Main Line being the most direct by a considerable margin. This means that the railway line along the length of the A9 Dualling Programme competes for the needs of both people and goods and has to balance both functions.

The railway line and associated stations along the length of the A9 between Perth and Inverness are shown in Figure 28 which notes the relative low provision of parking and cycling facilities at these locations. Furthermore, whilst all the stations act as transport hubs through facilitating local and regional bus services, as highlighted earlier in this section, these are often infrequent and may not cater for the needs of those that live and work within the surrounding areas of these locations.

Constrained by the geography, a large proportion of the Highland Main Line is single track and unlike other key parts of the Scottish and British Rail Networks, it is not currently electrified which limits the effective movement of goods and people along the A9 corridor via rail.

[83] Transport Scotland, Scottish Transport Statistics 2022, 2022, https://www.transport.gov.scot/publication/scottish-transport-statistics-2022/

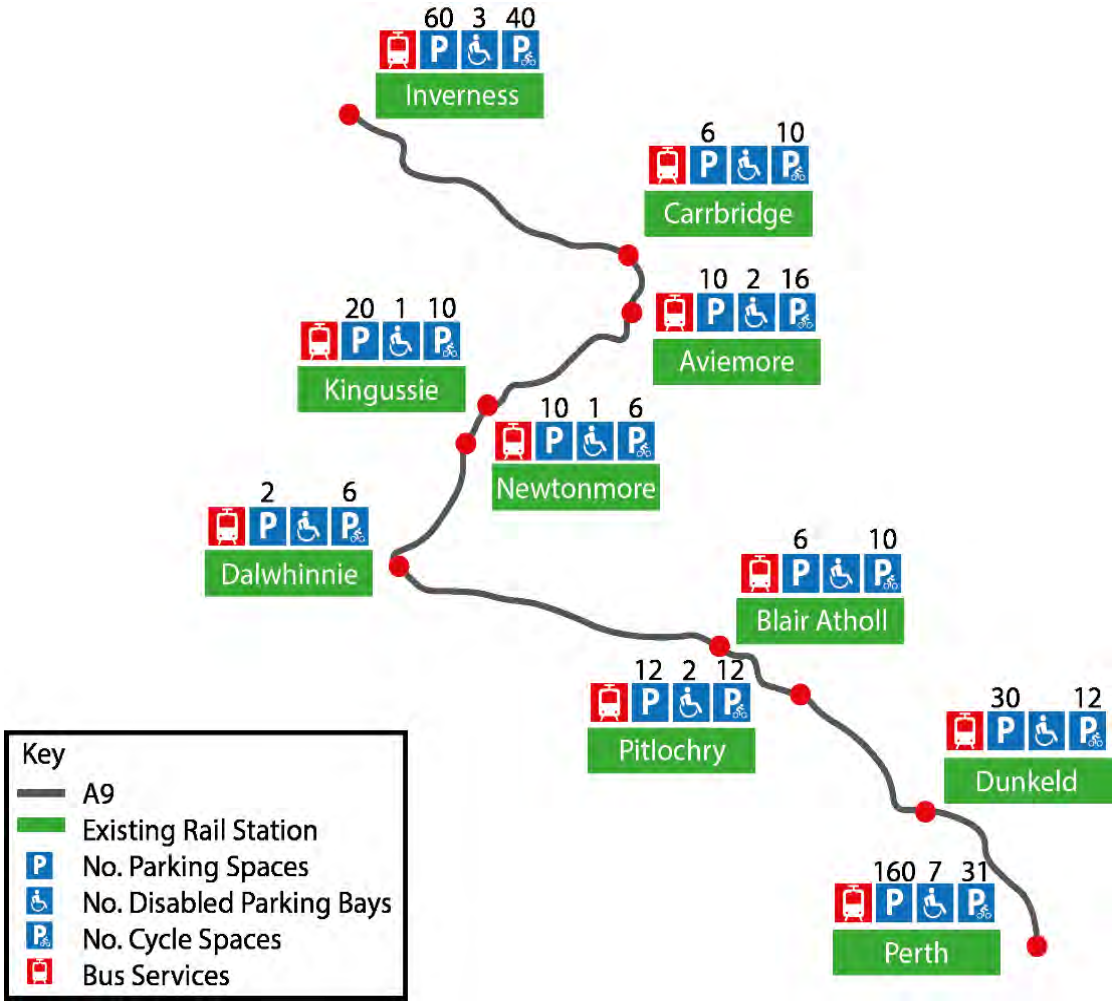


Figure 28 A9 Railway Stations and Facilities

The main railway services along the Highland Main Line are shown in Table 13 which indicates the relative low frequency of railway services along the corridor. In addition to these services, it has been observed that these services are inconsistent in terms of regular times and irregular in terms of the stations that they call at. This highlights the inconsistent provision of railway services along the A9 between Perth and Inverness.

Table 13. Existing Rail Services[84]

Station	Route	Weekday	Saturday	Sunday
Perth	Perth - Pitlochry - Kingussie - Aviemore - Inverness	10 per day	10 per day	6 per day
Inverness	Inverness - Aviemore - Kingussie - Pitlochry - Perth	11 per day	11 per day	6 per day

[84] Scotrail, Edinburgh & Glasgow – Inverness Timetable (Accessed May 2023) https://www.scotrail.co.uk/plan-your-journey/timetables

Regarding journey times, these observed irregular services have resulted in varying times for journeys with typical railway services between Perth and Inverness ranging from around 2 hours to nearly 2.5 hours in some instances. In comparison the car journey between Perth railway station and Inverness railway station takes approximately 2hrs 13mins[85].

In terms of demand, the number of passengers using services at these stations along the Highland Main Line, as shown in Figure 29, has been historically decreasing in recent years between 2014 and 2019. Like many rail services, patronage was severely affected by the COVID-19 pandemic and associated travel restrictions.

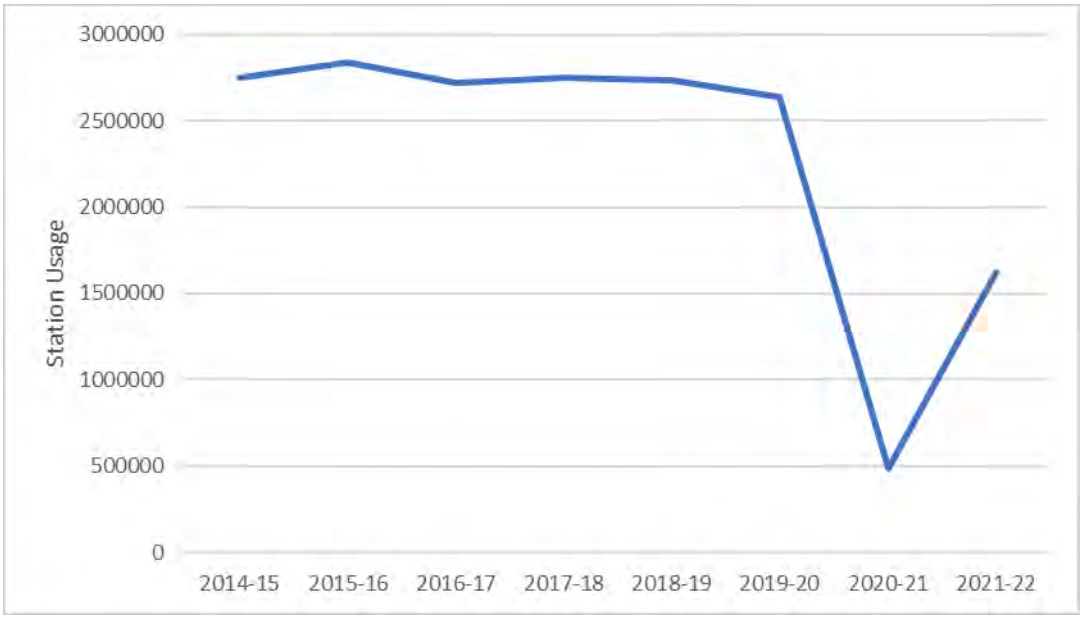


Figure 29 Rail Station Usage (2014-2021)

Figure 30 sets out the volumes of passengers handled by each station along the railway line over the latest four-year period, and that whilst the notable reduction between 2019 and 2020 is associated with the impacts of the COVID-19 Pandemic, it highlights the stark difference in the volumes of passengers handled across the length of the A9 Dualling Programme. With Perth and Inverness at either end of the railway line corridor handling the highest volume of passengers, followed by far by Pitlochry and Aviemore, while the remaining stations along the route handle significantly less passengers.

[85] Google Maps https://www.google.co.uk/maps/ (car journey time on a Thursday afternoon May 2023 journey)

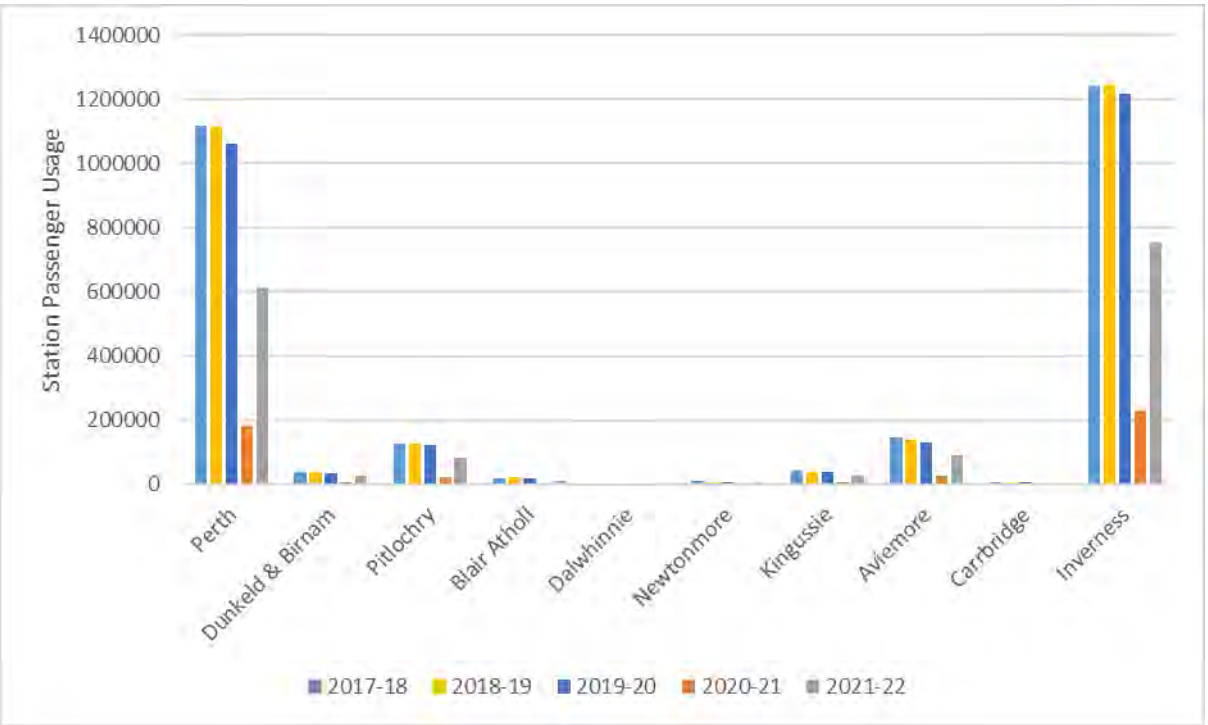


Figure 30 Highland Mainline Station Usage (2017-2022)

In addition to the recommendation of the A9 Dualling Programme through the STPR process, it was recommended to also improve and enhance railway infrastructure along the corridor. The Highland Main Line was enhanced across two distinct phases with Phase One, delivered in 2012, increasing services from nine to 11 per day and reducing journey times by an average of six minutes. Phase Two of the programme was completed in 2019 which delivered an hourly service between Perth and Inverness, improving the efficiency of freight operations and delivering reductions to average journey times of approximately 10 minutes.

The long-term goal of the Highland Mainline enhancements programme seeks to achieve faster journey times between Perth and Inverness and an hourly service per direction by 2025. The scope and programme of these future works has been identified through the STPR2 process and Highland Mainline Rail Corridor Enhancements has been included as Recommendation 15 within the final STPR2 report.

Notwithstanding future programmes, the Highland Main Line upgrade seeks to significantly improve greater connectivity for both passenger and freight services operating between Perth and Inverness. Collectively, these significant strategic enhancements are expected to improve the efficient movement of goods, people and services between Perth and Inverness and further afield.

Furthermore, the A9 Dualling Programme has provided an opportunity for the identification of assets, such as structures along its length that interact with the Highland Main Line, to be enhanced to strengthen, safeguard and futureproof sections of the railway corridor whilst also improving NMU and local road connections as part of the A9 Dualling Programme.

As a result of the COVID-19 Pandemic, ScotRail implemented a temporary timetable to accommodate a change in travel patterns, which meant for many routes services were operated on a reduced frequency. This, coupled with travel restrictions, meant that passenger volumes significantly reduced. However, passenger volumes have significantly recovered and have increased by over 200% since 2020-21[86] and continues to show a positive trend when compared against other public transport modes, particularly bus.

There is a low frequency of bus services, with there being an identified under provision of services at weekends with not all buses serving all the key settlements along the A9 between Perth and Inverness. Journey times fluctuating between two and three hours which collectively reduce the overall accessibility and viability of travel by bus.
Complex geography means that much of the Highland Main Line is single track and as it is currently not electrified, the railway line that runs parallel to the A9 is constrained in being able to accommodate significant volumes of freight and passengers.

2.4.6 Active Travel

The A9 between Perth and Inverness travels through or is adjacent to National Scenic Areas, areas of Ancient Woodlands, SSSI and the Cairngorms National Park.

The route passes through an outstanding natural landscape, which attracts Non-Motorised Users (NMUs). There are numerous recreational NMU routes present; recreational walkers, cyclists and equestrians make use of the NMU facilities in the vicinity of the A9. A Baseline of NMU facilities undertaken as part of the Strategic Environmental Assessment identified over 140 NMU crossing points, which primarily connect core paths, which consist of both at-grade and grade-separated crossings.

The Cairngorms National Park area is particularly attractive to recreational NMUs. Many NMU routes are frequented by active travellers (walkers, wheelers, and cyclists), who use existing NMU routes for daily commutes. It should be noted that the demand for NMU facilities from active travellers who commute is primarily on the approaches to Perth and Inverness.

In recent years, primarily as a result of the COVID-19 Pandemic, local communities have sought to embrace their outdoors environments more than what may have been previously done so. It is therefore not unreasonable to assume that there may have been localised increases in walking, cycling and wheeling both within settlements but also across wider areas as individuals and groups seek to increase their levels of outdoor activity. However, it is not expected that these increases are of material significance and are likely to be associated with primarily leisure purposes due to the moderate distances that are needed to be covered to access other opportunities such as those relating to health, employment and education.

It is likely that local communities along the A9 now potentially place a higher value on these assets than prior to the pandemic as their role in supporting physical health and mental wellbeing is now better understood and more widely accepted.

[86] Transport Scotland, Scottish Transport Statistics 2022, 2022, https://www.transport.gov.scot/publication/scottish-transport-statistics-2022/

2.4.6.1 Cycling and Wheeling

In a similar vein to the railway network along the length of the A9 Dualling Programme, the topography of the route also leads to a majority of strategic active travel connections, such as the National Cycle Network as shown in Figure 31, traverse across a similar route to that of the A9 between Perth and Inverness, highlighting its importance as a transport corridor for all modes.

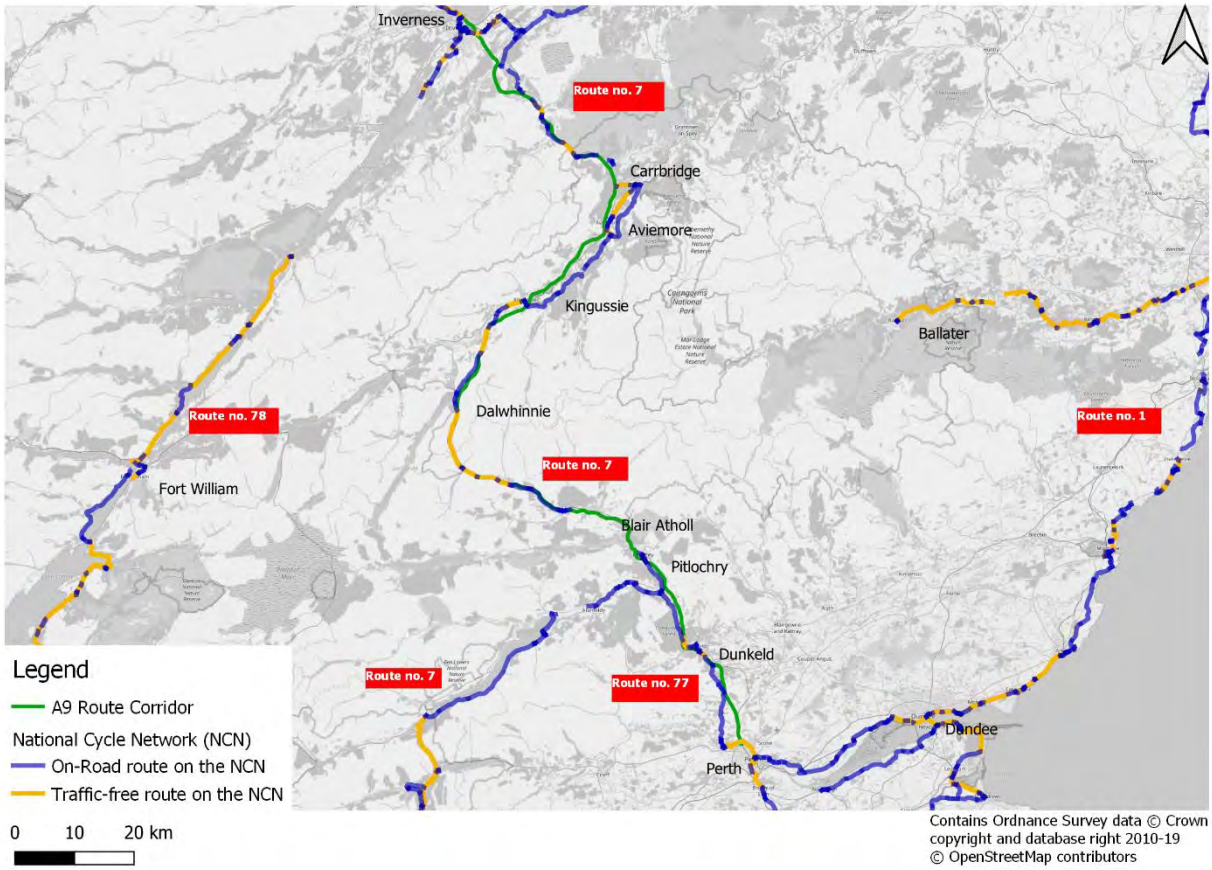


Figure 31 National Cycle Network

National Cycle Route Seven (NCR 7) connects Northern Perthshire and Inverness via the A9 Route Corridor and is currently of varying standard. It is constituted of varying sections of on-road and traffic-free routes which provides an inconsistent standard of cycling and wheeling infrastructure. Similar to the Highland Main Line, NCR 7 is the most direct cycling connection between the Central Belt and Northern Scotland with other routes having limited coverage up to Inverness such as NCR 78. NCR 77 also runs adjacent to the A9 between Perth and Pitlochry.

As a result of this inconsistent infrastructure, cycling is observed to be attractive only in certain areas – particularly between Newtonmore and Carrbridge via Kingussie and Aviemore, however there are identified gaps along this route itself, highlighting the under provision of high-quality cycling and wheeling assets between settlements. Towards the southern terminus of the A9 Dualling Programme, it is noted that there is an absence of cycling and wheeling facilities between the settlements of Bankfoot and Luncarty located north of Perth.

2.4.6.2 Walking

The length of the A9 Dualling Programme has a well-established Core Path Network, as shown in Figure 32, with significant localised Core Path Networks in the southern extent of the route around Pitlochry and Dunkeld as well as in the northern extent around Newtonmore, Kingussie, Aviemore and Carrbridge.

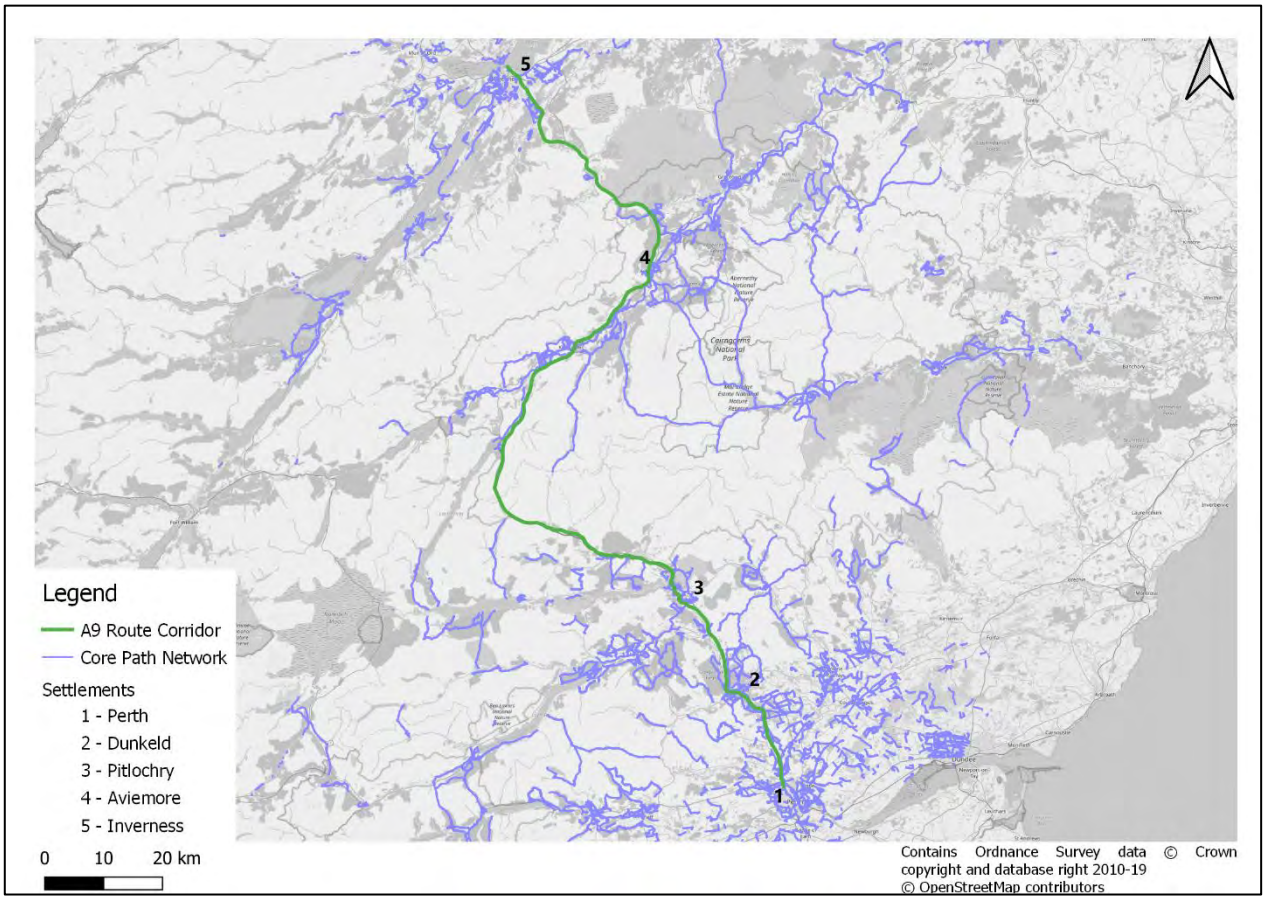


Figure 32 Core Path Network

Core Paths around Aviemore not only provide local connections between settlements along the A9 but also provide wider accessibility to longer Core Paths that traverse into the Cairngorms National Park and also into Speyside, with these Core Paths running adjacent to the A95, which connects to the A9 north of Aviemore. The Speyside Core Path Network from Aviemore forms one of four official Long-Distance Routes in Scotland, the Speyside Way, which links the Moray Cost with the edge of the Grampian Mountains, following the valley of the River Spey. It spans a distance of approximately 105km and is noted to be a popular asset for hikers and local communities. Due to the role that these local Core Path networks along the northern extent of the A9 Dualling Programme play in providing accessibility and connectivity to wider walking routes, enhancements to these local assets are likely to improve the attractiveness at both a local and regional-scale.

Although the Core Path networks to the southern extent of the A9 Dualling Programme are extensive, there is an identified under-provision regarding direct walking routes between Perth and the rural settlements of Luncarty, Bankfoot and further afield to Dunkeld and Pitlochry in Northern Perthshire.

There is a noted inconsistency regarding Active Travel infrastructure, particularly for cycling and wheeling, along the corridor whereby in some instances, there are identified gaps between settlements along the route which collectively present a barrier for further uptake of Active Travel modes.

2.4.7 Environment

The A9 and the Highland Main Lin are constrained geographically in parts by physical terrain and the environment they pass through. The majority of the A9 between Perth and Inverness corridor lies within upland terrain, traversed by significant watercourses such as the rivers Tay, Spey and Tummel. There are several flood risk zones and wooded areas including Ancient Woodland.

Approximately 50% of the corridor passes through the Cairngorms National Park, with a number of national and internationally protected sites such as Insh Marshes and the Drumochter Hills. The presence of a National Park means that there is a higher frequency of environmental receptors such as those relating to noise and air quality along the length of the A9.

The corridor's natural environment and beauty, whilst a potential constraint in engineering terms, is also one of the region's strongest assets and therefore presents a constraint in itself to safeguard this natural, and relatively untouched, landscape.

Figure 33 provides an overview of the main environmental and physical characteristics of the length of the A9 Dualling Programme. Further details of these characteristics are presented within the A9 Dualling Programme's Strategic Environmental Assessment as well as the Environmental Statements associated with each individual Project.

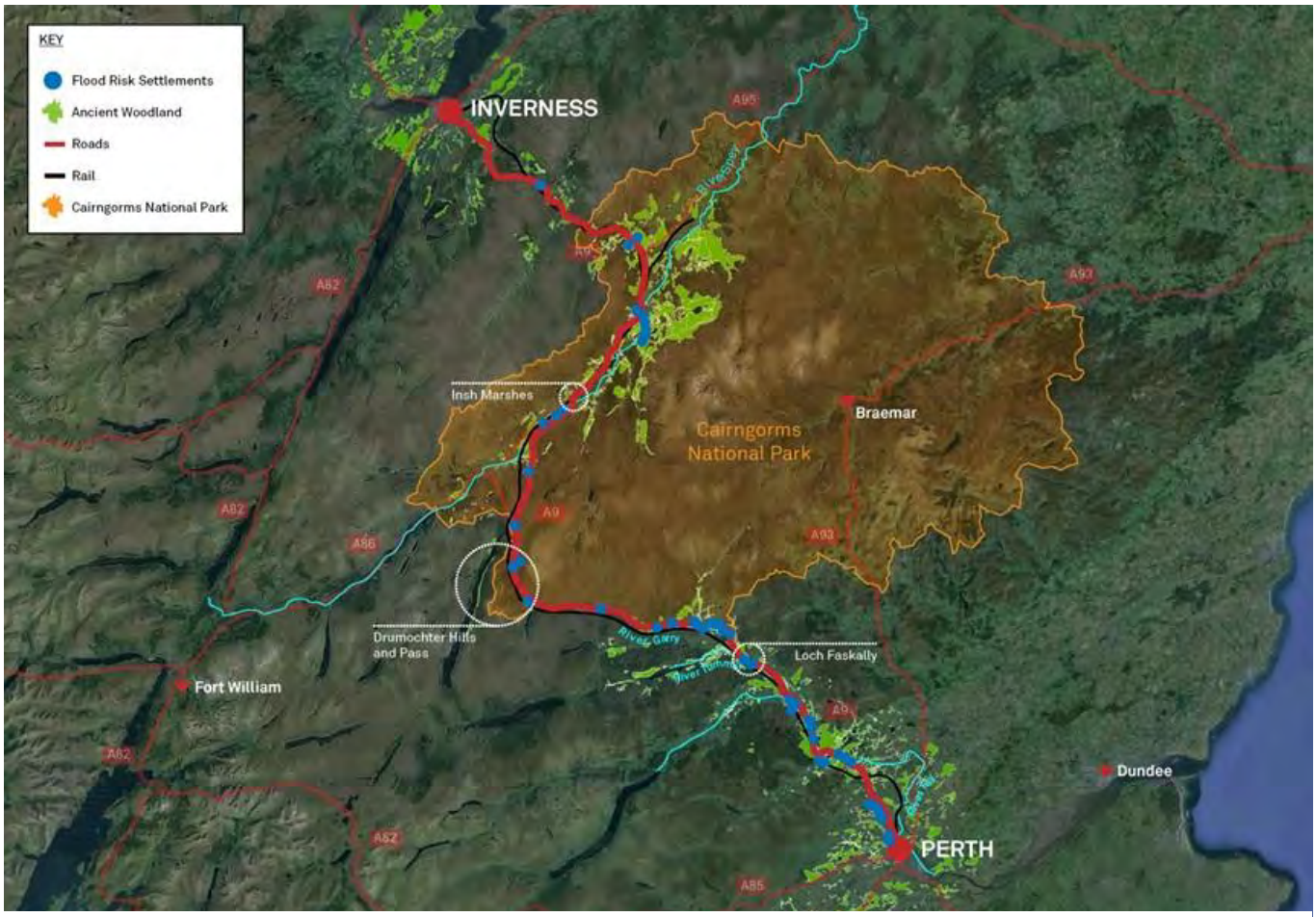


Figure 33 A9 Corridor - Environmental and Physical Character

There are multiple identified environmental receptors along the A9 with the route crossing through a considerable proportion of the Cairngorms National Park. Regarding the route itself, the most pronounced receptors are those relating to flooding and the wider water environment and wooded areas including Ancient Woodland.

2.4.8 Network Conditions

2.4.8.1 Traffic Volumes

Traffic flows along the A9 corridor between Perth and Inverness across each of the A9 Dualling Programme's constituent Project sections are shown in Figure 34 which shows that traffic levels vary between circa 20,000 on the approach to Perth to around 6,000 AADT on more rural sections of the corridor. Across time period assessed, no discernible trend regarding increases or decreases in traffic flow have been observed.

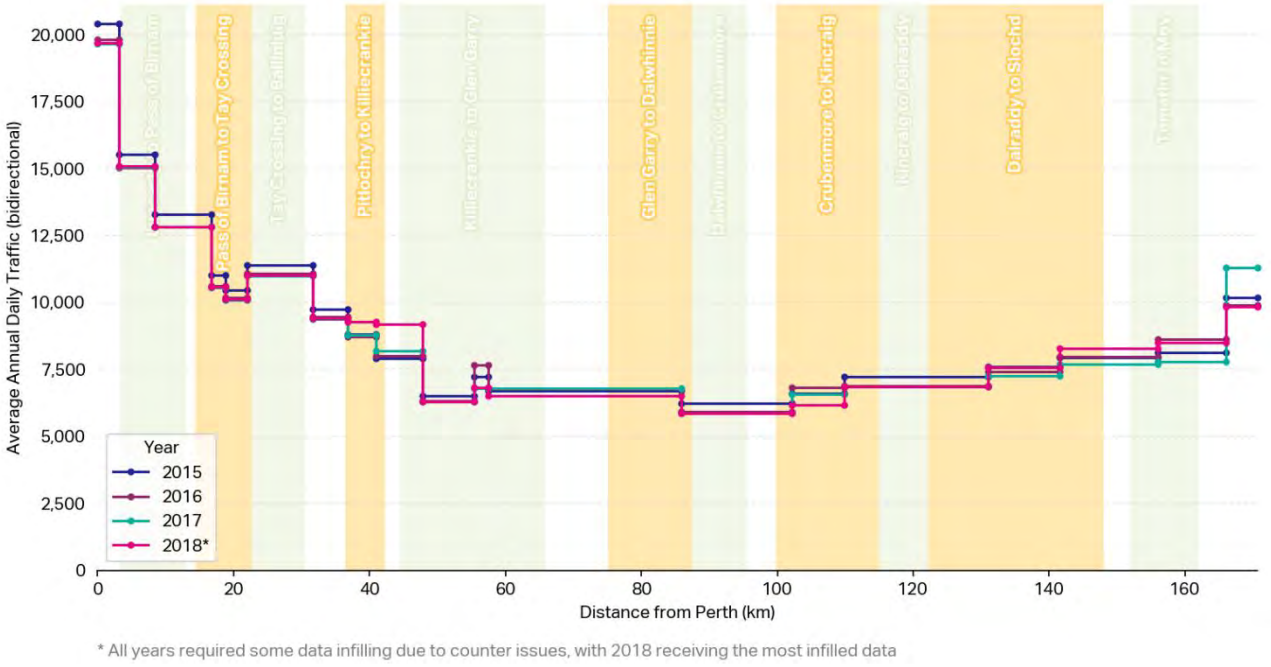


Figure 34 Average Annual Daily Traffic along the A9 (Perth to Inverness) between 2015 and 2018

2.4.8.2 Vehicle Speeds

In a similar vein to Traffic Flows, Traffic Speeds were gathered between 2015 and 2018, post implementation of Average Speed Cameras, for all vehicle types along the length of the A9 Dualling Programme. The results from these surveys are shown in Figure 35 which indicate that in the majority of instances, vehicle speeds have broadly remained similar across all vehicle types across the three-year period. Both Heavy Goods Vehicles and Public Transport vehicles are noted to have experienced increase in vehicle speeds in the last assessed year of 2018.

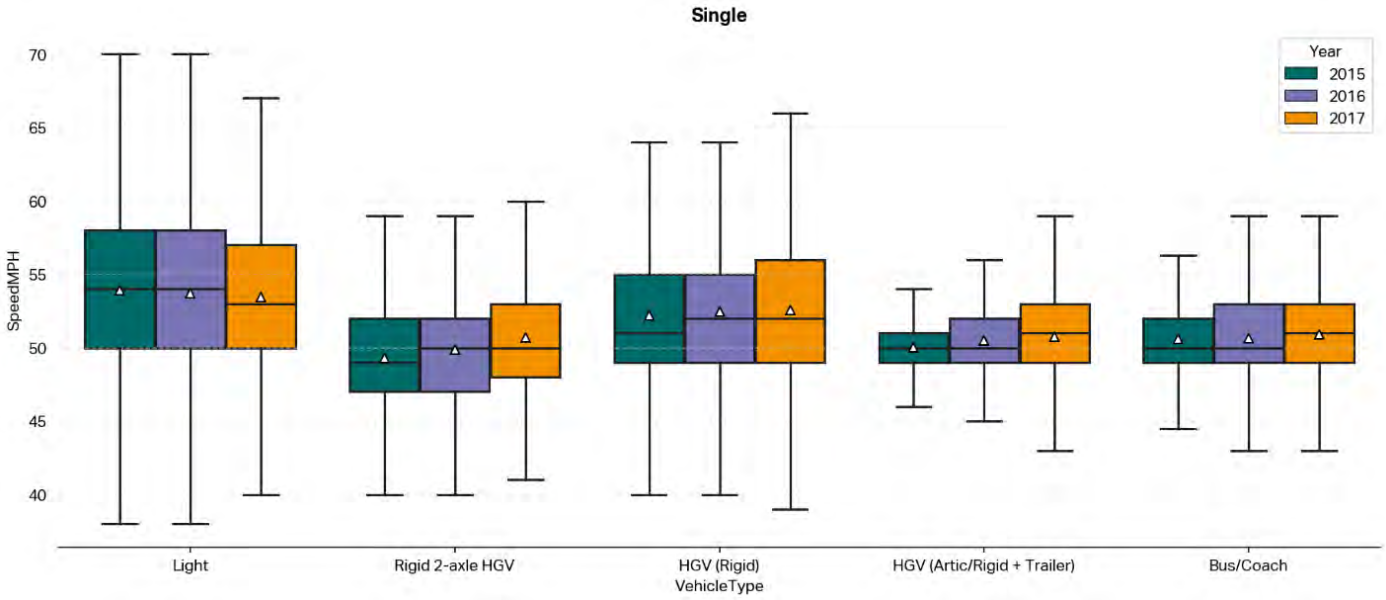


Figure 35 Observed Vehicle Speeds between 2015 and 2017

2.4.8.3 Journey Times

Journey times for a range of origins and destinations along the length of the A9 Dualling Programme have been extracted from the Transport Model for Scotland (TMfS18) for the modelled typical existing operational performance (Base) of the A9 between Perth and Inverness. These modelled journey times, as shown in Table 14, indicate that, on average, journeys between Perth and Inverness in both directional movements take approximately 2 ¼ hours with vehicles travelling nearly an hour to reach the mid-point of the A9 Dualling Programme around Newtonmore and Kingussie.

Table 14. Modelled A9 Journey Times (TMfS18 Base)

Route	Journey Time (h:mm)	Route	Journey Time (h:mm)
Perth to Inverness	2:16	Aviemore to Inverness	0:43
Inverness to Perth	2:17	Inverness to Aviemore	0:43
Perth to Pitlochry	0:37	Pitlochry to Bankfoot	0:38
Pitlochry to Perth	0:37	Bankfoot to Pitlochry	0:38
Perth to Aviemore	1:46	Perth to Bankfoot	0:16
Aviemore to Perth	1:47	Bankfoot to Perth	0:16
Kingussie to Aviemore	0:21	Inverness to Kingussie	0:52
Aviemore to Kingussie	0:22	Kingussie to Inverness	0:51

Source: TMfS18

Further insight into current travel catchments by car from the perspectives of communities that live on both extents of the length of the A9 between Perth and Inverness is highlighted in Figure 36 which shows the current typical travel times along the A9 corridor and further afield. For rural communities along the

route, such as those in Dalwhinnie and Kingussie, travel times to both Perth and Inverness can be up to an hour with overall travel times along the corridor being approximately two hours.

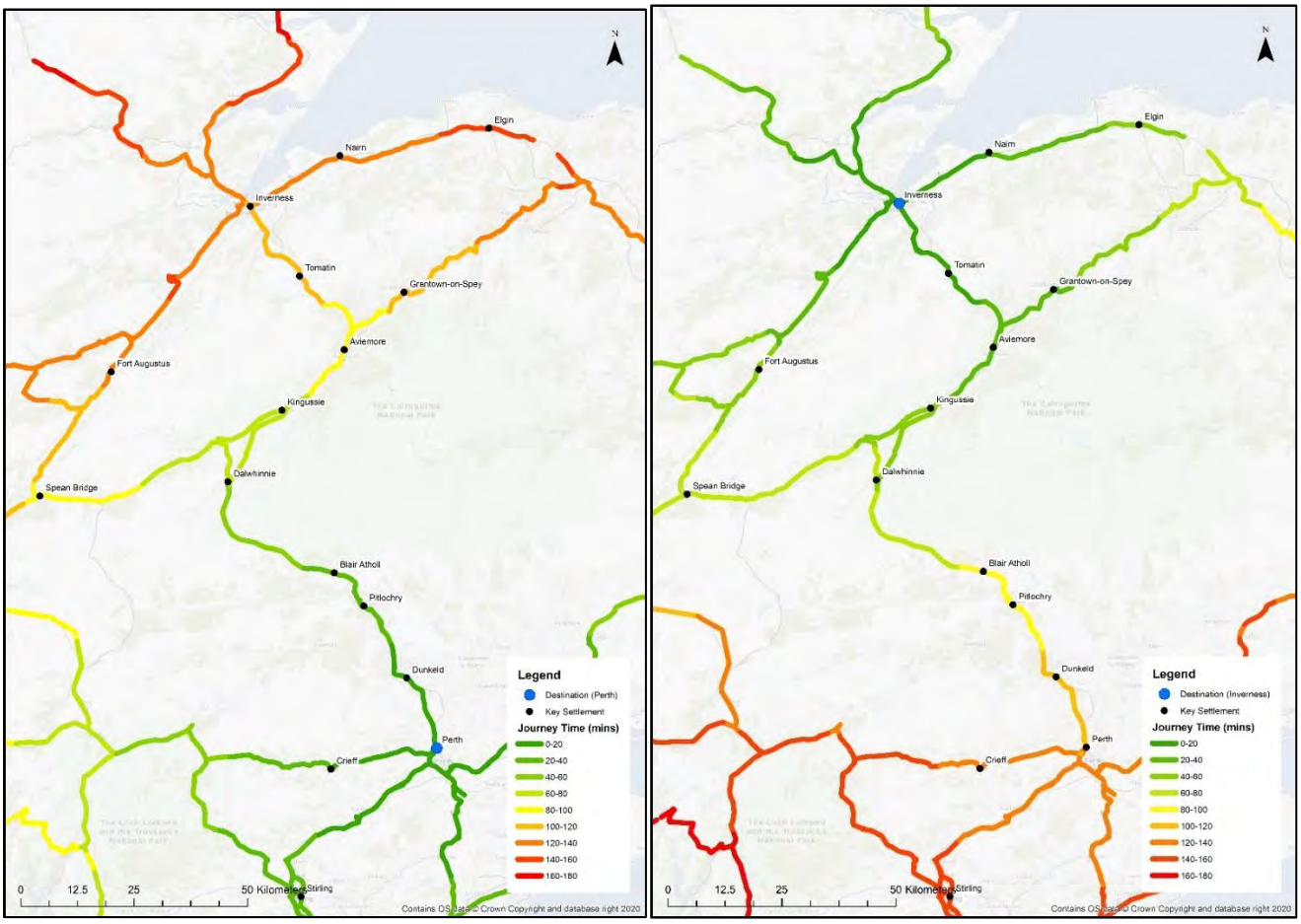


Figure 36 Trunk Road Accessibility from Inverness (left) and from Perth (right)

2.4.8.4 Platooning

Due to the nature of the existing road route between Perth and Inverness, a route which is mainly singly carriageway with some localised overtaking sections, drivers have limited opportunities to overtake slower vehicles. Therefore, platooning regularly occurs as a result of the lack of overtaking opportunities.

The results of platoon length surveys in 2015 after installation of Average Speed Cameras in 2015 have indicated that platooning is an identified issue along the length of the A9 between Perth and Inverness, an issue overwhelmingly associated with existing single carriageway sections along the route corridor. This is noted to occur across the full breadth of the route such as at Aviemore and Kingussie with Dunkeld being a notable example with high levels of platooning observed to occur in both directional movements as shown in Figure 37 and Figure 38.

Across all instances, it has been observed that platoons consist of a variety of road vehicles and are not always dictated by the presence of a slower moving vehicle such as those associated with the movement of Goods, Public Transport and Agricultural activities.

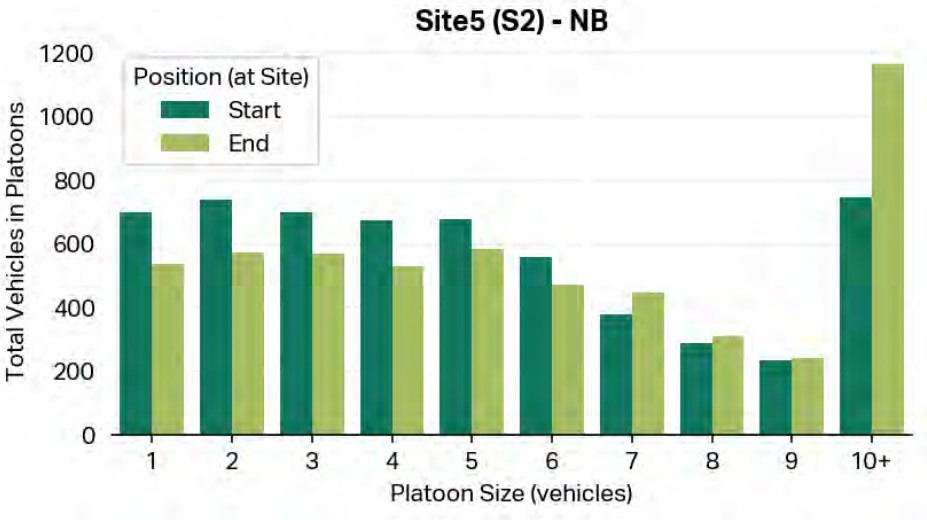


Figure 37 Observed Platooning (Dunkeld, Northbound)

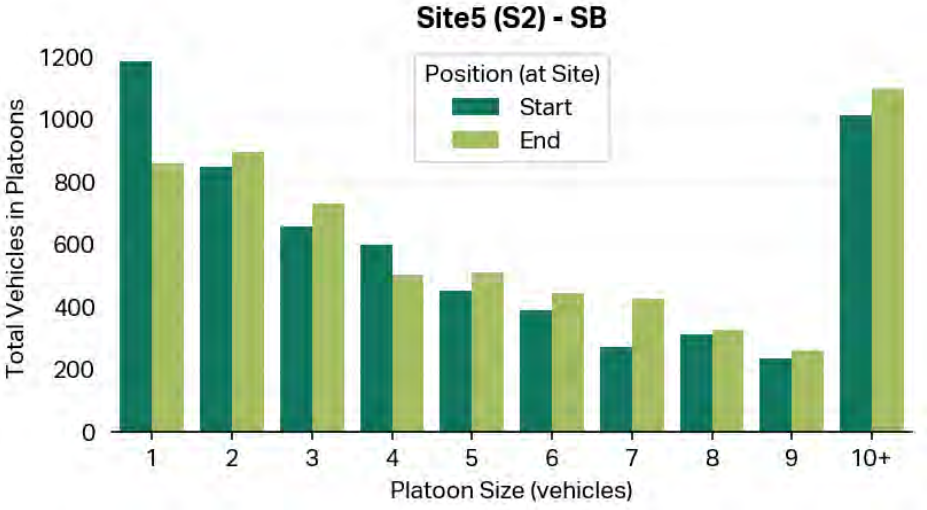


Figure 38 Observed Platooning (Dunkeld, Southbound)

There are identified moderate levels of platooning along the A9 in both Northbound and Southbound directional movements since the installation of Average Speed Cameras in 2015 which primarily occurs at existing single-carriageway sections along the route.

2.4.8.5 Road Safety

Currently there are 49 Average Speed Camera sites along the length of the A9 between Perth and Inverness which are located on single carriageway sections. They have been in operation since October 2014, and were introduced to encourage better speed limit compliance and in turn improve driving behaviours along this stretch of the A9. Average Speed Cameras were implemented as an interim safety measure until the A9 between Perth and Inverness is updated to dual carriageway upon which time a Ministerial Commitment has been made for their subsequent removal. At the same time, the speed limit for heavy goods vehicles (HGVs) on the A9 was raised from 40mph to 50mph.

Personal Injury Collision (PIC) STATS19 data was obtained from Police Scotland to analyse and assess the historic safety performance of the length of the A9 Dualling Programme. The time-period considered is from 1st January 2015 to 31st December 2022. This covers from the first full year of Average Speed Camera operation on the A9 to the current most recent full year of available data. It should be noted that during years 2020 and 2021 lower accident numbers are likely a result of reduced volumes of traffic on the road, due to the impacts of COVID-19 and the imposed travel restrictions that were in place.

As shown in Table 15, a total of 678 PICs were recorded over the eight-year period across the full length of the A9 trunk road between Dunblane and Thurso.

Table 15. A9 Dunblane to Thurso PICs (2015 – 2022)

	2015	2016	2017	2018	2019	2020	2021	2022	Total
Fatal	5	7	5	10	6	2	3	12	50
Serious	15	20	16	26	33	19	24	26	179
Slight	70	75	74	66	65	33	36	30	449
Total	90	102	95	102	104	54	63	68	678

Source: Transport Scotland

In relation to PICs in the context of the A9 Dualling Programme, as shown in Table 16 the majority of all Fatal collisions recorded on the A9 trunk road occurred along the length of the A9 between Perth and Inverness (54%). Furthermore, 40% of all recorded Serious collisions occurred along the same length of the A9 Dualling Programme.

Table 16. A9 Dualling Programme PICs (2015 – 2022)

	2015	2016	2017	2018	2019	2020	2021	2022	Total
Fatal	4	4	4	5	0	1	1	8	27
Serious	5	5	9	12	12	4	11	13	71
Slight	23	20	26	27	14	7	14	10	141
Total	32	29	39	44	26	12	26	31	239

Source: Transport Scotland

The frequency of PICs over the length of the A9 Dualling Programme is also noted to be different to recorded PICs over the same period compared to the section from Moy to Inverness, which is dual

carriageway, as shown in Table 17. It is noted that over this stretch of dual carriageway, that there have been no recorded Fatal PICs, only one Serious and a small number of Slight PICs between 2015 and 2022.

Table 17. A9 Moy to Inverness PICs (2015 – 2022)

	2015	2016	2017	2018	2019	2020	2021	2022	Total
Fatal	0	0	0	0	0	0	0	0	0
Serious	0	0	1	0	0	0	0	0	1
Slight	2	0	1	3	1	0	0	0	9
Total	2	0	2	3	1	0	0	2	10

Source: Transport Scotland

The spatial distribution of PICs between 2015 and 2022 shown in Figure 39 categorised by their severity (Slight, Serious and Fatal). The mapping indicates a high concentration of collisions occurring across the full length of the A9 Dualling Programme, with particular hotspots in Northern Perthshire between Dunkeld and north of Blair Atholl as well as between Kingussie and Aviemore in the Highlands, where a notable number of fatalities were recorded. It is noted that a majority of the recorded Fatal collisions occurred on existing single-carriageway sections.

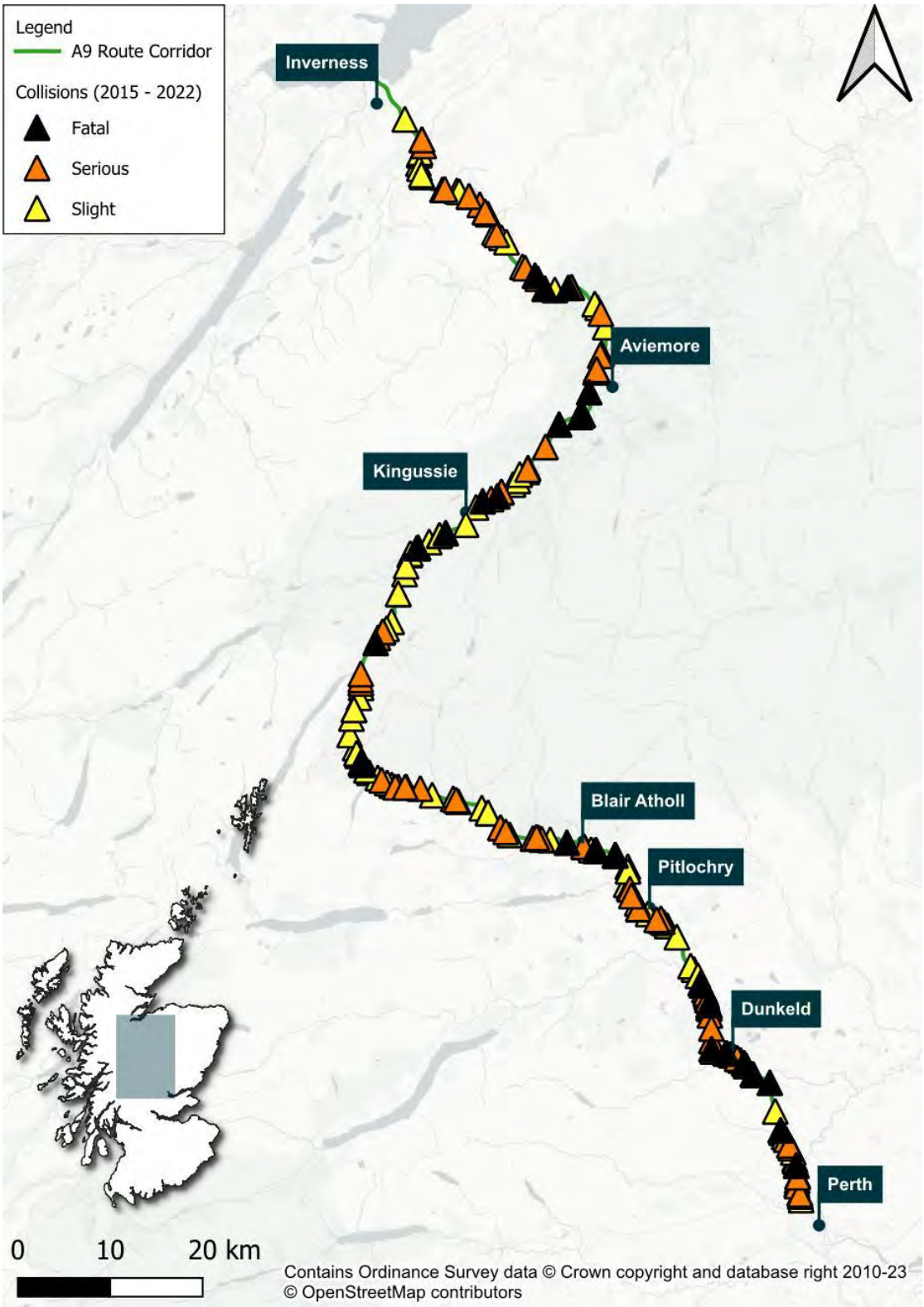


Figure 39 Personal Injury Collisions on the A9 Between Perth and Inverness (2015 – 2022)

Over this period 2015 to 2022, Figure 40 highlights the high average number of collisions per month saw notable peaks in December and August. In both instances, a potential contributory factor to these frequencies could be unfamiliar drivers, high travel demand, and, for December, adverse weather conditions.

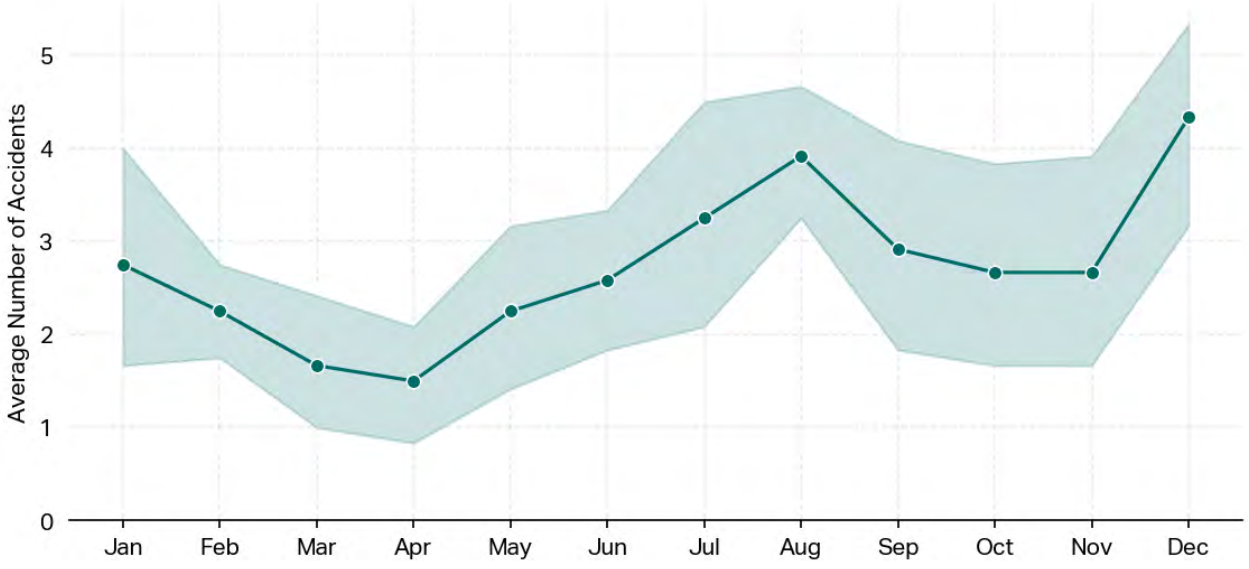


Figure 40 Average Number of Accidents per month (2015 –2022)

When the severity of recorded Road Traffic Collisions along the length of the A9 between Perth and Inverness is compared with National Averages for Single and Dual Carriageway standard between 2015 and 2022, as shown in Figure 41, the A9 is noted to have a higher proportion of Fatal and Serious recorded collisions. In particular, it is noted that single carriageway sections of the A9 between Perth and Inverness have a significantly higher proportion of Fatal (13%) and Serious (31%) collisions than National Averages for similar road types (2% and 12% respectively).

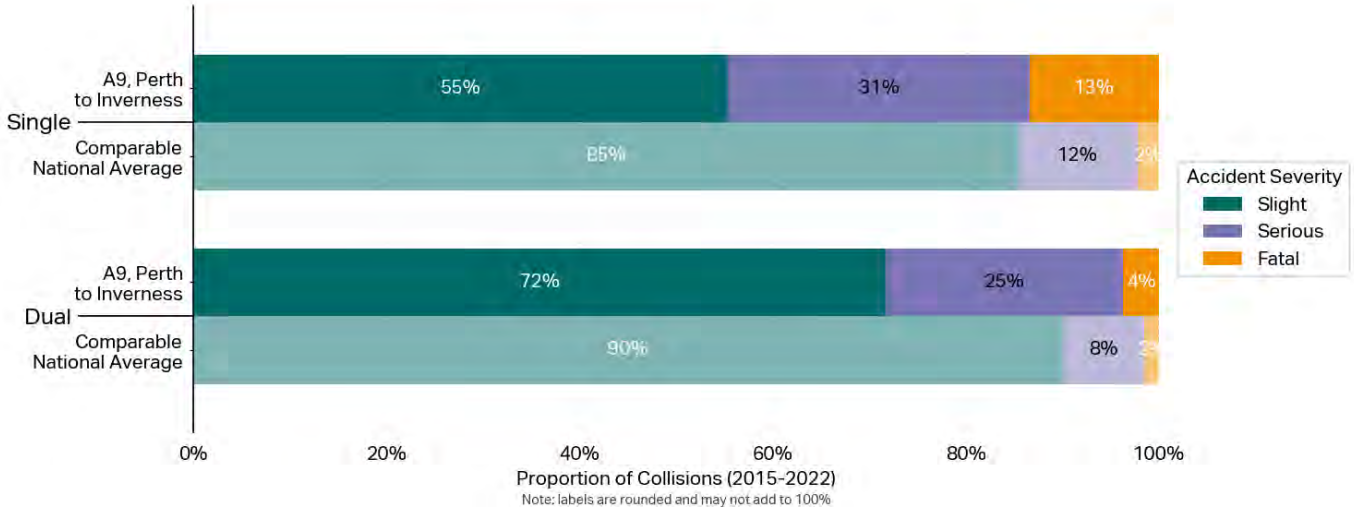


Figure 41 Severity Comparison between A9 and National Average for Single and Dual Carriageway sections

As briefly highlighted previously, there are particular areas of concern along the length of the A9 Dualling Programme which are noted to have experienced a high frequency of PICs as well as a higher proportion of Serious and Fatal PICs than other sections of the route. It should be noted that these locations correspond to some of the higher volume sections of the route.

Moving in a north-south manner along the length of the existing A9 between Perth and Inverness, the first area of concern is around Aviemore, shown in Figure 42, where three Fatal PICs have been recorded in addition to seven Serious and eleven Slight PICs, all of which occurred on single carriageway sections. Due to the proximity of the PICs, the symbols in the map may overlap. The cluster of one fatal and two slight PICs are noted to have occurred at A9 / B9152 junction which is the primary southern gateway to Aviemore.

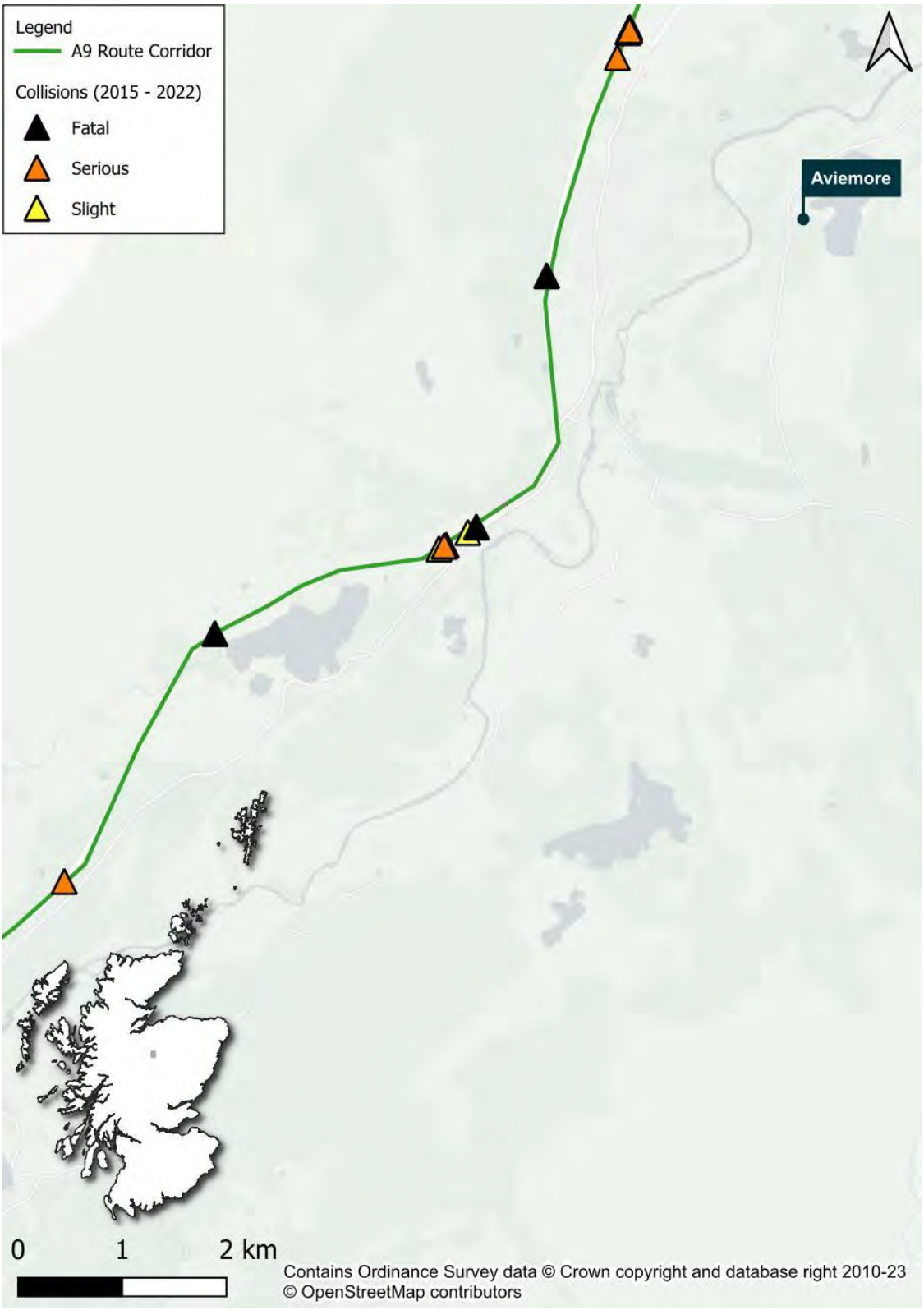


Figure 42 Identified PICs Area of Concern Aviemore (2015 – 2022)

A second area of concern along the length of the A9 between Perth and Inverness has been identified at Blair Atholl, with the frequency of PICs between 2015 and 2022 shown spatially in Figure 43. During that period, four Fatal PICs have been recorded, in addition to nine Serious and thirteen Slight PICs. The majority of these recorded PICs, except those east of the eastern Fatal PIC, are noted to have occurred on single carriageway sections.

Furthermore, three Fatal collisions have occurred on a section between the two main road accesses to Blair Atholl where the alignment of the current A9 route is not straight and has a series of gradual and tight bends. In particular, several collisions have been recorded close to the entrance to House of Bruar from the A9.

Figure 43 PICs Area of Concern - Blair Atholl (2015 – 2022)

The third identified PICs area of concern is towards the southern extent of the A9 Dualling Programme around the wider Dunkeld area, as shown in Figure 44, where eight Fatal, fifteen Serious and seventeen Slight PICs were recorded. All of these PICs, except the most southern Fatal one, are noted to have occurred on single carriageway sections. Of high concern is the identified collision cluster at the immediate proximity of the staggered A9 / A923 / A822 junction which provides direct access to Dunkeld to the north.

North of Dunkeld, the number of Fatal, Serious and Slight collisions are also concerning and that whilst the existing single carriageway alignment is relatively straight, the collision cluster potentially indicates that this alignment may influence poor driving behaviours.

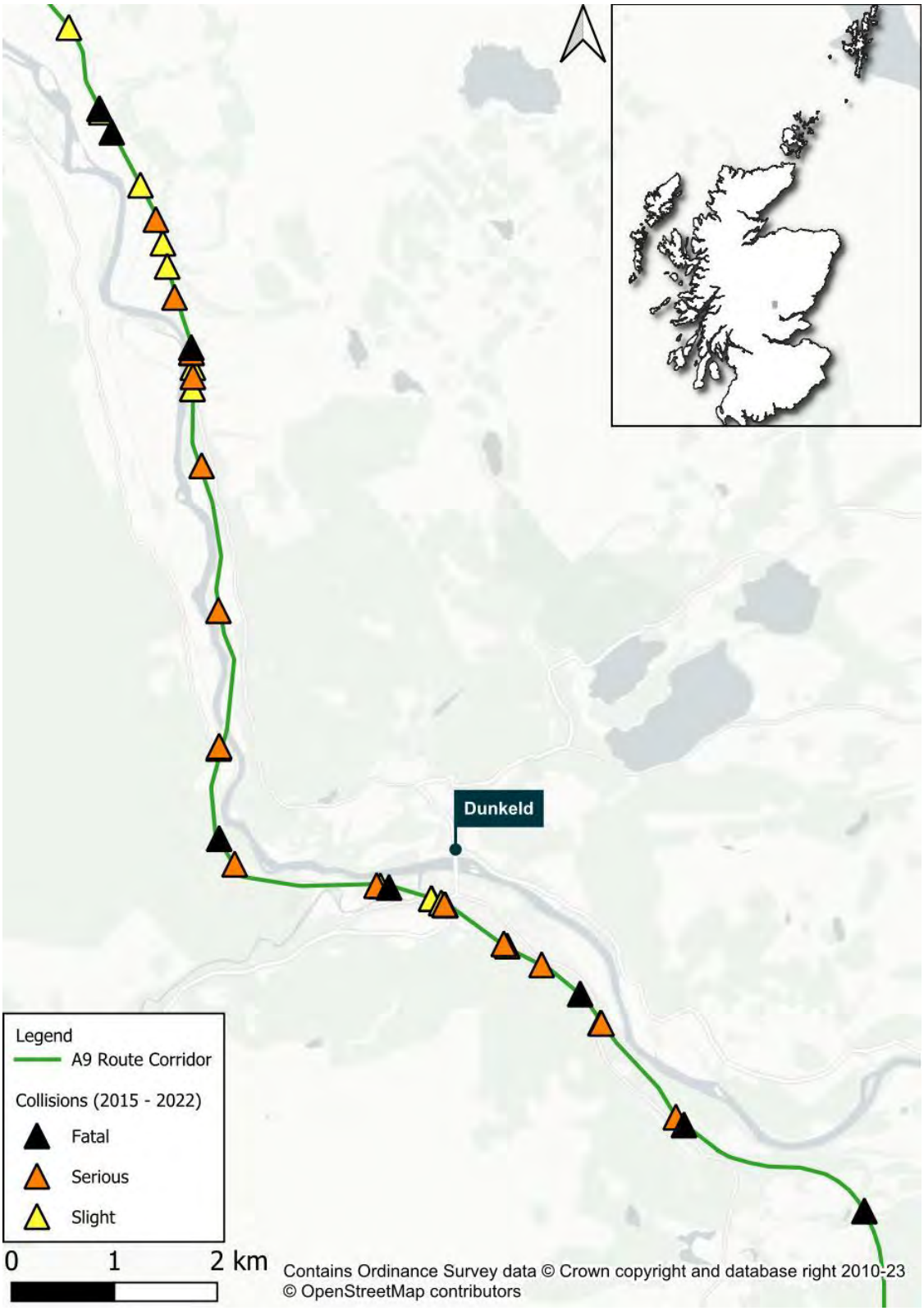


Figure 44 PICs Area of Concern - Dunkeld (2015 – 2022)

There are safety performance concerns with the current A9 Route Corridor between Perth and Inverness due to the number of collisions between 2015 and 2022. When compared to the National Average, the A9 between Perth and Inverness shows a higher proportion of Fatal and Serious collisions for both single and dual carriageway sections. Furthermore, there are Areas of Concern around Aviemore, Blair Atholl and Dunkeld which have high number of recorded collisions, of which several are Fatal and Serious. Collision clusters have been identified near to or within proximity to where local roads interface with the A9 to provide accessibility and connectivity to adjacent settlements.

2.4.8.6 Resilience

Resilience is the ability of a road network to withstand not only the impacts of extreme weather events (such as extreme flooding, heavy snowfall and strong winds) but also industrial action, major incidents and other local risks. In the context of the A9 between Perth and Inverness, this route traverses some of the highest altitude points on the UK and Scottish road networks which in itself gives rise to a higher frequency of incidents, partially induced by the route having a higher frequency of Road Traffic Collisions when referenced against comparable Scottish National Averages for Single and Dual carriageways.

The role and function that the A9 plays in connecting the Central Belt with the Highlands and further afield as well as providing crucial accessibility to rural communities, highlights the importance of a resilient A9 corridor, particularly between Inverness and Perth. To better understand the performance of the route of the A9 Dualling Programme, its record on unplanned road closures that have resulted in the implementation of an Incident Diversion Route (IDR) has been interrogated.

Where road closures are required to respond to events, predetermined Incident Diversion Routes are implemented to provide an alternative route choice for road users. In some instances, the local road network does not always lend itself to provide direct parallel routes to the affected trunk road section and / or node and can therefore contribute a significant increase in the distance travelled which in turn can substantially increase journey times. Additionally, these diversions can cause significant disruption to local communities along these routes, due to the significant increase in traffic volumes and increased accident risk.

Whilst these records do not fully capture the level of disruption caused along the A9 that arise through incidents where emergency services are not in attendance, it is a useful metric in understanding how resilient a route is.

The frequency of unplanned road closures across the A9 between Luncarty and Moy for the most recent five-year period prior to COVID-19 pandemic (2014-2019) is shown in Figure 45. It highlights the higher frequency during seasonal periods, most notably school summer holidays in July (14 road closures) as well as those in October (15 road closures) that could be attributed to half term school holidays. Furthermore, the higher frequency of road closures that occur throughout late Autumn and Winter also indicate the additional challenges experienced as a result of poorer weather conditions during these periods.

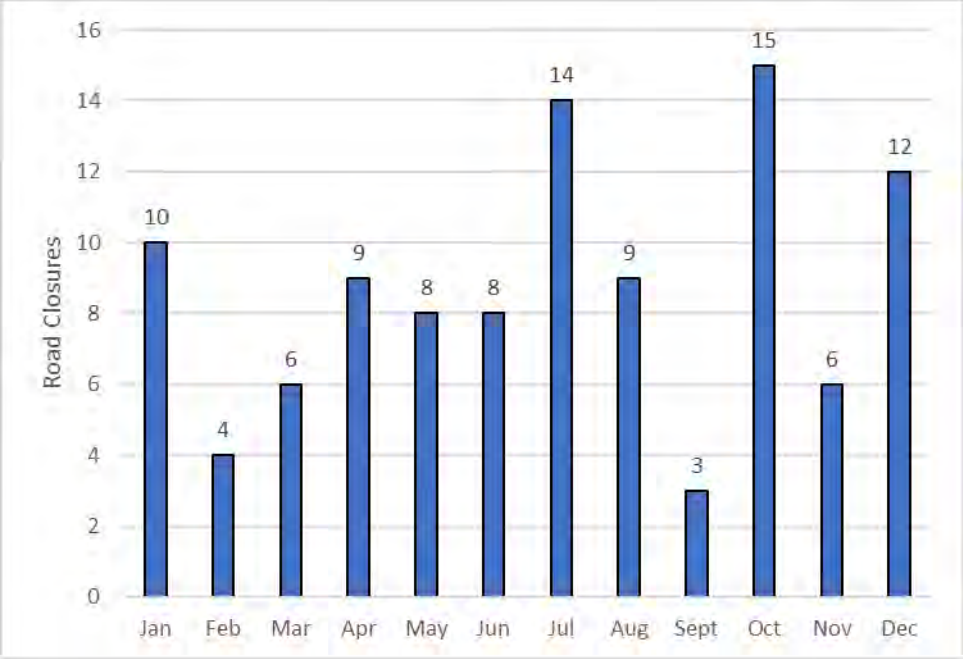


Figure 45 Frequency of Unplanned Road Closures (2014 - 2019)

Between 2014 and 2019, the duration of all closures along the A9 between Perth and Inverness equated to over 15 days of disruption for users of the A9, with the longest closure lasting nearly 15 hours and the shortest lasting 20 minutes.

For the A9 between Moy and Luncarty, Figure 46 shows the key types of incidents that result in the implementation of diversion routes, with Road Traffic Collisions accounting for 80% of all instances. Other attributed reasons for road closures are less pronounced, with vehicle recovery, adverse weather events and road obstructions also resulting in a requirement for a road closure to be implemented.

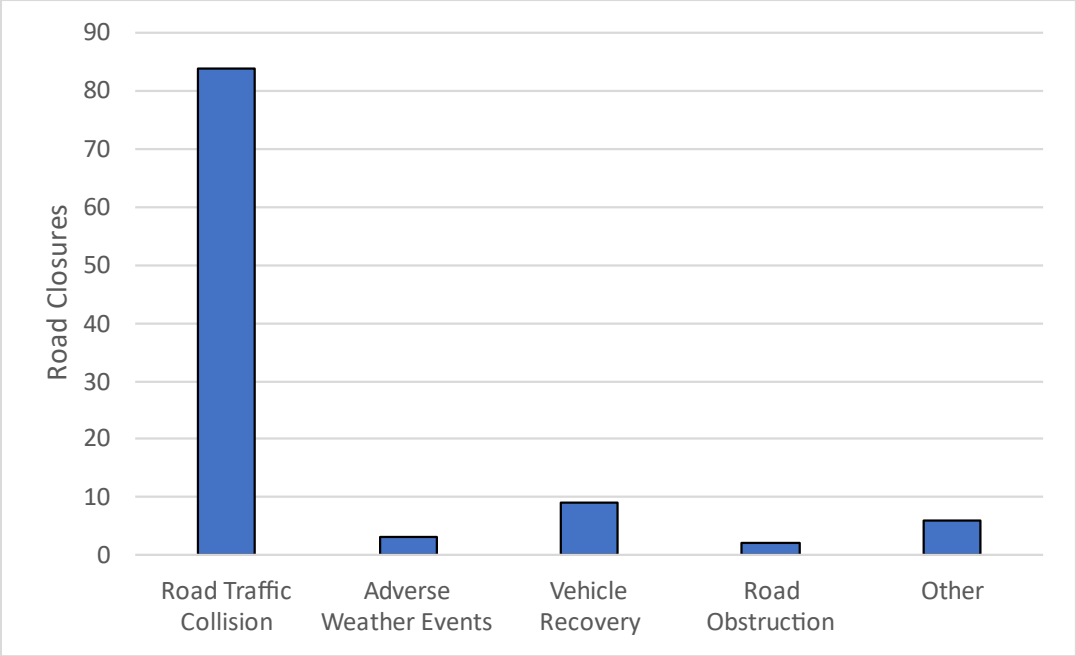


Figure 46 Reasons for Road Closures

When implemented, the challenging geography and the relative rural character means that these Incident Diversion Routes (IDRs) have limited alternative road routes which they can utilise. This can give rise to substantial increases in distance travelled, which in some instances can disproportionately impact journeys on either Northbound or Southbound movements as highlighted in Table 18.

Table 18. A9 Route Corridor Incident Diversion Routes

Route Number	A9 Length (miles)	Northbound Diversion Length (Miles) (% Increase)	Southbound Diversion Length (Miles) (% Increase)	Settlements
17	2	5 (150%)	5 (150%)	Inverness
18	1	9 (800%)	8 (700%)	Westhill - Culloden
19	3	4 (33%)	3 (0%)	-
20	3	16 (433%)	14 (367%)	Inverarnie - Balnafoich - Inverness - Westhill
21	2	16 (700%)	16 (700%)	Inverarnie - Balnafoich - Inverness
22	10	11 (10%)	11 (10%)	Moy
23	3	No IDR	115 (3,733%)	Carrbridge - Dulnain Bridge - Grantown on Spey - Nairn - Inverness
24	5	6 (20%)	No IDR	Tomatin

Route Number	A9 Length (miles)	Northbound Diversion Length (Miles) (% Increase)	Southbound Diversion Length (Miles) (% Increase)	Settlements
25	6	107 (1,683%)	80 (1,233%)	Carrbridge - Dulnain Bridge - Grantown on Spey - Nairn - Inverness
26	10	12 (20%)	12 (20%)	Carrbridge
27	21	22 (5%)	21 (0%)	Aviemore - Kincraig
28	24	32 (33%)	33 (38%)	Kingussie - Newtonmore - Laggan - Dalwhinnie
29	0	No IDR	No IDR	-
30	22	No IDR	62 (182%)	Pitlochry - Moulin - Blairgowrie - Birnam - Dunkeld
31	19	74 (289%)	48 (153%)	Gilmerton - Aberfeldy - Blairgowrie - Dunkeld - Birnam
Total:	**131miles**	**314miles (140%)**	**428miles (326%)**	-

Source: Transport Scotland

The rural character of the existing A9 between Perth and Inverness and the modest provision of alternative road routes of sufficient standard means that, there are locations where there are no diversion routes with the most notable example being the Pass of Drumochter.

While some diversion routes such as IDR 19 only add a minor increase in distance to the route, Routes 23 and 25 for example add considerable distances for traffic with Route 23 at near Carrbridge requiring vehicles to travel a 144km as the alternative to travelling 3km along the A9. The scale of these Incident Diversion Routes is highlighted in Figure 47 which provides an overview of the southern extent of the A9 Dualling Programme.

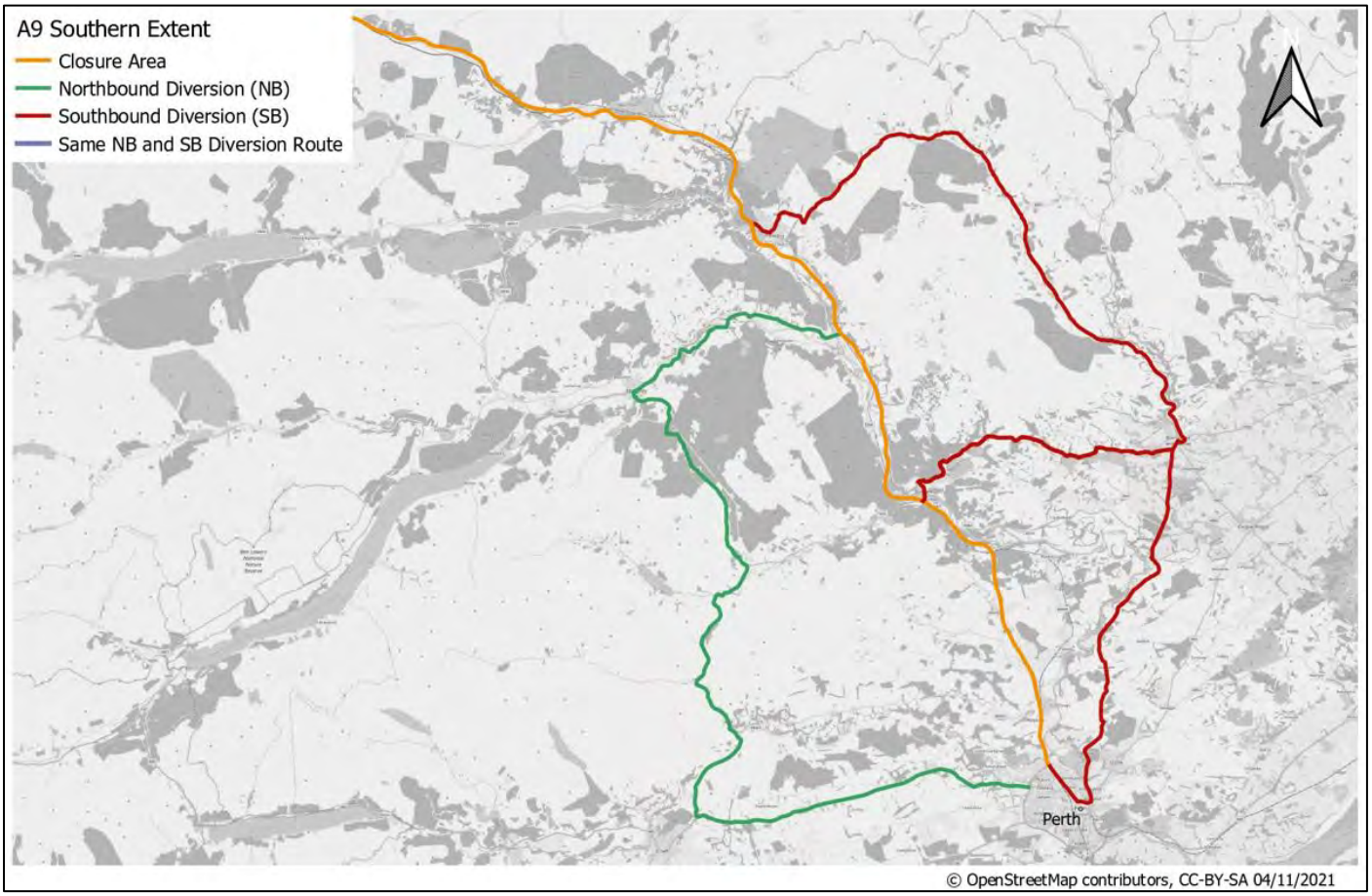


Figure 47 A9 Dualling Programme Southern Extent Major Incident Diversion Routes

These IDRs are noted to have significant lengths and / or no alternative routes in the more rural areas of the route, particularly between Moy and Inverness and also in the southern extents of the A9 in North Perthshire between Blair Athol and Perth itself.

Whilst the A9 Dualling Programme will not eliminate the necessity for IDRs as incidents will still occur along the route, delivery of a continuous dual carriageway and a wider programme of works improving the safety of the route through road design is expected to contribute towards a reduction in the frequency of Road Traffic Collisions along the A9 between Perth and Inverness and in turn, reduce the number of IDRs on an annual basis and the associated disruption experienced by road users and local communities. In addition, the dualling of the carriageway and resulting additional lane per direction would provide greater resilience to incidents that currently lead to the closure of the existing A9 single carriageway sections.

Although IDRs are implemented along the A9 between Perth and Inverness for numerous factors, the main contributory factor are road traffic collisions. Due to the complex geography and lack of alternative high-quality road routes, these IDRs are generally significantly longer in length than the original travel route and can not only significantly disrupt journeys for road users but also local communities where significant traffic volumes are routed through.

2.4.9 Stakeholder Engagement

Throughout the development of the A9 Dualling Programme and each constituent Project, there has been a meaningful commitment to placing public engagement and dialogue with directly affected communities and other stakeholders.

To support the programme, a bespoke communication and engagement strategy was developed which sets out the ways in which the public and stakeholders have the opportunity to engage throughout the design, development and construction phases of the A9 Dualling Programme[87]. The list of consultees involved in STPR process was also reviewed and used to identify consultees for the proposed scheme.

The community and engagement strategy for the A9 Dualling Programme has sought to comply with the National Standards for Community Engagement which are good practice principles designed to improve and guide the process of community engagement[88]. These National Standards are aimed at ensuring communities and affected individuals have their voices hear in the planning and delivery of services. These standards are:

- **Involvement**: Identify and involve the people and organisations who have an interest in the focus of the engagement
- **Support**: Identify and overcome any barriers to involvement
- **Planning**: Gather evidence of the needs and available resources and use this evidence to agree the purpose, scope and timescale of engagement and the actions to be taken
- **Methods**: Agree and use methods of engagement which are fit for purpose
- **Working** Together: Agree and use clear procedures that enable the participants to work with one another effectively and efficiently
- **Sharing Information**: Ensure that necessary information is communicated between the participants
- **Working with others**: Work effectively with others with an interest in the engagement
- **Improvement**: Develop actively the skills knowledge and confidence of all the participants
- **Feedback**: Feedback the results of the engagement to the wider community and agencies affected
- **Monitoring and evaluation**: Monitor and evaluate whether the engagement achieves its purposes and meets the national

Since 2012, engagement has been undertaken with many identified partners, agencies, communities and interested parties to identify the risks and benefits which need to be considered as part of the delivery of each Project. As part of this strategy, a range of methods have been deployed and utilised as part of the wider communication and engagement strategy, these are summarised overleaf in Table 19 which highlights the depth and breadth of the methods used.

These methods of stakeholder engagement have been utilised throughout the development of the Preferred Route Option for the A9 Dualling Programme and have been embedded into the communication strategy for each individual Project. During later stages of the detailed design process at the DMRB Stage 2 and 3 Assessments, local community workshops were essential in allowing the showcasing of several options and gaining feedback from residents, businesses and other key stakeholders.

[87] A9 Dualling Engaging with Communities, Transport Scotland, 2013, https://www.transport.gov.scot/media/6486/appx-a61-engaging-communities-booklet.pdf

[88] National Standards for Community Engagement, Scottish Community Development Centre, https://www.scdc.org.uk/what/national-standards

Table 19. Community and Engagement Strategy Communication Methods

Participation Method	Observed Benefits	Commitments
Letters	Direct contact with statutory organisations and other groups/individuals/landowners/community/interest groups.	To introduce them to the project. To invite stakeholders to meetings. To request information. To have direct communication with landowners. To ensure that information issued to stakeholders is copied to constituency and list MSPs, MPs, MEPs an
Email correspondence	A dedicated email address has been established a9dualling@transport.gov.scot to allow the public to contact the project team. Faster and more cost effective than post in targeting consultee groups/individuals.	To respond to email queries received.
Project website	An important central resource for the public, media and all stakeholders to access up to date information. The website will feature a document archive, timeline, frequently asked questions (FAQs), feedback mechanisms, information about events, news articles etc. Information can be downloaded.	To keep the website up to date throughout the project. To include all published project documents. To use online feedback mechanisms. To provide an email enquiry and response service.
eZines (Electronic Newsletters)	Dissemination of up-to-date information regularly to a targeted, but large database of interested parties.	To issue up-to-date information on project progress once design consultants have been appointed.
Leaflets	Provide regular information on specific route sections and topics and highlight feedback mechanisms.	For use during public exhibitions and to keep key groups (e.g. community councils and landowners) informed with details of specific sections.
Newsletter	Once construction starts, to provide regular information and opportunities for individuals to feedback comments.	To keep all affected parties and the general public informed about project development. • To make this information accessible to a

Participation Method	Observed Benefits	Commitments
		wide audience by distributing through libraries and other community facilities. To ensure that information issued to stakeholders is copied to constituency and list MSPs, MPs, MEPs and elected local councillors.
Media/news releases	To provide information to as wide an audience as possible using the national and local media.	To keep the media updated on developments throughout the life of the project through news releases and interviews or briefings.
Briefing sessions	Briefing members of representative stakeholder groups, including responding to questions.	To hold briefing sessions to introduce stakeholder representatives to the project team and set up a communication link with community groups. To ensure that constituency and list MSPs, MPs, MEPs and elected local councillors are invited to briefing sessions or are provided with a separate briefing session on the topics being presented. To also give consideration to the location and timing of these briefing sessions and ensure that invitations are issued in good time.
Public exhibitions	Opportunity for the public to feed back views through contact with the project team.	To hold public exhibitions/ road shows to present information and gain public feedback on proposals. To provide an opportunity for feedback. To ensure that constituency and list MSPs, MPs, MEPs and elected local councillors are made aware of public exhibitions and are invited to attend.
Community council, residents association and landowner meetings	Involving local people, key stakeholders and community groups to establish key issues and solutions. The format can be modified to suit the audience including formalised presentation, small group discussions and feedback. NB Discussions with community councils are taking place to investigate the potential for regular community forums	To engage effectively with community representatives and affected parties. To follow up on briefing sessions and to provide opportunity for discussion on project developments.

Participation Method	Observed Benefits	Commitments
	to be established i.e. to allow representatives of established groups to raise any local issues.	
Reference/focus groups	Structured group process where peoples' views on specific issues can be sought. Can be directed to a particular group with an interest in the project.	To benefit from the knowledge and expertise of particular groups to benefit the project.
One-to-one stakeholder meetings	One-to-one meetings with stakeholders most affected by the proposals. Opportunity to resolve potential issues.	To meet specific stakeholders to discuss issues related to the project, develop specific mitigation, etc. (As required or requested)

Source: A9 Dualling Engagement with Communities, Transport Scotland, 2013, https://www.transport.gov.scot/media/6486/appx-a61-engaging-communities-booklet.pdf

In addition to these methods, bespoke forums to further facilitate engagement were also created to meet at regular intervals which included the Environmental Steering Group, Environmental Forum and the Non-Motorised User Forum.

The purpose of these groups / forums is to facilitate consultation with stakeholders; to provide an opportunity to discuss requirements relating to statutory responsibilities and other issues; and to provide regular updates on and an opportunity for organisations to review emerging design work.

The statutory and non-statutory stakeholders for each of these forums are detailed below:

Environmental Steering Group (Monthly Meetings)

- Scottish Environmental Protection Agency (SEPA)
- Scottish Natural Heritage (SNH)
- Historic Environment Scotland (HES)
- Cairngorms National Park Authority (CNPA)
- Perth & Kinross Council (PKC); and
- The Highland Council (THC)

Environmental Forum

- All members of the Environmental Steering Group
- Forestry Commission Scotland
- Royal Society for the Protection of Birds Scotland
- Tay District Salmon Fisheries Board
- Spey Fishery Board
- Findhorn, Nairn and Lossie Fisheries Trust
- Badenoch and Strathspey Conservation Group
- Buglife – The Invertebrate Conservation Trust
- British Deer Society
- Scottish Wildlife Trust
- Scottish Badgers

Environmental Forum meetings were, generally, held every six months.

Landscape Forum

The Landscape Forum comprises the landscape architects from Transport Scotland's consultants and Transport Scotland's landscape advisor. The Landscape Forum has undertaken consultation throughout the assessment process with SNH, CNPA and the relevant local authorities to reach agreement on the approach to the assessment, finalise viewpoint locations and appropriate mitigation strategies.

Non-Motorised User (NMU) Forum

The Non-Motorised User (NMU) Forum has also been developed to engage with and seek views on specific design aspects relating to NMU access and includes stakeholders with walking, cycling and equestrian interests. The NMU Forum met on two occasions in May 2015 and May 2016, with Forum members also invited to attend the public exhibitions. At these events NMU stakeholders were updated on the A9 Dualling programme. These forums were held, generally, every six months.

Community Council Consultation

Engagement with relevant community councils has been ongoing throughout the DMRB Stage 2 and Stage 3 assessments and has aimed to inform of scheme progress and to seek feedback on any issues of concern with regard to potential impacts on the local community.

Landowner Consultation

Landowner identification commenced in 2015 and engagement with landowners has also been ongoing throughout the DMRB Stage 2 and Stage 3 assessments. This has involved door-to-door enquiries, written enquiries and meetings with both landowners and their agents. Landowners provided the following information in relation to their property interests:

- Details of the owners and occupiers of land.
- The extent of ownership information relating to any other land occupied either under lease, or through another informal agreement; and
- Type of land use, activities and access arrangements.
- Details of any agricultural, sporting or forestry activities carried out.

Landowners were also provided with updates on scheme development and offered the opportunity to comment on particular aspects of design potentially interfacing with their interests.

To date the stakeholder engagement has helped inform the design development process including the OBC and will continue to have an important role in developing the A9 Dualling Programme as detailed design progresses and construction work commences.

2.4.9.1 Engagement Outcomes

Whilst each Project and its associated community and stakeholder engagement activities generated individual outcomes in relevance to each particular Project and its associated study area, a significant proportion of the feedback obtained was noted to have general themes of commonality which were both applicable to individual Projects themselves as well as the wider A9 Dualling Programme. These themes of commonality as emerged from the individual Project Environmental Statements are as follows:

- The predominant land uses across the A9 Dualling Programme are agriculture with parcels of forestry and woodland. These industries utilise the A9 to access and egress these location as well as support the efficient movement of labour and goods.
- The A9 Route Corridor is popular with tourists due to the direct and indirect access that it provides to tourist destinations, with there being an aspiration to enhance existing tourism facilities. Sporting interests in the form of Fishing, Shooting and Hiking use assets that are located at or adjacent to the A9 Dualling Programme where any impacts should be mitigated. In addition, opportunities to improve access to these locations should be explored.
- There is an existing perception of safety risks along the A9, particularly where at grade junctions allow right hand turns across the carriageway and where larger vehicles such as those associated with Forestry and Agriculture may be crossing and / or maneouvering slowly.
- Residents of settlements along the route are likely to make regular trips to the nearest major urban centre (Inverness and Perth) to access a far greater range of community recreation and amenity land and services. It is therefore important that convenient access for residents of communities to the A9 be maintained and improved wherever possible as part of the A9 Dualling Programme.

- From an NMU perspective, feedback highlighted concerns relating to safety implications of diverting large volumes of vehicular traffic on to side roads during construction and their potential impact on NMUs. Additionally, concerns were raised regarding the current condition and dimensions of parts of National Cycle Route 7 as well as regarding potential impacts on existing formal and informal parking facilities adjacent to the A9 Dualling Programme. During consultation, it was highlighted that a number of lay-bys used by hillwalkers operate above capacity during busy periods and that improved provision at popular locations would provide opportunities for increasing Active Travel levels as well as increasing access to recreational opportunities along the length of the A9 Dualling Programme.
- Feedback also highlighted conflicting views on the need for a dedicated NMU route that runs parallel to the adjacent A9 Dualling Programme, with some groups preferring an adjacent route and others a more remote route.
- In addition to these NMU concerns, feedback also identified an opportunity to improve the signage of existing NMU routes both along and within proximity to the A9 Dualling Programme, with existing signage considered to be inadequate. The provision of new crossing points in the form of underbridges were also identified as an opportunity, where required, to be designed with sufficient width and clearance for equestrian use.

2.4.10 Risk and Uncertainty

At this stage of the A9 Dualling Programme development process, a number of risks and uncertainties have been identified.

From the perspective of the Outline Business Case, these are:

- Uncertainty relating to changes in guidance for how transport interventions are appraised and reported.
- Uncertainty of changes to the Strategic Fit of the development proposals at a local, regional and national scale that are likely to change the overall context in which the A9 Dualling Programme Objectives have been developed against.
- Uncertainty about future travel demand and movements and what a 'new norm' will represent following relative stabilisation after the COVID-19 Pandemic.
- Change in political direction / conflicting priorities within the Scottish Government
- The detrimental impacts of the war in Ukraine and other international events on fuel prices and the overall economy may lead to planned developments not progressing as previously anticipated which could lead to further changes on overall travel demand.

Design risks associated with the Scheme are managed on an ongoing basis throughout the design process in accordance with Transport Scotland's risk management process and Governance.

2.4.11 Dependencies

A summary of the dependencies from the point of view of the Strategic Case affecting the A9 Dualling Programme is provided in Table 20.

Table 20. Dependencies Affecting the A9 Dualling Programme

Dependency	Influencing Ownership
National economic climate and Scheme affordability	UK Government / Scottish Government / Transport Scotland
National Policy and Strategy – Levelling Up; Build Back Better; STPR2, Scotland's Economic Strategy; IIP; NPF4; Cleaner Air for Scotland; Scotland's Agenda for Cities	UK Government / Scottish Government
City Region Deals – policies/measures to support the development proposals and wider benefits / opportunities	UK Government / Scottish Government / The Highland Council / TayCities
Regional Transport Strategy - policies/measures to support the development proposals and wider benefits/opportunities	HITRANS, TACTRAN
TAYplan Strategic Development Plan – adopted plan / future development sites and road and trunk road impacts (existing and future)	TayCities

Dependency	Influencing Ownership
Local Development Plans – adopted plan / future development sites and road and trunk road impacts (existing and future)	The Highland Council, Moray Council, Perth & Kinross, The Cairngorms National Park
Moray Council Local Transport Strategy – local policies/measures to support the Scheme and wider benefits/opportunities	Moray Council
Appraisal guidance/methodology updates	Transport Scotland / Department for Transport / HM Treasury
Highland Main Line Upgrade	Scottish Government, Transport Scotland, Network Rail, Scotrail

A number of the dependencies are observed to be relating to Policy and Strategy whereby these dependencies and their alignment with the A9 Dualling Programme are further detailed earlier in the Business Strategy section.

Additionally, a number of infrastructure interventions which have been identified to be committed and therefore included within the supporting Transport Modelling of the A9 Dualling Programme are also included, with further detail on these specifically set out within supporting Transport Modelling reports. Only those of relevance to the length of the A9 Dualling Programme are referenced below.

2.4.12 Overview

The current problems and opportunity along the length of the A9 Dualling Programme are summarised in Table 21 alongside the key problems and issues identified as part of the STPR published in 2008. Although the STRP2 process supersedes the previous STPR, the A9 Dualling Programme is treated as a committed infrastructure development in STPR2, and therefore is out of the scope.

The assessment indicates that all the key issues and problems identified within STPR remain valid in addition to the identification of opportunities that can also be capitalized upon by the A9 Dualling Programme.

The original rationale for investment, as set out within the 2008 STPR publication, is considered to be robust and is observed to have been strengthened through the A9 Case for Investment published in 2016.

Table 21. Summary of Identified Problems and Alignment with Previous STPR Outcomes

Identified Problems and Opportunities		Still Relevant and Applicable?
Strategic Transport Projects Review A9 Perth to Inverness	**A9 Dualling Programme Outline Business Case**	
Increasing population/households	Significant growth proposals at the Northern and Southern termini of the road corridor Historic significant population growth	✓
Low current and forecast modal share by Public Transport	Low Public Transport mode share	✓
High car ownership/dependency	High car ownership levels and need to travel by private car	✓
Lower accident rate but higher severity	Poor safety performance record against other comparable road types	✓
Mixed carriageway standards along the A9 trunk road	Inconsistent road standard	✓
Mix of vehicle types and speeds leading to significant platooning	Varying composition of vehicle types, with pronounced platooning – particularly on single carriageway sections	✓
Lower income levels	Regional economic disparity	✓
Poor resilience of the transport networks during adverse weather – lack of alternative diversion routes	Significant disruption through road closures and implemented diversion routes	✓
Low accessibility levels along the corridor	Poor geographic access for rural local communities	✓
Strategic corridor – high levels of long-distance trips	Reliance on road transport network for effective movement of goods Provides accessibility and connectivity to significant tourism assets	✓
Capacity and quality issues on the transport networks	Inconsistent and substandard Active Travel infrastructure	✓
Geographical/Topographical constraints	Poor geographic access for rural local communities Multiple significant environmental receptors along road corridor	✓

2.5 Impact of Not Changing

This section sets out, in qualitative terms, the forecasted and projected impacts of the A9 Dualling Programme not coming forward (i.e. the Impact of Not Changing) and builds upon the outcomes of the contents of earlier sections of this Strategic Case.

2.5.1 Policy and Strategy

As detailed in the Business Strategy section, considerable weight has been applied across National, Regional and Local Policies and Strategies to the A9 Dualling Programme coming forward and the role that delivery of this significant level of transport investment will play in addressing the needs of not only communities across the length of the route but also that of Scotland and the United Kingdom.

The necessity of the A9 Dualling Programme is enshrined across key economic strategies pertaining to Scotland, with a notable example being that relating to the first STPR process, particularly in relation to further improving multimodal connections between the North of Scotland and the Central Belt of which the A9 Dualling Programme will play a fundamental role. This necessity is also highlighted through it being identified that the A9 Dualling Programme will support delivery of several of the outcomes set out within NTS2, particularly those from an inclusive economic growth perspective as well as those relating to inequalities and health and wellbeing.

From an economic perspective, the role of infrastructure in supporting inclusive economic growth is strongly recognised and enshrined at a national level as highlighted in Scotland's National Strategy for Economic Transformation. Similarly, delivery of inclusive infrastructure has the ability to address existing societal inequalities and support a fair and just transition towards Net Zero targets and priorities.

At a local level, the A9 Dualling Programme is recognised within each relevant Local Authority (The Highland Council, Moray Council and Perth & Kinross Council) as being a key enabler to economic growth through improving the strategic trunk road corridor between the Central Belt and the North of Scotland.

Through not delivering the A9 Dualling Programme, it is expected that a significant setback will occur to the position and Policy and Strategy at a National, Regional and Local level and will erode the significant expectation that has been placed on the development proposals to support economic growth, address existing transport inconsistencies across the route corridor in addition to not addressing the transport imbalance between all of Scotland's cities – leaving Inverness as an outlier in terms of connectivity and accessibility.

2.5.2 Economic Growth

Over 29,000 new homes are planned for communities and settlements that are either within immediate proximity to or adjacent to the length of the A9 Dualling Programme, most notably in the north of Perth, across the Inverness and Culloden area as well as the planned New Town, An Camas Mor, south of Aviemore. This level of planned residential growth coupled with significant levels of planned employment growth in Perth and across the Inverness and Culloden area, particularly around the regional economic hub at Inverness Airport Business Park, is likely to give rise to traffic impacts on the Scottish trunk road and local road networks.

As the A9 between Perth and Inverness is the principal road connection between the Central Belt Region and the Highlands, not delivering the A9 Dualling Programme is expected to stymie competitiveness for business who wish to export to national and international markets. Businesses have previously highlighted the unreliability of the existing road route which, in some instances, requires the factoring of additional time to accommodate the likelihood of journeys experiencing disruption for a proportion of their journey. Not addressing these existing legitimate concerns from a business perspective is therefore likely to further reduce the attractiveness in investing in these areas as a result of an ageing strategic road corridor that does not meet the needs of a modern and developed economy.

At a local level, the identified high reliance on car / van ownership and that households within settlements along the length of the A9 Dualling Programme have access to a higher proportion of vehicles than Scottish and UK national averages, highlights the important role that the A9 plays in facilitating access to educational, leisure, health and employment opportunities. The modest scale of these existing settlements along the corridor results in a large proportion of residents having to travel to urban areas around Inverness and Perth to access these facilities, amenities and services, with the A9 acting as an essential means to access the needs of residents and communities.

The A9 between Perth and Inverness is a crucial gateway to internationally renowned tourist destinations both within the immediate proximity of the route such as those in Northern Perthshire around Pitlochry and Dunkeld as well as those in the Highlands, most notably the Cairngorms National Park, but also further afield such as Speyside and the Moray Firth. The overwhelming majority of Tourism assets in these locations, of which there is a significant offering and variety that cater for Culture and Heritage, Adventure as well as Recreational and Leisure Tourism, are primarily accessed by road due to the challenging topographical and geographical constraints that limit the Public Transport offering. A known constraint, particularly within and around the Cairngorms National Park, is the lack of high-quality transport infrastructure to meet the needs of a large proportion of visitors accessing the region by motor vehicle and via the A9.

2.5.3 Network Performance

A critical component that forms part of the wider rationale for investment in the A9 Dualling Programme is the aspiration to significantly improve primarily the safety performance of the route as well as delivering benefits to operational performance also.

Since installation of Average Speed Cameras in late 2014, it has been observed that there has been no discernible decrease in the frequency of Personal Injury Collisions (PICs) along the length of the A9 Dualling Programme and that whilst there has been a slight reduction in the number of collisions categorised as Slight, 2022 recorded the highest frequency of Fatal and Serious collisions. With Road Traffic Collisions constituting 80% of the reason for unplanned road closures, PICs can cause significant impacts to not only those involved but also to other road users who encounter disruption and are forced to travel along Incident Diversion Routes, which add considerable distances to their journey in both directions along the corridor. These diversion routes redirect significant traffic volumes off the A9 onto local roads, routing motor vehicles through existing settlements and communities, which in-turn also causes disruption at a local and strategic level.
Not delivering the A9 Dualling Programme would mean that network performance would remain broadly similar to current network performance, including the incidence and severity of PICs.

2.6 Programme Objectives

The STPR process, which finished in 2008, developed the following corridor objectives, based on a multimodal assessment of the problems and opportunities along the A9 Inverness to Perth corridor:

- To reduce journey time and increase opportunities to travel between Inverness and Perth (and hence onwards to the Central Belt);
- To improve the operational effectiveness of the A9 as it approaches Perth and Inverness;
- To address issues of driver frustration relating to inconsistent road standard, with attention to reducing accident severity; and
- To promote journey time reductions, particularly by public transport, between the Central Belt and Inverness primarily to allow business to achieve an effective working day when travelling between these centres.

Since the publication of the STPR process in 2008, further analysis and evaluation of the problems and opportunities along the A9 corridor as part of the DMRB Stage 1 and Strategic Environmental Assessment (See the Project Development Process section) led to the development of the following operational objectives for the A9 Dualling Programme:

1) To improve the operational performance of the A9 by:
   a) Reducing journey times; and
   b) Improving journey time reliability.

2) To improve safety for motorised and non-motorised users by:
   a) Reducing accident severity; and
   b) Reducing driver stress.

3) Facilitate active travel in the corridor.

4) To improve integration with Public Transport facilities.

Through the preparation and development of this Strategic Case and its supporting evidence base, it is noted that the A9 Dualling Programme Objectives as initially identified through the STPR process are still relevant, appropriate, and sufficiently robust.

2.7 Project Development Process

2.7.1 Introduction

This section outlines the processes and key milestones which resulted in the identification of the A9 Dualling Programme between Perth and Inverness as the Preferred Route Option and presents the key outcomes of each of the critical milestone of the option development and appraisal process.

2.7.2 Design Manual for Roads and Bridges

The design work for the A9 Dualling Programme has been undertaken in accordance with the relevant Design Manual for Road and Bridges (DMRB) processes whereby there are three key stages which are shown in Figure 48.

Whilst DMRB guidance is non statutory, it is recognised as good practice across the entirety of the United Kingdom in enabling the consistent treatment of road schemes across the country in addition to attendant driver confidence and safety benefits. DMRB has repeatedly been proven to be a proportionate and robust process of justifying the use of statutory powers which is demonstrated through it being tested across numerous inquiries across the United Kingdom.

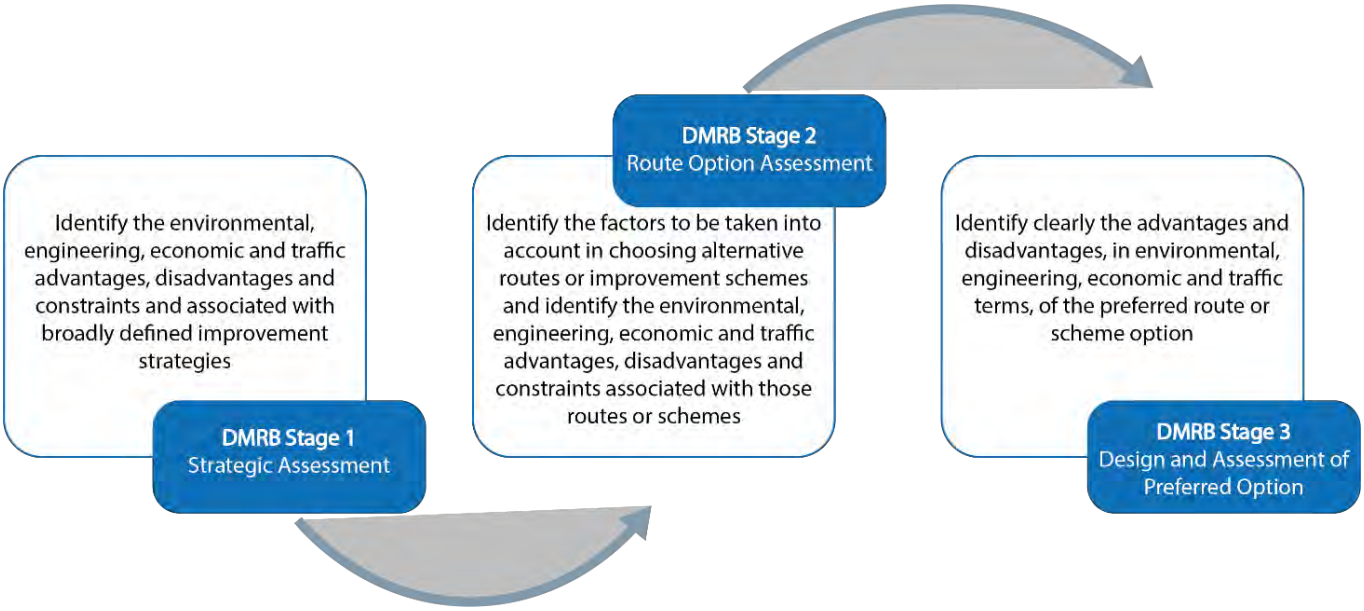


Figure 48 DMRB Stages

2.7.3 Option Development

2.7.4 Preliminary Engineering Services & SEA (DMRB Stage 1)

Following the publication of the Scottish Government's Infrastructure Investment Plan in 2011[89] which outlined a long-term commitment for the dualling of the A9 between Perth and Inverness, Transport Scotland commission the preparation of a Preliminary Engineering Assessment (PES) alongside a Strategic Environmental Assessment (SEA) for the A9 between Perth and Inverness.

[89] Infrastructure Investment plan, Scottish Government, 2011, https://timeline.hie.co.uk/media/1365/transport-scottish-government-infrastructure-investment-plan.pdf

Embedded into the development process of the A9 Dualling Programme was the desire to deliver a Category 7A all-purpose dual carriageway (renamed D2APc - Dual 2 lane All-purpose road – sub-category c in DMRB March 2020 update[90]), wherever possible, with the following design features:

- No gaps in the central reserve, to prevent right turns across carriageways;
- Full 'grade separation' of junctions to remove 'at grade' junctions, following the proposed design principles listed below:
  - Junctions will be provided with all A and B class roads unless junction locations can be combined.
  - All junctions with C class roads, unclassified roads and accesses are to be rationalised and an alternative connection provided unless particular site specific considerations can be demonstrated.
- Grade separated junctions to provide direct links, over or under, the A9 for non-motorised user crossing/access;
- Hard shoulder strips at least 1m width;
- Underpasses preferable to overbridges, where possible, to minimise visual impact; and
- Route, signage and lighting design to minimise overall visual impact.

Between 2012 and 2014, these two studies worked in parallel with each other to being the development of dualling proposals and their associated delivery strategy for the A9 between Perth and Inverness. These studies were equivalent to a DMRB Stage 1 Assessment[91].

At the core of the process was the involvement of stakeholders and communities which, as highlighted in the Problems and Opportunities section, resulted in engagement activities being undertaken along the A9 between Perth and Inverness since 2012. The most active of these groups throughout the entire design process of the A9 Dualling Programme has been the Environmental Steering Group.

These initial stages of the DMRB Stage 1 Assessment included identification of potential road interventions which located either adjacent to or in proximity to the existing A9 between Perth and Inverness or broad corridor options outside the geography of the existing road. A key component of the process was public consultation undertaken in 2014 at the corridor level, which enabled the sharing of pre-sifting widening options for the A9 Dualling Programme mainline, to canvas early views to help inform the development process.

As part of the assessment, these options where subjected to a two stage preliminary sifting assessment to identify options which were appropriate to be taken forward for further consideration as part of the DMRB Stage 2 Assessment. This initial sifting was undertaken in accordance with the wider A9 Dualling Programme Objectives, which are detailed in the Programme Objectives section.

The outcomes of this two stage sifting process and the options that were identified to be taken forward for further consideration as part of the DMRB Stage 2 Assessment are detailed in Table 22. Options with a Red ID are online corridor options following the existing single and dual carriageway of the A9 between Perth and Inverness. The Black, Pink and Green Options are offline corridor options[92].

[90] Road Layout Design DMRB CD 109 - Highway link design, DMRB, https://www.standardsforhighways.co.uk/search/c27c55b7-2dfc-4597-923a-4d1b4bd6c9fa
[91] A9 Dualling DMRB Stage 1, Transport Scotland, 2014, https://www.webarchive.org.uk/wayback/archive/20160104154659/http:/www.transportscotland.gov.uk/report/a9-dualling-design-manual-roads-bridges-dmrb-stage-1-report-5595
[92] A9 Dualling Programme SEA Addendum Environmental Report, Transport Scotland, 2013

Table 22. PES and SEA Options Identified for DMRB Stage 1 Assessment

Option ID	Section / Broad Location	Description
A1 (Red)	Inveralmond to Tay Crossing	Online improvements
B1 (Red)	Tay Crossing to Bruar	Online improvements
D1 (Red)	Dalwhinnie to Newtonmore	Online improvements
E1 (Red)	Newtonmore to Kinveachy	Online improvements
F1 (Red)	Kinveachy to Inverness	Online improvements
B2 (Black)	Ballinluig	An alternative to the online corridor between Tay Crossing and Ballinluig although the Black Option starts on the northern extents of the Birnam to Tay Crossing section.
B4 (Pink)	Pitlochry	An alternative to the fully online corridor between Pitlochry and Blair Atholl. The corridor encompasses three A9 subsections: Pitlochry to Killiecrankie, Pass of Killiecrankie and Killiecrankie to Glen Garry; only part of the Killiecrankie to Glen Garry section is covered by this offline corridor i.e. until the section reaches Blair Atholl.
B5 (Green)	Bruar	An alternative to the fully online corridor between Killiecrankie and Glen Garry. The offline corridor departs the existing A9 to the south of Bruar for approximately 4km; which would realign a series of sweeping horizontal curves associated with the existing A9.
Variation of E1 (Red)	Newtonmore to Kinveachy	A variation of the red corridor option E1 west of the existing trunk road between Newtonmore and Kinveachy to reduce the impact of Option E1 on the Insh Marshes Special Areas of Conservation
Variation of E1 (Red)	Newtonmore to Kinveachy	A variation of the red corridor option E1 to make provision for a possible grade separated junction in the vicinity of Newtonmore

Source: A9 Dualling DMRB Stage 1, Transport Scotland, 2014

Stakeholder discussions also identified further consideration was merited for two additional options which were variations of options identified during the process.

Some of these shortlisted online options (Red) as well as the offline corridor options at the southern extent of the A9 Dualling Programme are shown in Figure 49.

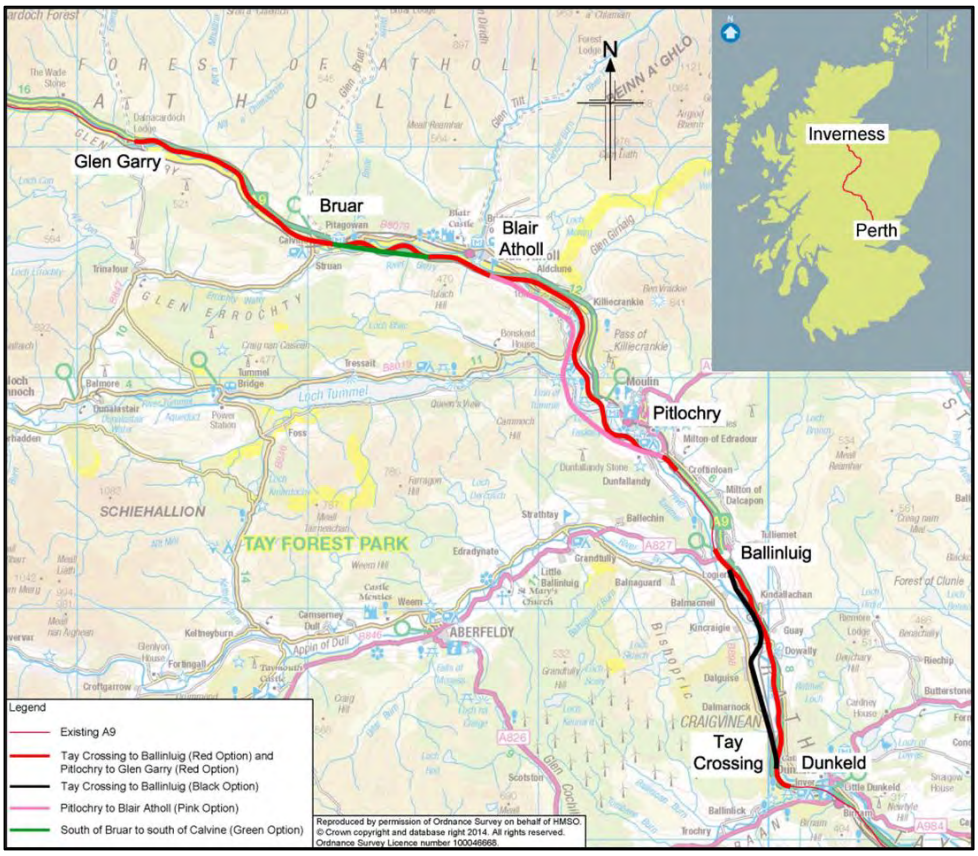


Figure 49 Southern Section Shortlisted Route Corridors

2.7.5 DMRB Stage 2

As shown in Figure 48, DMRB Stage 2 Assessment is a preliminary assessment which generally involves a broad and strategic approach to developing and assessing indicative and broad corridor options, to facilitate the identification and consideration of the environmental, engineering, economic and traffic advantages, disadvantages, and constraints associated with the developed improvement strategies.

Following the outcomes of the DMRB Stage 1 Assessment (see Table 22) and prior to the full DMRB Stage 2 Assessment, an initial sifting exercise was undertaken for the shortlisted options across each Project, to identify and suspend options from further consideration, due to being significantly less advantageous than other options, a process more commonly known as a 'negative' assessment. Once completed, widening options were combined to form a range of route options which were then subjected to a full DMRB Stage 2 Assessment.

The DMRB Stage 2 development work for each Project moved away from the consideration of broad 200m wide corridors for dualling down to individual route options for dualling. This was due to the identification of an opportunity along the existing A9 between Perth and Inverness whereby its existing geometry lent itself to widening to a dual carriageway standard thus minimising environmental impacts and associated delivery costs.

Through this stage, the option development process initially consisted of considering the widening either to one side of the existing A9 or the other. Widening to both sides of the existing road was also considered but generally was not preferred due to difficulties in constructing over the existing road, whilst keeping both directions of travel open to traffic as much as possible. In occasional circumstances some offline widening was considered where tight bends or adjacent constraints made online widening challenging.

These forms of widening were considered in an initial sifting exercise on a section-by-section basis, with the categorisation of sections primarily dictated by those sections not currently at dual carriageway standard (See Introduction section).

During the DMRB Stage 2 process, the importance of consultation with communities and stakeholders was recognised at the outset to enable feedback to be easily incorporated into the design development. Following the DMRB Stage 1 public consultation undertaken in 2014, further consultation was undertaken as the work moved towards a project level, to share the route and junction options that were emerging from the sifting and intended for the Stage 2 Assessment. Critical features of these community engagement activities were to understand specific local constraints that should be accounted for as well as any ideas for intervention options which had not yet been considered.

Building upon the DMRB Stage 1 Assessment, particularly the SEA work undertaken, the Stage 2 work included a greater level of environmental assessment work across some topic areas than is typically undertaken at this stage. This was due to the identification of sensitive environmental receptors for impacts such as Air Quality and Noise, particularly within The Cairngorms National Park, in addition to considering the significant topographical and geographic conditions of the length of the A9 Dualling Programme. This was undertaken to provide additional confidence in the route selection process and to facilitate the identification of opportunities to incorporate mitigation into design at the earliest opportunity.

Prior to the final decision on the preferred route, further workshops were held between Project design teams and Transport Scotland to consider the balance between engineering factors, environmental impacts, traffic and economic factors and stakeholder engagement to inform the preferred route recommendation. Value for money workshops were also held to challenge the findings of the assessment of options and examine ways in which Project designs could be refined to improve performance, better meet stakeholder aspirations, and make them more cost effective.

The DMRB Stage 2 Assessment Preferred Route Option for each Project is set out in Table 23. In all instances, multiple Preferred Route Options were taken forward for further consideration as part of the DMRB Stage 3 Assessments. It is worth noting that the identification of a Preferred Route Option did not negate other options and variations of other shortlisted options from being considered during the Stage 3 process, with there being opportunities for further refinement through engineering design and stakeholder input. All of the Preferred Route Options for each Project were shared at public engagement workshops which formed the final milestone of each Project's DMRB Stage 2 Assessment.

In the case of the Projects from Killiecrankie to Pitagowan (P5) and Pitagowan to Glen Garry (P6), it was decided that these would form a single Project since they were adjoining sections and there was an aspiration to provide a more balanced overall Project in terms of its associated benefits and disbenefits.

Further details are available in the DMRB Stage 2 Assessment Reports for each Project[93]

[93] A9 Dualling Perth to Inverness, Transport Scotland, https://www.transport.gov.scot/projects/a9-dualling-perth-to-inverness/

Table 23. DMRB Stage 2 Preferred Route Option(s)

Project ID	Project	DMRB Stage 2 Preferred Route Option(s)
P1	A9 Luncarty to Pass of Birnam	Mainline Option 3B Addendum
P2	A9 Pass of Birnam to Tay Crossing	TBC
P3	A9 Tay Crossing to Ballinluig	Mainline Route Option 2 and Side Road Option 2
P4	A9 Pitlochry to Killiecrankie	Mainline Option 2B (RW) with Side Road Option 2
P5	Killiecrankie to Pitagowan	Mainline Option 4B
P6	Pitagowan to Glen Garry	Mainline Option 3C
P7	A9 Glen Garry to Dalwhinnie	Mainline Option Five and Dalnaspidal Junction Option 21
P8	A9 Dalwhinnie to Crubenmore	Mainline Option 1 and Dalwhinnie Junction Option 27
P9	A9 Crubenmore to Kincraig	Mainline options 1A, 2A, 3A, 4B and 5B and Newtonmore Junction 7.
P10	A9 Kincraig to Dalraddy	Mainline Option 3
P11	A9 Dalraddy to Slochd	Mainline Option 1A and Junction Options A02, C34 and D12
P12	A9 Tomatin to Moy	Mainline Option 1A(ii)

Source: Transport Scotland

In all instances except two, these Projects extents remained unaltered, for further consideration as part of the DMRB Stage 3 Assessment. In the instances of P5 and P6, their direct proximity and lack of separation to each one another lent themselves to being amalgamated into one Project which became Project 5/6 which was then taken forward as part of the DMRB Stage 3 Assessment.

2.7.6 DMRB Stage 3

Throughout the DMRB Stages, the design process for each Project has been undertaken in an iterative manner that has involved successive refinement to achieve a solution that addresses issues arising through the collection of new information on constraints or understanding problems identified as the Project and its constituent elements develop. Therefore, the design iteration for each Project has resulted in incremental changes that provide solutions, whilst being mindful of the overall A9 Dualling Programme Objectives, until an optimum DMRB Stage 3 level of design has been reached.

At the DMRB Stage 3 Assessment, each Project's iterative design process has involved further collection of environmental data and associated environmental mitigation workshops, and has undergone a series of detailed design iterations in addition to receiving stakeholder and community input, for which a key enabler was monthly meetings of the A9 Environmental Steering Group.

DMRB Stage 3 developed the preferred route for each of the Projects to a greater level of detail for commencement of the statutory authorisation process. Where DMRB Stage 2 was concerned with the mainline and principal junctions, Stage 3 work also defined local junctions and accesses and how these would link to the strategic junctions. Facilities for non-motorised users were also more fully defined and lay-bys and bus stops located. Many of these infrastructure elements hold great importance to those living

locally and further local consultation (see Problems and Opportunities section) was undertaken as designs were developed during this stage.

At the final stage of the design process, the following overall principles were considered in identifying embedded mitigation, particularly from an environmental perspective, for each Project of the A9 Dualling Programme:

- minimising potential impact on people and communities by avoiding direct encroachment onto property, optimising land take and facilitating access requirements
- horizontal and vertical alignments designed to be as close to the existing A9 as possible to minimise resultant earthwork embankments/cuttings and land take
- minimising encroachment into areas of ancient woodland and other sensitive habitat
- consideration of opportunities for potential variation of slope gradients to achieve best landscape fit and to reduce impact on ancient woodland
- minimising encroachment into areas at risk of flooding
- management of surface water runoff arising from the proposed A9 dual carriageway and side roads through appropriately located and designed drainage features
- avoidance of known areas of priority/deeper peat
- alignments designed to facilitate access through the A9 corridor for Non-Motorised Users with specific consideration to the National Cycle Network, Rights of Way and Core Paths

Non-Motorised User (NMU) stakeholders have been able to influence the DMRB Stage 3 designs via dedicated NMU Forums in addition to feedback from public exhibitions at the Stage 3 stage as well as at previous consultations at DMRB Stages 1 and 2. The feedback received from these consultations has informed the design of NMU connections to and through the A9 between Perth and Inverness, which has included realignments and enhancements to the National Cycle Route, enhancement of existing and delivery of safe, accessible and dedicated crossing points at the A9 and where possible, segregation through the provision of bridges and underpasses.

A number of iterations of NMU access arrangements were developed as informed by consultee feedback and site visits, whilst taking cognisance of good design practice for NMU routes. This approach has not only safeguarded and enhanced crucial local connections but will also improve wider access to the Core Path Network and the National Cycle Network.

As part of the Stage 3 Assessments, further consideration was also given to the functionality and location of lay-bys along the route which, based on feedback and stakeholder inputs, led to the development of 'enhanced' lay-bys. These dedicated stopping points along the A9 Dualling Programme are of a greater length than conventional lay-bys and seek to increase the distance between pedestrians using the lay-bys and the live traffic on the carriageways, through enhanced segregation and increase the attractiveness and overall perception of any views and facilities.

Local Accesses to existing residential and employment premises, sites and Estates on the A9 were also sought, where possible, to be retained and enhance these crucial access points to enable vehicles to safely access and exit the A9. These new access points, where a significant majority are Left-In, Left-Out junctions, seek to mitigate any severance and potential safety impacts that may occur as a result of dualling the full length of the A9 between Perth and Inverness.

A further critical element of the DMRB Stage 3 Assessments across each relevant Project was refining the design of junctions that would facilitate safe and easy access on and off the A9. Many of these significantly enhanced junctions comprised Grade Separated Junctions to safeguard local and strategic movements. In addition to the dualling of the A9 between Perth and Inverness, these significant junction enhancements are also a critical feature as they are projected to significantly improve the operational performance of road nodes along the A9 Dualling Programme and collectively with dualling and NMU improvements, dramatically enhance the overall perception of the A9 for both road users and the communities that live and work near and adjacent to the highway corridor.

The completion dates of the DMRB Stage 3 Assessment for each Project are detailed in Table 24.

Table 24. Project DMRB Stage 3 Assessment Completion Dates

Project ID	Project Name	DMRB Stage 3 Assessment Completion Date
P1	A9 Luncarty to Pass of Birnam	2014
P2	A9 Pass of Birnam to Tay Crossing	Expected to be completed in 2025
P3	A9 Tay Crossing to Ballinluig	2018
P4	A9 Pitlochry to Killiecrankie	2017
P5/6	A9 Killiecrankie to Glen Garry	2017
P7	A9 Glen Garry to Dalwhinnie	2017
P8	A9 Dalwhinnie to Crubenmore	2017
P9	A9 Crubenmore to Kincraig	2018
P10	A9 Kincraig to Dalraddy	2013
P11	A9 Dalraddy to Slochd	2018
P12	A9 Tomatin to Moy	2018

The key details of each Project that forms part of the A9 Dualling Programme are summarised earlier in this document in Table 3. Further information on each Project and their constituent elements can be found in each respective Environmental Statement[94] published by Transport Scotland.

[94] A9 Dualling Perth to Inverness, Transport Scotland, https://www.transport.gov.scot/projects/a9-dualling-perth-to-inverness/

2.8 Performance against Programme Objectives

Table 25 summarises the performance of the Scheme against the A9 Dualling Programme's objectives outlined in the Programme Objectives section. This qualitative assessment, based on the contents and evidence presented within the Strategic Case, indicates that full delivery of the A9 Dualling Programme will lead to all the objectives being met.

Table 25. Performance of A9 Dualling Programme Preferred Route Option against Programme Objectives

Objective	Sub-Objective	Scheme Performance
To improve the operational performance of the A9	Reduce Journey Times	The A9 Dualling Programme will provide a continuous dual carriageway between Perth and Inverness, which in addition to permitting cars, HGVs and buses to travel at increased speeds, as a result of a higher National Speed Limit across these upgraded sections, will also provide continuous safe overtaking opportunities. Additionally, these proposals coupled with a programme of junction rationalisation which will deliver grade separated junctions and the removal of all right turn junctions across its length, leads to an expectation that the A9 Dualling Programme will significantly reduce journey times for cars, HGVs, and buses.
	Improve Journey Time Reliability	The A9 Dualling Programme will introduce a dual carriageway standard road between Perth and Inverness that will remove a number of the constraints (having to slow down due to slower moving vehicles or turning traffic ahead, lack of safe overtaking opportunities, full or partial road closures due to incidents) that prevent drivers from travelling at their desired speed. As drivers are heterogeneous with varying desired speeds, the removal of these constraints will at an individual level allow drivers to better predict their own travel time and schedule departure and arrival times with a greater degree of certainty. The A9 Dualling Programme is expected to reduce the frequency of Incident Diversion Routes being implemented, which add considerable distances to journey and cause disruption to not only road users but the communities and areas that traffic is rerouted through. This improved level of journey time reliability will benefit all users of the A9 including commuters, business travellers, tourists, bus operators and the haulage industry.
To improve safety for motorised and non-motorised users	Reduce accident severity	The provision of continuous dedicated overtaking opportunities, removal of all existing right turn access points and the delivery of grade separated junctions along the A9 Dualling Programme is expected to reduce the frequency of drivers undertaking dangerous overtaking manoeuvres, thus reducing associated collisions and casualties. The provision of new grade separated junctions, located primarily at gateways to settlements, will remove interaction between local roads and the A9, and will therefore safeguard and enhance local road connections whilst also reducing the interaction of NMUs and motor vehicles. All the above, allied to the horizontal and vertical design standards of the A9 Dualling Programme, would provide a material increase in road safety.

Objective	Sub-Objective	Scheme Performance
	Reduce driver stress	The A9 Dualling Programme would provide a consistent standard of road with increased overtaking opportunities. The provision of safer overtaking opportunities would reduce the number of vehicles travelling in platoons behind slower moving vehicles, leading to a reduction in driver frustration, a key component of driver stress.
Facilitate Active Travel in the corridor	-	The A9 Dualling Programme maintains existing use of NMU facilities whilst providing safer access points across the A9 as well providing an opportunity for enhancing existing Active Travel infrastructure and providing new high quality routes for NMUs. In some instances, the A9 Dualling Programme will enable "missing links" on existing NMU routes to be addressed and increase connectivity and accessibility between settlements and communities along its length. With the development proposals in place, significant adverse impacts will be largely avoided in key areas, as a result of the provision of underpasses and maintaining existing NMU routes. Enhancing existing Active Travel facilities and addressing identified opportunities and issues along the road corridor through the provision of new infrastructure is expected to increase the attractiveness of Active Travel along the length of the A9 Dualling Programme.
To improve integration with Public Transport facilities	-	The A9 Dualling Programme will have a minor positive impact on integration with Public Transport. There will be direct benefits to bus operators and users from reduced journey times and better reliability. The A9 Dualling Programme is being designed to integrate with existing and planned public transport facilities along the corridor with further opportunities for integration with the Highland Mainline explored collaboratively as both projects move forward.

2.9 Summary

In this document, the Strategic Case of the A9 Dualling Programme is presented in accordance with the investment decision making guidance of Transport Scotland.

The Strategic Case has demonstrated the need for intervention. It is clear that the Scottish Government's agenda for improving strategic transport connectivity between the Central Belt and the Highlands is at risk of not being delivered in the absence of excellent connectivity expected to be provided by the A9 Dualling Programme. In terms of its Strategic Fit, interrogation of Strategies, Policies and Legislation has noted the strong alignment of the A9 Dualling Programme in meeting current, emerging and future needs in addition to being a significant vehicle for aspirations at a National, Regional and Local level to be fully realised.

The review of the problems identified within STPR indicated that they remain valid. In addition, opportunities have been identified that can also be capitalized upon by the A9 Dualling Programme such as addressing identified inequalities, from the perspective of geographic access, as well as improving NMU facilities and routes to increase Active Travel levels. Since STPR, there has been an increasing emphasis in recent years to assess and mitigate the projected carbon impacts through delivery of road infrastructure to allow, where possible, impacts to be appropriately mitigated. Due to the complexity and scale of the A9 Dualling Programme, there are likely to be elements that are likely to positively contribute towards delivery of objectives to address Climate Change but also elements which could have the opposite effect to some degree. Road based elements are unlikely to contribute towards achieving a reduction in vehicle kilometers by 20% by 2030 however this is dependent upon whether there is a significant increase in overall journeys made. Positive contributing elements include the provision of new and enhanced active travel facilities to encourage a positive mode shift onto active modes across the length of the A9 Route Corridor. An example of the positive approach adopted to addressing these objectives is the measurement of embodied carbon for each Project that forms the A9 Dualling Programme and the inclusion of SMART Carbon Reduction targets, which demonstrate the consideration of carbon impacts that have been incorporated into the final development process of the A9 Dualling Programme.

Existing transport conditions have resulted in the perception of the current A9 Route Corridor between Perth and Inverness as being unreliable which requires further consideration to be applied when using it to make a journey, with business users that require the effective movement of goods and services within a short timescale most impacted.

The existing safety performance of the A9 Route Corridor is likely to be exacerbated unless a significant intervention is implemented to enhance the route standard and decrease driver frustration through the provision of safer overtaking opportunities as well as removing unsafe access points at the A9 and improving the interaction of the corridor with local roads and NMU routes and facilities.

The proposed A9 Dualling Programme, along with the Highland Main Line upgrade, is critical to overcoming local, regional, and national infrastructure deficits. It will help connect skilled people to jobs, link employment clusters and create an efficient and resilient national transport network that supports economic and employment growth to be delivered that supports the efficient and effective movement of goods, people, and services. The challenging geographical and topographic conditions presented by the study area, and the projected impacts of alternative road interventions, has meant that the environment has been a material factor in the A9 Dualling Programme preferring to enhance the existing A9 between Perth and Inverness. The development proposals will increase access for communities and residents that live along the length of the A9 Dualling Programme to educational, leisure and health facilities within the primary urban centres around Inverness and Perth.

The analysis and evaluation of transport and socio-economic challenges, opportunities, and issues in collaboration with stakeholders has helped inform the development of Programme Objectives which are

used to inform the option development and appraisal process. When appraised against these Programme Objectives, it is noted that full delivery of the A9 Dualling Programme will enable these to be fully met and realised.

A proportionate and robust cost-benefit assessment of the Preferred Route Option for the A9 Dualling Programme and a further detailed appraisal against the Programme Objectives has been undertaken as detailed within the Socio-Economic Case of this Outline Business Case.

Strategic Case Appendix A – Identified Key Development Sites

Table 26 Key Identified Residential Allocated Development Sites in relation to the A9 Dualling Programme

Local Planning Authority	Site ID	Name	Residential Units
Moray	R8	Land at Barhill Road	250
Moray	R10	Spynie Hospital North	435
Moray	R11	Findrassie	1,500
Moray	R19	Easter Linkwood and Linkwood	675
Moray	R2	Ferrylea	380
Moray	R3	Lochyhill	850
Moray	R1	Sunbank/Kinneddar	261
Cairngorms	N / A	An Camas Mor	1,500
Cairngorms	H1	Vacant Land	300
Cairngorms	H1	Monaltrie Park	250
Highland	12	Stratton, East Inverness	2,500
Highland	13	Tronagrain	2,509
Highland	N/A	Nairn Local Plan + Major Sites	566
Highland	N/A	Wider Nairn HMA + Windfall	605
Highland	N/A	A96 – Nairn Delnies	300
Highland	N/A	A96 – Nairn South	1,230
Highland	N/A	A96 - Cawdor	350
Highland	17	Delnies	300
Highland	22	Cawdor Expansion	285
Perth & Kinross	H15	Oudenarde	1,600
Perth & Kinross	MU27	Luncarty South	589
Perth & Kinross	MU73	Almond Valley	704
Perth & Kinross	MU345	Bertha Park	3,000
Perth & Kinross	MU70	Perth West	2,210
Perth & Kinross	H29	Scone North	550
Perth & Kinross	H30-34	Stanley	248
	Total		**23,947**

Table 27 Key Identified Employment Allocated Development Sites in relation to the A9 Dualling Programme

Local Planning Authority	Site ID	Name	Quantum of Development	
			Site Area (Ha)	Employment Floorspace (m^2)
Moray	I3/LONG2	West of Mosstodloch	30	TBC
Highland	12	Stratton, East Inverness	TBC	17,950
Highland	13	Tronagrain	TBC	21,350
Perth & Kinross	H15	Oudenarde	35	TBC
Perth & Kinross	E38	Ruthvenfield	23.6	TBC
Perth & Kinross	MU345	Bertha Park	25	TBC
Perth & Kinross	MU70	Perth West	25	TBC
Total			**138.6**	**39,300**

Table 28 Key Identified Mixed-Use Allocated Development Sites in relation to the A9 Dualling Programme

Local Planning Authority	Site ID	Name	Quantum of Development		
			Site Area (Ha)	Employment Floorspace (m^2)	Residential Units
Highland	M1	Aviemore Highland Resort	33	TBC	TBC
Perth & Kinross	MU330	Blairgowrie Eastern Expansion	53.1	TBC	594
Perth & Kinross	MU5	Western Blairgowrie	24.55	TBC	179
Perth & Kinross	MU7	Brioch Road	47	TBC	409
Perth & Kinross	MU171	Perth Quarry	21	TBC	112
Total			**178.65**		**1,294**

3 The Socio-Economic Case

3.1 Introduction

3.1.1 Socio-Economic Case Overview

This chapter presents the Socio-Economic Case stage of the Outline Business Case for the A9 Dualling Programme between Perth and Inverness. The Socio-Economic Case forms the second Stage of the wider Outline Business Case (OBC) suite.

This Socio-Economic Case revisits the appraisal undertaken through the Strategic Transport Projects Review (STPR)[95] and A9 Case for Investment[96] processes, ensuring that the identified problems, opportunities, and challenges still exist, and that the options assessed still offer solutions to the problem(s) whilst providing value for money (under the five STAG[97] critical criteria of Environment, Climate Change, Health, Safety and Wellbeing, Economy and Equality and Accessibility). Furthermore, the Socio-Economic Case has been developed taking account of the costs and benefits of the full Programme including those sections which have already been completed.

3.1.2 Reporting Structure

The sections below outline how the key evidence relating to the Socio-Economic Case for the A9 Dualling Programme have been structured in this report. This includes:

- **Section 3.2** provides an overview of the economic appraisal of the Preferred Route Option of the A9 Dualling Programme, its performance against the key assessment criteria of Environment, Climate Change, Health, Safety and Wellbeing, Economy, and Equality and Accessibility. This chapter also presents the Benefit to Cost Ratio (BCR) of the A9 Dualling Programme and its wider Value for Money (VfM) performance through consideration of both monetised and non-monetised impacts.

- **Section 3.3** presents the assessment of the A9 Dualling Programme, in both qualitative and quantitative terms, against the identified Programme Objectives.

- **Section 3.4** provides a summary of the Socio-Economic Case of the A9 Dualling Programme.

[95] Strategic Transport Projects Review, Transport Scotland, 2008, https://www.transport.gov.scot/our-approach/strategy/strategic-transport-projects-review/
[96] A9 Dualling Case for Investment, Transport Scotland, 2016, https://www.transport.gov.scot/media/6727/a9-dualling-programme-case-for-investment-main-report-september-2016.pdf
[97] Scottish Transport Appraisal Guidance, Transport Scotland, 2022, https://www.transport.gov.scot/our-approach/industry-guidance/scottish-transport-analysis-guide-scot-tag/#42948

3.2 Preferred Route Option Appraisal and Evaluation

3.2.1 Introduction

This section sets out the analytical approach adopted to assess the impacts of the A9 Dualling Programme and the resulting Value for Money performance of the Preferred Route Option as identified in the Strategic Case.

3.2.2 Economic Appraisal Methodology

The economic appraisal of the scheme has been undertaken in alignment with current STAG and TAG guidance as well as being informed by industry best practice with regards to the assessment and appraisal of significant road infrastructure development proposals.

The economic appraisal of the A9 Dualling Programme has therefore been informed by consideration of both monetised and non-monetised impacts. Where monetised impacts have been calculated, these have been further evaluated against the cost estimate of the A9 Dualling Programme, to derive an indicative Benefit-to-Cost Ratio (BCR).

It is not possible to monetise some impacts which have been considered (such as social and distributional impacts as well as environmental impacts). These have therefore been examined through alternative means. The Value for Money of the scheme is thus represented by a combination of the monetised values within the BCR calculations and the non-monetised impacts, as reported below.

An overview of the economic appraisal and monetised Value for Money process is illustrated in Figure 50.

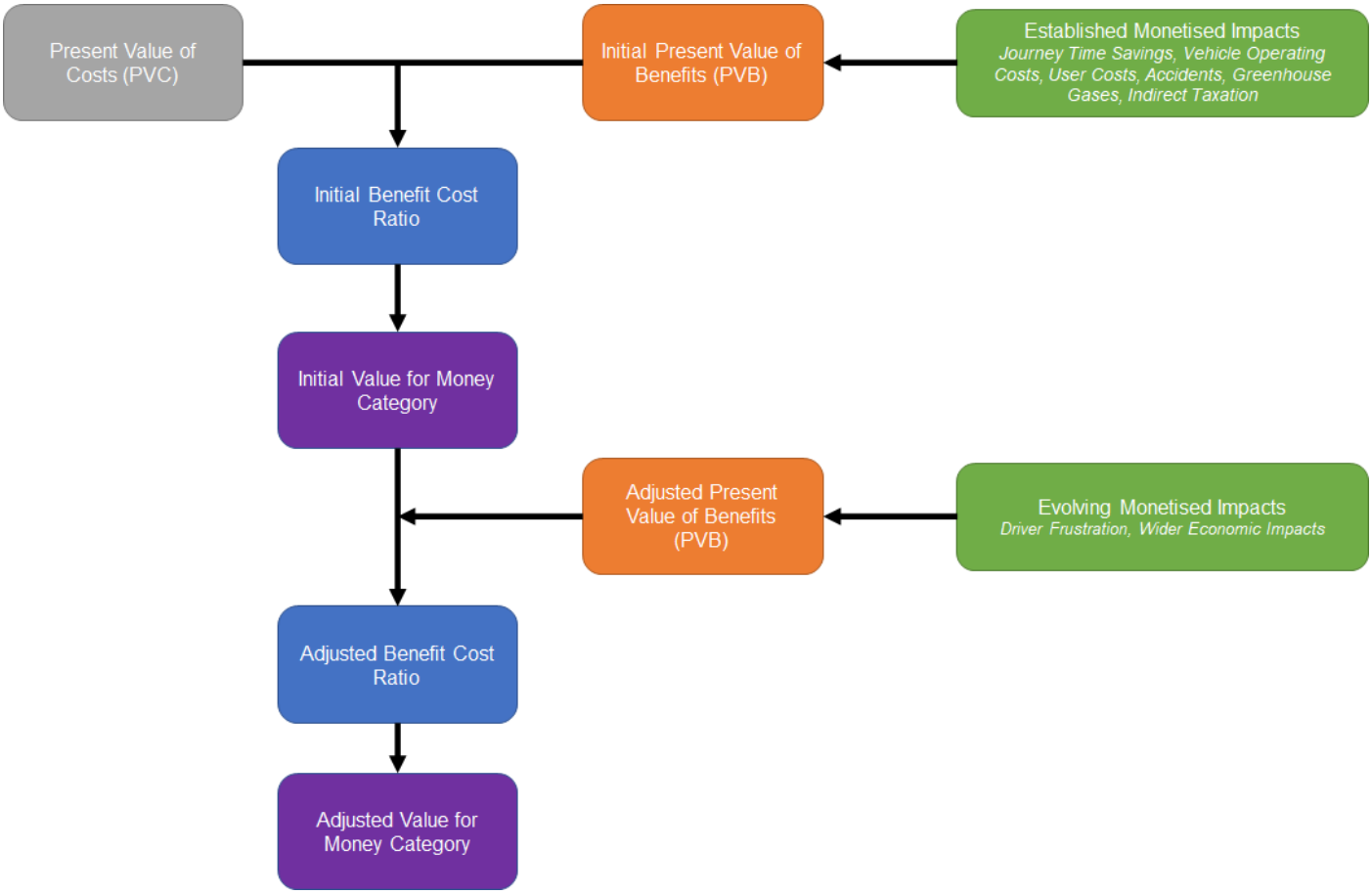


Figure 50 A9 Dualling Programme monetised Value for Money Process

The economic, environmental, social, and distributional impacts of the A9 Dualling Programme have all been examined, using qualitative, quantitative, and monetised information as appropriate and proportional to the level of the scheme. In assessing Value for Money, all of these should be considered by the decision maker in order to determine the extent to which a proposal's benefits compare to its costs.

The following sections of this report set out the assessment of the preferred route option against the five STAG criteria (Environment, Climate Change, Health, Safety and Wellbeing, Economy and Equality and Accessibility). Where quantitative information is available, this is provided. Analysis of benefits which cannot be quantified or monetised are also included.

3.2.3 Transport Modelling

To support the A9 Dualling Programme, the impacts of the proposed road intervention have been assessed using a strategic multi-modal model, to enable an understanding of travel behaviours at a national level, and microsimulation traffic modelling at a more granular level, which represents solely the extents of the A9 Dualling Programme and its interfacing local roads. Collectively, utilisation of these modelling packages has allowed the A9 Dualling Programme to be robustly and proportionately modelled to better understand its impacts.

The impacts of the COVID-19 Pandemic have been considered as part of the development of the A9 Dualling Programme OBC. Further detailed is included within the Strategic Case.

The transport modelling suites which have been used are the Transport and Economic Land-use Model of Scotland (TELMoS18), the Transport Model for Scotland (TMfS18) and the A9 Dualling Traffic Model (A9DTM15).

TELMoS18 is the national land-use model which provides forecasts of land use changes that form the basis for future travel demands. TMfS18 is the national transport model which offers a generalised, multi-modal representation of travel demands and infrastructure supply for a base (2018) and future forecast years. A9DTM15 is a detailed model of the road network between Perth and south of Inverness. Its forecasts are informed by traffic demands provided by TMfS18.

The Socio-Economic Case is informed by an analysis of the modelled impacts of the A9 Dualling Programme for the forecast years 2032, 2035, 2040, and 2045. It considers analysis of the effect of the introduction of the A9 Dualling Programme on traffic volumes, mode choice, and changes in destination and routes. It also considers analysis of trip lengths and origin-destinations using the existing A9 at certain points between Perth and Inverness.

Comparisons between these data and the model have been used to assess the fitness for purpose of each of the modelling suites used to test the impacts of the A9 Dualling Programme. Where appropriate, other publicly available information has been used to assist the assessment.

3.2.3.1 Transport and Economic Land-use Model of Scotland (TELMoS)

The land-use model provides a view of future land-use and a representation of the interaction between the pattern of land-use and transport demand over time.

The model has three major inputs:

- Census data and demographic forecasts;
- Employment and macroeconomic forecasts; and
- Forecasts of land available for development based upon planning policy inputs supplied by local authorities.

The land-use model, like the transport model, is incremental. It considers changes to the pattern of land-use which result from forecast changes to baseline population and employment, given the availability of land for development.

The model has three main sub-models which inform one another:

- The economic model;
- The urban model; and
- The migration model.

The economic model forecasts the growth or decline for different sectors of economy at regional level. Its main concern is the distribution of economic activity. Two distinct processes are represented within this model - trade and investment. The primary outputs of the economic model are changes in employment by sector and subregion.

TELMoS receives forecasts of travel cost from the linked transport model (TMfS18), which influences many of the behaviours included in the model, including the choice of developments that are built out.

3.2.3.2 Transport Model for Scotland (TMfS18)

The Transport Model for Scotland (TMfS18) is a strategic transport model, which provides a broad representation of transport supply and estimates of transport demand.

The model:

- Covers the whole mainland population of Scotland;
- Details the choices made by people on how, where, why, and when they travel;
- Covers the mainland-based motorised modes of car, bus, and rail for personal travel;
- Links with an interactive land-use model (TELMoS), which provides a land-use transport interaction;
- Is designed for broad option identification, ranking, and scheme/policy appraisal;
- Is a demand model which does not model the detailed operation of junctions or congestion;
- Has a wide range of model outputs; and
- The development of the models is underpinned by an extensive bank of transport data.

The A9 Case for Investment, published in 2016 was informed by TMfS12, with a base year of 2012. Since then, TMfS has been through two iterations. The latest version, TMfS18, has informed the Socio-Economic Case. It has a base year of 2018 and covers the whole of Scotland with additional zones representing England and Wales. It is thus large enough to model short distance and long distance transfers. TMfS18 has three modelled periods representing the AM peak hour, the PM peak hour and an average Inter-Peak hour.

The interaction between TELMoS and TMfS is highlighted in Figure 51.

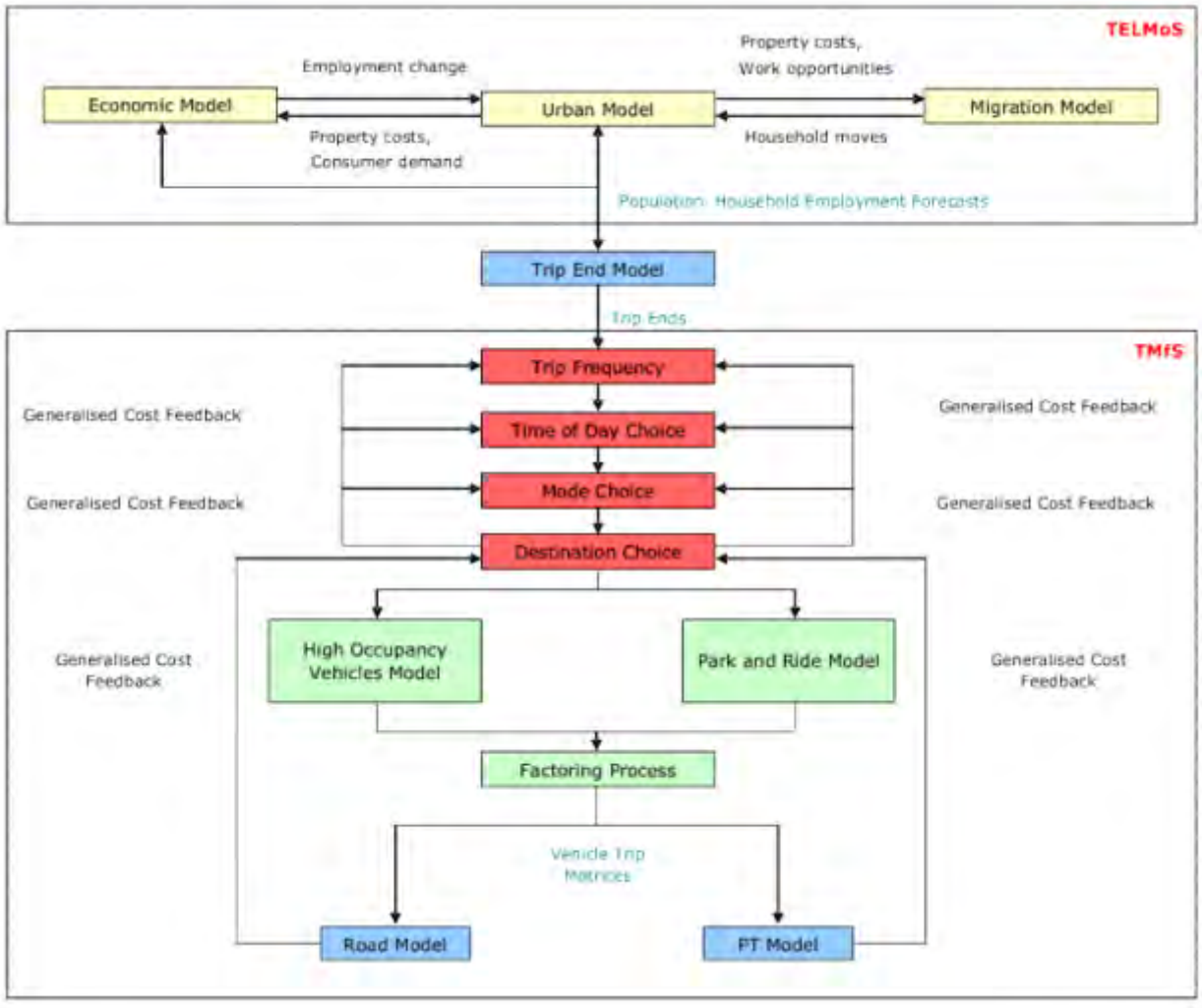


Figure 51 TELMoS and TMfS Interaction

Transport forecasts have been informed through incorporating one of Transport Scotland's alternative growth scenarios. These scenarios have been developed by varying some of the assumptions made about the future which includes future population, economic growth, and fuel prices, and therefore seek to capture the key uncertainties of future growth across the transport network.

For the purposes of the A9 Dualling Programme, the 'Low Motorised Traffic / Emission demand' alternative growth scenario has been used. This scenario in particular is underpinned by key future policies such as a 20% reduction in car km by 2030, the phasing out of new petrol and diesel cars by 2030 and the requirement to reach Net Zero carbon emissions by 2045.

3.2.3.3 A9 Dualling Traffic Model (A9DTM)

Traffic modelling undertaken in support of the A9 Dualling Programme has also been informed by the A9 Dualling Traffic Model 15 (A9DTM15), which was developed to provide a more detailed overview of the A9 Route Corridor to enable traffic related analysis. As a detailed microsimulation model it has the ability to represent individual vehicle interactions that is not present in TMfS.

The A9DTM15 has been used in the development of the Socio-Economic case for the calculation of specific types of benefits suited to its capabilities. These include journey time savings and delays due to dualling or junction rationalisation, driver frustration due to presence of Heavy Goods Vehicles (HGVs) and absence of overtaking opportunities and delays due to construction and maintenance.

3.2.4 Preferred Route Option

The Preferred Route Option for each individual Project has been developed in accordance with the Design Manual for Roads and Bridges (DMRB) and has undergone substantial development as it has transitioned through the DMRB process. Each constituent Project of the A9 Dualling Programme and its associated key elements are detailed in the Strategic Case of this OBC which also details the option development process and associated methodology for the identification of the Preferred Route Option for each of the Projects.

The Preferred Route Option for the A9 Dualling Programme is composed of the Preferred Route Option of each of the multiple constituent Projects which collectively seek to fully upgrade the A9 between Perth and Inverness to Category 7A All Purpose Dual Carriageway (renamed D2APc - Dual 2 lane All-purpose road – sub-category c in DMRB March 2020 update[98]). These individual Projects that form the A9 Dualling Programme and their associated details are set out within the Strategic Case.

The Preferred Route Option for the A9 Dualling Programme has emerged as a result of a comprehensive option development process, as discussed within the Strategic Case. This Socio-Economic Case therefore sets out the modelled impacts of this particular option.

3.2.5 Network Performance

3.2.5.1 Introduction

The A9 Dualling Programme will deliver a high quality, grade separated connection along the Perth to Inverness corridor – delivering reduced journey times, improved safety and reliability, greater driver comfort, and increased resilience to incidents. This chapter presents information on the forecast travel impacts following the dualling of the A9 from Perth to Inverness.

For the purposes of transport modelling undertaken in support of the A9 Dualling Programme, the Do Minimum assessment scenario has been defined as including all committed strategic trunk road and public transport interventions as of October 2021 and therefore this reflects the transport infrastructure projects included in the TMfS18 Do Minimum forecasts. The Do Minimum seeks to robustly model the current performance of the A9 and therefore includes the current Average Speed Camera system that has been in operation along the road corridor between Dunblane and Inverness since 2014. In order to capture the full benefits of the A9 Dualling Programme, the Do Minimum scenario does not include any of the A9 Dualling sections, even those that have already been constructed. The associated costs of the A9 Dualling Programme of sections already delivered are captured within the overall Value for Money calculation for the development proposals, which is detailed in Section 3.2.9.7.

The Do-Something assessment scenario considers the full A9 Dualling Programme in place and therefore each of its constituent sections with a projected full opening year in 2034. As there is a Scottish ministerial commitment to remove the Average Speed Cameras as part of the A9 Dualling Programme this is reflected in the development proposals and therefore also within the Do Something. Further future assessment scenarios have also been modelled in 2035, 2040 and 2045.

[98] CD 109 - Highway link design, DMRB, 2020, https://www.standardsforhighways.co.uk/dmrb/search/c27c55b7-2dfc-4597-923a-4d1b4bd6c9fa

3.2.5.2 Traffic Flows

Figure 52 provides a key to the link sections presented in Table 29, which reports two way Annual Average Daily Traffic (AADT) flows in 2035, the first available modelled year in TMfS18, for both with the A9 Dualling Programme (Do Something) and without intervention (Do Minimum) together with the forecast change in flows as a result of delivery of the A9 Dualling Programme.

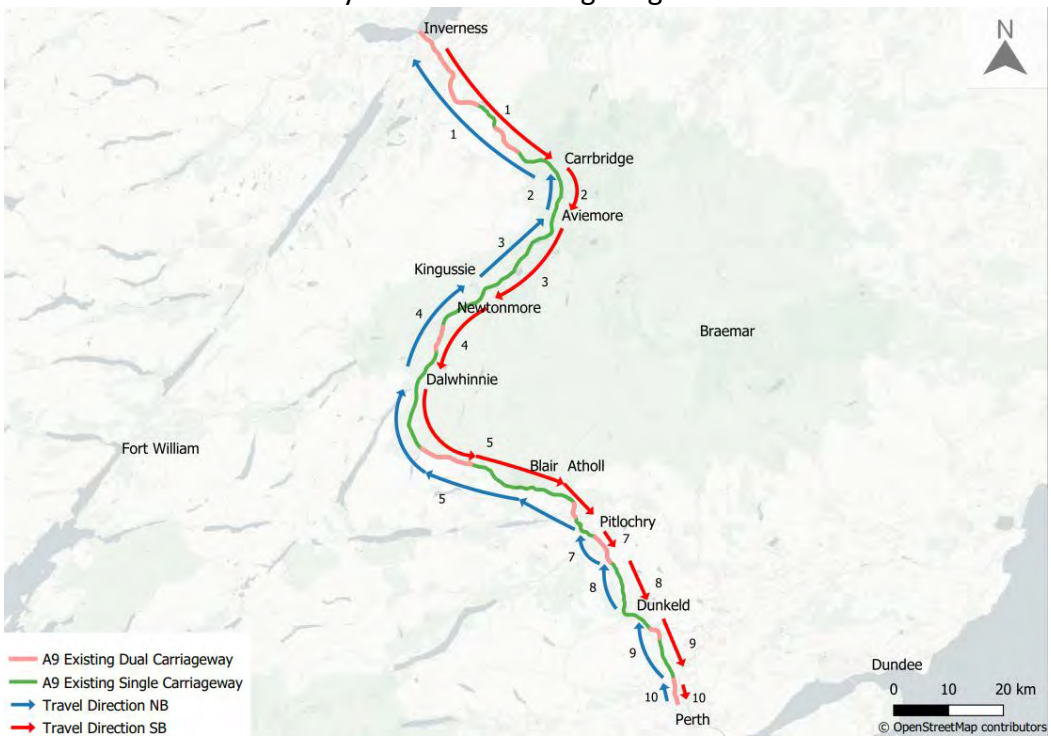


Figure 52 A9 Identified Road Links

Table 29 Forecast 2035 TMfS18 Daily Traffic Flows with and without the A9 Dualling Programme

Link ID	Section Title	Without A9 Dualling Programme		With A9 Dualling Programme		Change	
		North-bound	South-bound	North-bound	South-bound	North-bound	South-bound
1	Inshes to Carrbridge	6,600	6,500	6,800	6,800	+200	+300
2	Carrbridge to Aviemore	4,700	5,000	4,900	5,300	+100	+300
3	Aviemore to Kingussie	5,300	5,800	5,600	6,200	+300	+400
4	Kingussie to Dalwhinnie	5,000	5,500	5,300	5,900	+200	+400
5	Dalwhinnie to Pitlochry Bypass	5,100	5,500	5,400	5,900	+400	+500
6	Pitlochry Bypass	6,500	6,800	6,900	7,300	+400	+500
7	Pitlochry Bypass to Ballinluig	7,600	7,800	8,000	8,400	+500	+600
8	Ballinluig to Dunkeld	7,500	7,500	8,900	9,100	+1,400	+1,600
9	Dunkeld to Luncarty	7,300	7,400	8,100	8,000	+900	+600
10	Luncarty to Perth	9,900	9,800	10,400	10,300	+500	+500

Delivery of the A9 Dualling Programme is forecast to increase the number of vehicles that would be travelling along the road corridor. This will be a combination of longer distance rerouting, as well as small amounts of mode shift, and more trip making within the corridor. In particular, flows are forecast to increase significantly between Dunkeld and Ballinluig, with flows overall forecast to increase by more between Perth and Pitlochry than in other sections along the road corridor.

3.2.5.3 Journey Times

A selection of routes has been identified to provide a representation of the typical journeys made along the length of the A9 Dualling Programme route. Journey Times for 2035 have been extracted from TMfS18 for the inter-peak period for a range of origins and destinations, with and without the A9 Dualling Programme in place.

A comparison of journey times along the length of the route is shown in Table 30. This shows the journey times as a result of no intervention along the road corridor (without A9 Dualling Programme) but including the Average Speed Cameras, and journey times as a result of full delivery of the A9 Dualling Programme (with A9 Dualling Programme).

Table 30 Forecast 2035 TMfS18 Journey Times for selected Origins and Destinations (hh:mm)

Route	Without A9 Dualling Programme	With A9 Dualling Programme	Time Saving (hh:mm)	Time Reduction Percentage Change
Perth to Inverness	2:15	1:48	-00:26	-20%
Inverness to Perth	2:16	1:48	-00:27	-20%
Perth to Pitlochry	0:36	0:30	-00:06	-16%
Pitlochry to Perth	0:36	0:30	-00:06	-17%
Perth to Aviemore	1:45	1:25	-00:20	-19%
Aviemore to Perth	1:46	1:25	-00:21	-20%
Kingussie to Aviemore	0:20	0:18	-00:02	-12%
Aviemore to Kingussie	0:21	0:19	-00:02	-12%
Aviemore to Inverness	0:42	0:37	-00:05	-12%
Inverness to Aviemore	0:42	0:37	-00:05	-13%
Pitlochry to Bankfoot	0:37	0:34	-00:03	-8%
Bankfoot to Pitlochry	0:37	0:32	-00:05	-14%
Perth to Bankfoot	0:16	0:16	-00:00	0%
Bankfoot to Perth	0:16	0:16	00:00	0%
Inverness to Kingussie	0:51	0:42	-00:09	-18%
Kingussie to Inverness	0:50	0:41	-00:08	-17%

The A9 Dualling Programme is expected to provide significant reductions in journey times, both for long distance trips as well as those across a shorter distance, although longer distance trips gain the highest percentage time reduction. Trips in both directions between Perth and Inverness are forecast to benefit from a 20% reduction in journey times, with similar reductions between Perth and Aviemore, Inverness and Kingussie as well as Perth and Pitlochry.

Rural settlements along the length of the A9 Dualling Programme, particularly those in northern Perthshire and around the wider Aviemore area, are likely to be some of the biggest beneficiaries through significant improved accessibility and connectivity to the urban areas of Perth and Inverness as well as further afield to the north of Scotland and the Central Belt.

3.2.5.4 Mode of Travel Impacts

To better understand the potential impact on mode share by Public Transport, TMfS18 forecast bus and rail passengers at a number of key locations along the length of the A9 between Perth and Inverness have been analysed with and without the A9 Dualling Programme in place.

These forecast mode share impacts are shown in Table 31 which shows the forecast change in bus and rail passengers in the year 2035 for the morning (AM), inter-peak (IP) and evening (PM) peak hours with the final columns denoting the net change in Public Transport trips along the length of the A9 Dualling Programme. Values have been rounded to the nearest 10 passengers, with values under 10 removed. These impacts are presented for both Northbound (NB) and Southbound (SB) directional movements.

Table 31 TMfS18 Forecast Public Transport Patronage, Do-Minimum versus Do-Something, 2035

Section	**Direction**	**Change in Bus passengers**			**Change in Rail passengers**			**Net Change in Public Transport Trips**		
		AM	IP	PM	AM	IP	PM	AM	IP	PM
Inshes to Carrbridge	NB	-	+10	+30	-	-10	-30	-	-	-
	SB	-	-	+10	-	-	-10	-	-	-
Carrbridge to Aviemore	NB	-	+10	+30	-	-10	-30	-	-	-
	SB	-	-	-	-	-	-10	-	-	-
Aviemore to Kingussie	NB	-	-	+30	-	-	-30	-	-	-
	SB	-	-	-	-	-	-	-	-	-
Kingussie to Dalwhinnie	NB	-	-	+30	-	-	-30	-	-	-
	SB	-	-	-	-	-	-	-	-	-
Dalwhinnie to Pitlochry	NB	-	-	+30	-	-	-30	-	-	-
	SB	-	-	-	-	-	-	-	-	-
Pitlochry Bypass	NB	-	-	+30						
	SB	-	-	-						
Pitlochry to Ballinluig	NB	-	-	+30	-	-	-20	-	-	-
	SB	-	-	-	-	-	-	-	-	-
Ballinluig to Dunkeld	NB	-	-	+30						
	SB	-	-	-						
Dunkeld to Luncarty	NB	-	-	+30	-	-	-30	-	-	-
	SB	-	-	-	-	-10	-10	-	-	-
Luncarty to Perth	NB	-	-	+30						
	SB	-	-	-						

The modelling indicates that there will be little change in overall Public Transport patronage along the A9 between Perth and Inverness following construction of the A9 Dualling Programme. Notwithstanding Public Transport usage, the modelling has indicated that there will be a sub-mode switch from rail to bus as a result of reduced journey times by bus which increases the attractiveness of bus travel as a Public Transport mode choice, particularly for longer-distance trips along the A9 corridor and further afield.

3.2.5.5 Safety Impacts

The proposed D2APc - Dual 2 lane all-purpose road design standard of the A9 Dualling Programme and the associated high levels of vehicle segregation will deliver significant safety benefits by reducing casualty severity.

Local accident rates, casualty rates, and severity splits calculated for single and dual carriageway sections of the A9 Dualling Programme, as detailed within the Strategic Case, have been combined with TMfS18 traffic forecasts to model the projected future change in both collisions, their classification, in terms of severity, and their associated causalities and damage. The local values were used for the 'without A9 Dualling Programme' case only, with standard national values used for the 'with A9 Dualling Programme' case, as the local conditions resulting in the statistically significant local rates will be removed by the introduction of a consistent dual carriageway standard road between Perth and Inverness.

The forecast change in casualties, by severity, is presented in Table 32.

Table 32 Change in annual casualties, by severity

Year	Fatal	Serious	Slight
2035	-3	-6	11
2040	-3	-6	11
2045	-3	-6	11

Implementation of the A9 Dualling Programme results in three fewer fatalities per year with a noticeable reduction in serious casualties (six per year) and an increase in casualties classified as 'slight'.

3.2.6 Appraisal - Environment

3.2.6.1 Introduction

The A9 Dualling Programme runs through a remote and rural landscape which is internationally renowned for its natural beauty and strong diversity of flora and fauna.

As a result of a notable proportion of the A9 Route Corridor traversing through the highly protected Cairngorms National Park, there are a number of environmental designations along the length of the route. This section summarises the appraisal of the A9 Dualling Programme against the STAG criterion of Environment and was informed by the DMRB Stage 3 Environmental Statement for each Project[99]. Where quantification of outcomes has not been possible the appraisal against sub-criteria has been qualitative.

[99] A9 Dualling Perth to Inverness, Transport Scotland, https://www.transport.gov.scot/projects/a9-dualling-perth-to-inverness/

3.2.6.2 Environment

As set out within their respective DMRB Stage 3 Environmental Impact Assessments, each of the Projects that form the A9 Dualling Programme have been evaluated to assess the environmental impacts against key receptors. These assessments detail the environmental impacts of the development proposals both during construction and operation.

Where practical and appropriate, mitigation has been incorporated into the design of the Preferred Route Option for each constituent Project of the A9 Dualling Programme, to minimise the impacts of the development on the environment and any disruption that may occur during the construction process.

The remainder of this sub-section provides an overview of the Preferred Route Option against the sub-criteria of the Environment STAG criterion.

3.2.6.2.1 Biodiversity and habitats

Potential impacts relate to aspects including loss of habitat (such as tree removal), disturbance and pollution risk during construction, and the effects of road widening in terms of preventing movement of species between different areas.

Where avoidance of impacts has not been possible, mitigation measures to reduce significant adverse impacts have been proposed. Measures include the implementation of standard mitigation commitments and best working practices during the construction phase.

A potential beneficial impact is anticipated as a result of the proposed scheme through increased permeability of the A9 Dualling Programme for species compared with that from the existing A9. This is expected for species including badger and otter, through provision of crossing structures, which include culverts with mammal provision and dry mammal underpasses.

Appraisal Score: Neutral

3.2.6.2.2 Geology and Soils

Several potential sources of contamination have been identified within the study area. These may require specific measures to be taken during construction. For example, procedures for working with potentially contaminated soils and appropriate waste management. However, taking into account the measures proposed to reduce impacts no significant adverse impacts have been identified.

Appraisal Score: Neutral

3.2.6.2.3 Land Use (including Agriculture and Forestry)

The scheme will require modest amounts of agricultural land and whilst some land acquired for the A9 Dualling Programme has the potential to be returned to agricultural use, this is not expected to reduce the significance of impacts for the affected land interests.

Appraisal Score: Slight Negative

3.2.6.2.4 Water, Drainage and Flooding

The A9 Dualling Programme is not expected to have any significant impacts on the aquifers and on groundwater abstractions, following the implementation of measures to protect these during construction

and operation. Identified SSIs and Special Area of Conservation have been assessed and not considered to be at risk from changes to groundwater.

Measures will be implemented to reduce the potential for adverse impacts on the water environment during construction, including best practice construction and pollution control measures. Following the implementation of these measures identified potential construction impacts are assessed as not significant.

The A9 Dualling Programme also includes measures to reduce impacts during the operational phase. These will include Sustainable Drainage Systems (SUDS) to treat runoff before it reaches watercourses via the drainage system, such as features that provide filtering of water and temporary storage basins for runoff. These systems have also been designed in accordance with SEPA guidance to protect against future flooding and will likely provide an improvement to the existing infrastructure.

Appraisal Score: Slight Positive

3.2.6.2.5 Air Quality

With the implementation of appropriate dust control measures, the construction phase of the proposed scheme is not predicted to cause any significant impacts. Assessments concluded that there are no significant local air quality impacts during operation. Despite traffic forecasting indicating an increase in overall traffic volumes, it is not expected that there would be any increases in Nitrogen Dioxide (NO_2) or Nitrogen Oxides (NO_x) in general, due to the anticipated change in fleet composition and the reduction of internal combustion engine (ICE) vehicles, in line with the 'Low Motorised Traffic / Emission demand' alternative growth scenario.

Appraisal Score: Neutral

3.2.6.2.6 Historic Environment

Potential impacts were identified in relation to aspects such as changes to the setting of cultural heritage sites, or the requirement to remove existing features (such as remains of previous settlements). To reduce potential impacts, a programme of archaeological evaluation is proposed comprising trial trenching, geophysical and earthwork survey, and if required this would be followed by archaeological recording in advance of or during construction. Archaeological recording may include for example, archaeological earthwork survey, historic building recording and photographic survey. The landscape planting proposed will also reduce potential impacts on the settings of cultural heritage assets.

Potential significant impacts on Killiecrankie Battlefield during operation have been identified, and these relate to the increased prominence of the proposed scheme within the battlefield landscape. This would reinforce the severance already caused by the existing A9 through the widening of the road corridor and the construction of lay-bys, Sustainable Urban Drainage Systems (SUDS) and earthworks. It is not considered that the mitigation proposed, such as the grading out of earthworks to improve integration with the existing landform, will be able to reduce this overall severance effect, and the residual impact will remain significant.

To offset the impacts on the Killiecrankie Battlefield, opportunities such as the provision of increased interpretation, and / or additional research to increase the ability to understand and appreciate the battlefield will be explored with Historic Environment Scotland, the National Trust for Scotland and the Perth & Kinross Heritage Trust. Archaeological recording in advance of or during construction may be required to mitigate the impact on unknown archaeological remains disturbed by the construction of the proposed scheme.

Appraisal Score: Moderate Negative

3.2.6.2.7 Landscape

There are a number of designated/protected areas and areas of national importance located within the study area including the Cairngorms National Park, Loch Tummel National Scenic Area, Ben Vrackie Special Landscape Area and the Cairngorms Wild Land Areas.

Potential impacts of the proposed scheme on these landscape receptors would arise from construction activities such as the removal of roadside vegetation, the loss of existing embankments and rock outcrops, in addition to the construction of structures and earthworks. Potential impacts would also arise from the operation of the additional carriageway and associated route infrastructure in addition to the changed appearance of the landscape and the associated change in the perception of the Cairngorms National Park, National Scenic Areas, Special Landscape Areas and Wild Land Areas.

The majority of landscape mitigation is achieved through input to the design and planting proposals. Measures include appropriate grading of earthworks and planting to provide screening and improve the fit within the surrounding landscape. Where planting is specified, native plant species would be used so as to re-establish or reinforce the character of the landscape.

Impacts will be most pronounced immediately after opening whilst landscape planting establishes, with the most significant impacts to occur during winter of the opening year. Once the planting has become fully established, no significant landscape impacts are predicted.

Appraisal Score: Slight Negative

3.2.6.2.8 Noise and Vibration

Where the A9 runs adjacent to properties and settlements along the route, noise levels are forecast to increase for some properties across the length of the A9 Dualling Programme.

Mitigation for noise includes using low noise road surfacing materials as well as providing soft and physical landscaping along the route. Overall, far more dwellings and other sensitive receptors are forecast to experience decreases in noise level than increases in noise level.

Appraisal Score: Slight Positive

3.2.6.3 Environment Summary

Overall, it is acknowledged that the A9 Dualling Programme is likely to give rise to slight negative impacts across a range of environmental receptors along the length of the A9 between Perth and Inverness, particularly as a result of the need to utilise undeveloped land and the impacts associated with construction. The most significant adverse impact is expected to occur with regards to interaction of the route with the Killiecrankie Battlefield. When assessed across all environmental appraisal criteria the A9 Dualling Programme is considered likely to generate Slight Negative Impact as shown in Figure 53.

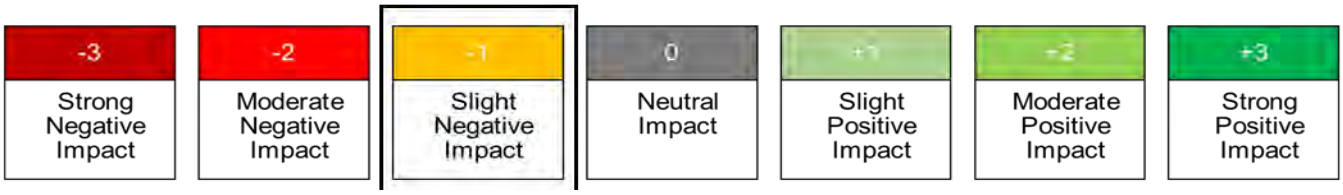


Figure 53 Environmental Appraisal Scoring

3.2.7 Appraisal – Climate Change

The Climate Change Scotland Act (2019) includes a target date of 2045 for achieving net zero carbon as well as a target of 75% reduction against 1990 emissions levels by 2030. In 2019 the Scottish Government declared a Climate Emergency and set out targets to reduce Scotland's emissions of all greenhouse gases to net-zero by 2045 at the latest, with interim targets for reductions of at least 56% by 2020, 75% by 2030 and 90% by 2040. These ambitious targets are underpinned by the Climate Change (Emissions Reductions Targets) Act[100].

In 2020, the Scottish Government published its Climate Change Plan 2018-2032 update which sets out the strategic pathway to facilitate a green recovery from COVID-19[101]. A key element to support the successful delivery of this plan is the aspiration to significantly reduce car use, which currently constitutes 38% of Scotland's transport emissions, which is reflected in the route map to achieve a 20% reduction in car kilometres by 2030[102].

The A9 Dualling Programme has also sought to consider the carbon impacts associated with delivery of the proposals and its interface with Climate Change ambitions. This is reflected through the calculation of a Carbon Baseline as part of the planned Social Value Programme which will be informed by the associated detailed designs for each individual Project. This Carbon Baseline will then be used to inform ambitious carbon reduction management targets that will be embedded into the wider procurement strategy and overall delivery.

The effect of the A9 Dualling Programme on Scotland's ability to meet net zero targets is assessed in this sub-section which includes an appraisal of the A9 Dualling Programme against the STAG criteria of Climate Change. The three STAG sub-criteria of Greenhouse Gas Emissions, Vulnerability to Effects of Climate Change and Potential to Adapt to Effects of Climate Change are discussed.

3.2.7.1 Greenhouse Gas Emissions

In terms of the economy STAG criteria, the Global Air Quality impacts of the A9 Dualling Programme are monetised and reported in Table 33. It should be noted that as part of the Strategic Environmental Assessment (SEA), Air Quality and Noise impacts were scoped out with subsequent Environmental Assessments forecasting impacts during the DMRB Stage 2 and 3 Assessments.

Transport Modelling undertaken in support of the A9 Dualling Programme has indicated that there will be a modest increase in CO_2 emissions across the 60-year appraisal period. The forecast significant increase in Electric Vehicle uptake and therefore overall composition of vehicle types that use the A9 Dualling Programme is noted to be a contributing factor in projected CO_2 emissions not being higher.

The monetisation outlined below is only for the purposes of informing the Value for Money Assessment.

Table 33 Environment Monetised Benefits (£m, 2010 values and prices)

Indicator	Value
Global air quality – CO_2	-1.3

[100] Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, Scottish Government, 2019, https://www.legislation.gov.uk/asp/2019/15/enacted
[101] Update to the Climate Change Plan 2018 – 2032, Scottish Government, 2020, https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/
[102] Reducing car use for a healthier fairer and greener Scotland, Transport Scotland, 2022, https://www.transport.gov.scot/media/50872/a-route-map-to-achieve-a-20-per-cent-reduction-in-car-kms-by-2030.pdf

The increase in fuel usage as a result of the A9 Dualling Programme which in turn is forecast to generate an increase in CO_2 emissions across the appraisal period, has been calculated to provide a monetised disbenefit of approximately £1.3m. This forecast change can be attributed to a combination of rerouting of vehicles as well as a change in efficiencies as a result of higher speeds along the length of the road corridor, as well as some induced traffic.
Overall, the A9 Dualling Programme is expected to have a Slight Negative Impact against Greenhouse Gas Emissions as shown in Figure 54.

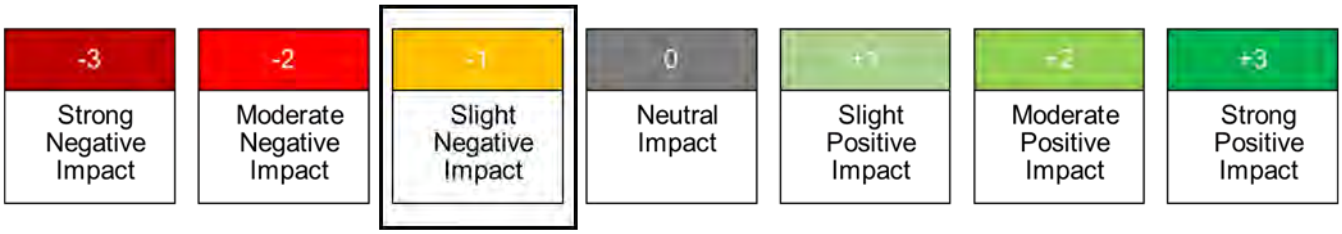


Figure 54 Greenhouse Gas Emissions Appraisal Score

3.2.7.2 Vulnerability to Climate Change

Scotland's top 10 warmest years since records began in 1884 have all occurred since 2002[103], with there already being evidence of a changing climate in Scotland and across the wider UK. Over the last few decades the climate has warmed, rainfall patterns have changed, and sea levels have risen. Current weather extremes are also changing, with the current hottest days getting hotter and wettest days getting wetter. Climate projections indicate that the changes that are already being experienced will continue and intensify over the coming decades.

In terms of the associated impacts of Climate Change, 2018 UK Climate Projections (UKCP18), produced by the Met Office Hadley Centre, provide up-to-date information about the potential future climate in Scotland. Across all emission scenarios presented in UKCP18, there is a general consensus that Scotland's future climate will be characterised by:

- Average temperatures increasing across all seasons;
- Our weather will remain variable and may become more variable;
- Typical summers will be warmer and drier;
- Typical winters will be milder and wetter;
- Intense, heavy rainfall events will increase in frequency in both winter and summer;
- Sea levels will rise; and
- There will be fewer days / periods of frost and snowfall.

From the perspective of the A9 Dualling Programme, impacts of Climate Change on strategic road infrastructure such as Trunk Roads include the following:

[103] UK Climate Projections, Met Office, August 2022, https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v4_aug22.pdf

- More flooding (of the road and surrounding land) and erosion (mainly focused on the surrounding soils rather than the road itself): a challenge for drainage systems and erosion protection (on embankments) and for the design and maintenance of culverts and bridges.
- Landslides and avalanches occurring more frequently, at new locations, and with a higher share of 'wet' landslide types, such as slush avalanches and debris flow.
- Droughts and high summer temperatures may pose problems for asphalt surfacing, due to softening, but also for run-off conditions, due to lower permeability. Risk of wildfires may also increase in the southernmost regions.
- Impact of extreme temperatures, such as tarmac melt and freeze-thaw impacts on road surfaces.
- Deterioration of roads and pavements, as expressed by service life and rutting, mostly in cases where drainage is insufficient.
- Heavy snowfall in mountainous areas of Scotland increasing difficulty for winter maintenance and general operation.
- The need for better risk management and efficient procedures for initiating remedial actions after a weather-related event occurs, due to the fact that existing protective measures may not be sufficient and that the planning of remedial measures requires time.
- Disruption of the network by weather events (rain, snow, high temperatures).
- Damage to roads through deterioration, deformation and subsidence.
- Damage to roadside infrastructure by high winds.
- New challenges to road operation and safety depending on the type and condition of road surface. Inspection and maintenance cycles may need adjusting to enable road organisations to react to changes in events as they arise.
- A risk of indirect climate impacts on vegetation growth and plant diseases, the latter could require large scale felling of roadside trees with disease, such as with ash dieback.

Transport Scotland is updating its review of vulnerable locations based on the latest climate prediction forecasting with consideration being given to a further update of the UK Climate Projections 2009[104] following the UK Climate Projections 2018[105].

Vulnerability to Climate Change in the context of the A9 Dualling Programme is noted to be relevant to several of the potential identified impacts that could affect the operational performance of Trunk Roads. In particular to both the immediate area and the wider region in which the A9 is situated, impacts associated with increased rainfall and potential flooding, primarily as a result of the high frequency of watercourses, and disruption associated with extreme cold temperatures due to the relative high altitude as highlighted by the presence of Slochd Summit, the mountain pass on the A9 between Inverness and Aviemore that is 400m above sea-level. This is therefore reflected within the appraisal scoring of this sub-criterion as shown in Figure 55.

[104] Adapting to climate change: UK climate projections 2009, Department for Environment, Food & Rural Affairs, 2011, https://www.gov.uk/government/publications/adapting-to-climate-change-uk-climate-projections-2009
[105] UK Climate Projections (UKCP), MET Office, 2018, https://www.metoffice.gov.uk/research/approach/collaboration/ukcp

However, whilst these potential impacts are noted to be broadly applicable to the area in which the A9 Dualling Programme is situated, it is noted that no particular aspects of the development proposals are likely to be particularly susceptible to the impacts of climate change. Therefore, the overall vulnerability to climate change in the context of the A9 Dualling Programme is identified to be negligible and therefore a Neutral Impact has been identified.

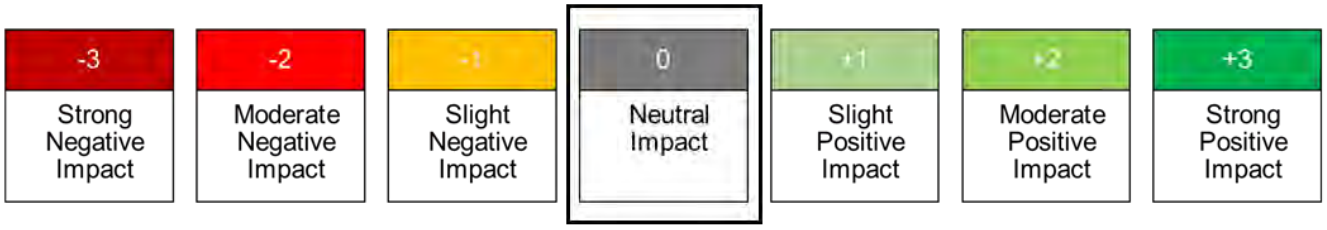


Figure 55 Vulnerability to Climate Change Appraisal Score

3.2.7.3 Potential to Adapt to the Effects of Climate Change

Climate change is already impacting people and places across Scotland. Taking early action to adapt will help increase resilience and reduce risks. The Climate Change (Scotland) Act places a legal duty on many organisations to adapt to the impacts of climate change.

In August 2021, the Intergovernmental Panel on Climate Change (IPCC) released a report which is the first major review of the science of climate change since 2013. The landmark study warns of increasingly extreme heatwaves, droughts and flooding, and a key temperature limit being broken in just over a decade.

Adaption is defined by the IPCC as "The Process of adjustment to actual or expected climate and its effects". Adaptation aims to reduce our vulnerability to the harmful effects of climate change (such as sea level encroachment, more intense extreme weather event or food insecurity). Another element of adaptation includes 'designing' for climate resilience and using materials for example that are more resilient to climate change and therefore are better adapted to a future climate.

As the A9 Dualling Programme seeks to enhance and improve the existing A9 route corridor between Perth and Inverness, the development proposals have presented an opportunity for consideration of Climate Change impacts to be embedded into the design principles throughout the development process.

Regarding the water environment, design principles have made allowance for potential increases in flow as a result of Climate Change which is reflected within assumptions relating to the Annual Exceedance Probability. Of the existing A9 watercourse crossings there are multiple structures where the current capacity restricts flow upstream of the crossing posing a flood risk. As a result, the A9 Dualling Programme has identified the requirement for the provision of numerous watercourse crossing features, including bridge structures and drainage culverts, and watercourse realignments. These flood mitigation schemes and drainage improvements that will be developed in accordance with Sustainable Drainage Systems (SUDS) and Scottish Environment Protection Agency (SEPA) guidance will provide Improvements to drainage to prevent regular flooding events which have safety implications and result in delays or diversions.

The A9 Dualling Programme is therefore observed to likely have a slight positive impact with regards to its potential to adapt to the effects of climate change, particularly as a result of the significant consideration of impacts primarily associated with the water environment, as shown in Figure 56.

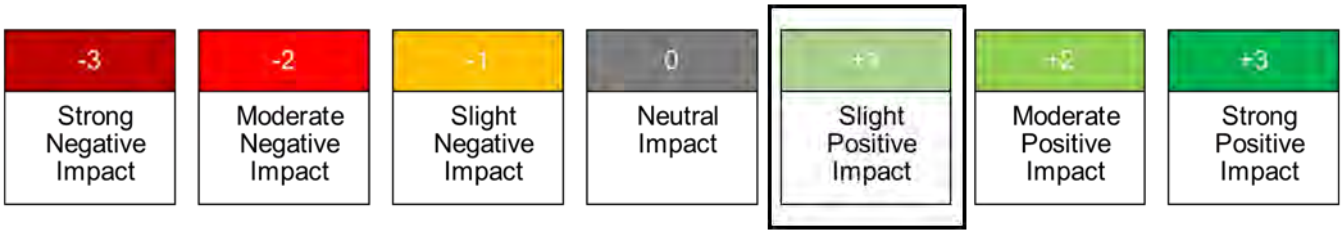


Figure 56 Potential to Adapt to the Effects of Climate Change Appraisal Score

3.2.8 Appraisal – Health, Safety and Wellbeing

In this sub-section an appraisal of the A9 Dualling Programme is presented against the STAG criteria of Health, Safety and Wellbeing and its five sub-criteria: Accidents, Security, Health, Access to Health and Wellbeing Infrastructure, and Visual Amenity.

3.2.8.1 Accidents

The application and inclusion of monetary valuations on casualties and accidents on differing severity is standard in UK cost-benefit analysis. In transport appraisal, accidents can impose a wide range of impacts on people and organisations including medical and healthcare costs, losses in economic outputs, material damage, emergency services costs, insurance and legal costs and an allowance for the pain, grief and suffering incurred.

As detailed within the Strategic Case, the existing A9 between Perth and Inverness records a high frequency of Fatal and Serious collisions.

The benefit assessment was undertaken using vehicle-kilometre forecasts, by link type, extracted from TMfS18. The calculated benefits resulted in a PVB of £192.6m (2010 values and prices) across the 60-year appraisal period, as shown in Table 34. These benefits are attributed to the forecast reduction of casualties as presented in section 3.2.5.5.

Table 34 Accident Monetised Benefits (£m, 2010 values and prices)

Indicator	Value
Accident savings	192.6

Stress experienced by motor vehicle drivers is attributed to frustration, the fear of accidents, and uncertainty attributed to the route that is being followed, with the latter being more pronounced for those that are not overly familiar with the route such as tourists. Safety improvements implemented through delivery of the A9 Dualling Programme are therefore expected to address and mitigate existing levels of driver stress along the length of the route, which in-turn will help improve the overall safety performance of the A9 between Perth and Inverness. This is discussed in further detail in section 3.2.9.3.

The provision of a continuous dual carriageway between Perth and Inverness is also expected to improve the resilience of the A9 Route Corridor during incidents. The provision of two running lanes per direction,

would increase accessibility of emergency vehicles, through increasing their ability to navigate between road users, to reach locations either at or adjacent to the A9. The ability of emergency vehicles to respond to an incident in a timely manner minimises the overall level of disruption caused to road users, and where medical assistance is required can significantly increase the chances of survival for those involved.

A further element of the A9 Dualling Programme is the provision of enhanced lay-bys along its length, which through the replacement of existing lay-bys on both northbound and southbound sides of the existing A9 will provide separation, through soft landscaping, between the dedicated rest areas and the live carriageway and reduce the interaction between users at these locations and live traffic. Designed to a Trunk Road standard, these enhanced lay-bys will provide greater parking capacity for vehicles than existing lay-bys and are expected to accommodate the high demand at popular locations along the A9 which were identified through stakeholder engagement as being over-subscribed during busy periods.

Moreover, the implementation of high-quality grade separated junctions as a result of the rationalisation of junctions along the A9 between Perth and Inverness will also have the effect of allowing safer and more convenient access to and from the A9 trunk road.

As such the improvements brought about by the A9 Dualling Programme could contribute to preventing some casualties from becoming more serious. Overall, a Moderate Positive Impact has been identified from the perspective of accidents as shown in Figure 57.

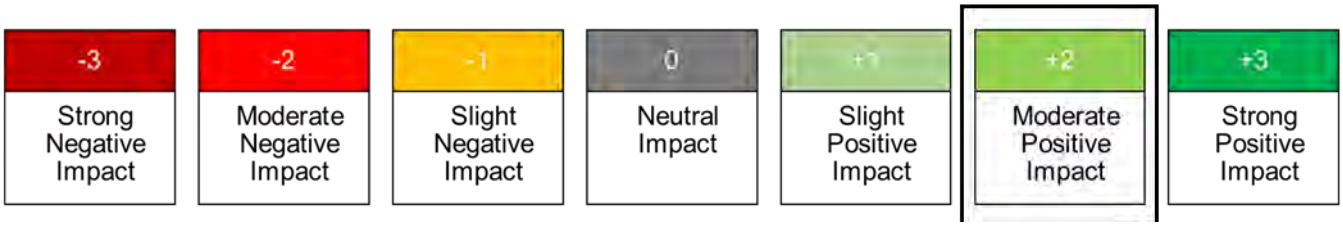


Figure 57 Accidents Appraisal Scoring

3.2.8.2 Security

Security concerns the personal security of travellers and their property, including pedestrians, cyclists, and equestrians, as well as public transport and car users.

The geographic extent of the A9 Dualling Programme and its associated environment is remote and rural. As highlighted in the Strategic Case, it has some of the lowest population densities in Scotland with settlements along the route having relatively modest population sizes. Therefore, the relative remoteness of elements of the A9 between Perth and Inverness means that in some instances there is not always a visible presence of security along the route which may influence uptake of Non-Motorised modes, particularly during periods where daylight is limited / not present. Furthermore, the current lay-by provision along the length of the A9 Dualling Programme is not fully segregated from the live carriageway in the majority of instances and therefore there are valid concerns associated with the potential interaction with vehicles and users of the dedicated rest areas.

The security of travellers will be improved through the delivery of enhanced lay-bys and their associated dedicated rest areas along the length of the A9 Dualling Programme. The provision of lighting at select Non-Motorised Users (NMU) crossing points such as underpasses and overpasses will contribute towards

increasing the perception of security at these locations. Therefore, a potential slight positive impact has been identified which is highlighted in Figure 58.

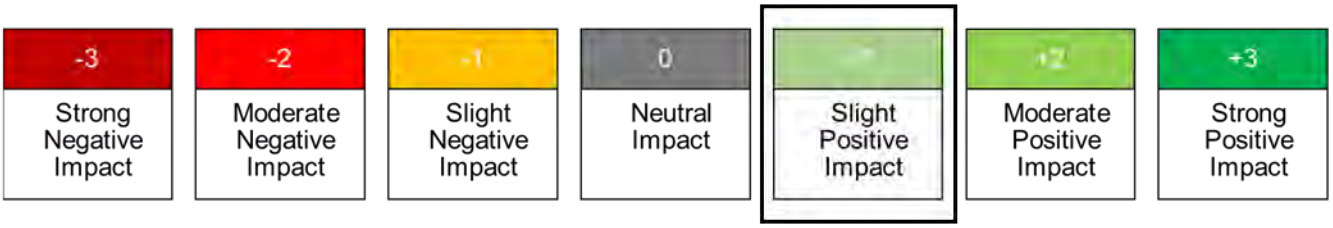


Figure 58 Security Appraisal Score

3.2.8.3 Health Outcomes

A significant component of the A9 Dualling Programme is the delivery of active travel infrastructure along the length of the road corridor, consisting of enhancing and improving existing assets and also delivering new infrastructure to address existing identified shortfalls across the walking, cycling and wheeling network in the region.

Such planned enhancement of active travel infrastructure across the length of the A9 Dualling Programme is expected to increase the coverage and quality of the current network and therefore the overall attractiveness. In particular, the delivery of new infrastructure between Newtonmore and Aviemore, via Kingussie, as well as between Bankfoot and Luncarty, will improve walking, cycling and wheeling connections across these communities and further encourage individuals to lead healthy lifestyles. Additional benefits are expected to be realised by addressing existing severance along the route corridor through the delivery of enhanced crossing points for NMUs across the road in the form of underpasses and underbridges.

A further beneficial element of the A9 Dualling Programme is the role that enhanced lay-bys will play in further improving connections to the Core Path network and popular walking, wheeling and cycling routes and trails along the A9 Route Corridor and further afield. Although primarily proposed to provide improved placemaking benefits and safer opportunities for motorists to rest along the A9, these lay-bys are likely to further increase the overall attractiveness of using the A9 Route Corridor.

Although modest in relation to the road proposals of the A9 Dualling Programme, addressing identified deficiencies in the overall standard of existing active travel infrastructure as well as better connecting communities through the provision of high-quality infrastructure is likely to generate positive benefits. Increasing the overall offering of infrastructure that enables physical activity and in turn generates better health outcomes is likely to benefit local communities along the length of the A9 Dualling Programme as well as visitors to the region. Whilst it is acknowledged that the provision of enhanced road facilities may provide a disincentive to active travel, the scale of improvements overall, particularly to address identified gaps within the active travel network between key settlements along the A9 Route Corridor as well as reducing the overall interface with the A9 itself, could positively offset these potential disbenefit. Therefore, it is considered that the A9 Dualling Programme will likely have an overall slight positive impact against the Health Outcomes criterion as highlighted in Figure 59.

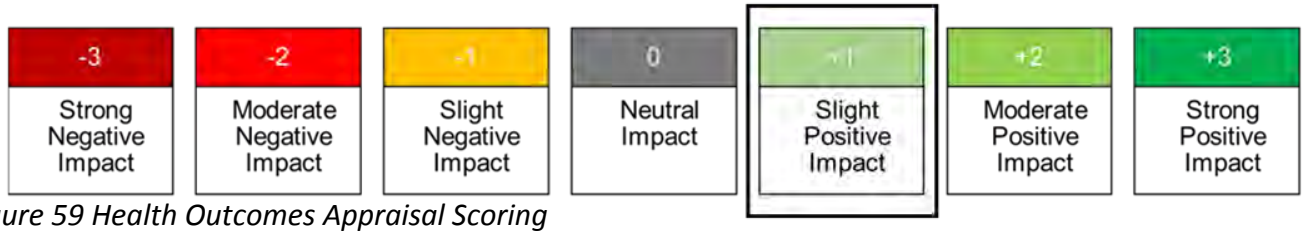


Figure 59 Health Outcomes Appraisal Scoring

3.2.8.4 Access to Health and Wellbeing Infrastructure

The rural character of the length of the A9 Dualling Programme and the varying size and scale of settlements along the road corridor results in the provision and spatial distribution of Health and Wellbeing Infrastructure not being consistent and entirely even. Health and Wellbeing Infrastructure has been defined for the purposes of this appraisal as including public assets which in the context of Health include Hospitals, GP Surgeries and Dentists with Wellbeing Infrastructure covering all aspects of leisure facilities and assets that provide Wellbeing benefits such Community Leisure Facilities. The Cairngorms National Park has also been considered to be an asset as this enables various activities that facilitate improved health and wellbeing. These assets in relation to key settlements along the A9 Route Corridor are summarised in Table 35.

Table 35. Summary of Health and Wellbeing Assets per key settlement along the A9 Route Corridor

Settlement	Hospital	General Practitioner Surgery	Dentist	Community Leisure Facilities
Inverness	Yes, General Hospital	Yes	Yes	Yes
Aviemore	Yes, but no A&E and restricted opening hours	Yes	Yes	Yes
Kingussie	No	Yes	Yes	Yes
Newtonmore	No	No	No	No
Blair Atholl	No	No	No	No
Pitlochry	No	Yes	Yes	Yes
Dunkeld	No	Yes	Yes	Yes
Perth	Yes, General Hospital	Yes	Yes	Yes

The cities of Perth and Inverness at either extent of the A9 Route Corridor provide the greatest offering in terms of Health and Wellbeing Infrastructure. In some instances, these cities are the only location where assets exist such as General Hospitals, which include Accident and Emergency, and therefore have significant catchment areas in which these services are depended upon by many communities that live along the A9 Route Corridor. Whilst it is acknowledged that continued growth along the corridor may give rise to increasing the provision and frequency of these assets, growth is not expected to be of a scale where a similar offering exists to that offered by Perth and Inverness and therefore the significance of these assets in relation to the A9 is expected to continue.

The A9 Dualling Programme is therefore likely to improve access to Health and Wellbeing Infrastructure both within the Cities of Perth and Inverness at either end of the route corridor, as well as improving connectivity between existing smaller settlements along the corridor. It is expected that journey time savings will improve access to these pieces of infrastructure and therefore benefits in this aspect are likely to be slight positive, which is reflected in Figure 60.

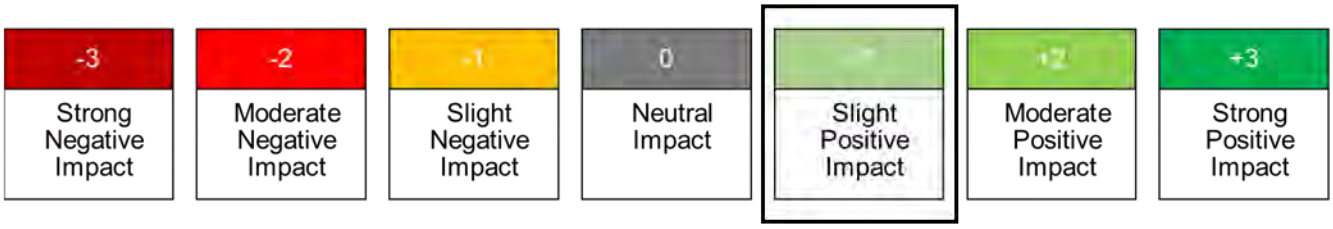


Figure 60 Health and Wellbeing Infrastructure Appraisal Score

3.2.8.5 Visual Amenity

The A9 between Perth and Inverness traverses through some of the most scenic landscapes in both Scotland and the UK, as well as running in close proximity to some settlements and communities along the route, most notably Dunkeld. Additionally, the A9 alongside the Highland Main Line is the most significant and therefore observable piece of transport infrastructure across the region and therefore consideration has been made throughout the development process to ensure that any disruption is minimised through mitigation, but also, where possible, to improve the overall setting of the A9 and how it interacts with its immediate and wider environment.

Existing lay-bys along the A9 Route Corridor are known to be used not only as dedicated rest areas for road users but also areas that provide opportunities to appreciate the wider environment and enjoy the available scenery. Lay-by rationalisation will see all existing single carriageway lay-bys along the road corridor removed, with standard and enhanced dual carriageway lay-bys delivered at key locations as part of the A9 Dualling Programme. These lay-bys will provide a physical separation between the live carriageway and the dedicated rest area through both physical and soft landscaping and have been designed to provide safe, accessible, and attractive rest areas for all road users. As these facilities will be of a greater length than current lay-bys and therefore will have greater parking capacity, more road users will be able to enjoy these facilities, particularly during seasonal periods where demand is likely to be at its highest.

The most pronounced impacts of the A9 Dualling Programme from a visual perspective will occur during the winter year of opening as a result of the significant landscaping and planting recently delivered not yet being fully established. The design of the proposed scheme was developed through a process involving engineering, environmental and landscape specialists in order to reduce visual impacts and integrate it with the surrounding landscape. As part of the design, landscape proposals were developed to include grading out of embankment and cutting slopes to blend with existing landforms and new planting to screen the proposed scheme and help further integrate it with the surrounding landscape. The landscape design also considered opportunities to maintain or enhance open views. The effectiveness of the new planting is expected to increase over time as vegetation matures. Therefore, the establishment of the mitigation planting is expected to reduce these impacts to not significant over time.

Although it is recognised that some of the more significant elements of the A9 Dualling Programme have the potential to cause visual impacts, in particular the planned programme of delivering grade separated junctions at strategic locations, such impacts are not expected to be of such significance that planned

mitigation cannot appropriately address. Delivery of the A9 Dualling Programme will not only seek to enhance how the trunk road corridor interacts with its landscape and nearby communities through improvements such as landscaping, but also seek to improve how the scenic environment can be enjoyed by road users through the delivery of enhanced lay-bys. With this in mind, it is considered that the A9 Dualling Programme will generate a Neutral Impact on Visual Amenity as shown in Figure 61.

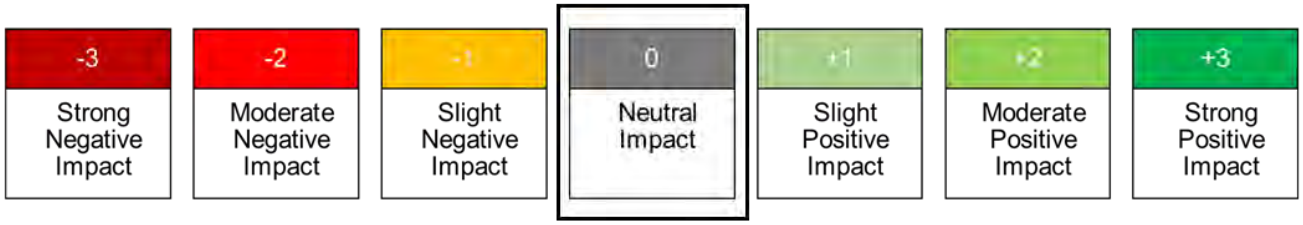


Figure 61 Visual Amenity Appraisal Score

3.2.9 Appraisal - Economy

3.2.9.1 Introduction

This section provides an economic assessment of the impact of the A9 Dualling Programme and considers the role that the investment would make in supporting and enabling sustainable, transformative, and inclusive economic growth whilst delivering Value for Money. To inform the economic appraisal, the assessment criteria highlighted in Figure 62 have been monetised and are included within the wider Value for Money assessment of the A9 Dualling Programme.

Figure 62 Economic Assessment Appraisal Criteria

The economic appraisal of the A9 Dualling Programme has been undertaken based on Scottish Transport Appraisal Guidance (STAG), published by Transport Scotland, and where relevant, Transport Appraisal Guidance (TAG) published by the Department for Transport (DfT). The DfT's Transport User Benefits Appraisal (TUBA) software version 1.9.17 has also been adopted to derive monetised benefits.

Further details of appraisal criteria and standards adopted to inform the economic appraisal are outlined in Table 36.

Table 36. Key Economic Appraisal Criteria and Standards

Item	Criteria Applied
Appraisal Period	60 years - no residual value
Discount Rates	3.5% for 30 years after appraisal year, and 3% thereafter
Base Year/Price Base	2010
Forecasts	TMfS18: 2032, 2035, 2040 and 2045
A9 Dualling Programme First Full Year of Operation	2034
Forecast Year	2045 (last year available)
Annualisation Factors	Derived from Scottish Household Survey[106]

3.2.9.2 Transport Economic Efficiency

The central principle of Transport Economic Efficiency (TEE) analysis is to estimate the welfare gain which results from transport investment, as measured by the individual's willingness to pay for such an improvement and the financial impact on private sector transport operators. TEE analysis presents the key effects disaggregated by particular groups, mode of transport, and by impact (journey time, vehicle operating costs, and user costs). Table 37 presents the TEE User Benefits for the 60-year appraisal period, discounted to 2010 values and prices.

Table 37. TEE User Benefits (£m, 2010 values and prices)

TEE User Benefits	Commute	Other	Business	Freight	PT	Total
Travel Time	45.0	174.8	182.1	247.1	5.7	**654.7**
User Charges	0.0	0.0	0.0	0.0	3.6	**3.6**
Vehicle Operating Costs	-1.8	-5.8	4.0	2.0	0.0	**-1.5**
Total	**43.2**	**169.0**	**186.2**	**249.1**	**9.3**	**656.8**

The project is forecast to deliver significant user benefits through journey time savings, primarily to non-public transport modes, as the increase in road class allows higher speeds on the corridor. These higher speeds result in a relatively minor increase in vehicle operating costs, however, these are not of such a scale to detract from the significant scale of forecast travel time benefits.

In addition to the above modelled benefits, TEE results also forecast that Private Sector Operators will experience a disbenefit of £3.9m.

Table 38 presents the total monetised journey time savings in £000s by scale of time saving, for 2035 for all projects. The negative time bands reflect an increase in journey times and associated disbenefits and positive time bands reflect journey time savings. The total journey time saving by trip purpose (work or non-work) is also shown.

[106] Scottish Household Survey, Scottish Government, https://www.gov.scot/collections/scottish-household-survey/

Table 38. Total Monetised Journey Time Savings at 2035 (£000s, 2010 values and prices)

Scale of time saving	Business	Proportion	Non-Work	Proportion
< -5 mins	-5	0%	-250	-5%
-5 to -2 mins	-3	0%	-47	-1%
-2 to 0 mins	-15	0%	-49	-1%
0 to 2 mins	19	0%	68	1%
2 to 5 mins	394	4%	705	15%
> 5 mins	8,669	96%	4,310	91%
Total	**9,059**	**100%**	**4,737**	**100%**

The above table showcases that the majority of monetised benefits are driven by substantial journey time savings (> 5 mins), which as a proportion of overall forecast benefits accounts for 96% and 91% for work trips and non-work trips impacts (i.e. benefits and disbenefits) respectively.

In terms of economic efficiency, the A9 Dualling Programme is forecast to deliver significant user benefits through journey time savings compared to modest disbenefits, linked to increased vehicle operating costs, therefore it is considered to generate a moderate positive impact on Transport Economic Efficiency as shown in Figure 63.

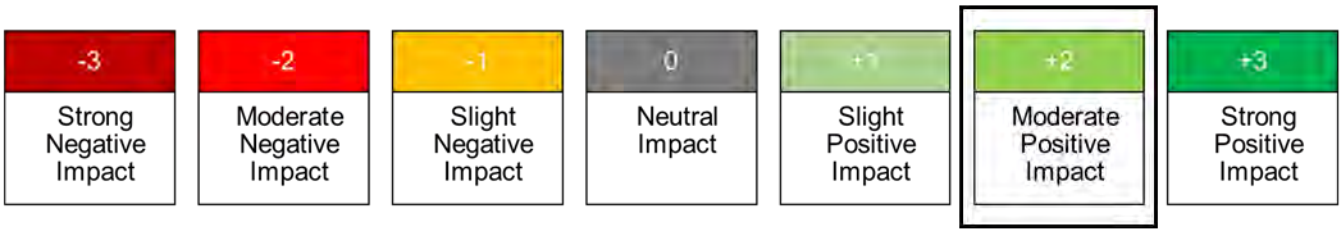


Figure 63 Transport Economic Efficiency Appraisal Score

3.2.9.2.1 Construction and Maintenance Impacts

An assessment of the potential traffic delays, and hence costs to road users, anticipated to occur as a result of the construction and maintenance of the A9 Dualling Programme has been undertaken using the A9DTM15 traffic model.

Three streams of traffic modelling were undertaken: the construction phase, the maintenance of the Do Minimum scenario where the scheme is not built, and the maintenance of the Do Something scenario where the scheme is built.

The construction phase has been based upon the incremental building-up between 2021 and the end of 2033 based on the latest construction programme. As highlighted in the Strategic Case, the A9 Dualling Programme has been segmented into 11 distinct Projects. For the purposes of traffic modelling, it was assumed that one lane remains open in each directional movement with an enforced 40mph speed limit during the construction phase of each Project.

The Do Minimum scenario assumed that single carriageways could only be maintained with one lane closed and the use of shuttle working. It was also assumed that road reconstruction would occur every 20 years post-opening across the 60-year appraisal period. A 40mph speed limit restriction would also be enforced through the construction.

The Do Something scenario assumed that dual lane carriageways would be maintained through keeping one lane open in each direction with an associated 40mph enforced speed limit restriction. To reflect the maintenance works, a single lane has been closed in each direction, this provides an approximate representation of a contraflow system which would be in operation on site, whereby both traffic movements would occupy one side of the carriageway. Furthermore, it was assumed that road reconstruction would only need to occur in years 2062 and 2092 during the 60-year appraisal period, as the modern construction method of the road allows a longer interval between major maintenance.

For the purposes of modelling maintenance, five sections were selected to represent the conditions experienced under road maintenance. The exact length of works will vary from site to site; however, a standardised length of works based on a 500m maintenance length was assumed. Due to higher traffic volumes at the southern part of the A9 Route Corridor, two of the locations, north of Perth and north of Dunkeld, were reduced to 250m. This minimised disruption and improved travel times. Furthermore, the Do Minimum scenario includes existing sections of dual carriageway, these sections were not modelled in the Do Minimum scenario, therefore relied on the delays from the Do Something scenario to provide an approximation of the expected delays during maintenance.

For all three assessments the difference in the delays due to the works, for each project or section, for each time period, for each vehicle category, was factored and annualised. The total delay for these sections was multiplied by the works duration, in order to complete the specific section of road. The delays on the total length of road were extrapolated from this and repeated for each flow section.

Values of Time (VoT) per hour for each assigned vehicle category converted the modelled delay hours to monetary values. Monetary values were then adjusted back to 2010 prices and discounted to 2010.

The maintenance impacts have been assessed for major reconstruction events only. No account of delay impacts due to routine and cyclic maintenance has been appraised.

The time benefits due to construction and maintenance impacts are presented in Table 39.

Table 39. Construction and Maintenance User Journey Time Costs (£m, 2010 values and prices)

	Without A9 Dualling Programme	With A9 Dualling Programme	Programme outcome
Construction	0.0	43.8	-43.8
Maintenance	15.0	4.5	10.5
Total	**15.0**	**48.3**	**-33.3**

The construction of the A9 Dualling Programme results in a £43.8m disbenefit. The shuttle working required for the maintenance of the Do Minimum results in a significant time disbenefit (£15m), when compared with the more efficient maintenance regime that can be operated under a fully dualled configuration (£4.5m). Over the 60-year appraisal period this results in a £33.3m total disbenefit which is reflected in the identification of a slight negative impact as highlighted in Figure 64.

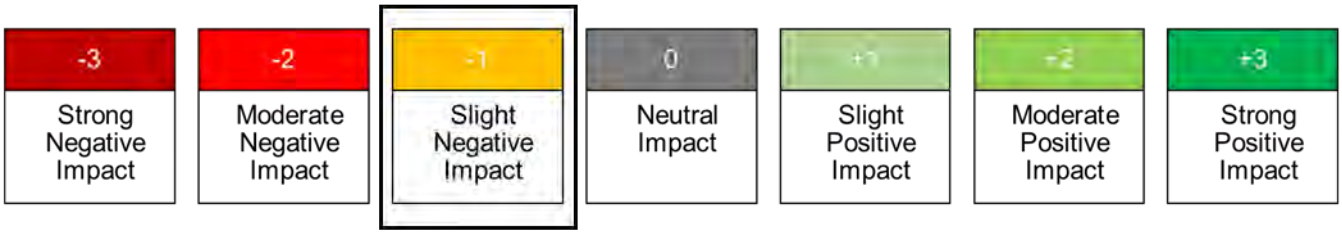


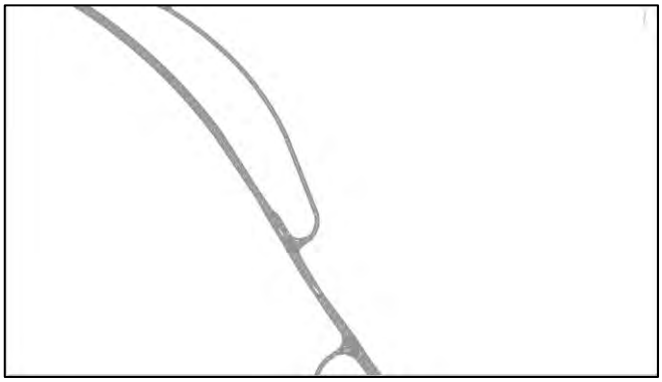
Figure 64 Construction and Maintenance Impacts Appraisal Score

3.2.9.2.2 Junction Rationalisation

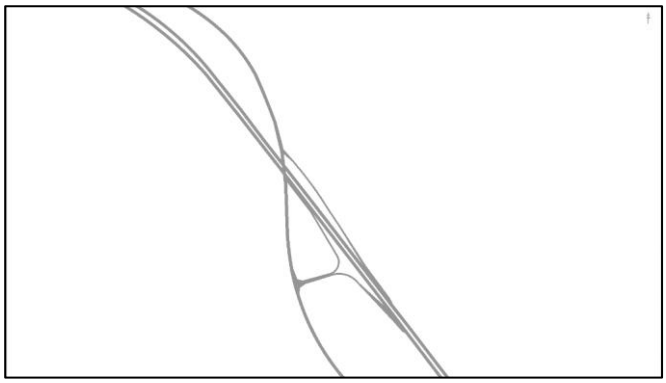
As detailed in the Strategic Case, the design principles of the A9 Dualling Programme have identified the requirement to remove all existing right turns at grade access points at the A9 and will therefore remove gaps in the central reservation and rationalise the number of junctions along the length of the route itself. Since the A9 is to be designed as a D2APc - Dual 2 lane all-purpose road, only grade separated junctions are permitted with isolated left-in, left-out junctions, therefore the majority of existing at grade junctions will need to be upgraded or closed. This will reduce the number of access points to the A9, which will result in additional distances for some road users in order to access the route.

In order to assess the impact of the junction rationalisation in isolation, two models have been developed. First, a dual carriageway model which maintained the current junction configurations and secondly, a dual carriageway model with the proposed junction strategy in place. The DfT's TUBA software was then used to assess the economic impact of the Junction Rationalisation proposals.

To illustrate the changes made within the model at each junction, Figure 65 provides an example of the proposed Junction Rationalisation as part of the A9 Dualling Programme at A9 between Perth Road and B867. In Figure 65, the screenshot on the left shows that the right turns are allowed on both directions to and from the A9, however once junction rationalisation is implemented the right turns will be diverted to the slip roads on the northbound and southbound approaches as shown in the screenshot on the right.



A9 junction between Perth Road and B867 - Before Junction Rationalisation



A9 junction between Perth Road and B867 - After Junction Rationalisation

Figure 65 A9 Proposed Junction Rationalisation illustration between Perth Road and B867

The projected outcomes associated with the planned Junction Rationalisation programme are shown in Table 40 which indicate that the A9 Dualling Programme will generate modest disbenefits for road users.

Table 40. Junction Rationalisation Benefits (£m, 2010 values and prices

Junction Rationalisation Benefits	Commute	Other	Business	Freight	PT	Total
Travel Time	-2.3	-4.9	-3.1	-5.1	-0.2	-15.6
User Charges	0.0	0.0	0.0	0.0	0.0	0.0
VOCs	0.0	-0.2	-0.2	-1.2	-0.1	-1.8
Summary	**-2.3**	**-5.0**	**-3.4**	**-6.3**	**-0.3**	**-17.4**

This can be attributed to the requirement for some vehicles having to travel greater distances to reach their destination as a result of direct accesses at the A9 being significantly reduced and for the majority of these locations to now be accessed primarily by local roads.

The rationalisation of junctions along the A9 between Perth and Inverness will have an impact on the distance and hence time travelled by all road vehicles travelling to or from areas currently accessed through them, and their associated operating costs. However, the implementation of high-quality grade separated junctions will also have the effect of allowing safer and more convenient access to and from the A9 trunk road. As a result of these associated benefits, the overall Junction Rationalisation programme is expected to provide Slight Negative Impacts as shown in Figure 66.

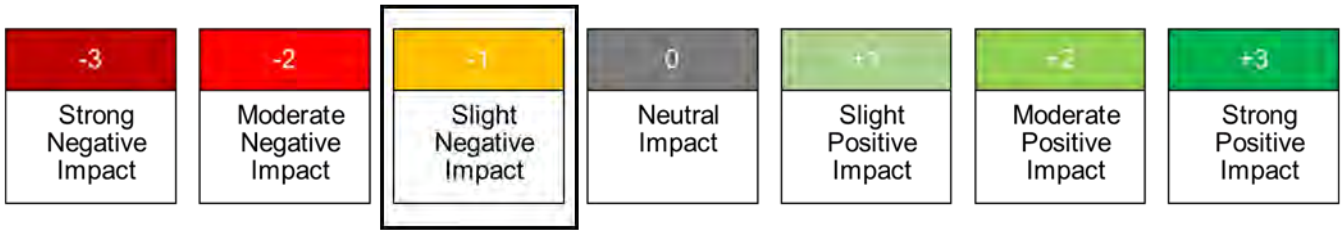


Figure 66 Junction Rationalisation Appraisal Score

3.2.9.3 Driver Frustration

There are three main components contributing to driver stress levels, these are as follows:

- Fear of accidents;
- driver frustration (often linked to travelling below desired speed); and
- uncertainty about the route being followed.

Due to the nature of the existing route between Perth and Inverness, a route which is mainly single carriageway with some localised overtaking sections, drivers have limited opportunities to

overtake slower vehicles. Platooning, therefore, occurs regularly as a result of the lack of overtaking opportunities.

As highlighted in the Strategic Case of this OBC, platooning has been observed to occur across a variety of existing Single Carriageway sections along the length of the A9 Dualling Programme in both directions.

Platoons are a direct indicator of vehicles travelling below their desired speed which, as noted above, is a key component in creating driver stress.

Building on the primary research developed to quantify and monetise the level of driver frustration experienced on routes such as the A9, traffic survey data was used to estimate the amount of time that drivers would experience driving conditions that cause driver frustration.

The following assumptions were adopted within the appraisal:

- Business travellers were attributed commuter values of time for the purposes of valuing 'frustrated time';
- Passengers were considered to experience no frustration for the purpose of monetisation; and
- No 'frustration' was deemed to occur in the full A9 Dualling Programme scenario.

In order to include this monetised benefit in the Socio-Economic case it is necessary to establish that 'frustration' is not included in the standard journey time savings.

Primary research has been undertaken to gain a better understanding of the factors that influence frustration, and by so doing quantity the levels of frustration along A9 between Perth and Inverness. The key factors to affected frustration were found to be:

- **Travel speed** – the greater the difference between the desired speed (taken to mean the speed limit in the primary research conducted) and actual speed, the greater the frustration;
- **Platoons ahead** – in particular, the number of HGVs in the platoon ahead, more HGVs led to higher frustration
- **Oncoming traffic** – limiting the opportunity to overtake adds to frustration

Stated preference research[107] was used to establish value of time uplifts (i.e. the value or cost each person attributes to each of the above variables) which have subsequently been used to monetise driver frustration. The monetisation of driver frustration is presented as a sensitivity to the standard TEE analysis[108].

Table 41 presents the calculated benefits due to the relief of driver frustration by implementing the A9 Dualling Programme. For the purposes of the OBC the value of benefits derived by the A9 Dualling Programme in relation to Driver Frustration is itemised separately from the TEE analysis.

[107] Driver Frustration, AECOM Technical note 07, September 2015
[108] STAG Technical Database, Section 9 Economy, Transport Scotland, 2018, https://www.transport.gov.scot/publication/stag-technical-database/section-9/

Table 41. Driver Frustration Benefits (£m, 2010 values and prices)

Vehicle Type	Purpose	Present Value of Benefit
Car	In Work	89.0
Car	Commute	32.5
Car	Other	59.0
LGV	In Work	45.5
LGV	Other	2.5
All	**All**	**228.5**

Driver Frustration calculations indicate that delivery of the A9 Dualling Programme will provide a significant benefit of approximately £228.5m to all road users, which corresponds with the identification of Moderate Positive Impacts from this perspective as shown in Figure 67.

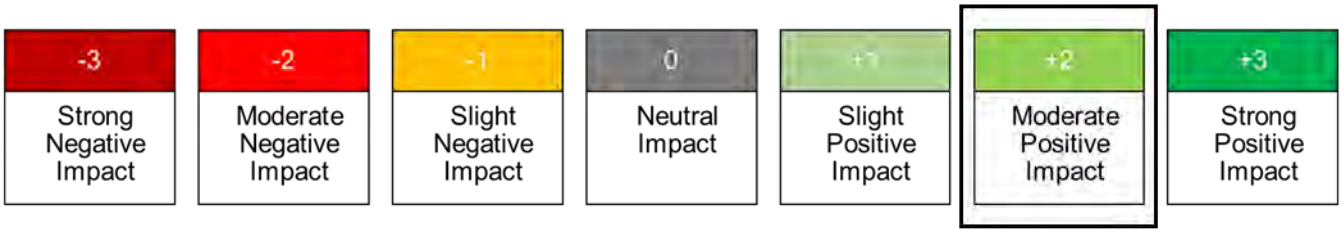


Figure 67 Driver Frustration Appraisal Score

3.2.9.4 Journey Time Reliability / Variability

Incident related journey time variability is concerned with events such as weather-related problems, roadworks, breakdowns or accidents. Any incident occurring on a carriageway will give rise to delays for motorists. Breakdowns cause brief blockages of at least one traffic lane, while serious incidents involving personal injuries or fatalities can result in extended road closures on one or more lanes.

As highlighted and detailed within the Strategic Case, the A9 between Perth and Inverness route traverses some of the highest altitude points on the Scottish or UK road networks which gives rise to a higher frequency of incidents, partially induced by the route having a higher frequency of Road Traffic Collisions when referenced against comparable Scottish National Averages for Single and Dual carriageways. The A9 Route Corridor is also prone to experiencing impacts associated with adverse weather events which can sometimes contribute towards the requirement for a road closure. In some instances, incidents require the implementation of an associated Incident Diversion Route to provide an alternative route choice for road users. The local road network does not always lend itself to provide direct parallel routes to the affected trunk road section and / or node and can therefore contribute a significant increase in the distance travelled which in turn can substantially increase Journey Times.

The implementation of a high quality D2APc - Dual 2 lane all-purpose road is expected to have the effect of both reducing the occurrence of incidents (through providing drivers with a consistent road standard with overtaking opportunities and the removal of at grade junctions and gaps in the central reserve as well as improved resilience to weather conditions) and reducing the delay impact of each incident, thus delivering road user time savings. With this in mind, the A9 Dualling Programme has been identified, in qualitative terms, to provide Moderate Positive Impacts from a Journey Time Reliability / Variability perspective which is highlighted in Figure 68.

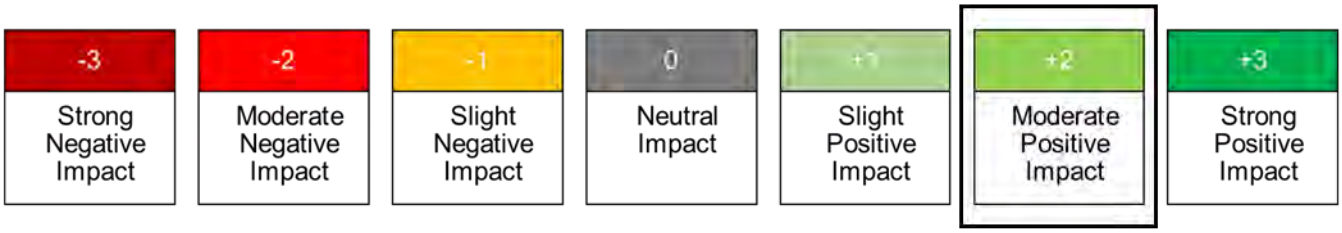


Figure 68 Journey Time Variability / Reliability Appraisal Scoring

3.2.9.5 Wider Economic Impacts

Wider Economic Impacts (WEIs) are monetised economic impacts of transport changes that occur in the wider economy rather than to transport users. These are additional to the other monetised impacts (such as time savings) and non-users impacts (such as safety and decongestion impacts) which are included in the economic case. WEIs arise because of imperfect markets in the business sectors that use the transport system. For example, improved connectivity between businesses provides spin-off benefits through effectively clustering businesses closer together and fostering more specialised supply chains, wider labour markets and improved diffusion of knowledge and best practice.

Guidance on the calculation of WEIs is provided by both DfT through TAG and by Transport Scotland through STAG. In appraising the A9 project, the more detailed TAG guidance has been adopted for two reasons:

- TAG guidance has evolved following greater use and further academic input on appropriate parameter values; and
- TELMoS18 has been developed to implement this more detailed representation of WEIs.

There are four main types of WEIs:

- Agglomeration: By improving patterns of accessibility, transport investment can effectively bring businesses closer together and support specialisation of labour within supply chains and the diffusion of best practice.
- Competition effects: Changes in transport can expose businesses to new competitors or can widen the reach of already large firms enabling them to grow larger and dominate smaller firms through cost advantages from economies of scale. No guidance is available from either STAG or TAG to guide the quantification of this impact and it is usually considered to be neutral. It has therefore not been calculated.
- Imperfect competition: Where businesses do not operate under competitive conditions, they are able to charge more than their production costs for the goods and services that they produce. Following TAG and STAG guidance, it is assumed that, on average, businesses set their price based on a 10% mark-up over costs. Thus, if transport improvements reduce business costs, it is assumed that these cost savings will be passed on to consumers with a 10% reduction.

- Labour market impacts: By reducing the difficulty of commuting journeys, transport interventions can change the net returns from working and encourage more people to enter the labour market. The benefits to individuals are captured though user time savings. However, personal decisions are assumed to be made based on post tax income. Any additional tax generated by people entering employment will accrue to government and constitutes an additional benefit of transport improvements.

The calculation of WEIs has been undertaken using land use outputs from TELMoS18 and generalised cost data from TMfS18.

In accordance with STAG, the forecast benefits were estimated for the three main types of WEIs - agglomeration, imperfect competition and labour market impacts – and calculated over the 60-year appraisal period. Results are presented in Table 42. The impacts reflected here are impacts on welfare and should be considered as additional to the other user and non-user benefits in the economic case.

Table 42. Forecast WEIs (£m, 2010 values and prices)

Wider Economic Impact	**PVB**
Agglomeration	161.8
Imperfect competition	42.2
Labour supply impact	2.2
Total	**206.2**

The total modelled value of WEIs is £206.2m. This assumes no land use change. The agglomeration benefit is the largest contributor and dominates the impacts of attracting people into the labour market. Both agglomeration benefits and the benefits of attracting people into work grow consistently over the modelled period in all areas reflecting generalised cost benefits that also grow over time.

The scale of modelled WEIs has therefore led to the identification of the A9 Dualling Programme providing Moderate Positive Impacts from this perspective, as shown in Figure 69.

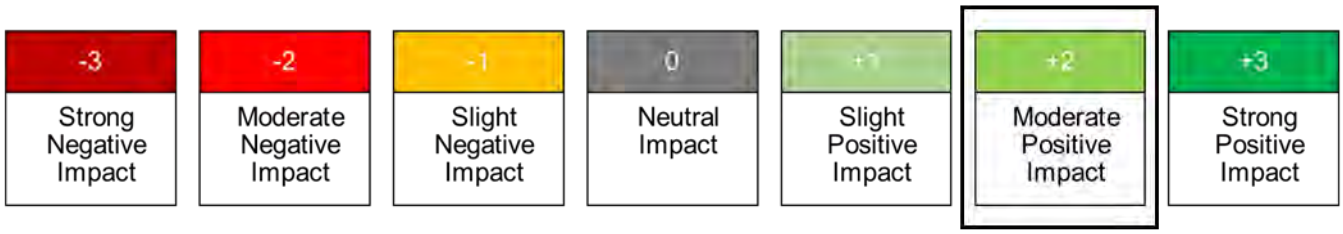


Figure 69 Wider Economic Impacts Appraisal Score

3.2.9.6 Scheme Costs

3.2.9.6.1 Capital Costs

Capital costs have been estimated for the completed A9 Dualling Programme. This includes costs for design and preparation, land acquisition, advance works, construction, supervision and statutory undertakers. As

noted in Section 2.1.2 for the purposes of modelling for the Strategic Case and Socio-Economic Case of this OBC the construction phasing schedule is based on the MIM Option described in Section 1.4 and the profile of capital expenditure represents the timing of spend on construction and associated costs. Costs for projects that have already been delivered have been included and the capital costs estimate has taken the following factors into account:

- Allowances for inflation on construction prices;
- Quantified risk assessment; and
- Optimism bias assessment.

Regarding the optimism bias that has been applied, Projects P1 and P10 are complete and therefore actual costs have been used with no optimism bias uplift applied. For the remaining nine Projects two factors have been used to inform cost estimates. As detailed within the Strategic Case, the A9 Dualling programme has been divided into distinct elements to enable further development of the proposals, these are the Southern Section (Projects P2 to P5), the Central Section (Projects P7 to P9) and the Northern Section (Projects P11 and P12). For the Southern section, an optimism bias uplift of 17.1% has been applied with an optimism bias uplift of 10.7% applied to both the Central and Northern sections, both to reflect the relative stage of design and the assumption on the form of contract used for delivery of these Projects for the purposes of the financial modelling undertaken.

The Present Value Cost (PVC) of the construction element of the programme, adjusted for risk and inflation, is £1,428.1m (in 2010 prices and values).

3.2.9.6.2 Operating and Maintenance Costs

The operating and maintenance (O&M) costs for the A9 Dualling Programme (Do Something) and for the existing A9 between Perth and Inverness (Do Minimum) are shown in Table 43 which summarises the O&M between 2014 and 2093. The length of time period accommodates costs associated with early delivery of some elements of the A9 Dualling Programme and the 60-year appraisal period from the proposed opening year in 2034.

Table 43. Total O&M Costs between 2014 and 2093 (£m, 2010 values and prices)

O&M Costs	Without A9 Dualling Programme	With A9 Dualling Programme	Programme outcome
Total	609.6	699.4	89.8

With the O&M for the A9 Dualling Programme having a cost estimate of £699.4m the intervention is projected to require an additional £89.8m (in 2010 prices and values) over the full appraisal period compared against the O&M for the A9 between Perth and Inverness having no additional dual carriageway standard sections.

3.2.9.7 Value for Money

3.2.9.7.1 Overview

The monetary appraisal used to prepare the value for money assessments is conducted over a 60-year period, from the first full year of opening in 2034 to 2094.

All monetary values are expressed in present value terms in 2010 values and prices and in millions of pounds, unless otherwise stated. Non-monetised impacts, where discussed, are not factored into any numeric measures. It should also be noted that where revenues are discussed, these represent incremental changes in revenue over a case with no dualling, not total revenue.

A number of metrics are required by transport appraisal guidance to present measures of a project's value for money:

- ***Present Value of Costs (PVC):*** a measure of the monetary cost to the government's transport budget. In the context of the assessment of the A9 Dualling Programme it includes upfront capital costs, grant/subsidy payments, and operation and maintenance costs.
- ***Present Value of Benefits (PVB):*** this the impact on society exclusive of the government's transport budget. It includes the monetised benefits accruing to users (in terms of travel time, vehicle operating costs, and user charges), those falling on the private sector (operating costs and revenues), monetised environmental and safety impacts, and the change in indirect taxation receipts.
- ***Net Present Value (NPV):*** a measure of the total impact of the project upon society, in monetary terms, including everything that can be monetised. This is PVB minus PVC. A positive value means that the monetised return on the investment is greater than the cost.
- ***The Benefit-Cost Ratio (BCR)*** is used to assess value for money. This is PVB divided by PVC and presents the return on each pound spent.

3.2.9.7.2 A9 Dualling Programme Economics

Table 44 summarises the cost benefit appraisal for the A9 Dualling Programme. As per current STAG guidance, the work undertaken to quantify driver frustration and the calculation of WEIs are itemised separately.

The values in Table 44 present the aggregation of monetised values which have been presented previously within this report and the overall presentation of the calculated BCR for the A9 Dualling Programme.

The Present Value of Transport Benefits is an aggregated value of the monetised impacts presented within this report for the fields of Environment (Table 33), Accidents (Table 34) and Economy (Table 37, Table 39, Table 40) in addition to the forecast indirect Taxation impacts which have been calculated to provide £3.2m of benefit; all of which have been determined through analysis of the transport modelling. The Present Value of Cost to Government includes both the capital cost of the A9 Dualling Programme as well as its associated Operating and Maintenance costs (Table 43). These values are aggregated to provide an initial BCR.

The monetised impacts associated with both Driver Frustration (Table 41) and Wider Economic Impacts (Table 42) are also assessed against the associated costs of the A9 Dualling Programme which are in turn, brought together to calculate a combined BCR for the A9 Dualling Programme.

Table 44. A9 Dualling Programme Cost Benefit Summary (£m, 2010 values and prices)

Indicator	Value
Present Value of Transport Benefits	796.7
Present Value of Cost to Government	1,518.0
Net Present Value	-721.3
Benefit-Cost to Government Ratio	0.52
Benefit-Cost to Government Ratio (including Driver Frustration)	0.68
Benefit-Cost to Government Ratio (including WEIs)	0.66
Benefit-Cost to Government Ratio (including WEIs and Driver Frustration)	0.81

The A9 Dualling Programme has a Net Present Value of -£721.3m and a BCR of 0.52. When Driver Frustration is included the BCR rises to 0.68, whereas if WEIs is included the BCR is 0.66. Including both Driver Frustration and WEIs results in the BCR of 0.81, which equates to low value for money based on the BCR alone.

Table 45 presents the full itemised present value of costs and benefits for the A9 Dualling programme as per STAG.

Table 45. A9 Dualling Programme Monetised Summary (£m, 2010 values and prices)

Criteria	Value
Environment	
Global air quality - CO2	-1.3
Accidents	
Total discounted savings	192.6
Economic (TEE)	
Travel Time (TEE)	654.7
Travel Time (Construction & Maintenance)	-33.3
Travel Time (Junction Rationalisation)	-15.6
User Charges (TEE)	3.6
Vehicle Operating Costs (TEE)	-1.5
Vehicle Operating Costs (Junction Rationalisation)	-1.8
Revenues	-3.9
Monetised summary	602.1
Driver Frustration	
Driver Frustration	228.5
WEIs	
Agglomeration economies	161.8
Increased output in competitive markets	42.2
Wider benefits - labour supply	2.2
Monetised summary	206.2
Cost to Public Sector	
Public sector investment costs	-1,428.1
Public sector O&M costs	-89.8
Grant/subsidy payments	0.00
Revenues	0.00
Taxation impacts	3.2

3.2.10 Appraisal – Equality and Accessibility

In this sub-section an appraisal of the A9 Dualling Programme is presented against the STAG criteria of Equality and Accessibility. The five STAG sub-criteria of Public Transport Network Coverage, Active Travel

Network Coverage, Comparative Access by People Group, Comparative Access by Geographic Location and Affordability are discussed.

3.2.10.1 Public Transport Network Coverage

The A9 Dualling Programme would not directly make changes to existing local bus and rail services and networks. Therefore, this sub-section focuses in qualitative terms on the potential impact on public transport network coverage along the A9 corridor between Perth and Inverness.

The A9 is used by a number of bus and coach services which serve local communities, interurban travel, school travel, and organised tours. As highlighted in the Strategic Case, there is a limited number of bus facilities (i.e., bus stops and lay-bys), with the majority of these being located within settlements along the route in addition to those at Perth and Inverness. With regards to rail, the Highland Main Line is the only railway line that runs parallel to the A9 for the majority of its length, with 10 railway stations between Perth and Inverness.

The A9 Dualling Programme will directly interface with the rail network in design terms at various locations along the road corridor where the strategic road and rail networks meet. The design and statutory approvals process will ensure that all rail / road interfaces and their designs are progressed taking on board all relevant design standards and statutory requirements. The railway station at Dunkeld, where existing access is currently taken off the A9, is the most impacted in terms of potential changes to its accessibility and connectivity by road. As this particular section has yet to reach a Preferred Route Option, it is not yet certain how accessibility to and from the railway station will be impacted as a result of the development proposals.

However, as a general theme it is expected that railway stations along the road corridor will benefit as a result of the forecast traffic relief along the local road network. Regardless of the actual designs and options taken forward, it is not envisaged that the A9 Dualling Programme will have any material impact on the rail network coverage along the A9 corridor.

When considering buses, again the A9 Dualling Programme will not directly make any changes to the bus network. However, due to the potential for rationalisation of access points along the existing A9 Route Corridor there is the potential for the deregulated bus environment to respond by making changes to network coverage and frequencies along the route. Notwithstanding this, the improved resilience resulting from a fully dualled A9 is expected to significantly reduce the variability in bus journey times and the likelihood of full closures.

Feedback from operators has highlighted the beneficial impact dualling would bring from improved road safety and a reduction in dangerous overtaking. In addition to the obvious reduction in accidents, there will be a health and welfare benefit to bus drivers as the frequency of risky driving manoeuvres and behaviours will be greatly reduced. A lack of suitable rest areas for coach stops was raised by operators during the consultation which is expected to be addressed through the provision of enhanced lay-bys along the A9 Dualling Programme which provide better dedicated rest areas as well as providing greater parking capacity for road vehicles.

Bus operators identified potential delays during the construction period as a source of some concern. Transport Scotland is aware of the potential impacts on road users and local communities as a result of the A9 Dualling and will work in partnership with all stakeholders including bus operators to ensure the impacts of construction activities are mitigated. Further consultations with stakeholders also highlighted the potential for rail to help mitigate the impacts of any travel delays during construction of the A9.

Any change in bus services may increase or decrease the network coverage depending on how the bus industry responds to the implementation of the A9 Dualling Programme.

In terms of patronage of Public Transport services across the appraisal period of the A9 Dualling Programme and as previously discussed in Section 3.2.5.4, traffic modelling indicates that there will be little change in overall Public Transport patronage along the A9 between Perth and Inverness following construction of the A9 Dualling Programme. The transport modelling has indicated that there may be a sub-mode switch from rail to bus as a result of reduced journey times by bus which increases the attractiveness of bus travel as a public transport mode choice, particularly for longer-distance trips along the A9 corridor and further afield. However, such impacts are not expected to be significant and therefore a Neutral Impact from the perspective of Public Transport Coverage has been identified, as shown in Figure 70.

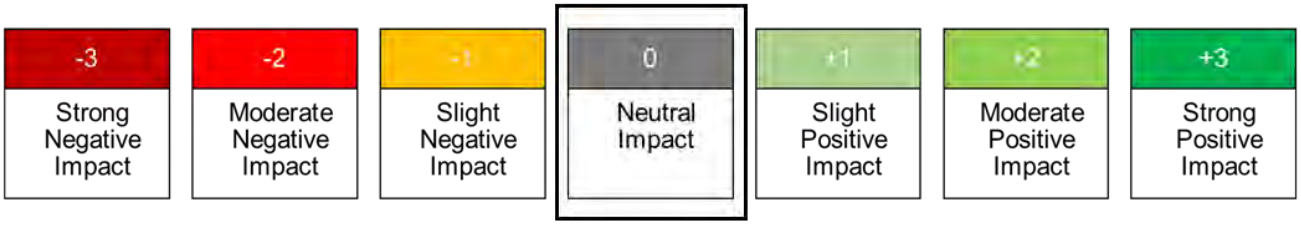


Figure 70 Public Transport Network Coverage Appraisal Score

3.2.10.2 Active Travel Network Coverage

The Strategic Case highlighted the extensive Core Path Network as well as other existing Non-Motorised User (NMU) routes and facilities both along the length of and within the area of the A9 Dualling Programme. With over 140 NMU routes identified along the length of the A9 Dualling Programme, there is significant interaction between road users and NMUs across a majority of its length with Active Travel networks being popular for both local communities and visitors.

The A9 Dualling Programme has sought, where possible, to remove interactions of existing NMU facilities and existing road infrastructure through the provision of grade separated crossing points such as overbridges and underbridges along the route.

The A9 Dualling Programme will provide significant benefits to NMU facilities, particularly in areas where provision has been identified to be insufficient. Improvements and enhancements to NMU facilities include 4km of new and upgraded paths around Luncarty and Bankfoot including a new link between the settlement themselves, a new NMU route from Kingussie to Kincraig which will form part of the Kingussie to Aviemore Route and realignment of National Cycle Route 7 at various locations to improve the place-setting and segregation from the existing A9. Tourism Assets such as Tomatin Distillery will benefit through improved access through the replacement of an existing footbridge and a new footpath.

Enabling access to walking and cycling routes is also noted as a key consideration in the identification and design of lay-bys and rest areas along the A9. During consultation, it was highlighted that a number of lay-bys used by hillwalkers operate above capacity during busy periods. Improving provision at popular locations through delivery enhanced lay-bys and parking areas is expected to open up opportunities for increased levels of active travel and improved access to recreational opportunities along the route. Therefore, it is likely that the A9 Dualling Programme will have a slight positive impact on Active Travel Network Coverage, as highlighted in Figure 71.

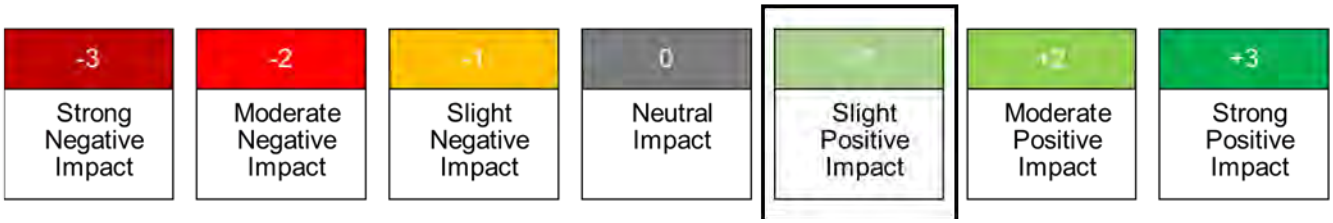


Figure 71 Active Travel Network Coverage Appraisal Score

3.2.10.3 Comparative Access by People Group

This sub-criterion is focused on understanding the distribution of accessibility impacts from a transport intervention, by people group and by geographical area. Consideration of potential impacts by user group is presented below.

3.2.10.3.1 Motorists

The Strategic Case details the identified high levels of car dependency across settlements that are located along the length of the A9 Dualling Programme but also the wider region and the key Local Authority areas of Moray, Highland and Perth & Kinross. At a more local level for settlements, the Strategic Case highlights that all settlements which are noted to be particularly rural such as Kingussie, Newtonmore and Luncarty, have a higher percentage of households that have access to two cars / vans and three cars / vans or more when compared against the Scottish Average.

For those that live within these modestly sized settlements, the settlement hierarchy of the Region where Perth and Inverness provide the widest offering of health, education, leisure and employment opportunities means that travel to these urban areas is sometimes unavoidable with A9 providing crucial accessibility and connectivity.

Whilst the A9 Dualling Programme will substantially increase accessibility and connectivity for a significant proportion of motorists, it is acknowledged that there may be slight increases in some journeys as a result of the junction rationalisation programme. As the junction rationalisation element of the A9 Dualling Programme will result in the removal of all existing right-turn access points along the A9 single carriageway sections to improve safety, there may be instances where the closure of more-direct access points for residential and commercial properties may result in some traffic having to travel longer distances. In these instances, the perceived operational and safety benefits through junction rationalisation are observed to outweigh the disbenefits to some road users.

3.2.10.3.2 Leisure Users, Local Communities and Disabled Users

A key user group which will directly benefit from the A9 Dualling Programme are visitors and leisure users. As previously highlighted within this chapter, the initial development of the A9 Dualling Programme and stakeholder engagement undertaken identified an opportunity to enhance lay-bys along the route to cater for high demand at popular locations as well as improving the overall perception of these facilities between Perth and Inverness.

The increased parking capacity at these locations will provide more opportunities for users that use lay-bys to access wider walking, cycling and wheeling networks, increasing the attractiveness of these locations for leisure users and enhancing the tourism offering of the region. During the development process and where possible, viewpoints have been incorporated into identifying appropriate locations for lay-bys to enable users to experience more of the natural environment.

Local Communities that live and work along the length of the A9 Dualling Programme are expected to benefit in terms of improved road accessibility and connectivity both in terms of travelling between settlements along the corridor but also in terms of improving access to the major settlements of Perth and Inverness at both extents of the corridor which offer a significant range of services, facilities as well as employment opportunities. Planned NMU enhancements, particularly between Luncarty and Bankfoot and between Newtonmore and Aviemore will also improve sustainable travel connections between settlements and provide alternative means to travelling by car. The provision of safer NMU crossing points across the A9, of which the majority will be grade-separated, will significantly improve the safety for NMUs and remove the interaction with a live carriageway. Where interfaces are removed, such benefits are likely to be disproportionately realised by those who are more vulnerable such as children and those with mobility problems such as those who may be disabled and / or of an older age. However, as there are no specific elements of the A9 Dualling Programme that propose to improve accessibility and connectivity to major assets such as Public Transport infrastructure and other community facilities there is unlikely to be any noticeable impact from the viewpoint of Disabled Users outside of potentially benefiting through safer and more segregated crossing points at the A9.

3.2.10.3.3 Freight Users

During the first development stage of the A9 Dualling Programme, as detailed in the DMRB Stage 1 Assessment[109], it was identified that there was only one rest area along the length of the route and that there was a limited number of services located in adjacent communities off the A9 itself. Rest areas are dedicated areas that provide opportunities for a longer break than lay-bys and have a greater provision of facilities.

The sole rest area at Newtonmore (Ralia Cafe) will benefit from improved access for only northbound vehicles through the provision of a new Left-in, Left-out junction which will increase the safety of egressing and accessing the A9, particularly for slower-moving traffic such as goods vehicles. To accommodate the removed access for vehicles travelling southbound, a new enhanced lay-by will be provided on the southbound carriageway to provide opportunities for both short and longer period of stay[110].

Across the wider length of the A9 Dualling Programme itself, the delivery of enhanced lay-bys which are of greater length and therefore provide more parking capacity than conventional lay-bys will provide more opportunities for usage by freight users although it is acknowledged that there will be limited improvement to facilities at these locations. Such enhanced lay-bys are also being designed in a manner, through placemaking, to deliver areas that are attractive and improve the overall perception of the A9 between Perth and Inverness.

In summary, the A9 Dualling Programme is expected to substantially increase accessibility for the majority of motorists, enhance existing lay-bys which will benefit leisure users and freight users alike and improve access the existing rest area along the route to the benefit of freight users, therefore it is expected to have a slight positive impact on Comparative Access by People Group as indicated in Figure 72.

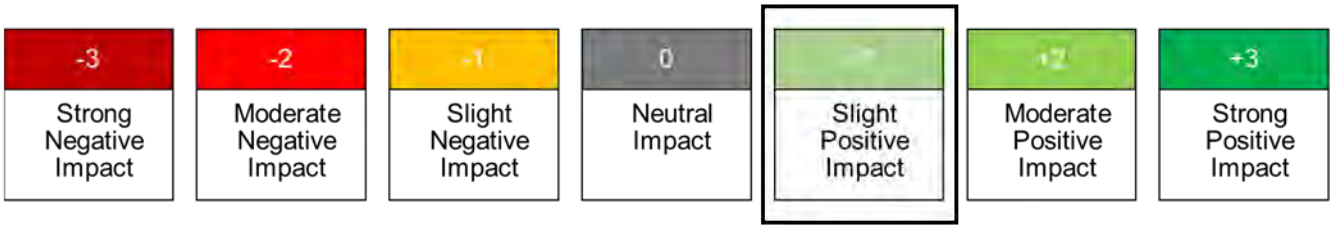


Figure 72 Comparative Access by People Group Appraisal Score

[109] DMRB Stage 1 Assessment, A9 Dualling: Preliminary Support Services, Transport Scotland and Jacobs, 2014
[110] Draft Orders and Environmental Statement - Crubenmore to Kincraig - A9 Dualling, https://www.transport.gov.scot/publication/draft-orders-and-environmental-statement-crubenmore-to-kincraig-a9-dualling/

3.2.10.4 Comparative Access by Geographic Location

From a Journey Times perspective, the A9 Dualling Programme is expected to provide significant reductions in journey times, both for long-distance trips as well as those across a shorter distance, although longer distance trips gain the highest percentage time reduction. Trips in both directions between Perth and Inverness are forecast to benefit through a 20% reduction in journey times in 2035, with similar reductions between Perth and Aviemore, Inverness and Kingussie as well as Perth and Pitlochry.

Rural settlements along the length of the A9 Dualling Programme, particularly those in Northern Perthshire and around the wider Aviemore area, are likely to be some of the biggest beneficiaries through significant improved accessibility and connectivity to the urban areas of Perth and Inverness as well as further afield to the North of Scotland and the Central Belt Region.

These forecast changes in journey times between the Do-Minimum and Do-Something in 2035 are presented in Figure 73 which illustrate the changes in journey times along the length of the A9 Dualling Programme from the perspective of journeys starting in Perth and Inverness. These forecast changes in Journey Times indicate the benefits that delivery of the A9 Dualling Programme would provide in contrast to not intervening which highlight the significant improvements to journeys for longer-distance trips both along the corridor but also further afield as a result of the development proposals being delivered which is in excess of 20 minutes at both the northern and southern extents of the A9 Dualling Programme.

Furthermore, the A9 Dualling Programme is also forecast to noticeably improve journey times along the corridor for existing communities, particularly those in more rural locations such as Aviemore, Dalwhinnie and Blair Atholl. This is noted to be of particular significance due to Perth and Inverness providing a greater offering of education, leisure and employment opportunities as well as a wider range of services and facilities which is likely to attract trips from a significant catchment area and therefore includes these communities along the A9 Dualling Programme.

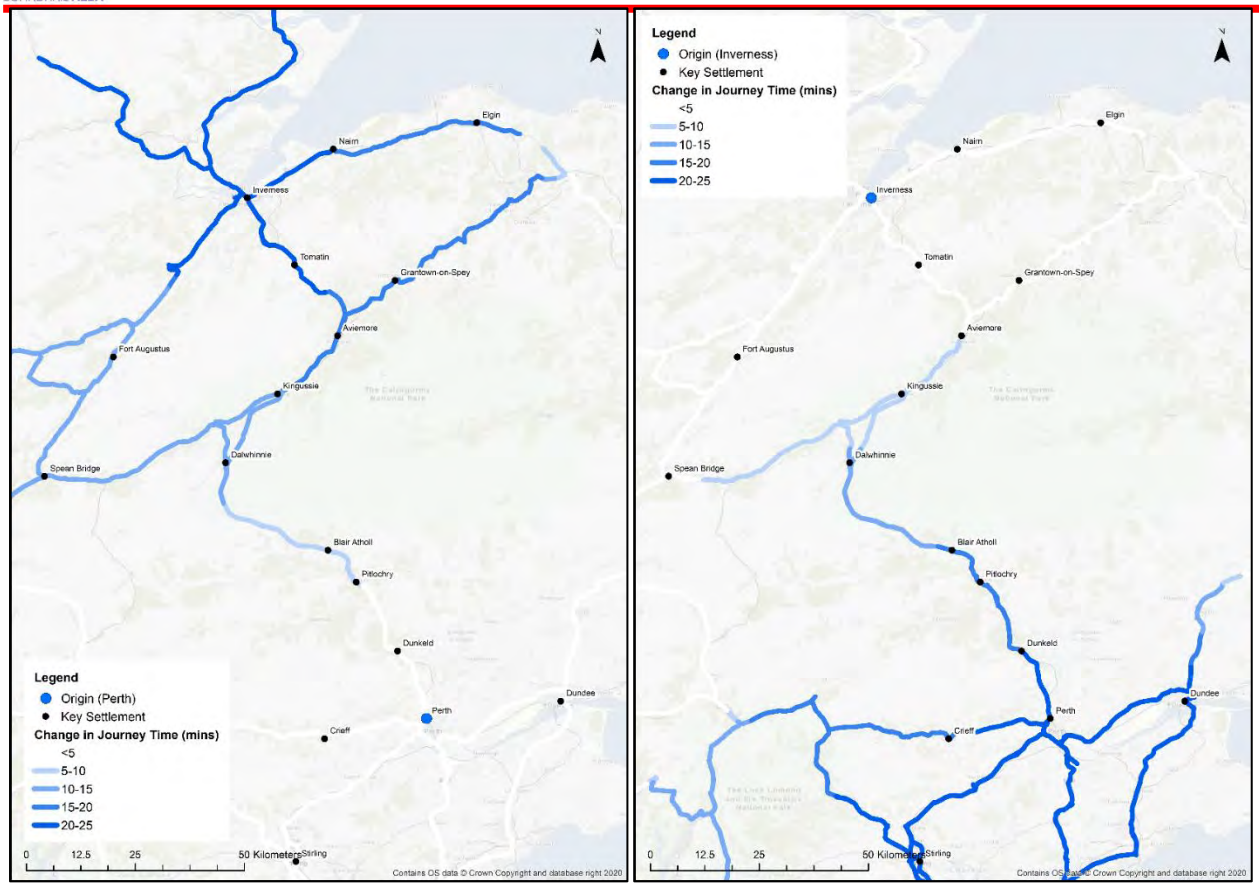


Figure 73 Forecast Changes in Accessibility from Perth (left), from Inverness (right)

The forecast significant improvement in accessibility across the full length of the A9 corridor between Perth and Inverness as well as a more-local level for the communities that live and work along it is reflected within the associated appraisal score for this sub-criterion which is shown in Figure 74.

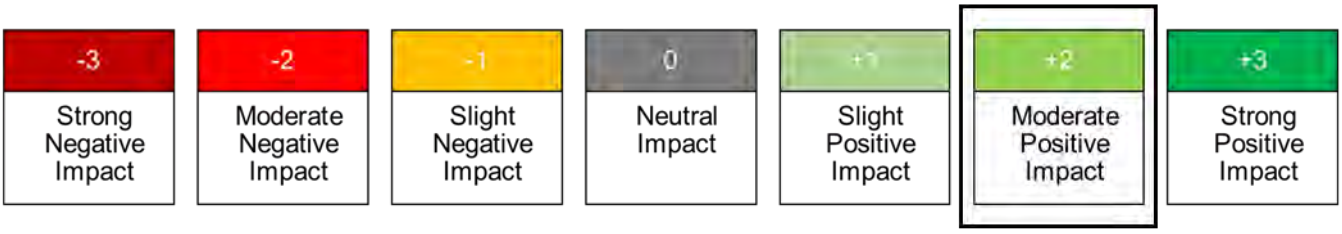


Figure 74 Comparative Access by Geographic Location Appraisal Score

3.2.10.5 Affordability

As the A9 Dualling Programme does not propose to provide specific elements that would have a direct impact on Public Transport services and facilities and their associated fares, analysis has indicated that there is likely to be an overall minimal change in fares as a result of delivery of the A9 Dualling Programme.

However, enhancement of the Active Travel network across the region through improvements that are being delivered along the A9 as a result of the development proposals is expected to increase the attractiveness of cycling, walking and wheeling as a travel choice, particularly at a local level, although the scale of Active Travel proposals means that the associated affordability benefits are unlikely to be significant.

Therefore, considering the above has resulted in identification of the A9 Dualling Programme providing a Neutral Impact in the context of Affordability, as shown in Figure 75.

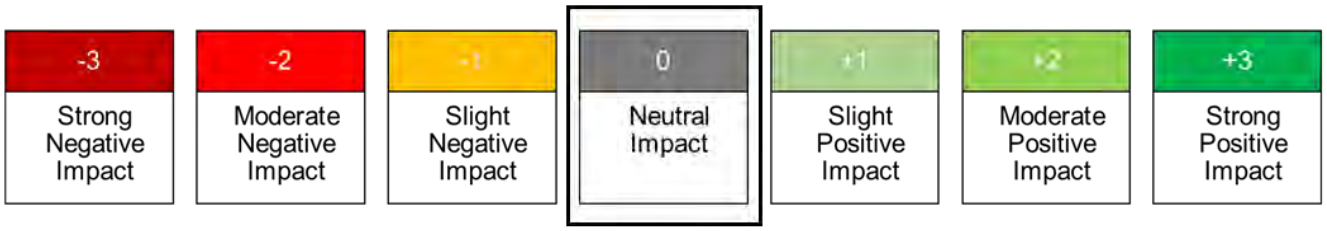


Figure 75 Affordability Appraisal Score

3.3 Performance Against Programme Objectives

3.3.1 Introduction

As highlighted in the Strategic Case, the A9 Dualling Programme Objectives were originally developed as an outcome to the DMRB Stage 1 and Strategic Environmental Assessment, which formed the initial development stages of the A9 Dualling Programme.

These Programme Objectives are as follows:

1) To improve the operational performance of the A9 by:
   a) Reducing journey times;
   b) Improving journey time reliability.

2) To improve safety for motorised and non-motorised users by:
   a) Reducing accident severity;
   b) Reducing driver stress.

3) Facilitate active travel in the corridor.

4) To improve integration with Public Transport facilities.

A key outcome of the Socio-Economic Case and the contents presented within is the determination that the Programme Objectives previously identified for the A9 Dualling Programme are still relevant, appropriate and sufficiently robust. This section therefore builds upon the outcomes of the qualitative assessment of the A9 Dualling Programme's objectives as presented within the Strategic Case, incorporating the outcomes of analysis and assessment of Transport Modelling undertaken in support of the development proposals.

3.3.2 Assessment Against Programme Objectives

This sub-section summarises, the performance of the A9 Dualling Programme against each identified objective and where relevant, associated sub-objectives.

1. To improve the operational performance of the A9

a) Reduce Journey Times

The A9 Dualling Programme will provide a continuous dual carriageway between Perth and Inverness, which in addition to permitting cars, HGVs and buses to travel at increased speeds, as a result of a higher National Speed Limit across these upgraded sections, will also provide continuous safe overtaking opportunities. Additionally, these proposals coupled with a programme of junction rationalisation which will deliver grade-separated junctions and the removal of all right-turn junctions across its length, leads to an expectation that the A9 Dualling Programme will significantly reduce journey times for cars, HGVs, and buses.

From a Journey Times perspective, the A9 Dualling Programme is expected to provide significant reductions in journey times, both for long-distance trips as well as those across a shorter distance, although longer distance trips gain the highest percentage time reduction. Trips in both directions between Perth and Inverness are forecast to benefit through a 20% reduction in journey times, with similar reductions between Perth and Aviemore, Inverness and Kingussie as well as Perth and Pitlochry.

Appraisal Score: Moderate Positive

b) Improve Journey Time Reliability

The A9 Dualling Programme will introduce a dual carriageway standard road between Perth and Inverness that will remove a number of the constraints (slower moving vehicles, lack of safe overtaking opportunities, having to slow down due to turning traffic ahead, reduced incidents leading to full or partial road closures) that prevent drivers from travelling at their desired speed. As drivers are heterogeneous with varying desired speeds, the removal of these constraints will at an individual level allow drivers to better predict their own travel time and schedule departure and arrival times with a greater degree of certainty.

The A9 Dualling Programme is expected to reduce the frequency of Incident Diversion Routes being implemented, which add considerable distances to journey and cause disruption to not only road users but the communities and areas that traffic is re-routed through. This improved level of journey time reliability will benefit all users of the A9 including commuters, business travellers, tourists, bus operators and the haulage industry.

Appraisal Score: Moderate Positive

2. To improve safety for motorised and non-motorised users

a) Reduce accident severity

The A9 Dualling Programme will provide a high degree of segregation of traffic and grade separation at junctions. This, allied to the horizontal and vertical design standards of the project, would provide a material increase in road safety. Implementation of the A9 Dualling Programme is forecast to reduce fatalities by 3 casualties per annum and serious casualties by 6 per annum.

The benefit assessment indicated a PVB of £192.6m (2010 values and prices) from accident rates and severities reductions.

Appraisal Score: Moderate Positive

b) Reduce driver stress

The A9 Dualling Programme would provide a consistent standard of road with increased overtaking opportunities. The provision of safer overtaking opportunities would reduce the number of vehicles travelling in platoons behind slower moving vehicles, leading to a reduction in driver frustration, a key component of driver stress. Safety improvements implemented through delivery of the A9 Dualling Programme are expected to address and mitigate existing levels of driver stress along the length of the route, which in-turn will help improve the overall safety performance of the A9 between Perth and Inverness.

Driver Frustration calculations indicate that delivery of the A9 Dualling Programme will provide a significant benefit of approximately £228.5m to all road users that are related to a frustrated driving environment.

Appraisal Score: Moderate Positive

3. Facilitate Active Travel in the corridor

The A9 Dualling Programme maintains existing use of NMU facilities whilst providing safer access points, through grade-separated crossings, across the A9 as well as facilitating an opportunity for enhancing existing Active Travel infrastructure and providing new high-quality routes for NMUs. In some instances,

the A9 Dualling Programme will enable 'missing links' on existing NMU routes to be addressed and increase connectivity and accessibility between settlements and communities along its length.

With the development proposals in place, significant adverse impacts will be largely avoided in key areas, as a result of the provision of underpasses and maintaining existing NMU routes.

Enhancing existing Active Travel facilities and addressing identified opportunities and issues along the road corridor through the provision of new infrastructure is expected to increase the attractiveness of Active Travel along the length of the A9 Dualling Programme.

Appraisal Score: Slight Positive

4. To improve integration with Public Transport facilities

The A9 Dualling Programme is expected to provide benefits to bus operators and users from reduced journey times and better service reliability.

The A9 Dualling Programme is being designed to integrate with existing and planned public transport facilities along the corridor with further opportunities for integration with the Highland Main Line railway line explored collaboratively as the latter project further develops as a recommendation through the STPR2 process. This is demonstrated through targeted enhancements where appropriate such as bus turning circles and enhanced bus stops. These benefits could be greater once a preferred route option is identified for the A9 at Dunkeld and Birnam Railway Station.

Appraisal Score: Slight Positive

When assessed at a cumulative level, the A9 Dualling Programme is identified to provide a positive impact across each of the identified Programme Objectives, with particular significant benefits for improving both the operational and safety performance of the A9 between Perth and Inverness. Positive impacts are also noted with regards to improving the integration of Public Transport as well as facilitating Active Travel through the provision of new and enhanced infrastructure. Therefore, the aggregated appraisal for the A9 Dualling Programme, as highlighted in Figure 76, is that it will provide a Moderate Positive Impact and that the full delivery of the A9 Dualling Programme will lead to all the objectives being met.

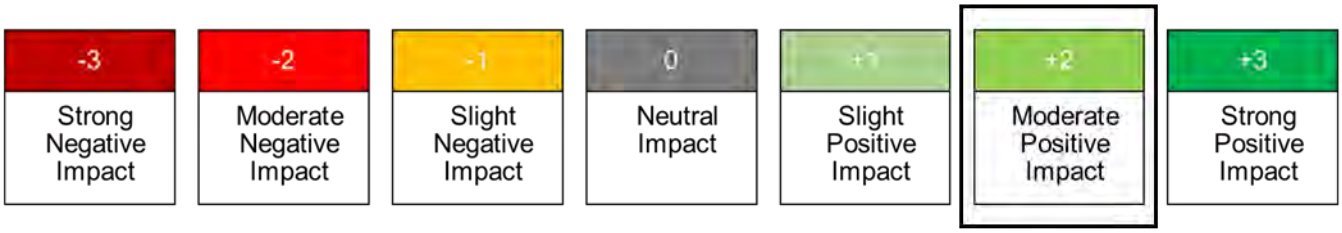


Figure 76 A9 Dualling Programme Appraisal Score

3.4 Summary

This document presents the Socio-Economic case of the A9 Dualling Programme in accordance with the investment decision making guidance of Transport Scotland.

The Socio-Economic Case has demonstrated the significant benefits that the A9 Dualling Programme is forecast to generate across both its immediate area but also across the wider region. It is clear that the Scottish Government's agenda for improving strategic transport connectivity between the Central Belt and the Highlands is at risk of not being delivered in the absence of excellent connectivity expected to be provided by the A9 Dualling Programme as demonstrated by the forecast that journey times along the corridor will decrease by approximately 20% between Perth and Inverness during the interpeak period following completion of the dualling.

The development proposals are expected to have minimal environmental impact as a result of appropriate mitigation and consideration of key environmental receptors during the development process to-date. Besides significant Policy interventions such as 2045 Net Zero targets and the aim to reduce car kilometres by 20% by 2030, traffic demand levels along the A9 Route Corridor are forecast to increase significantly between Dunkeld and Ballinluig, in excess of 1,400 per direction in 2035, with flows overall forecast to increase by more between Perth and Pitlochry, than in other sections along the road corridor. However Greenhouse Gas and other emissions associated with conventional motor vehicles is expected to be relatively minor and not of significance due to the switch to EVs. Additionally, the measurement of Embodied Carbon for each Project that forms the A9 Dualling Programme and the inclusion of SMART Carbon Reduction targets demonstrates the consideration of carbon impacts that have been incorporated into the final development process of the A9 Dualling Programme. The potential impacts of a Changing Climate in the context of the A9 Dualling Programme have also been identified and have been sought to be mitigated through considered design, with such impacts primarily associated with the water environment due to the presence of numerous interfacing watercourses along the length of the A9 between Perth and Inverness.

In addition to the significant forecast journey time benefits and the associated improvements to accessibility and connectivity further benefits are anticipated due to the projected reduction in collisions, and their associated severity and causalities occurring along the route. Without intervention, the existing safety performance of the A9 Route Corridor is likely to be exacerbated and further erode the wider operational performance of the A9. On average the A9 Dualling Programme is forecast to reduce the frequency of Fatal Collisions by up to three per annum, as well as reducing Serious Collisions by up to six per annum with a small increase in the overall frequency of Slight Collisions by eleven per annum.

The proposed A9 Dualling Programme is critical to overcoming local, regional, and national infrastructure deficits. It will help connect skilled people to jobs, link employment clusters and create an efficient and resilient national transport network that supports economic and employment growth to be delivered that supports the efficient and effective movement of goods, people, and services. The challenging geographical and topographic conditions presented by the study area, and the projected impacts of alternative road-based interventions, has meant that the environment has been a material factor in the A9 Dualling Programme preferring to enhance the existing A9 between Perth and Inverness. The development proposals will increase access for communities and residents that live along the length of the A9 Dualling Programme to educational, leisure and health facilities within the primary urban centres around Inverness and Perth. Although the A9 Dualling Programme will not materially propose to significantly improve Public Transport facilities, there is expected to be a minimal direct improvement in services along the corridor however there is an opportunity for public transport service operators to improve their current offering while capitalising upon the improved journey times and the overall improvement of the resilience of the route, and potentially deliver better services along the route corridor.

The A9 Dualling Programme demonstrates a BCR of 0.52 that rises to 0.81, when including Driver Frustration and Wider Economic Impacts, which equates to Low Value for Money. However, it should be recognised that the BCR does not reflect wider impacts which are likely to be realised as a result of delivery of the A9 Dualling Programme and have not been monetised, such as those relating to Health and Wellbeing, the expected significant benefits to Journey Time Reliability and Variability as well proposals to improve accessibility and connectivity for communities and settlements along the road corridor. Therefore, the BCR is observed to be relatively conservative with there being scope for further benefits to be monetised and incorporated into the wider economic assessment which may result in an overall higher BCR.

The analysis and evaluation of transport and socio-economic challenges, opportunities and issues in collaboration with stakeholders has helped inform the development of Programme Objectives which are used to inform the option development and appraisal process. When appraised against these Programme Objectives, it is noted that full delivery of the A9 Dualling Programme will enable these to be fully met and realised.

Overall, the summary of the appraisal of the A9 Dualling Programme against the identified Transport Planning Objectives and STAG criteria is illustrated in Figure 77.

Transport Planning Objectives				STAG Criteria				
To improve the operational performance of the A9	To improve safety for motorised and non-motorised users	Facilitate Active Travel in the corridor	To improve integration with Public Transport facilities	Environment	Climate Change	Health, Safety and Wellbeing	Economy	Equality and Accessibility
Moderate Positive	Moderate Positive	Slight Positive	Slight Positive	Slight Negative	Neutral	Slight Positive	Moderate Positive	Slight Positive

Figure 77 Appraisal Summary for the A9 Dualling Programme

4 The Commercial Case

4.1 Introduction

4.1.1 Purpose of Commercial Case

This Commercial Case has been prepared to set out information considered when evaluating options for the procurement of the remaining elements of the A9 Dualling Programme ("the Programme"), and to provide conclusions based on that evaluation.

4.1.2 Overview of the A9 Dualling Programme

The A9 Trunk Road provides a strategic link between the Scottish Highlands and Central Scotland. It is the longest trunk road in Scotland, with the Perth to Inverness section totalling 179 km (110 miles) in length, of which 63 km (39 miles) are already dualled. The A9 Dualling Programme is designed to deliver economic growth through improvement to journey times, journey time reliability, road safety and driver stress. Dualling the A9 will provide greater connectivity to communities, businesses and tourists along the corridor and beyond.

The Programme has been divided into 11 projects during the planning phase, as listed below in Table 46.

Table 46. List of Projects forming the A9 Dualling Programme

Project Name	Status
P1: Luncarty to Pass of Birnam	Open to Use
P2: Pass of Birnam to Tay Crossing	Preparation for Selection of Preferred Route Option
P3: Tay Crossing to Ballinluig	Made Orders Published
P4: Pitlochry to Killiecrankie	Made Orders Published
P5: Killiecrankie to Glen Garry*	Preparation for Publication of Made Orders
P7: Glen Garry to Dalwhinnie	Made Orders Published
P8: Dalwhinnie to Crubenmore	Made Orders Published
P9: Crubenmore to Kincraig	Preparation for Publication of Made Orders
P10: Kincraig to Dalraddy	Open to Use
P11: Dalraddy to Slochd	Preparation for Publication of Made Orders
P12: Tomatin to Moy	In Procurement

* Originally two separate projects referenced as P5 and P6 were identified, but these were later combined into a single project referenced as P5.

4.1.3 Structure of the Commercial Case

The structure of this Commercial Case is as follows:

- Section 4.1 Introduction (this section);
- Section 4.2 Background;
- Section 4.3 Procurement Options;
- Section 4.4 Market Consultation;
- Section 4.5 Procurement Option Evaluation;
- Section 4.6 Conclusions; and
- Commercial Case Appendices A and B.

4.2 Background and Scope

4.2.1 Progress of Project Development

Following completion in 2014 of a Preliminary Engineering Study for dualling of the A9 between Perth and Inverness, along with a Strategic Environmental Assessment (SEA), consultants were appointed to progress development of proposals to support commencement and completion of statutory processes for each of the 11 projects. The current stage that each of the projects has reached in respect of statutory processes is summarised in Table 46 above.

4.2.2 Scope of Programme Considered in this Commercial Case

With the construction of P1 and P10 complete and the new procurement of P12 progressing, this Commercial Case considers options for the procurement of the remaining eight projects within the A9 Dualling Programme. Those projects cover 136km of the overall programme, extending from the southern extent of P2 to the northern extent of P11, with the overall length including sections of existing dual carriageway, as noted in Table 47 below.

Table 47. Sections of Road Considered in this Commercial Case

Project Name	Description	Length
P2: Pass of Birnam to Tay Crossing	Existing Single Carriageway to be Dualled	8.4km
P3: Tay Crossing to Ballinluig	Existing Single Carriageway to be Dualled	8.2km
Ballinluig to Pitlochry	Existing Dual Carriageway	6.0km
P4: Pitlochry to Killiecrankie	Existing Single Carriageway to be Dualled	6.4km
Killiecrankie	Existing Dual Carriageway	2.2km
P5: Killiecrankie to Glen Garry	Existing Single Carriageway to be Dualled	22.0km
Glen Garry	Existing Dual Carriageway	9.3km
P7: Glen Garry to Dalwhinnie	Existing Single Carriageway to be Dualled	9.5km
P8: Dalwhinnie to Crubenmore	Existing Single Carriageway to be Dualled	11.0km
Crubenmore	Existing Dual Carriageway	3.8km
P9: Crubenmore to Kincraig	Existing Single Carriageway to be Dualled	16.5km
P10: Kincraig to Dalraddy	Existing Dual Carriageway	7.5km
P11: Dalraddy to Slochd	Existing Single Carriageway to be Dualled	25.0km

To provide a ‘like for like’ comparison, each of the options considered in this Commercial Case assesses the cost of operation and maintenance of the new and existing dual carriageways listed above, as well as the cost of dualling each of the existing single carriageway sections.

4.2.3 Consideration of Procurement Options

Consideration of the preferred procurement option for a project or a programme of projects, including the form of contract to be adopted, is a required stage in determining the optimum approach for project/programme delivery.

The Scottish Government's 2019/20 Budget indicated that Scottish Futures Trust (SFT) was asked to examine the use of profit sharing revenue finance schemes, such as the Welsh Government's Mutual Investment Model (MIM), to help secure both additionality of investment and best value for the taxpayer and that Ministers would utilise all mechanisms available to deliver their priorities, including the completion of the A9 Dualling Programme. In May 2019 SFT's recommendation to use a Scottish version of the Welsh Government's Mutual Investment Model (MIM), a form of PPP, for any revenue funded procurements was accepted in the Medium Term Financial Strategy. In the update to Parliament in February 2023 the then Minister for Transport confirmed that, following the principles of the Scottish public finance manual, consideration of procurement options would assess use of either capital-funded design and build (D&B) contracts or resource-funded public-private partnership contracts.

The remainder of this Commercial Case sets out the work undertaken to evaluate the implications of adopting either a capital funded D&B Option or a resource funded MIM Option for delivery of the remainder of the Programme extents set out in Table 2 above.

It should be noted that the consideration of options for procurement of the remainder of the A9 Dualling Programme included within this Commercial Case does not include P12 within its scope. A decision was taken in early 2021 that, with sufficient capital funding being available, P12 should progress to procurement as a standalone Design and Build contract at an earlier date, to maintain progress of the overall programme. P12 is the most northerly project in the A9 Dualling Programme, and progressing it next offered a number of advantages, including connecting two existing dualled sections of the A9, providing a continuous dual carriageway of approximately 30km south of Inverness, and providing a geographic distribution of investment across the corridor as a follow on from construction of P1, which is the most southerly project in the A9 Dualling Programme.

4.3 Procurement Options

4.3.1 Programme Objectives

In identifying the potential options for the form of contract for procurement of the remaining elements of the Programme, consideration has been given to the Programme objectives, which are:

- To improve the operational performance of the A9 by:
    - Reducing journey times; and
    - Improving journey time reliability.
- To improve safety for motorised and non-motorised users by:
    - Reducing accident severity; and
    - Reducing driver stress.
- To facilitate active travel within the corridor; and
- To improve integration with public transport facilities.

Consideration has also been given to the strategic themes identified in Scotland's National Infrastructure Mission ("NIM"), that serve as a guide to making investment decisions. The three strategic themes are:

- Enabling the transition to net zero emissions and environmental sustainability;
- Driving inclusive economic growth; and
- Building resilient and sustainable places.

The objectives and strategic themes have been used as reference points to guide the appraisal and evaluation of options considered for delivery of the Programme. In addition, work is in progress to develop a Social Value Programme to inform the approach to procurement in a manner that complements the Programme objectives, the strategic themes identified in the NIM and aligns with wider Scottish Government policy, including the Public Procurement Strategy for Scotland 2023 to 2028, published on 27 April 2023.

4.3.2 Procurement Options

Two options for delivery of the remaining elements of the Programme were identified initially:

- **D&B Option**: Delivery via a series of capitally funded D&B contracts, broadly similar to the approach adopted to date for P1 and P10 and in development for delivery of P12, with each project being procured as a stand-alone contract; and
- **MIM Option**: Delivery via a series of resource funded Design, Build, Finance and Operate (DBFO) Mutual Investment Model (MIM) contracts, similar to that used by the Welsh

Government for the A465 Heads of the Valleys Sections 5 and 6 project, with groups of individual projects being bundled together into 'packages', reflecting the scale of contract preferred by this market sector.

Subsequently an additional **Hybrid Option**, combining elements of the initial two options, was developed for comparison with the initial options considered. The Hybrid Option entails delivery via the combination of two MIM contracts and three D&B contracts. Although this option was not the explicit subject of market consultation, it is considered that the views gathered through market consultation on the two initial options are also of relevance to the assessment of the Hybrid Option.

Once the preferred procurement route has been identified, consideration will then be given to the most appropriate procurement process and a separate analysis and recommendation will be set out in the Outline Business Cases prepared for subsequent decisions to proceed to contract procurement.

4.3.2.1 Capital funded D&B Option

This option is based on delivering the remaining eight projects on the A9 Programme as a series of individual D&B contracts funded through capital budget allocation. Based on the outcome of the recent A9 Dualling: Tomatin to Moy procurement it is anticipated that changes to Transport Scotland's standard D&B terms and conditions, including risk allocation, would be necessary to achieve successful procurements. The completed projects would subsequently be integrated into Transport Scotland's existing North West unit Network Management Contract (NMC) for ongoing operation and maintenance.

Contract features and funding implications

- D&B contracts require to be funded from capital budgets as they are unable to achieve a private sector classification to enable an "off capital budget" treatment in the Government's budgets.
- These contracts typically include a 5-year post construction obligation to remedy any defect that arises and ensure the establishment of landscape planting, but do not include any wider operation or maintenance obligations and hence Community Benefit (CB) requirements are limited to during the construction period.

A capital funded D&B option would require the Scottish Government to make sufficient provision in annual capital budgets to fund the whole of the construction works (currently estimated at a nominal outturn figure of circa £3.24bn) as well as sufficient provision in annual revenue budgets to fund the whole of the operation and maintenance works (currently estimated at a nominal outturn figure of circa £1.45bn).

4.3.2.2 Resource funded MIM Option (A Public Private Partnership (PPP) model option)

In its 2019-20 Budget paper, the Scottish Government indicated that it would investigate the use of the MIM, to provide additionality of investment to support the delivery of Scotland's National

Infrastructure Mission and other priorities including the A9, through use of resource funded delivery models.

Resource funded DBFO delivery models have been used extensively to deliver investment in previous Scottish infrastructure projects, most recently through the Hub and Non-Profit Distributing (NPD) programmes. This included Transport Scotland using the NPD model to deliver the Aberdeen Western Peripheral Route/Balmedie-Tipperty (AWPR/B-T) and the M8 M73 M74 Motorway Improvements.

As a result of a change in the statistical classification of NPD projects by Eurostat and the Office of National Statistics (ONS), the use of the NPD model in Scotland was discontinued as it no longer delivered classification to the private sector to allow an "off capital budget" resource funded route to facilitate additional infrastructure investment.

Following the re-classification of the NPD model, the Welsh Government built on the core principles of the NPD model to develop the MIM. The MIM has been designed to achieve an off-balance sheet classification while retaining transparency for the public sector and oversight of and sharing in the private sector returns through investment of a public sector equity stake.

An options appraisal paper by Scottish Futures Trust on privately financed resource funded infrastructure models[111] identified the MIM (with up to 20% public sector equity stake) used by Welsh Government as the recommended investment model for achieving additionality of investment in Scotland.

On this basis, the following PPP model options were identified for further evaluation to determine their suitability to deliver the Programme:

- Option 1: MIM - multiple standalone project companies (ProjectCos)
- Option 2: MIM - a single Private Sector Delivery Partner (PSDP)

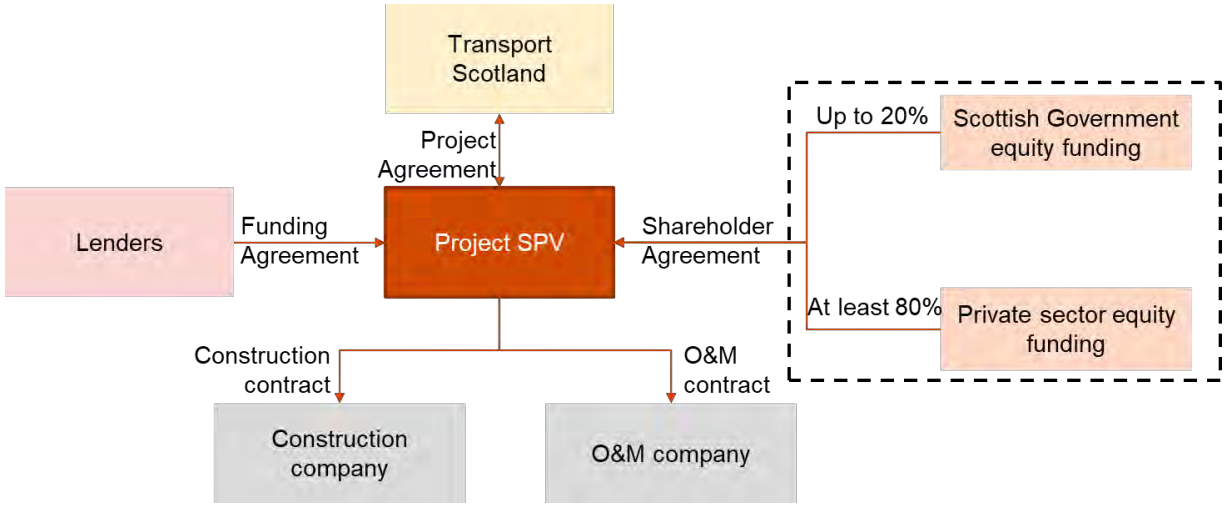
Option 1: MIM (standalone ProjectCos)

Structure

- The MIM (standalone ProjectCos) was recently used by the Welsh Government to procure the A465 dualling project, a scheme with several similarities to the A9, which reached Financial Close in October 2020.
- The MIM (standalone ProjectCos), like other previously used PPP models, establishes a non-recourse special purpose vehicle (SPV) to deliver infrastructure projects on a DBFO basis over a construction plus 25-30 year operating concession with an overall structure as summarised at Figure 78 below.

[111] Source: https://www.scottishfuturestrust.org.uk/storage/uploads/sftoptionsappraisalreportlowres.pdf

Figure 78: Overview of MIM (standalone ProjectCos) model



Contract features and funding implications

- MIM (standalone ProjectCos) has been designed to achieve a private sector classification to enable a resource funded "off capital budget" treatment in the Government's budgets.
- A key difference of the MIM from the NPD model is that there is a public sector equity investment (of up to 20%) within the Project SPV (similar to the Hub model and the PF2 model previously used in England), giving the public sector a right to appoint a Director(s) to the ProjectCo Board. This helps increase the level of transparency and also gives the public sector a right to earn a return on its equity investment in the project
- Another characteristic of the MIM in Wales is a greater focus on enhanced CB being embedded within the contract. CB targets are included for the entire project lifecycle and not just during the construction period.
- A resource funded PPP option would require the Scottish Government to make sufficient provision in annual revenue budgets across the concession period to fund the majority of the construction works and the whole of the operation and maintenance works (currently estimated at a nominal outturn figure of circa £8.9bn) as well as sufficient provision in annual capital budgets to fund an element of construction works not covered by revenue budgets (currently estimated at a nominal outturn figure of circa £0.3bn).

Option 2: MIM (PSDP)

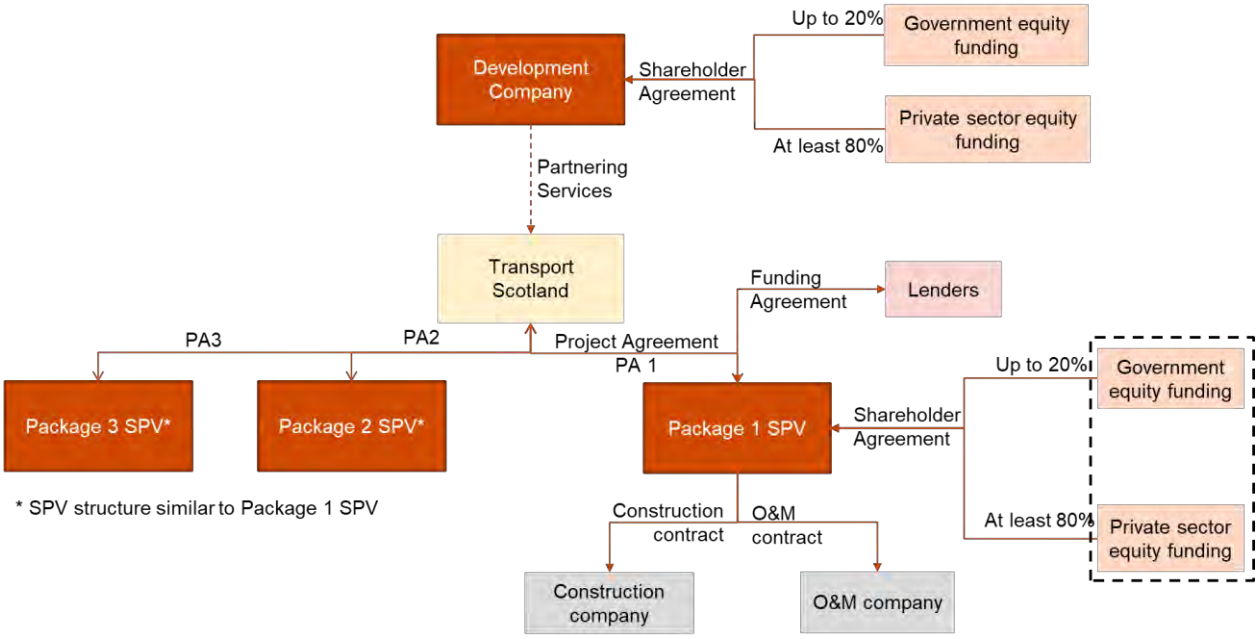
Structure

- The MIM (PSDP) model is a modified version of the Hub model used widely in Scotland, although not previously on linear infrastructure projects. Under the PSDP model, the public sector procures a Private Sector Development Partner (PDSP/Delivery Partner) in advance of

launching individual projects. The PSDP enters into a Strategic Partnership Agreement (SPA) with the Authority, through which it would support the Authority in developing the design, business case, funding model etc. for individual projects.

- The rationale behind this model is to be able to bundle smaller scale projects into larger packages that may be capable of attracting cost-effective private finance. This model also helps access support from the PSDP in design development and in prioritising/sequencing underlying projects to make them attractive to the market and/or to private finance.

Figure 79: Overview of MIM (PSDP) model



Contract features and funding implications

- Since the underlying model is still a MIM, it shares similar features as the MIM (standalone ProjectCos) structure such as public sector equity investment, embedded community benefit targets, "off capital budget" treatment etc. and would have broadly similar funding implications.
- The Development Company is owned jointly by the private sector partner and the public sector. Public sector equity investment can be up to a limit of 20%, in order to achieve off-balance sheet treatment. Each individual project that is identified for delivery is then delivered on a MIM (standalone ProjectCos) basis with competitions being run to procure the construction contract, operations contractor and financiers. This approach would extend the period before an appointment for an individual project for delivery can be achieved compared to the MIM (standalone ProjectCos) model.

4.3.2.3 Capital and Resource funded Hybrid Option

This option is based on delivering the remaining eight projects on the A9 Programme through a combination of three individual D&B contracts funded through capital budget allocation and two MIM (standalone) contracts funded through resource budget allocation. The features and funding implications of the respective contracts would be as described for the D&B Option and MIM Option above.

A capital and resource funded Hybrid Option would require the Scottish Government to make sufficient provision in annual capital budgets (currently estimated at a nominal outturn figure of circa £1.1bn) as well as sufficient provision in annual resource budgets (currently estimated at a nominal outturn figure of circa £6.7bn).

4.4 Market Consultation

4.4.1 Overview

In order to fully identify, assess and appraise options for delivery of the Programme, a market consultation exercise, as contemplated in Regulation 41 of the Public Contracts (Scotland) Regulations 2015, took place during February to April 2021 comprising the following:

- Identification of a list of target markets (streams) to consult;
- Identification of organisations within each stream from which a representative sample could be obtained;
- Preparation of an information pack for each stream;
- Issue of a questionnaire tailored to each stream;
- 1-to-1s arranged and undertaken across all streams with interested parties; and,
- Analysis of responses and feedback ascertained through questionnaire returns and 1-to-1s.

In March 2022 additional consultations took place with parties expressing an interest in the MIM Option to inform the assessment of risk allocation, procurement sequencing, implications of public sector equity and bid appetite for the MIM Option.

In addition to these consultations, Transport Scotland and its advisors have continued to monitor developments in the market and have continued to receive further feedback in the course of ongoing interactions with the market. This has included consultations with the market in Spring 2023 on potential changes to the terms and conditions and risk allocation set out in Transport Scotland's standard D&B contract, undertaken to inform preparations for the new procurement of the A9 Dualling: Tomatin to Moy project.

The findings set out below summarise feedback from these various consultations.

4.4.2 Issues for Market Consultation

The following issues were the subject of market consultation:

- **Supply Chain Capacity**
    - The extent of capacity available in the construction market to deliver the volume of work required to complete the Programme; and
    - The rate at which the market can deliver the volume of work required and whether there are points at which supply chain constraints incur a price premium that is unattractive.

- **Maximum Project Value**
    - The size of projects/packages that the market can deliver under each option and whether there is scope to combine smaller projects into larger packages;
    - The effects of such combination on deliverability/competitive tension; and
    - The effects of such combination on completion date.
- **Bid Appetite & Capacity**
    - The extent to which A9 projects would be attractive to the market under each funding route;
    - An understanding of other competing projects may be in the market;
    - An understanding of parties that may bid and whether competitive tension can be achieved; and
    - An understanding of the ability of the market to resource the competitive bid/tender process for one or multiple projects at any given time.
- **Extent of Concurrent Construction Activity**
    - The extent to which it is possible to accommodate concurrent levels of construction activity across multiple projects within the Programme, given supply chain constraints and impact on road users and the local economy.
- **Contractual Structures**
    - An understanding of the view of the market on the proposed contractual structures/models identified as delivery options.
- **Risk Allocation**
    - An understanding of the view of the market on how concerns regarding inflation and supply chain costs can be best addressed;
    - An understanding of the view of the market on any mechanisms that could be applied to avoid the application of significant risk premia to prices; and
    - An understanding of the view of the market on any key general or programme-specific risks, particularly where these may be material to bid appetite for either option.

In respect of resource budget delivered options, the following additional issues were also a consideration:

- **Availability of private finance**
    - Views on the level at which, and on what basis, value for money private finance is available to pay for upfront construction costs; and
    - The effects of this on the packaging of projects, contractor selection and choice of contractual model.

- **Public sector equity**
    - Views on the acceptability to the marketplace of the principle of public sector equity;
    - Views on the impact of public sector investment on the appetite of private equity investors to participate; and
    - An understanding of any concerns regarding potential conflicts of interest between equity investors and how those conflicts could be managed.

4.4.3 Participation Rate

The 2021 market consultation obtained feedback (in the form of questionnaire responses and/or during 1 to 1 sessions) from DBFO contractors, senior debt lenders and D&B contractors.

The 2022 market consultation focused on parties interested in the MIM Option and obtained feedback (during 1 to 1 sessions) from DBFO contractors and equity investors.

The 2023 market consultation focused on parties interested in the new procurement of a D&B contract for the A9 Dualling: Tomatin to Moy project and obtained feedback (during 1 to 1 sessions) from D&B contractors.

4.4.4 Summary of feedback

Across all three streams, there were two consistent themes:

1. The A9 Dualling Programme is attractive to the market; and
2. Appetite for risk has hardened markedly in all three markets both prior to commencing the first market consultation and across the period over which the various market consultations have been undertaken. It was clearly indicated that what has been acceptable in the past is not necessarily acceptable now.

In the case of the two contractor markets, a further consistent theme that came out of the market consultation was that there are strong pipelines of work in more accessible parts of the UK and on commercial terms which they consider are more attractive than those historically offered by Transport Scotland. Participants indicated that this wider market context needs to be considered by Transport Scotland in order to attract competitive interest and supply chain resources to deliver under either delivery route for the Programme.

The following sections summarise the key messages coming out of each consultation stream and represents the views expressed by the participants.

4.4.4.1 D&B Market

Optimal Project Value	Differing views were proffered from UK versus international D&B contractors. UK contractors take a risk-based approach in terms of their bidding appetite with an optimal contract value between £100-150m on a risk-reward basis. There is a reluctance from UK contractors to bid/deliver larger contract values (beyond £150m) due to the requirement to form CJVs and related ongoing/legacy commercial issues from previous projects making partnerships unattractive. International contractors have a greater risk appetite and capacity to deliver larger scale project values without the need to form joint ventures but with a less demonstrable track record of working on TS projects. International contractors favoured contract sizes greater than £300-£500m and would be unlikely to bid the smaller package sizes favoured by the UK market.
Construction Schedule/ Completion Date	The views expressed by participants on construction timescale for the remaining programme (the eight remaining projects) ranged between 8 to 12 years with an average timescale of 10 years. This excludes the procurement period to appoint contractors which would be in addition to this timeframe.
Concurrent Construction Activity	Participants considered that a maximum of 2-3 D&B projects could be under construction concurrently. Influencing factors were market and resource capacity, risk appetite and the potential impact on user disruption if more than 3 projects are under construction at the same time. Appropriate staggering of projects (consistent with the 10-11 year construction timeline, excluding procurement) would mitigate peaks and troughs of work and avoid creating self-generated market inflation/capacity constraints.
Impact of competing programmes on bid appetite	The 'hot' UK market was highlighted as offering the potential to 'cherry pick' from the most attractive projects/programmes e.g. HS2/Highways England/Energy sector. Influencing factors on project/programme selection include visibility of committed pipeline, favourability of commercial & contractual approach, capability and capacity of supply chain and importance of strategic long-term relationship. To increase TS's ability to attract the market to Scotland, visibility of a committed pipeline of projects would help to secure the commitment and investment of the supply chain (e.g. clarity on A96 and other major infrastructure projects in the pipeline).

Impact of Commercial & Contractual Approach on Bid Appetite	UK contractors referenced the commercial and contractual approach as being key to their bid appetite. The standard TS approach of single stage fixed price, full risk transfer (including adoption of an advanced design); and bespoke terms and conditions were highlighted as being unfavourable, out of step with the market and a potential no bid issue for some participants. The TS approach was contrasted with other UK procuring authorities (HS2/Highways England/Utilities) where it is considered by the market that a more collaborative approach is adopted via: ● Early Contractor Involvement (ECI); ● Equitable approach to risk sharing/transfer; ● Two stage target price with pain/gain incentivisation; and ● Standard industry form of contract (NEC3/ NEC4). This approach was considered more favourable to the market and expected to lead to higher likelihood of participation by UK contractors as it enables them to get involved with projects earlier, understand risk, influence design decisions (from a constructability sense), utilises an industry recognised standard form of contract (with principles/ precedents understood and established) and facilitates working with the procuring authority on a partnership type basis throughout the lifecycle of the project. More recent consultations have emphasised that D&B contractors are now unwilling to bid for contracts that transfer significant risk and wish to see a change in Transport Scotland's standard contract form to NEC4, as well as a significant change in risk allocation. International contractors were less vocal about the impact of the commercial and contractual approach on their bid appetite, being more interested in seeing larger scale projects.
Programme Risk	The UK contractor market approach to risk has changed significantly and feedback included: ● **Client participation** – The undertaking of advance works by the public sector, in particular utilities diversions, was considered by the market as current best practice and key to improving overall schedule confidence. ● **Ability to price** – participants indicated that they require to robustly quantify and price risk and where they are unable to do so, they have to apply significant risk premiums to obtain internal governance

	approvals to bid. Participants highlighted a client sponsored package of advanced works and surveys, the early provision of detailed information in the procurement process and the implementation of an equitable risk sharing approach as desirable to mitigate this risk and optimise pricing. • **Market view on equitable risk sharing** – due to the geographic location of the Programme, adverse weather risk and its impact on schedule was highlighted as a key area of risk. There was an increasing unwillingness from the contractor market to take full responsibility for this, with an approach which included for relief and compensation being viewed as essential to appeal to the market. Similarly, the seasonal and environmental constraints of the Programme were highlighted as key schedule risks, with the need for these to be factored into the timing of contract awards to minimise the impact on schedule

4.4.4.2 Lender Market

Strong market appetite for PPPs	There is a lack of an identifiable DBFO project pipeline in the UK but, conversely, high demand for long term lending opportunities in sterling, in particular from institutional investors. Visibility on pipeline and timing of projects is crucial to build appetite, plan capacity and secure capital allocations versus other competing demands for capital.
Views on general market capacity vary	Anywhere between £500m-£1.25bn depending on price sensitivity and strength of the contractors within the consortium. A range of £500m-£750m was most consistently identified as the pricing 'sweet spot' for a typical investment grade UK PPP project, with £1bn pushing the market to the limit of competitive capacity (+25-30 basis points pricing increase) and beyond £1bn likely to attract a significant liquidity premium (50bps+).
Impact of constitutional uncertainty	The uncertainty around Scotland's future relationship with the rest of the UK introduces risk in two areas from a financing perspective; firstly, lender participation and market capacity for projects in Scotland and secondly, the contract terms lenders will require. **Lender participation and market capacity** For most domestic UK lenders the constitutional uncertainty may have a slight adverse impact on the amount they are willing to lend and their pricing, but they will still lend if the fundamentals of the project are sound. However, one of them indicated they could not currently consider any new lending opportunities in Scotland having reached their country limit. Whilst they are seeking to increase this limit, the current constitutional uncertainty makes it

	challenging to present a robust case. This removes a significant level of market liquidity and could potentially affect the appetite of others, particularly international entities, who may take non-participation by a domestic lender as a sign that the deal is 'off-market'. For a lot of international lenders it is more of a binary 'participate/do not participate' decision with a general rule of thumb that the further away from the UK they are based, the more likely that decision will be to not participate in the project. Whilst no participant said they definitely would not lend, a number of them highlighted that political stability is a key factor for their credit committees when assessing lending propositions. The ramifications of this was witnessed in both the 2014 Scottish Independence referendum and the 2016 British EU referendum, when a number of international lenders/investors, particularly in Asia, withdrew from the market until the political situation stabilised, impacting both liquidity and pricing of debt capital. **Contract terms** The key concerns expressed by lenders were in respect to the future credit rating of an independent Scotland, the currency of the unitary charge and change in law risk. Similar concerns existed in 2014 and TS was able to mitigate these risks by introducing appropriate protections into the contract documents which helped to maintain lender market appetite for the M8 and AWPR NPD transactions. A number of the participants in the consultation exercise noted that similar protections are likely to be required to maintain market appetite for the A9.
Contractor Financial Strength	The majority of participants noted that there is an expectation that consortia will be led by large scale international contractors due to the lack of UK contractors with sufficient balance sheet strength to carry the risks associated with fixed price, date certain contracts. They also indicated that their preference would be for consortia to be formed on a JV basis, with joint & several liability amongst the contractors, where the construction value of the packages is greater than £500m. Local contractors are expected to play a key support role at supply chain level. The credit ratings and security packages of the contractors sitting at the CJV level will be a key focus of lenders' due diligence processes.
Environmental, Social and Corporate Governance (ESG)	Environmental, Social and Corporate Governance (ESG) criteria are an increasingly important focus. This is increasingly driven by investor requirements, increasing disclosure requirements (including Task Force on Climate-related Financial Disclosures – TCFD) and the associated need for enhanced internal reporting and monitoring. As a result, a project with strong ESG credentials appeals to credit committees and this may help with capital

	allocation and optimising terms. No specific concerns were raised in respect to the A9 Dualling Programme or road projects in general in this regard.
Key Structural Terms	Drawdowns over a construction period of no more than 4-5 years are preferred. Beyond 5 years may be doable but will impact the efficiency of financing structures which involve institutional bond investors. Bank debt tenors can stretch to 30 years in some cases but the 'sweet spot' to maximise liquidity and price tension in the bank market is sub-20 years. Institutional debt can comfortably lend out to 35 years. Hybrid bank and institutional debt models are common for long tenor senior debt to maximise the appetite of both lender groups. Structures which support implied credit ratings of BBB/BBB+ is what the majority of the market seeks. Both PPP options (MIM standalone ProjectCos and MIM PSDP) were presented in order to test their preference and appetite for each option. Lenders indicated limited appetite for the MIM (PSDP) option due to concerns regarding potentially large levels of exposure to a single (or a group of few) contractor(s), limited previous examples of a 'Finance aggregator' type structure and concerns over the applicability of such a structure to the A9 Programme.

4.4.4.3 DBFO Contractor & Equity Market

Bidding appetite & capacity	Bidding appetite is likely to be restricted to the international contractor market and there are a number of issues to be considered in making the A9 attractive. Contributing factors and feedback include: ● There was strong interest in the Programme from the international contractor market. The international contractors noted they would prefer to have a UK partner in the CJV alongside them but this was a challenge as domestic contractors are appearing unlikely to reverse their position on not pursuing PPP style contracts given a committed pipeline of projects in the UK civils market offering more attractive commercial terms and risk sharing mechanisms (e.g. HS2, Highways England and the water and energy sectors). This means the market capacity for the A9 is likely to be constrained to international contractors, with local contractors participating at supply chain level only. It was noted that the recent lack of a UK DBFO pipeline means the current stance of the UK contractor market may not have been fully tested at board level and a new pipeline of DBFOs could allow the issue to be revisited. In this regard, a number of participants noted that 3 or

	more packages of works on the A9 and visibility on the A96 programme would be beneficial. • The international contractors highlighted limited capacity within bid teams to resource overlapping procurements. This has been exacerbated by the lack of a DBFO pipeline in the UK. • A number of participants noted TS has a reputation in the market for being a "well-informed client" that "knows what it wants" but also for being known as a "difficult client to work with" and "hard to build relationships with". This was contrasted with a more explicitly collaborative approach seen elsewhere. There was widespread awareness, and a number of comments made, on the commercial disputes which arose on M8 and AWPR.
Bid cost reimbursement	• All participants expressed a desire for a contribution to be made towards tender costs, citing this as something that is seen in many other jurisdictions and becoming an increasingly critical factor in their bid/no bid decision. It was noted that tender cost stipends are looked upon very favourably by investment boards when it comes to choosing between competing projects around the globe for the allocation of limited human and financial resources. • Since the market consultation in early 2021 it has been observed that that there is a trend towards some level of bid cost stipend in both public and private sector sponsored major construction projects in the UK and EU in order to attract or maintain bidder interest in a busy construction market. This includes examples of projects where bidders that pre-qualified withdrew after no commitment to bid cost contribution was offered by procuring bodies. It is therefore anticipated that some or all bidders will make a bid cost contribution a bid/no-bid decision.
Supply Chain Concerns	A number of participants expressed concerns over the capacity of the local supply chain, noting that a premium may have to be paid for labour and plant from other parts of the UK and further afield (plus associated accommodation costs). Constraints in supply of certain materials within the local market were also raised (e.g. quarries).
Optimal Package size	Early rounds of engagement indicated some divergence of views with a couple of participants expressing a preference for package sizes in the £750m+ range

	but a clear majority expressing a preference for smaller packages in the £400m-£600m range. This was driven by a number of factors: • A preference for maximum package sizes that could be delivered by a single contractor, perhaps with a local partner, and avoiding the requirement to team up with multiple parties at CJV level to deliver larger package sizes with the loss of control this entails; • The technical challenges of managing the construction lengths involved in larger sized packages; • The risk exposure under PPPs of larger package sizes; • Lender security package requirements for larger package sizes; • The desire to keep construction periods within 5 years More recent market feedback indicates that: • There is limited (if any) appetite amongst domestic contractors to act as a local partner in a CJV for a PPP; • Boards do not wish to take full risk on a project of this size and they would prefer to have at least one partner at CJV level. With the lack of interest from local/domestic contractors this implies the need to form CJVs with other international contractors. It is understood that mature discussions have taken place between large international contractors to form CJVs to bid the A9 if it is taken forward as a MIM. Where this is the case the maximum package size such CJVs could deliver will be in excess of the £400-600m indicated by the earlier rounds of market engagement and is expected to enable delivery of the package sizes currently identified in the 3 package option (c.£650-£800m).
Approach to Risk	There is limited appetite from the market to take on risks such as ground conditions, latent defects and utilities and this position has hardened in recent years. There was a strong consensus on the benefits of TS undertaking as much advance works as possible, for example approach to utilities and the extent of SI/GI undertaken and shared prior to procurement launch. Most participants also expected TS to play a central role in the interface management between projects in the construction phase.
Political Commitment	There was a desire expressed to see strong cross-party political commitment to the Programme to minimise risk of cancellation post launch and associated

	uncompensated bid costs as seen elsewhere in the UK and further afield. Constitutional uncertainty surrounding Scotland's future relationship with the rest of the UK would also require to be addressed in the contract in areas such as currency and change of law.
Construction Schedule	It was indicated that overall construction duration would likely fall within a range of 8–12 years dependent on the size of packages and staggering of procurements. Contributing factors were highlighted as follows: • **Construction Duration** – It was considered that the 2 package approach would involve construction periods in the order of 5-6 years, with the 3 package approach in the order of 3.5-5 years. Durations beyond 5 years were highlighted as being problematic both in terms of efficiency of private finance and delayed return on investment. • **Overlapping of Procurements** – There was limited appetite for any substantial overlap of procurement activity due to resource constraints within bid teams and the benefits, to both TS and bidders, of being able to embed lessons learned from the first procurements into those that follow. Equally, participants did not want to see long gaps between procurements as this results in having to stand bid teams down and then re-start them (which is problematic in a UK market without an active PPP pipeline). This suggests successive procurements should, at the latest, be launched shortly after Financial Close of the preceding package. If there was to be any overlap then it was suggested that this should only occur after the appointment of a preferred bidder for the preceding procurement which could offer advantages in reducing the overall procurement duration for the Packages and in keeping bid teams consistently resourced. • **Efficiency of Procurement Process** – A common request was for TS to develop a clear, robust and efficient procurement timetable at the outset and stick to it. This can be facilitated by making detailed information available as early as possible on GI, land, traffic flows and the intended approach to risk sharing in the contract. Streamlining tender deliverables to focus on those areas of real importance to TS was also a point made by a number of participants. Participants also expressed a consistent preference for a single stage procurement with no more than 3 bidders and fully funded final tenders.

ESG criteria	It was indicated that the market is keen to demonstrate the significant construction phase carbon reduction opportunities which could be introduced to the Programme. This would require: • TS to be clear on their objectives with these being reflected in the evaluation criteria, particularly given the cost implications of such carbon reduction technologies; • Flexibility for innovation in the specifications if these opportunities are to be maximised e.g. permitted content of recycled materials; and, • Clarity as to how the benefits proposed are to be contractualised (e.g. KPIs). A number of participants cited the Dutch programme as a good example of this and also the Norwegian roads programme where the concept of carbon budgets were integrated into the tender process.
Key Structural Terms	Both PPP options (MIM standalone ProjectCos and MIM PSDP) were presented in order to test their preference and appetite for each option. The contractor market indicated no appetite for such an approach, viewing it as a 'one chance only' tender with a small probability of success and no guarantee of winning the actual construction work when packages are tendered
Public Sector Equity Stake	While some market participants have reservations about the idea of public sector equity, most are accepting of it as a necessary and key feature of the MIM, with many understanding the potential attractiveness of such an approach in terms of transparency for the public sector and opportunity for greater partnership. A number of participants highlighted that they would want to see greater flexibility in the shareholder agreement than seen in recent Welsh MIM schemes, to reflect different types of consortium structure and in respect of how potential conflicts of interest are addressed.

The feedback from the 2021 market consultation was shared and discussed with Scottish Futures Trust (SFT). SFT noted that the key elements of the feedback, which broadly remained consistent in the 2022 market consultation, were consistent with its understanding of the respective markets, particularly:

- around UK contractors reluctance to take on large fixed price civils contracts;
- international contractors appetite for large and complex projects; and
- the lender market's ability to lend more money in aggregate across the Programme if it is split into three or more packages versus two.

4.5 Procurement Options Evaluation

The market consultation exercise confirmed that there is keen interest in the Programme, irrespective of the procurement approach and funding route chosen by Scottish Government, but it also highlighted the need for Transport Scotland to consider how to make the Programme attractive in the face of a buoyant infrastructure market in the UK and further afield and changing attitudes to risk from those seen in the past.

Based on analysis of feedback gathered through the market consultation process, the potential schedule, financial implications and risk considerations for the D&B Option, the MIM Option and the Hybrid Option are set out below.

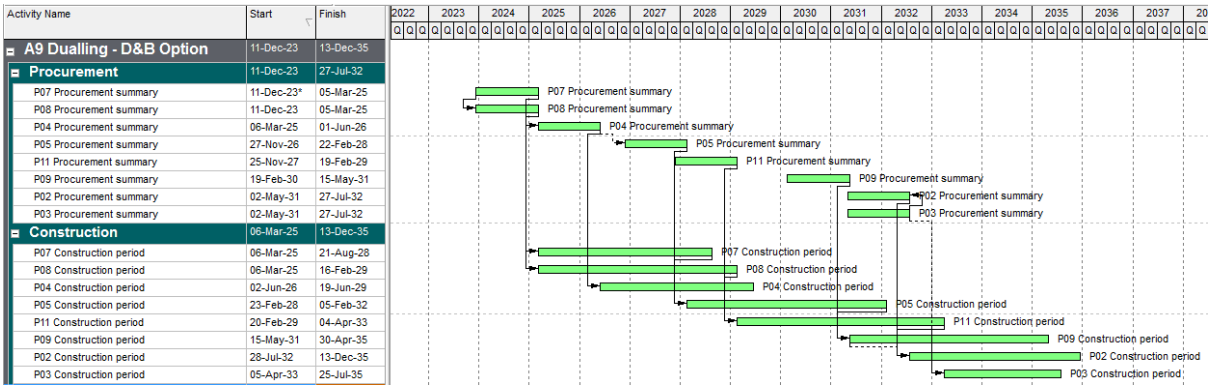
4.5.1 Capital funded D&B Option

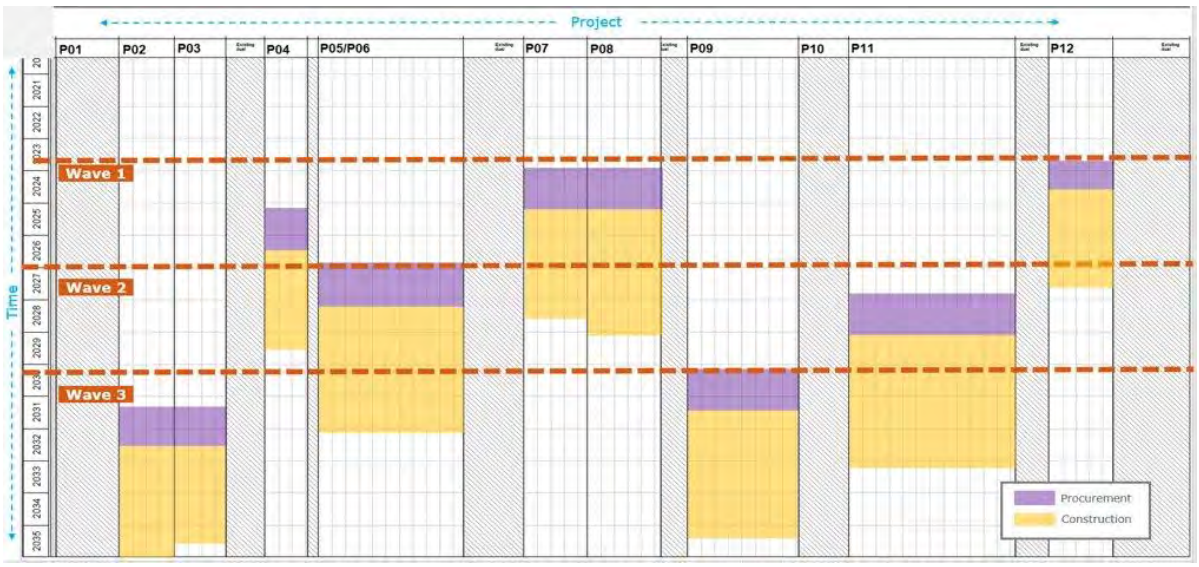
4.5.1.1 Schedule

The D&B market has indicated that the Programme could be constructed over a 12 year timeframe (including procurement), with capacity to deliver 2 or 3 projects concurrently at any point in time.

Transport Scotland has generally adopted a single stage, fixed price, full risk transfer contracting approach on D&B projects in the past (including P1, P10), however following an unsuccessful procurement for P12 on that basis it is undertaking a new procurement based on modified terms and conditions, including changes to the risk allocation. The schedule below (Figure 79) has been developed to illustrate the sequencing of procurements and construction of the 8 individual D&B contracts.

Figure 79: Indicative schedule for Capital funded D&B Option
(note on the time chainage diagram the vertical axis represents time and the horizontal axis represents distance, with the southernmost scheme on the left and the northernmost schemes on the right).





In line with feedback from the D&B contractor market, the sequence of projects shown above splits the Programme into three "waves" of construction activity, with typically two to three projects under construction at any one time. A procurement duration of 15 months from publication of contract notice to contract award has been assumed in addition to the construction durations identified within the Design Manual for Roads and Bridges (DMRB) Stage 3 reports.

This programme is dependent on statutory processes for projects being completed in sufficient time for procurements to progress as timetabled. It should be noted that there are several possible sequencing permutations, given the large number of D&B projects. In addition, consideration could be given to packaging together some of the individual projects (e.g. P2 and P3; P7 and P8) if the D&B Option is selected, although such an approach is not anticipated to provide appreciable cost or time benefits.

The sequence indicated above attempts to add separation between construction sites which are on-line concurrently. With fewer projects under construction at any one time there is flexibility to deal with any delays which arise during construction.

Applying these assumptions results in an earliest estimated construction completion date for the Programme of late 2035.

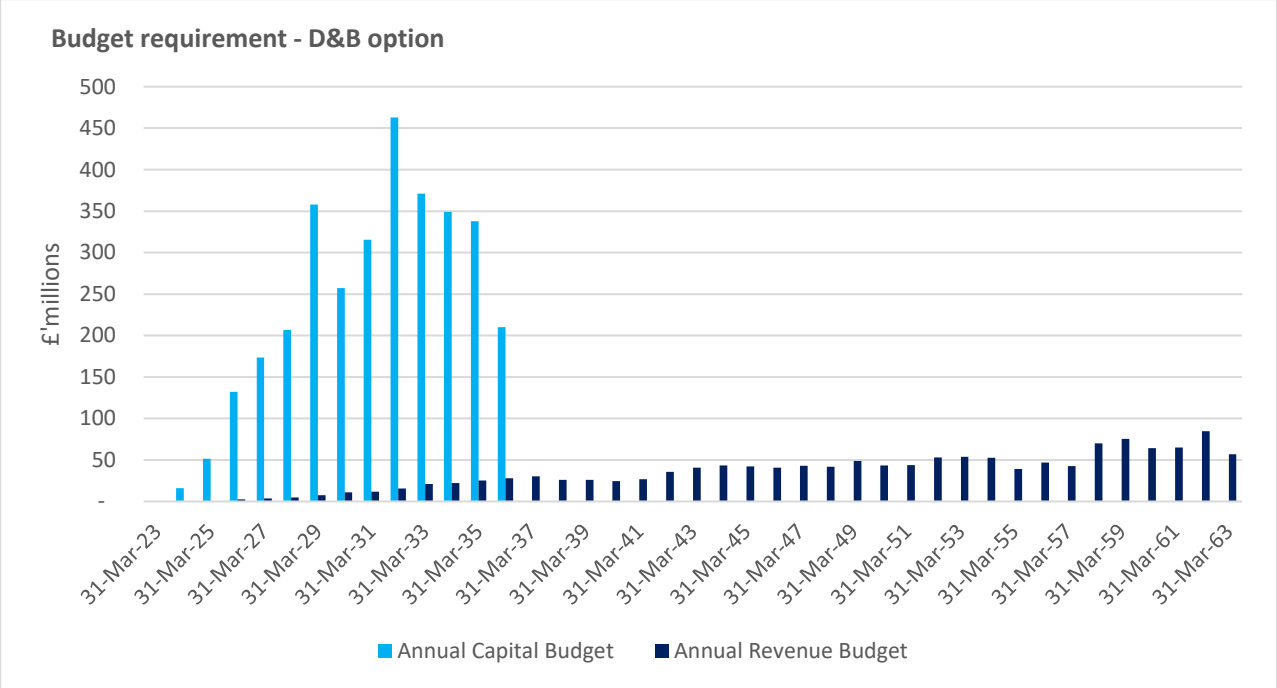
4.5.1.2 Financial implications

Timing of cash flows and net present costs of the Programme under the D&B Option are shown below. Risks retained by the Scottish Government (SG) have been included in this cost assessment, with the final risk allocation dependent on the terms and conditions offered to the market.

The Net Present Value indicated below takes into account core construction costs, side roads payments and other enabling works such as Advance works, Statutory Undertakers, development &

supervision costs and land costs, as well as additional costs such as Non-Recoverable VAT, other client costs, advisor costs, risk, bid costs and insurance costs.

Figure 80: Budget requirements under Capital funded D&B Option



Overall budgetary impact and capital/resource budget profiles to the end of the construction period of the D&B Option are set out in Table 48 and Table 49 below. The detailed breakdown of the full capital and resource budget profiles over the period adopted for comparison of the D&B Option, the MIM Option and the Hybrid Option are set out in Appendix A.

Table 48. Budgetary impact of D&B Option

Model option	Capital Budget Requirement (Nominal)	Resource Budget Requirement (Nominal)	Total Budget Requirement (Nominal)	NPV as at 1st April 2023 (discount rate 5.8805%)
Capital funded D&B	**£3,241.9**	**£1,457.7**	**£4,699.6**	**£2,388.5**

Table 49. Capital and resource budget profile of D&B Option to end of construction

FY (01 April – 31 Mar)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36
Total capital budget (£m)	15.9	51.5	132.3	173.6	206.8	357.9	257.1	315.5	463.1	370.9	349.1	338.0	210.1
Annual resource budget (£m)	0	0	2.5	3.7	4.7	7.7	10.8	11.8	15.6	21.1	22.4	25.2	28.1

4.5.1.3 Risk considerations

In addition to the schedule and financial implications of undertaking a D&B Option, consideration needs to be given to the following key areas of risk:

Risk	Description
Multiple procurements resulting in risk of delay	• The D&B Option involves Transport Scotland undertaking several procurements (often simultaneously) to award multiple contracts. This could result in a continuous and lengthy procurement programme. • Delay in any one procurement may have a consequential impact on subsequent projects. • It is noted that due to the earliest estimated completion date being in late 2035, a relatively minimal length of delay which cannot be mitigated within current programme could result in the completion date moving to early 2036.
Risk of insufficient bids	• The value of the individual projects are in the range of c. £100-300m (contract values in 2012, including risk), meaning that market appetite will be limited to the UK/Scottish/Irish construction market. International contractors are generally interested in larger project sizes (£500m+) • In terms of procurement there is a requirement to obtain multiple bidders (potentially 3-5) for each project. Across 8 projects, there is a risk that insufficient bids are received impacting value for money to Ministers. This is further impacted by limited market appetite to potentially form Joint Ventures (JVs) for some of the larger projects.
Multiple contracts resulting in large number of interfaces	• Delivering the Programme as a series of several smaller individual projects will result in a significant number of interfaces. • Since D&B contractors will have limited appetite for contractual arrangements with each other for interface management, Transport Scotland will have to bear the majority of responsibility for this aspect of risk.
Coordination on a Programme-wide basis	• Aspects of the works which will require to be managed/coordinated on a Programme wide basis (such as utility diversions, TTM & Network Rail interfaces) will become more complex, as multiple

	contractors get involved in the process. This could result in interface issues and potential delay to programme and increase in costs.
Market capacity	• Market capacity, competing with other UK Civil Engineering programmes (Highways England, HS2, Nuclear programme) • Where multiple contractors are operating independently and calling upon the same resource pool there is a risk that multiple sources of demand increase costs and impacts the potential economies of scale
TS capacity	• Transport Scotland client team capacity to resource and manage prolonged procurement and delivery phases.

4.5.2 Resource funded MIM Option

4.5.2.1 Preferred MIM model option

It was noted from market consultation that both lenders and DBFO contractors considered that the MIM (standalone ProjectCos) option was preferable to the MIM (PSDP) option, for the reasons set out earlier in this Commercial Case. Additionally, under a MIM (PSDP) approach, the Delivery Partner would have limited ability to influence strategic technical decisions at this stage of the Programme, as all projects other than P2 are well advanced in their statutory processes. Furthermore, pursuing the appointment of a Delivery Partner would have a significant impact on the Programme timelines, as much as 2 years or more, because this option would require a circa 18-month procurement period to identify the Delivery Partner followed by at least another 6 months of preparation, working with the Delivery Partner, to launch the first procurement of a package of works. This is evidenced by the timelines involved in the Welsh Governments Schools programme, where the Delivery Partner was appointed in Q3 2020 following an 18-month procurement, but where the first bundle of schools has not yet reached contract notice stage.

A MIM (standalone ProjectCos) structure was considered by the market as a better suited solution to delivering a single large programme such as the A9 Dualling

This Commercial Case has therefore based assessment of use of the MIM Option for delivery of the Programme on adoption of MIM (standalone ProjectCos).

4.5.2.2 Packaging considerations

The majority preference expressed by lenders and DBFO contractors during market consultation was for the MIM Option to comprise 3 or more MIM contracts. This approach is considered to provide an effective pipeline of successive opportunities and hence better able to attract market interest and maintain competitive tension. Since the market consultation in April 2021, further development of the cost estimates and assessment of issues such as inflation in the construction sector suggests core capital costs for each package of between c.£690m and £870m. The deliverability of larger packages

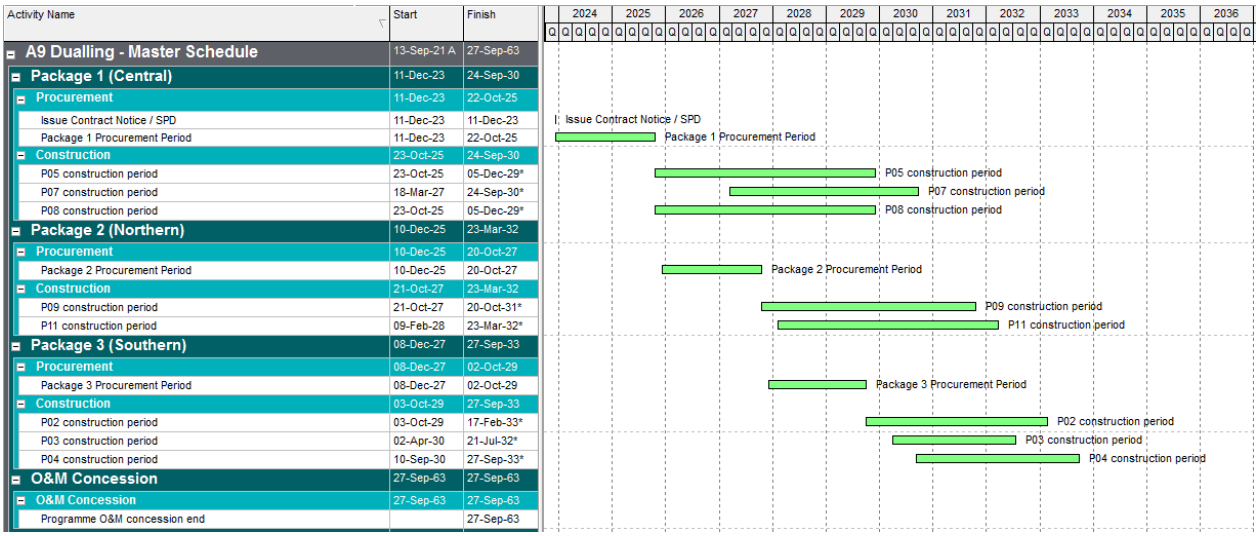
will be affected by the willingness of contractors to form joint ventures. This could potentially limit the number of bidders for the packages (as bidding entities combine into joint ventures for larger packages) or across the Programme as a whole if construction joint ventures agree to bid all three packages together based on the scale of the largest package.

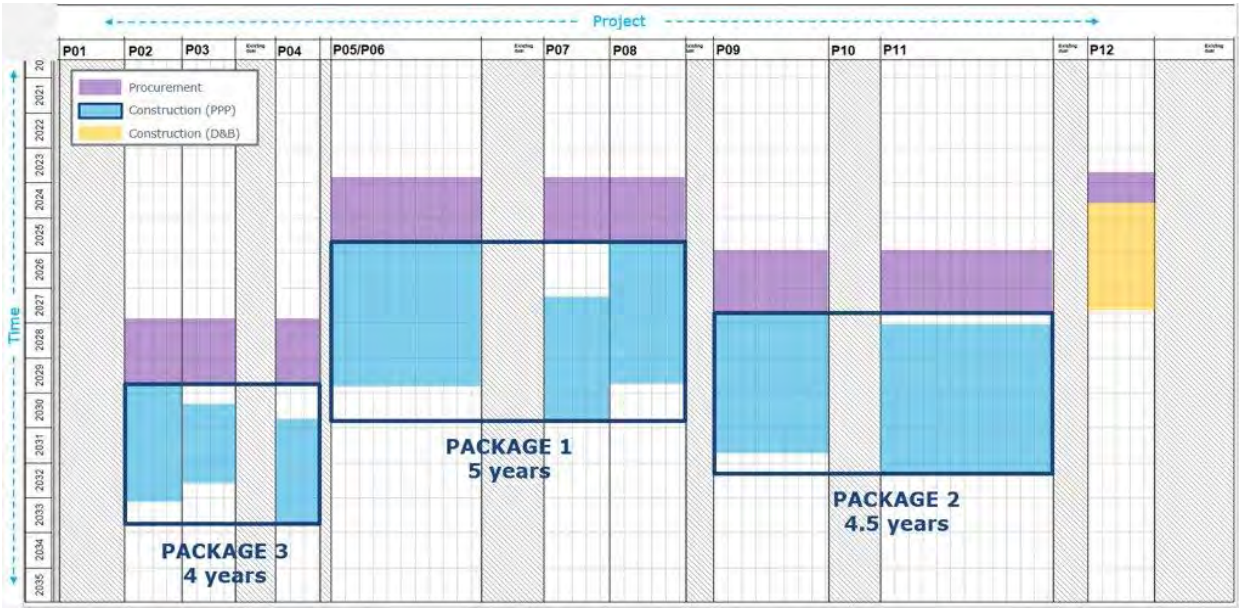
It is recognised that procurement of three successive road DBFO contracts has not previously been undertaken in Scotland and that it will be important to maintain competitive tension throughout these procurements in order to achieve best value for money.

4.5.2.3 Schedule

The following target timeline has been developed for the A9 Programme, taking account of market feedback on the preferred timing of successive procurements and considering TS delivery team resources:

Figure 81: Indicative schedule and time-chainage diagrams for Resource funded MIM Option
(note on the time chainage diagram the vertical axis represents time and the horizontal axis represents distance, with the southernmost project on the left and the northernmost project on the right).





The sequence of packages shown above is based on the first procurement being of a 'Central' package, comprising P5, P7 and P8. A procurement duration of c.22 months has been assumed and successive procurements commence following Financial Close of the preceding procurement.

This programme is dependent on statutory processes for projects included in individual packages being completed in sufficient time for procurements to progress as timetabled.

The sequence indicated above results in concurrent work on adjacent projects in individual packages as well as periods when construction is proceeding on more than one package. This is likely to result in higher levels of user disruption during construction operations, this being offset in part by an earlier overall completion date. As contractors are dealing with larger individual contracts they have increased flexibility to apply resources across a larger area to deal with any delays which arise during construction.

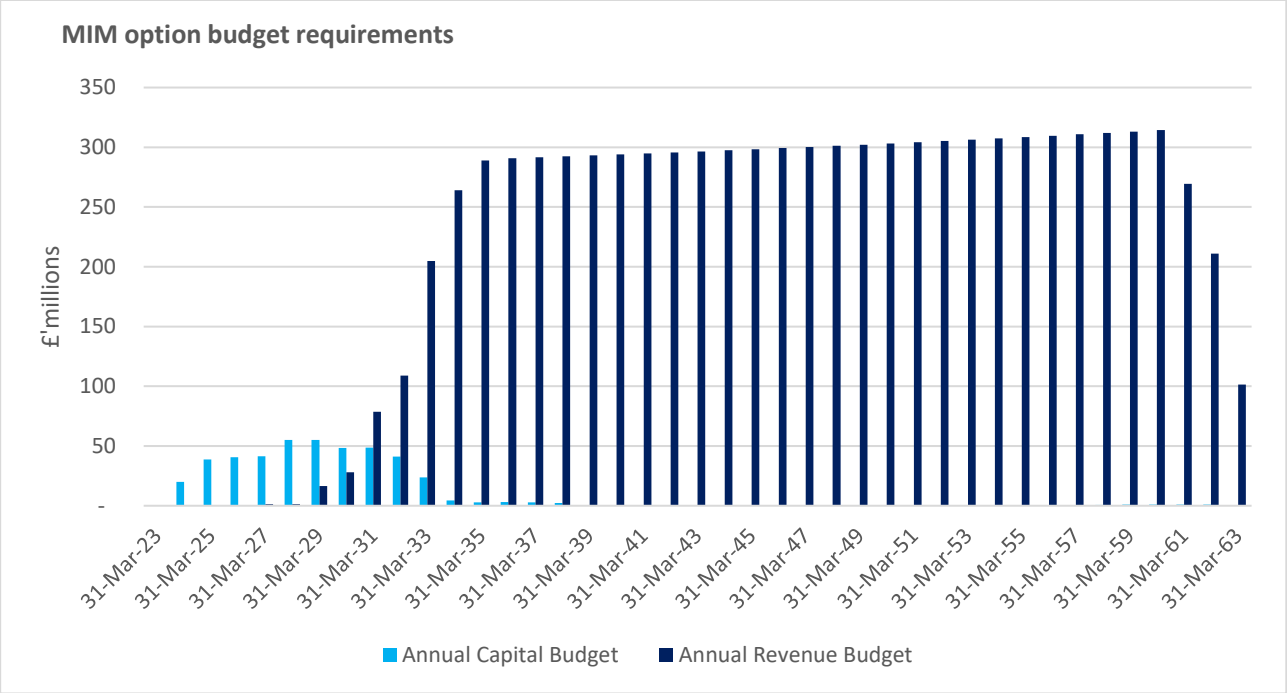
Applying these assumptions results in an earliest estimated construction completion date for the A9 Dualling Programme of late 2033.

4.5.2.4 Financial implications

Timing of cash flows and net present costs of the Programme under a MIM Option are shown below. Resource budget costs are based on the preparation of a "shadow bid model" reflecting the estimated cost of MIM contract bids from the market. The shadow bid model is based on capital and O&M cost estimates prepared by TS's Design Consultants and estimated private finance costs prepared by TS's Commercial and Financial advisors. The capital budget items relate to items such as land purchase, advance works, design and capital expenditure on side roads.

Similar to the D&B Option, risks retained by the Scottish Government have been quantified in detail and included in this cost assessment. Since the level of risk transferred to the private sector is greater under the MIM Option than under the D&B Option, the exposure to increased costs associated with retained risks is less under the MIM Option than under the D&B Option.

Figure 82: Timing of cash flows under Resource funded MIM Option



Overall budgetary impact and capital/resource budget profiles to the end of the construction period of the MIM Option are set out in Table 50 and Table 51 below. The detailed breakdown of the full capital and resource budget profiles over the period adopted for comparison of the D&B Option, the MIM Option and the Hybrid Option are set out in Appendix A.

Table 50. Budgetary impact of MIM option

Model option	Capital Budget Requirement (Nominal)	Resource Budget Requirement (Nominal)	Total Budget Requirement (Nominal)	NPV as at 1st April 2023* *(discount rate: 5.8805%)*
Resource funded MIM	**£280.7m**	**£8,967.4m**	**£9,248.1m**	**£2,774.1m**

*Inclusive of corporation tax benefits and equity investment costs and income

Table 51. Capital and resource budget profile of MIM Option to end of construction

FY (01 Apr – 31 Mar)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Total capital budget (£m)	20.0	38.8	40.5	41.5	55.1	55.1	48.3	61.9	39.3	37.4	13.3
Annual resource budget (£m)	0	0	0	0.3	(0.6)	13.0	22.7	72.0	101.7	198.3	258.1

A key driver of the difference in NPV between the D&B Option and the MIM Option is the timing of the cash outflows from the Scottish Government for delivery of the Programme under the two

scenarios. Under the capital funded D&B Option the Scottish Government directly incurs the development and construction costs arising during the construction phase which, as near-term cash outflows, are not subject to many periods of discounting under the NPV method. By contrast, under the resource funded MIM Option the same upfront construction costs are financed by the private sector and recouped over the 30-year operating concession via the Unitary Charge. As the Unitary Charge is paid over time, it is subject to greater discounting under the NPV method (recognising the time value of money).

4.5.2.5 Public Sector Equity Stake

The NPV figure quoted in Table 5 above includes both the cost of equity investment in the MIM contracts and the return forecast on that investment, with the modelling based on an equity investment of 15% in each MIM contract. The maximum equity investment permissible under European System of Accounts (ESA) 2010 rules while maintaining an off capital budget classification is 20%. Normal market returns for such investments in PPP projects are in the range of 10-12% nominal Internal Rate of Return, however recent increases in UK interest rates may lead to investors requiring higher returns. It is noted that the decisions on the scale of equity investment and the identity of the investing body lie out with the scope of this Commercial Case.

4.5.2.6 SFT Guideline Affordability Tests

The Scottish Futures Trust report on options appraisal to examine profit sharing finance schemes[112] describes the "Scottish Government's self-imposed revenue [resource] finance investment limit of 5 per cent of the Scottish Government budget". The report estimates that, in Financial Years 2023/24 and 2024/25, the Scottish Governments' share of long-term commitments under resource financed investments will be c.3%. The UC for the first full year of operations for all three packages occurs in Financial Year 2034/35 is estimated as a nominal cost of £289.0m. The Scottish Government resource budget in the same year has been estimated at £47.4bn[113] meaning the first full year UC commitment would represent c.0.61% of total resource expenditure in that year. With only 9-12% of the UC expected to increase in line with general inflation as measured by CPI, it is expected that this proportion will steadily decrease in the subsequent years of the contract assuming total resource spending in the long term keeps pace with general inflation. Assuming there has been no material commitment to other resource financed schemes since the date of the SFT report then it is unlikely that the A9 Dualling MIM UC would see the 5% cap on investment commitment being breached.

The SFT report also sets out two ratios to consider the allocation of this 5% cap across capital investment proposals coming forward across different sectors. At a portfolio level these ratios are intended to support the overall affordability and sustainability of taking forward any future MIM programme and at a project level may act as a guide as to the level of resource required to deliver a certain value of capital investment and around which affordability parameters may be formed . These ratios are:

[112] Source: https://www.scottishfuturestrust.org.uk/storage/uploads/sftoptionsappraisalreportlowres.pdf

[113] Forecast resource budget estimated based on a stated forecast for Total Scottish Government Fiscal Resource 26/27 of £40.4bn which has been rolled forward to 2034/35 assuming annual growth in line with general inflation at 2.0% per the Bank of England target.

- **Cost Multiplier ratio -** Calculated as the ratio of 'total revenue commitment over the entire contract length period' to 'total construction cost'; and
- **Revenue Commitments ratio -** Calculated as the ratio of 'First Year Revenue Commitment' to the 'total construction cost' of the Programme.

Table 52 below presents the value of these ratios for the Programme, based on the costs set out in this Commercial Case. These are shown against the guideline estimates suggested in the SFT report for road sector projects as "informed by data collected and published across the Non Profit Distributing and hub programmes". This analysis indicates that the currently modelled costs of the Programme result in ratios that are above the guideline estimates identified by SFT.

Table 52. SFT affordability test results (based on resource costs including irrecoverable VAT)

	A9 Programme	SFT guideline estimates
Cost multiplier ratio	4.01	3.70
Revenue commitments ratio	12.6%	9-12%

There is some additional pressure on resource commitments vs capital cost for the Programme due to the inclusion of O&M/lifecycle spend on the existing dual sections within the MIM contracts which do not have a corresponding underlying construction cost. Removing this factor from the calculation would have a slight downward impact on the ratios however they would remain above the guideline estimates.

The SFT guidance notes that "the ratio ranges take into account sensitivity analysis on movements in inflation and the cost of private finance noting that the previous revenue funded programmes were contracted at a time of historically low underlying market funding rates". The guidance also recommends that ratios are monitored at key stages of a project in order that the overall sustainability of revenue funded commitments remains affordable and sustainable.

4.5.2.7 Risk considerations

Risk considerations to be taken into account in adopting the MIM Option are set out below:

Risk	**Description**
Impact of cost inflation on packaging strategy and market competition	• DBFO contractors indicated a preference for package sizes in the range of £400m- £600m during initial market consultation, in order to reduce the need to form CJVs and/or the number of parties required in a CJV. • More recent market consultation has indicated that the market has begun to form CJVs to bid for the A9 on the basis of an

	assumption that, if the MIM Option is adopted, this will take the form of procurement of three successive MIM contracts. This aligns with the approach assumed within this Commercial Case and indicates a market acceptance of the scale of contracts this would entail. ● There is a risk that continued cost inflation will reduce the numbers of individual bidders/consortia, should these combine due to the increasing cost of each contract. ● If the final packaging approach fails to align with market preferences/capacity to form suitable join ventures it may result in lack of competition which in turn could put pressure on affordability/value for money.
Risk transfer and balance sheet treatment	● It is expected that there would be mutual interest between SG and the bidder market to achieve an 'off capital budget' treatment. However, post Brexit, there is an uncertainty on the timeline of applicability/validity of ESA10 rules for statistical classification of privately financed projects. ● Change in market preferences on risk transfer during procurement or change in applicable rules/guidance during procurement may make achieving an 'off capital budget' classification more challenging or costly.
Finance availability	● Package sizes need to take into account the risk of not being able to raise competitively priced debt above a certain level due to market concerns regarding the constitutional uncertainty of Scotland's future relationship with the UK.
Interface challenges	● ProjectCos may agree interface agreements between themselves to manage this risk to some extent. However, the scale of the Programme and the number of stakeholders involved (Network Rail, Statutory Undertakers, NMC operator etc.) increases the need for TS's involvement in managing Programme-wide interfaces including with external stakeholders. TS undertaking sufficient advance works may help limit interface challenges to some extent.

Supply chain constraints	• As a result of construction overlap between packages and also due to pressure on resources due to other competing projects in the UK (eg. HS2, Highways England projects etc.), the cost of labour, plant and materials may increase and reduced availability may impact schedule.
Bid Cost Stipends	• All market consultation participants highlighted the high cost of bidding associated with such projects and that bid cost stipends are commonplace in other jurisdictions. An absence of such a stipend on the A9 could see some bidders declining to participate. This has been evidenced on other UK projects recently.
Statutory process delays in gaining consent resulting in delay to Made Orders / GVD and potential challenge to Made Orders	• While this has the potential to delay the start of the procurement process, ongoing work of this nature is normal at pre-procurement stage, is being effectively managed, and generally has a low likelihood of impacting programme or cost. • The project currently presenting the most significant statutory process risk is P2, where the Preferred Route Option has not yet been confirmed. This risk is mitigated by the inclusion of P2 within the final package planned for procurement under the MIM Option. • It is noted that due to the earliest estimated completion date being in late 2033, a relatively minimal length of delay which cannot be mitigated within current programme could result in the completion date moving to early 2034.
Delay in progressing advance works	• In order to reduce risk to construction programmes a package of advance works has been identified and is being taken forward with utility companies and other parties.

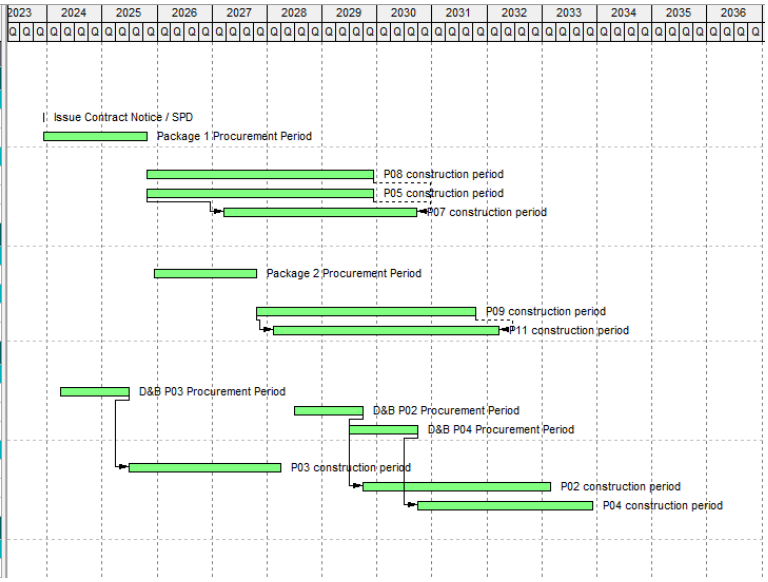
4.5.3 Capital and Resource funded Hybrid Option

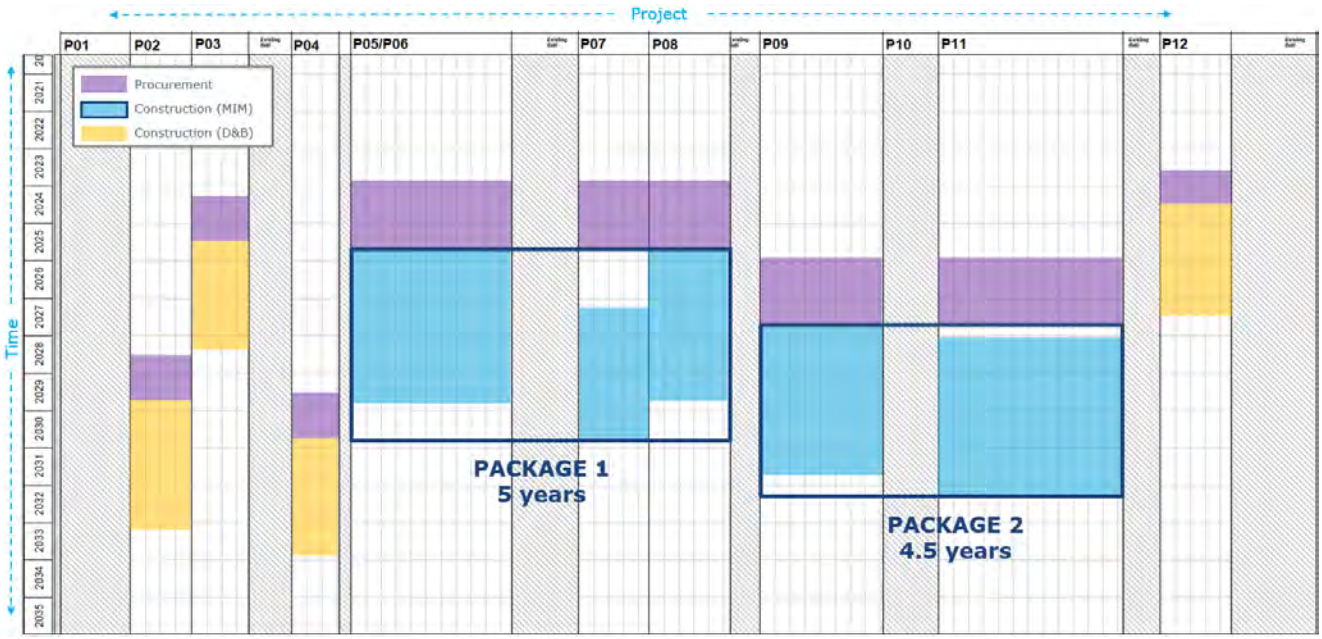
4.5.3.1 Schedule

The following target timeline has been developed for the **Hybrid Option** based on the procurement of Package 1 and Package 2 **as per** the MIM Option **with** the procurement of projects P3, P4 and P2 scheduled to achieve the earliest practicable completion date**.**

Figure 83: Indicative schedule and time-chainage diagrams for Capital and Resource funded Hybrid Option
(note on the time chainage diagram the vertical axis represents time and the horizontal axis represents distance, with the southernmost project on the left and the northernmost project on the right).

Activity Name	Start	Finish
A9 Dualling - Hybrid Option	13-Sep-21 A	30-Nov-63
Package 1 (Central) - MIM	11-Dec-23	24-Sep-30
Procurement	11-Dec-23	22-Oct-25
Issue Contract Notice / SPD	11-Dec-23	11-Dec-23
Package 1 Procurement Period	11-Dec-23	22-Oct-25
Construction	23-Oct-25	24-Sep-30
P08 construction period	23-Oct-25	05-Dec-29*
P05 construction period	23-Oct-25	05-Dec-29*
P07 construction period	18-Mar-27	24-Sep-30*
Package 2 (Northern) - MIM	10-Dec-25	23-Mar-32
Procurement	10-Dec-25	20-Oct-27
Package 2 Procurement Period	10-Dec-25	20-Oct-27
Construction	21-Oct-27	23-Mar-32
P09 construction period	21-Oct-27	20-Oct-31*
P11 construction period	09-Feb-28	23-Mar-32*
Package 3 (Southern) - D&B	02-Apr-24	30-Nov-33
Procurement	02-Apr-24	30-Sep-30
D&B P03 Procurement Period	02-Apr-24	30-Jun-25
D&B P02 Procurement Period	03-Jul-28	28-Sep-29
D&B P04 Procurement Period	02-Jul-29	30-Sep-30
Construction	01-Jul-25	30-Nov-33
P03 construction period	01-Jul-25	31-Mar-28*
P02 construction period	01-Oct-29	28-Feb-33*
P04 construction period	01-Oct-30	30-Nov-33*
O&M Concession	30-Nov-63	30-Nov-63
O&M Concession	30-Nov-63	30-Nov-63
Programme O&M concession end		30-Nov-63

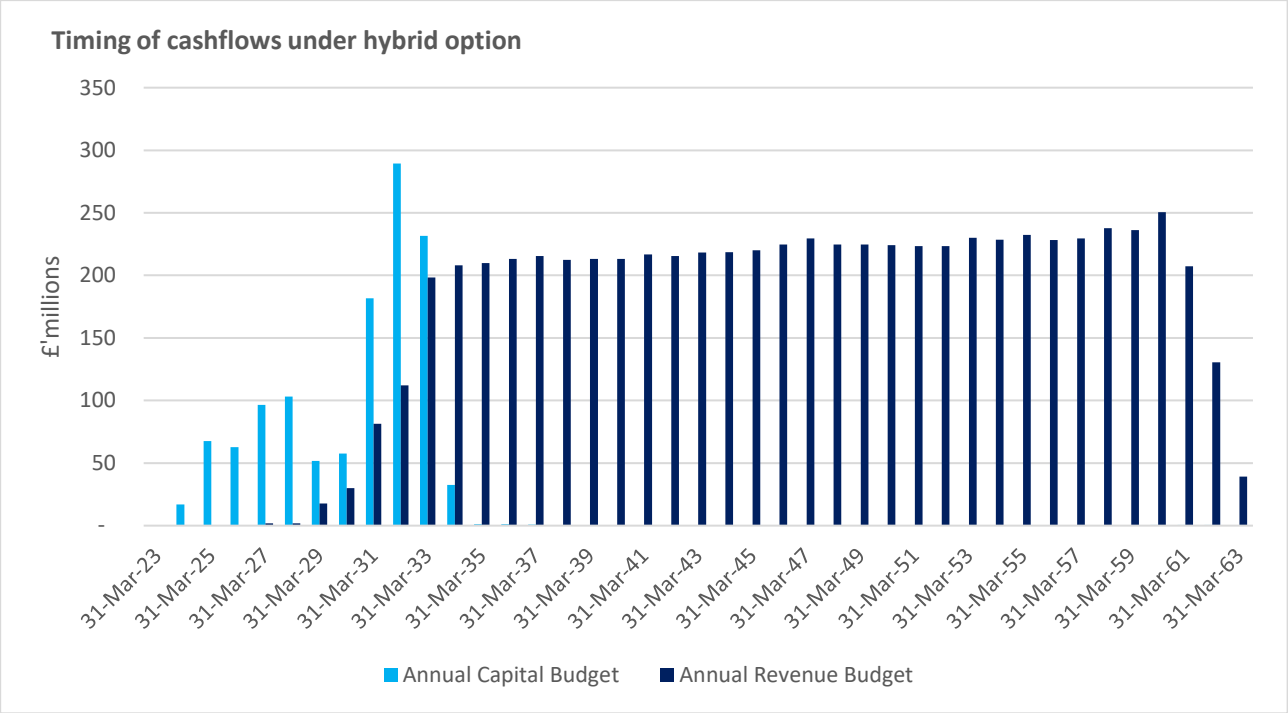




4.5.3.2 Financial Implications

Timing of cash flows and net present costs of the Programme under the Hybrid Option are shown below. The cashflows for this option have been prepared on the same basis as the MIM only and D&B only options as explained above.

Figure 84: Timing of cash flows under Hybrid Option



Overall budgetary impact and capital/resource budget profiles to the end of the construction period of the Hybrid Option are set out in Table 53 and Table 54 below. The detailed breakdown of the full capital and resource budget profiles over the period adopted for comparison of the D&B Option, the MIM Option and the Hybrid Option are set out in Appendix A.

Table 53. Budgetary impact of Hybrid option

Model option	Capital Budget Requirement (Nominal)*	Resource Budget Requirement (Nominal)**	Total Budget Requirement (Nominal)	NPV as at 1st April 2023* *(discount rate: 5.8805%)*
Hybrid Capital funded D&B/ resource funded MIM	**£1,087.9m**	**£6,708.6m**	**£7,796.5m**	**£2,687.6m**

*Inclusive of SG equity investment costs and returns

**Inclusive of benefits from SPV corporation tax

Table 54. Capital and resource budget profile of Hybrid Option to end of construction

FY (01 Apr – 31 Mar)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33
Total capital budget* (£m)	16.9	67.6	62.6	96.4	103.1	51.7	57.6	195.0	287.4	245.3
Annual resource budget** (£m)	0	0	0.4	1.0	0.1	14.2	24.7	75.5	106.7	194.4

4.5.3.3 Public Sector Equity Stake

As above for the MIM option, the NPV figure quoted in Table 8 above includes both the cost of equity investment in the MIM contracts and the return forecast on that investment assuming the same 15% equity investment in each MIM contract. Normal market returns for such investments in PPP projects are in the range of 10-12% nominal Internal Rate of Return, however recent increases in UK interest rates may lead to investors requiring higher returns. It is noted that the decisions on the scale of equity investment and the identity of the investing body lie out with the scope of this Commercial Case.

4.5.3.4 SFT Guideline Affordability Ratios

Table 55 below presents the value of the SFT affordability ratios for the two MIM contracts forming part of the Hybrid Option (these tests are not relevant to the D&B funded contracts). This analysis indicates that the currently modelled costs of the MIM contracts included in the Hybrid Option result in ratios that are above the guideline estimates identified by SFT.

Table 55. SFT affordability test results (based on resource costs including irrecoverable VAT)

	A9 Programme	SFT guideline estimates
Cost multiplier ratio	4.03	3.70
Revenue commitments ratio	12.7%	9-12%

As noted in respect of the MIM Option, for the MIM contracts included in the Hybrid Option there is some additional pressure on resource commitments vs capital cost for the Programme due to the inclusion of O&M/lifecycle spend on the existing dual sections within the MIM contracts which do not have a corresponding underlying construction cost. Removing this factor from the calculation would have a slight downward impact on the ratios however they would remain above the guideline estimates.

As also noted above, the SFT guidance notes that "the ratio ranges take into account sensitivity analysis on movements in inflation and the cost of private finance noting that the previous revenue funded programmes were contracted at a time of historically low underlying market funding rates". The guidance also recommends that ratios are monitored at key stages of a project in order that the overall sustainability of resource funded commitments remains affordable and sustainable.

4.5.3.5 Risk Considerations

Risk considerations to be taken into account in adopting the Hybrid Option include those noted in respect of the D&B Option and the MIM Option as they relate to D&B contracts and MIM contracts included within the Hybrid Option. Additional risks specific to the Hybrid Option are set out below:

Risk	Description
Market appetite for reduced number of MIM contract opportunities	● As the Hybrid Option includes two MIM contracts rather than the three included in the MIM Option, market appetite for participating in bidding for MIM contracts may not be as strong.
Interactions of D&B and MIM contracts	● As the Hybrid Option includes D&B and MIM contracts proceeding concurrently, parties seeking to secure individual D&B contracts may be less willing to participate in delivery of MIM contracts, impacting supply-chain capacity to support those MIM contracts.

4.5.4 Value for Money Analysis of Procurement Options

Appendix B sets out a detailed qualitative and quantitative analysis of the D&B Option, the MIM Option and the Hybrid Option. This analysis has been undertaken in accordance with government guidance including the HM Treasury Green Book. The findings of this analysis are summarised below.

4.5.4.1 Qualitative Analysis

Appraisal of the "Critical Success Factors" identified in Box 9 of HMT Green Book suggests that in overall terms the MIM Option performs slightly better than either the D&B Option or the Hybrid Option. However, the availability of sufficient funding is a significant issue affecting all options. Resolution of this issue ultimately depends on Ministerial views on the priority to be given to the A9 Dualling Programme relative to other programmes and projects, and views on the preferred funding source are likely to be determinative of the preferred option. The most significant difference in Critical Success Factors is in respect of "Potential Achievability", where the use of D&B contracts that provide lower levels of risk transfer are likely to present significant resourcing risks if delivered to the timetable proposed for the D&B Option, with the Hybrid Option considered to provide slightly lower resourcing risks and the MIM Option the lowest resourcing risk.

Appraisal of the "Qualitative Issues when Considering PPP Options" identified in Box 28 of HMT Green Book suggests the MIM contracts are capable of being developed in a manner that effectively addresses the issues noted.

4.5.4.2 Quantitative Analysis

The quantitative analysis compares the capital and resource costs of each option and is summarised on Table 56 below, This indicates that the estimated NPV of the D&B Option is around 13.9% and 11.1% lower than the NPV of the MIM Option and the NPV of the Hybrid Option, respectively.

Table 56. Quantitative comparison of capital and resource costs of the D&B Option, the MIM Option and the Hybrid Option

	NPV of D&B Option (£000)	NPV of MIM Option (£000)	NPV of Hybrid Option (£000)	Difference (£,%) MIM vs D&B	Difference. (£,%) Hybrid vs D&B
Capital Budget	2,034,126	311,675	797,090		
Resource Budget (Unitary Charge incl irrecoverable VAT[114])	354,369	2,563,158	1,963,575		
Sub-Total	**2,388,495**	**2,874,833**	**2,760,665**		
Corporation tax payable to public sector by MIM SPV[115]	N/A	(77,869)	(56,134)		
Sub-Total (pre public sector equity)	**2,388,495**	**2,797,144**	**2,704,530**	**408,650 17.1%**	**316,036 13.2%**
Add: public sector equity investment (15%)	N/A	24,184	17,523		
Less: public sector equity distribution (15%)	N/A	(47,222)	(34,466)		
Total	**2,388,495**	**2,774,107**	**2,687,58**	**385,612 13.9%**	**299,092 11.1%**

[114] The proportion of VAT on the UC estimated as being irrecoverable has been based on analysis undertaken in respect of the position agreed with HMRC on other similar projects.

[115] HMT Green Book (2020) Annex A4, p103 (A4.8) notes that when comparing a PPP option to the PSC, adjustments should be made to reflect the distortions caused by "differences in effective tax rates between the public and private sector". It is recommended that "as far as possible estimates of the effective tax rate based on tax paid" are used. The adjustment applied reflects the forecast tax paid in the shadow bid model using tax treatment considered typical for projects of this type. No equivalent tax adjustment is necessary for the PSC.

4.6 Conclusions

4.6.1 Procurement Options

Assessment of the D&B Option, the MIM Option and the Hybrid Option suggests that any of these options has the potential to be used for delivery of the remaining elements of the Programme. In comparative terms, the following broad conclusions have been developed based on the work set out in this Commercial Case.

- Although market appetite exists for both the D&B Option and the MIM Option and would therefore be expected to exist for the Hybrid Option, parties interested in bidding for the MIM contracts are more advanced in their preparation and planning than is the case for parties interested in bidding for the D&B contracts;

- Although the quantitative comparison of capital and resource costs of the options in terms of NPV shows that the D&B Option is around 13.9% lower than the MIM Option, this difference may reduce appreciably should significant levels of risk materialise under the D&B Option for risks retained by Transport Scotland. The occurrence of significant levels of risk would not be expected to impact on the MIM Option in the same manner, due to the extent of risk transfer required to achieve an off capital budget classification for the MIM contracts. This consideration applies in a proportional manner to the difference in terms of NPV of 11.1% between the D&B Option and the Hybrid Option;

- The D&B Option, the MIM Option and the Hybrid Option each have significantly different capital and resource budget implications, with the nominal cost of the D&B Option being considerably lower than the nominal cost of the MIM Option and the Hybrid Option, and the nominal cost of the Hybrid Option being appreciably lower than the nominal cost of the MIM Option Whilst the capital budget requirements of the D&B Option are significantly higher overall and in peak years than is the case for the MIM Option or the Hybrid Option, the resource budget requirements are significantly higher on an annual basis and overall for the MIM Option than is the case for both the D&B Option and the Hybrid Option, with these requirements being appreciably higher than for the D&B Option;

- The MIM contracts, whether forming part of the MIM Option or the Hybrid Option, are considered to be above the guideline ratios identified by SFT;

- The MIM Option and the Hybrid Option are both estimated to be capable of achieving completion of the Programme around 2 years earlier than is the case for the D&B Option;

- None of the options is capable of being delivered without the allocation of sufficient funding to support preparation, procurement and construction of the remaining elements of the Programme, in line with the corresponding option estimated timetable; and

- In respect of the MIM contracts, it is considered that a MIM (standalone ProjectCos) approach is preferred to a MIM (PSDP) approach, and the estimated timetables in this Commercial Case are based on that approach.

Commercial Case Appendices

Commercial Case Appendix A – Capital and Resource Budget Profiles

Capital and Resource budget profile of D&B Option to end of operations (to nearest £1m per annum)

Cost Element	Nominal Total (£m)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	41/42	42/43	43/44	44/45
Capital Budget	**3,242**	16	51	132	174	207	358	257	316	463	371	349	338	210	-	-	-	-	-	-	-	-	-
Resource Budget	**1,458**	-	0	3	4	5	8	11	12	16	21	22	25	28	30	26	26	25	27	36	41	43	42
Total Budget Requirement	**4,700**	**16**	**52**	**135**	**177**	**211**	**366**	**268**	**327**	**479**	**392**	**372**	**363**	**238**	**30**	**26**	**26**	**25**	**27**	**36**	**41**	**43**	**42**

	45/46	46/47	47/48	48/49	49/50	50/51	51/52	52/53	53/54	54/55	55/56	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65		
Capital Budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Resource Budget	41	43	42	49	43	44	53	54	53	39	47	43	70	75	64	65	85	57	21	21	-	-
Total Budget Requirement	**41**	**43**	**42**	**49**	**43**	**44**	**53**	**54**	**53**	**39**	**47**	**43**	**70**	**75**	**64**	**65**	**85**	**57**	**21**	**21**		

NOTE: Capital and Resource Budget are rounded and to the closest £1m p.a. Total Budget Requirement is accurate.

Capital and Resource budget profile of MIM Option to end of operations (to nearest £1m per annum)

Cost Element	Nominal Total (£m)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	41/42	42/43	43/44
Capital Budget	**439**	20	39	41	42	55	55	48	49	41	24	4	3	3	3	2	0	0	0	0	0	0
SG Equity Investment	**42**	0	0	0	0	0	0	0	13	0	16	12	0	0	0	0	0	0	0	0	0	0
SG Investment Distributions	**(200)**	0	0	0	0	0	0	0	0	(2)	(2)	(4)	(5)	(5)	(5)	(5)	(5)	(5)	(6)	(5)	(5)	(5)
Subtotal Capital Budget	**281**	**20**	**39**	**41**	**42**	**55**	**55**	**48**	**62**	**39**	**37**	**13**	**(2)**	**(2)**	**(3)**	**(3)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**
Unitary Charge	**8,681**	0	0	0	0	0	15	25	73	102	194	250	274	275	276	277	278	278	279	280	281	282
Initial Service Payments	**6**	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Irrecoverable VAT	**485**	0	0	0	0	0	1	2	4	6	11	14	15	15	15	15	16	16	16	16	16	16
Corporation Tax	**(204)**	0	0	0	(1)	(2)	(4)	(5)	(7)	(7)	(7)	(6)	(5)	(5)	(5)	(6)	(6)	(6)	(6)	(6)	(6)	(6)
Subtotal Resource Budget	**8,967**	**0**	**0**	**0**	**0**	**(1)**	**13**	**23**	**72**	**102**	**198**	**258**	**284**	**286**	**286**	**287**	**287**	**288**	**289**	**290**	**290**	**291**
Subtotal Budget Requirement	**9,248**	**20**	**39**	**41**	**42**	**55**	**68**	**71**	**134**	**141**	**236**	**271**	**282**	**283**	**284**	**284**	**282**	**283**	**283**	**285**	**285**	**286**

	44/45	45/46	46/47	47/48	48/49	49/50	50/51	51/52	52/53	53/54	54/55	55/56	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	
Capital Budget	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	-
SG Investment Distributions	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(9)	(16)	(14)	(15)	(6)	(8)	
Subtotal Capital Budget	**(5)**	**(4)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(4)**	**(8)**	**(15)**	**(13)**	**(14)**	**(6)**	**(8)**	
Unitary Charge	283	283	284	285	286	287	288	289	290	291	292	293	294	295	297	298	255	201	96	51	
Irrecoverable VAT	16	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	14	10	5	3	
Corporation Tax	(6)	(6)	(6)	(7)	(7)	(7)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(5)	(4)	(3)	(1)	(1)	
Subtotal Resource Budget	**292**	**293**	**294**	**295**	**296**	**297**	**298**	**299**	**300**	**301**	**302**	**304**	**305**	**306**	**307**	**309**	**265**	**208**	**100**	**53**	
Subtotal Budget Requirement	**287**	**289**	**289**	**290**	**291**	**292**	**293**	**294**	**295**	**296**	**297**	**299**	**300**	**302**	**299**	**294**	**253**	**194**	**94**	**46**	

NOTE: Due to rounding to nearest £1m, nominal totals for Capital and Revenue Budget may not be accurate, however, the Total Resource Requirement is accurate.

Capital and Resource budget profile of Hybrid Option to end of operations (to nearest £1m per annum)

Cost Element	Nominal Total (£m)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	41/42	42/43	43/44
Capital Budget	**1,200**	17	68	63	96	103	52	58	182	289	232	32	1	1	1	0	0	0	0	0	0	0
SG Equity Investment	**29**	0	0	0	0	0	0	0	13	0	16	0	0	0	0	0	0	0	0	0	0	0
SG Investment Distributions	**(141)**	0	0	0	0	0	0	0	0	(2)	(2)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(3)
Subtotal Capital Budget	**1,088**	**17**	**68**	**63**	**96**	**103**	**52**	**58**	**195**	**287**	**245**	**29**	**(3)**	**(3)**	**(3)**	**(3)**	**(4)**	**(4)**	**(4)**	**(4)**	**(4)**	**(3)**
Unitary Charge	**6,085**	0	0	0	0	0	15	25	73	102	184	192	193	193	194	194	195	195	196	197	197	198
Initial Service Payments	**4**	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrecoverable VAT	**340**	0	0	0	0	0	1	2	4	6	10	11	11	11	11	11	11	11	11	11	11	11
Corporation Tax	**(146)**	0	0	0	(1)	(2)	(4)	(5)	(6)	(5)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Package 3 D&B Resource Budget	**426**	0	0	0.4	1	1	1	2	3	4	4	5	6	9	11	7	7	7	10	8	10	10
Subtotal Resource Budget	**6,709**	**0**	**0**	**0**	**1**	**0**	**14**	**25**	**76**	**107**	**194**	**204**	**206**	**209**	**211**	**208**	**209**	**209**	**213**	**211**	**214**	**214**
Subtotal Budget Requirement	**7,796**	**17**	**68**	**63**	**97**	**103**	**66**	**82**	**270**	**394**	**440**	**233**	**204**	**207**	**208**	**205**	**205**	**205**	**209**	**208**	**210**	**211**

	44/45	45/46	46/47	47/48	48/49	49/50	50/51	51/52	52/53	53/54	54/55	55/56	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	
Capital Budget	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SG Investment Distributions	(3)	(3)	(3)	(4)	(4)	(4)	(4)	(3)	(4)	(4)	(4)	(4)	(3)	(3)	(5)	(14)	(12)	(14)	(2)	0	
Subtotal Capital Budget	**(3)**	**(3)**	**(3)**	**(3)**	**(4)**	**(3)**	**(3)**	**(3)**	**(3)**	**(4)**	**(4)**	**(3)**	**(3)**	**(3)**	**(5)**	**(13)**	**(12)**	**(13)**	**(2)**	**0**	
Unitary Charge	198	199	200	200	201	202	202	203	204	204	205	206	207	208	208	209	166	111	6	0	
Irrecoverable VAT	11	11	11	11	11	11	11	11	11	11	11	12	12	12	12	12	9	6	0	0	
Corporation Tax	(4)	(4)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(3)	(2)	(0)	0	
Package 3 D&B Resource Budget	11	14	19	13	13	11	10	9	15	13	16	11	11	19	16	30	32	14	32	13	
Subtotal Resource Budget	**216**	**220**	**225**	**220**	**220**	**220**	**219**	**219**	**225**	**224**	**228**	**224**	**225**	**234**	**232**	**247**	**204**	**129**	**39**	**13**	
Subtotal Budget Requirement	**213**	**217**	**222**	**217**	**217**	**216**	**215**	**215**	**222**	**220**	**224**	**221**	**222**	**231**	**227**	**234**	**193**	**116**	**37**	**13**	

NOTE: Due to rounding to nearest £1m, nominal totals for Capital and Revenue Budget may not be accurate, however, the Total Resource Requirement is accurate.

Commercial Case Appendix B – Commercial Value for Money Analysis

1. Introduction and Approach

1.1 Overview

An initial qualitative and quantitative analysis has been undertaken to assess the comparative commercial Value for Money (VfM) of the D&B Option, the MIM Option and the Hybrid Option described in sections 4.5.1, 4.5.2 and 4.5.3 respectively of the main body of this Commercial Case. In line with guidance, this analysis will be revisited in OBCs and FBCs prepared at relevant stages in support of decision making on individual procurements.

1.2 Guidance referenced

The approach to the commercial VfM analysis set out below has been informed by a number of relevant guidance documents and reference materials:

- National Audit Office Report[116];
- HMT Green Book Guidance[117]; and
- Audit Scotland report "Privately financed Infrastructure investments"[118].

1.2.1 *National Audit Office Report*

On 18 January 2018 the National Audit Office ("NAO") released its report "PFI and PF2". This report presented information on the rationale, costs and benefits of the Private Finance Initiative ("PFI"); the use and impact of PFI/PF2 and the ability to make savings from operational contracts.

In summary the report noted:

- "Any public body procuring an asset which will be privately financed has to compare the VfM of private finance against a PSC [Public Sector Comparator]. It has an incentive to show that private finance offers better value for money than the PSC as unless alternative capital funding is made available to the project the project is unlikely to proceed"
- NAO does "not form a view on the value for money ("VfM") of PFI and PF2" but does observe that "if capital and cash budgets are insufficient, private finance may be the only investment option for public bodies."

1.2.2 *Overview of 2022 Green Book Guidance*

The Green Book contains guidance on how to appraise and evaluate policies, projects and programmes. This includes guidance on appraising public and private finance delivery options. A summary of the key elements of this guidance have been set out below.

[116] Weblink: https://www.nao.org.uk/wp-content/uploads/2018/01/PFI-and-PF2.pdf

[117] Weblink: https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

[118] Weblink: https://www.audit-scotland.gov.uk/uploads/docs/report/2020/nr_200128_npd_hubs.pdf

Annex 4 of HM Treasury's Green Book provide guidance on the two stages of appraisal for any PPP project.

PPP Appraisal at long-list stage

"When considering PPP at the longlist stage, qualitative questions help to identify whether PPP should be the 'preferred way forward' or form part of the shortlist. In addition to assessing a PPP option against critical success factors set out in Chapter 4, the issues in Box 28 should also be considered."

PPP appraisal at shortlist stage

"At the longlist stage, if any form of Public Private Partnership (PPP) option including an outsourcing or insourcing change, is selected as a preferred way forward, then at least one of the viable alternative options must be for comparable direct public provision. This required option is the "Public Sector Comparator," it provides a benchmark as a fair counterfactual that is used to test the social value for money of the preferred way forwards. The public sector comparator should be comparable to the PPP option, in terms of service quality and output and also levels and quality of asset maintenance."

1.2.3 *Overview of Audit Scotland report*

In January 2020, Audit Scotland published its PFI investment report[119], which set out recommendations for the Scottish Government and SFT to consider in adopting a privately financed route for delivering a project. The report considers lessons learned from previous privately financed projects in Scotland and advises that consideration is given to a number of recommendations when making future capital investment decisions including:

- "better document and report how decisions on the use of private finance are made at a programme level, and how the overall combination of programme and project funding aims to maximise investment and benefits;
- better communicate the rationale of project financing and funding decisions to public sector organisations and Parliament;
- continue to monitor existing NPD and hub projects to review if the models are successfully achieving their original aims, and documenting lessons learned;
- set out how the MIM will operate, and establish clear criteria for selecting programmes and monitoring risks;
- develop its public reporting to provide more information on the costs and benefits of using private finance, the management of risks and outcomes delivered, and its contribution to supporting economic policies and growth."

[119] *'Privately financed infrastructure investment The Non-Profit Distributing (NPD) and hub models'(https://www.audit-scotland.gov.uk/report/privately-financed-infrastructure-investment-the-non-profit-distributing-npd-and-hub-models)*

1.3 Approach

Reflecting the guidance available, the consideration of the comparative commercial VfM of the publicly financed D&B Option, which forms the PSC, the privately financed MIM Option and the joint publicly/privately financed Hybrid Option has been assessed by:

- Documenting the details of the D&B Option in line with HM Treasury guidance;
- Qualitative appraisal of the D&B Option, the MIM Option and the Hybrid Option against:
  - Project Critical Success Factors; and
  - the "Box 28" qualitative issues set out in the Green Book including.
- Quantitative appraisal of the total estimated cost of the D&B Option, the MIM Option and the Hybrid Option in Net Present Value (NPV) terms.

2. Appraisal Results

2.1 Qualitative Appraisal

Chapter 4 and Annex A.4 of HM Treasury's Green Book state that a qualitative assessment should be undertaken to determine whether a privately financed solution may be an appropriate option when assessed against the following:

- "Critical Success Factors" (Box 9 of the Green Book); and,
- "Qualitative Issues when Considering PPP Options" (Box 28 of the Green Book).

The following sections set out an analysis of the options against the respective factors highlighted in this guidance.

2.1.1 Commentary against Critical Success Factors identified in the Green Book

The table below reviews the D&B Option, the MIM Option and the Hybrid Option against the Critical Success Factors noted in Chapter 4, Box 9 of the Green Book. A simple Red/Amber/Green rating has been included to help compare the performance of each option, defined as follows:

- Green – assessment of the evidence indicates the option compares well against the considerations specified and may have some relative advantages;
- Amber – assessment of the evidence indicates the option compares reasonably against the considerations specified but may have some challenges and relative disadvantages; and
- Red – assessment of the evidence indicates the option compares poorly against the considerations specified and may have some relative disadvantages

.

Critical Success Factors and description (as taken from Chapter 4, Box 9 of Green Book)		A9 Specific commentary against Green Book questions	D&B Option	MIM Option	Hybrid Option
Strategic fit and meets business needs	How well the option: • meets the agreed spending objectives, related business needs and service requirements • provides holistic fit and synergy with other strategies, programmes and projects	• None of the options can progress to the earliest achievable timescale in the absence of guarantees regarding funding availability. Taking any option forward would require prioritisation of funding against other programmes and projects. • The MIM Option and the Hybrid Option are consistent with Scottish Government's objectives to utilise innovative financing mechanisms where privately financed revenue funded models may be appropriate. Use of the MIM Option or the Hybrid Option would provide additionality of funding and provide an opportunity for capital budgets to be used for programmes or projects less suitable for private finance (e.g. net-zero transition). • MIM is the recommended investment model for privately financed revenue funded projects in Scotland, based on an options appraisal carried out by SFT. However neither the MIM Option nor the Hybrid Option provide the lowest NPV of Cost, and the MIM contracts involved in these options are expected to exceed the guideline ratios identified by SFT. • The D&B Option would create an opportunity to align with wider Scottish Government procurement strategies in relation to splitting larger requirements into smaller lots/contracts, although the scale of these contracts remains large and this has implications for the timescale to completion. • The Hybrid Option would provide a mix of both D&B and MIM contract opportunities for the construction market.			

Critical Success Factors and description (as taken from Chapter 4, Box 9 of Green Book)		A9 Specific commentary against Green Book questions	D&B Option	MIM Option	Hybrid Option
Potential value for money	How well the option: • optimises social value (social, economic and environmental), in terms of the potential costs, benefits and risks	• The MIM contracts in the MIM Option and the Hybrid Option have the potential to provide a larger scale of social value benefits over their longer contract life than the D&B Option, although it is noted that social value could be achieved via the successor contracts applying following the D&B contracts. • Although the NPV of Cost is higher for the MIM Option and the Hybrid Option than for the D&B Option, the outcomes may be different were low likelihood/high impact risks to occur, given the greater level of risk transfer provided by MIM contracts compared to D&B contracts. • Market consultation indicated the MIM option is likely to appeal to large international contractors who expressed an interest in bringing global best practice in low carbon construction and innovation to the A9 in line with a wider focus on Environmental Social and Governance (ESG) issues. Funders also indicated a strong attitude to delivery of robust ESG outcomes providing additional focus on these issues and, in some cases, indicating potential to make additional (grant) funding available to support these outcomes as well as “optimised” funding costs.			

Critical Success Factors and description (as taken from Chapter 4, Box 9 of Green Book)		A9 Specific commentary against Green Book questions	D&B Option	MIM Option	Hybrid Option
Supplier capacity and capability	How well the option: • matches the ability of potential suppliers to deliver the required services • appeals to the supply side	• Recent experience of tendering major roads projects has shown a reduced market appetite for Transport Scotland's standard terms and conditions. Although it is anticipated that modified terms and conditions will be offered to the D&B market, it is considered that there is likely to be a stronger market appetite and capacity for the MIM Option than for the D&B Option. • Many of the projects, if procured as D&B contracts, would require construction joint ventures to be formed due to the scale and value of the contract, thus limiting the potential pool of bidders for individual procurements. • Recent success and competitive interest in the A465 MIM project and Silvertown Tunnel PPP project indicates a good level of market interest in privately financed delivery models among potential suppliers. This level of interest is also demonstrated by the number of consortia that have formed to pursue potential MIM contracts on the A9 Dualling Programme.			

Critical Success Factors and description (as taken from Chapter 4, Box 9 of Green Book)		A9 Specific commentary against Green Book questions	D&B Option	MIM Option	Hybrid Option
Potential affordability	How well the option: • can be financed from available funds • aligns with resourcing constraints	• None of the options can progress to the earliest achievable timescale in the **absence of guarantees regarding funding availability**. Taking any option forward would require prioritisation of funding against other programmes and projects. • The D&B Option is considered to have the lower NPV of Cost. The D&B Option requires large levels of capital funding across its 11 year construction programme. The MIM Option requires large levels of resource funding across the approximately 26 year period that the Unitary Charge is payable in full across all three MIM contracts. Whilst the Hybrid Option requires lower capital funding than the D&B Option and lower resource funding than the MIM Option, it still requires significant capital and resource funding over its construction and operational period. • As noted above in relation to "Strategic Fit", the MIM contracts in the MIM Option and in the Hybrid Option have higher NPVs of Cost and are expected to exceed the guideline ratios identified by SFT. It is considered unlikely that adoption of either the MIM Option or the Hybrid Option for the A9 Dualling Programme would see the 5% cap on investment commitment being breached.			

Critical Success Factors and description (as taken from Chapter 4, Box 9 of Green Book)		A9 Specific commentary against Green Book questions	D&B Option	MIM Option	Hybrid Option
Potential achievability	How well the option: • is likely to be delivered given an organisation's ability to respond to the changes required • matches the level of available skills required for successful delivery	• Transport Scotland has significant experience in the delivery of PPP contracts of the type included in the MIM Option and the Hybrid Option. • Although Transport Scotland also has significant experience in the delivery of D&B contracts, as the form of such contract expected to be included in the D&B Option is likely to change significantly from Transport Scotland's historic approach, this is likely to require significant additional resource and extensive training to deliver, and presents a greater delivery risk. Securing these resources and undertaking this training over the period required to support the D&B Option presents a further risk. • Although governance arrangements can be established to support effective delivery of any of the options the nature of the changes in risk allocation anticipated as required by the D&B Option are likely to increase governance requirements and, in the event of low likelihood/high impact risks occurring, could lead to significant adverse cost outcomes affecting achievability.			

2.1.2 *Commentary against the Box 28 "Qualitative Issues to Consider"*

The table below reviews the MIM contracts included within both the MIM Option and the Hybrid Option against the "Qualitative Issues to Consider when Considering PPP Options" taken from Annex 4, Box 28 of the Green Book. As these issues only apply to PPP options assessment of these issues has not been undertaken in respect of the D&B Option or the D&B contracts of the Hybrid Option.

Issues to Consider (as taken from Annex A4, Box 28 of Green Book)		A9 Specific Commentary against Green Box questions
Ability of the public sector to define and measure objectives and outputs	• Is the responsible organisation satisfied that long-term contracts could be constructed for projects in the sector and that any contractual outputs could be objectively measured and assessed?	• Yes – there is extensive track-record of private finance road projects in the UK and internationally. These projects include payment / performance mechanisms that objectively measure and assess outputs – such as availability, asset condition and compliance with reporting requirements. Transport Scotland has recent experience of delivering privately financed road projects such as M8 and AWPR.
Risk allocation and management of risk by the private sector	• Is the responsible organisation sure that optimal risk allocation and service delivery is achieved through a PPP delivery model (including practical risk transfer to the private sector for better management)? • Is the private sector able to manage the risks associated with the programme more effectively than the responsible organisation? • Have service demand and income risks been fully assessed in the context of proposed contract length for the PPP option?	• Yes – demonstrated by track record of privately financed road projects under similar contractual models. Risk allocation will ultimately need to be tested through the procurement process. The market consultation exercise indicates that the generality of risk allocation under MIM-style contracts remains broadly acceptable/deliverable but that there is an expectation that some specific risks previously wholly transferred may now require an element of risk sharing with the public sector. • Yes – the private sector will have overall control of the integrated design, build, finance, operation and maintenance of the road improvements. This will transfer whole-life cost risk and raising of private finance. • Yes – service demand/need (including resilience and safety factors) have been considered in the context of

Issues to Consider (as taken from Annex A4, Box 28 of Green Book)		A9 Specific Commentary against Green Box questions
		the strategic investment case and as a long-life asset a contract length of construction plus 30 years is considered appropriate for a road. The intention is to adopt an availability-based payment mechanism that would not place unreasonable revenue risk (and associated financial risk) with the private sector in line with other similar UK schemes.
Operational flexibility	• Is the responsible organisation sure that there is an appropriate balance between the degree of operational flexibility desired and long-term contracting based on up-front capital investment? • The responsible organisation should assess the likelihood and nature of variations during the life of the contract. • Can the service be implemented without unacceptably constraining the responsible organisation in Value for Money delivery of future operational objectives?	• Yes – contract will feature output specifications that will allow flexibility to achieve the required outputs. The contract will feature a change mechanism to allow operational flexibility and to provide for some flexibility in requirements over time. • Likelihood and nature of variations considered to be relatively minor due to the nature, long term design history of road assets and the future road usage expectations. This is also evidenced by reference to the low level of variations on recent similar projects such as M8 and AWPR. • Yes – the change mechanism within the contract allows a level of flexibility to change service if needed to align with future operational objectives.
Equity, efficiency and accountability	• Is the responsible organisation sure there are no factors that mean direct service delivery is required, rather than a PPP contract?	• Yes – no factors have been identified that would mean direct service delivery is required.

Issues to Consider (as taken from Annex A4, Box 28 of Green Book)		A9 Specific Commentary against Green Box questions
Innovation by the private sector	• Is there scope for innovation in the design of the solution or the provision of services, including the need for removal of constraints by the public sector organisation?	• Yes - contract will be output driven, therefore allowing bidders to innovate, driving better value for the Scottish Government. Although it is noted that the scope for innovation is limited by the constraints of the site and the conditions that arise from the statutory process
Contract duration and residual value	• Is the responsible organisation sure that the advantages and disadvantages of the proposed contract length are understood? • This consideration should include how far into the future service demand can reasonably be predicted, the expected life of any assets, what the expected use of any asset or service could be post-contract, the residual value of any assets and the affordability of the contract.	• Yes, various alternative contract lengths have been considered from the perspective of major maintenance lifecycles, efficacy and availability of long-tenor private finance and annual affordability before settling on the current contract length. The assumed operational concession length of 30 years was tested during market consultation and considered favourable. • Long-term traffic forecasting has been undertaken to assess service demand over the lifetime of the contract. The contract will include asset handback conditions at contract expiry and mechanisms for the operations to be continued either by Scottish Government or by a future private sector operator.
Incentives and monitoring	• Can the contracts be drafted to avoid perverse incentives for the private sector? Are private sector partners actively able to manage the risks they will hold and be held accountable for doing so?	• Yes – a MIM contract can be developed from the model recently used to deliver the A465 project in Wales, which in turn was developed from NPD and other PPP procurement models used by the Scottish Government in the past. The MIM model is sufficiently

Issues to Consider (as taken from Annex A4, Box 28 of Green Book)		A9 Specific Commentary against Green Box questions
	• The responsible organisation should assess whether incentives for delivery or service levels can be enhanced through the proposed PPP payment mechanism. They should also be satisfied that the service can be independently assessed against an agreed standard.	similar to existing PPP models to maintain market interest, yet sufficiently different to achieve an off balance sheet classification. • The PPP payment mechanism includes incentives to encourage timely completion of construction, availability for road users of the completed roads, and compliance of the ProjectCo with specified service standards. The payment mechanism is broadly similar to those in use on the M80 PPP contract and the M8 and AWPR NPD contracts. The service standards are aligned with those used for Transport Scotland's Network Management Contracts and well established KPIs can be used to monitor and compare service performance under such contracts.
The Market	• Is the private sector capable of delivering the required outcome? • The responsible organisation should assess whether a significant market with sufficient capacity for these services exists in the private sector.	• Market consultation and precedent projects have validated market capability to deliver the required outcomes, in particular A465, M8 and AWPR. • Market consultation has indicated sufficient competitive interest from the large-scale international contractor market to deliver the MIM Option, potentially overcoming some of the constraints within the domestic contractor supply chain and leveraging wider supply chains. • The market consultation has indicated significant market interest in a MIM Option and a number of

Issues to Consider (as taken from Annex A4, Box 28 of Green Book)		A9 Specific Commentary against Green Box questions
	• They should also assess whether there is sufficient market appetite and whether other similar projects have been tendered to market. • Do potential private partners have the financial and managerial resources to manage the risks it is taking on?	consortia have already formed with the financial strength to take on the risks associated with the package sizes envisaged and an ability/willingness to form CJVs. • The PQQ process ensures the potential private partners have the financial and managerial resources to manage the risks being taken on. Market consultation has indicated that consortia recognise these issues and are structing themselves accordingly.
Timescale	• The responsible organisation should ensure that the procurement is feasible within the required timescale and that there is enough time for the resolution of key procurement issues.	• Timescales for procurement have been developed with the support of technical, legal and CaF advisors based on recent similar transactions (A465, M8, AWPR) and validated through the market consultation process as being reasonable. In addition, learnings from previous projects have been incorporated through 'Lessons Learned Workshops' with advisors.
Skills and resources	• The responsible organisation should ensure that it has the management expertise and capacity to define, deliver and support the service throughout the procurement and the subsequent delivery period.	• The Transport Scotland team has been sufficiently resourced with the appropriate management expertise to deliver, support and manage the project through its term. This is further supplemented by specialist PPP procurement knowledge from external legal, commercial & financial and technical advisors. • The MIM is a variant of the NPD model which the Scottish Government, supported by SFT, has used to deliver many similar projects using (e.g. M8 and

Issues to Consider (as taken from Annex A4, Box 28 of Green Book)		A9 Specific Commentary against Green Box questions
		AWPR). As such, Scottish Government has the management expertise to deliver the MIM option.

2.1.3 Qualitative Appraisal Summary

Appraisal of the "Critical Success Factors" suggests that in overall terms the MIM Option performs slightly better than both the D&B Option and the Hybrid Option. However, the availability of sufficient funding is a significant issue affecting all options. Resolution of this issue ultimately depends on Ministerial views on the priority to be given to the A9 Dualling Programme relative to other programmes and projects, and views on the preferred funding source are likely to be determinative of the preferred option. The most significant difference in Critical Success Factors is in respect of "Potential Achievability", where the use of D&B contracts that provide lower levels of risk transfer are likely to present significant resourcing risks if delivered to the timetable proposed for the D&B Option, with the Hybrid Option considered to provide slightly lower resourcing risks and the MIM Option the lowest resourcing risk .

Appraisal of the "Qualitative Issues to Consider" suggests that MIM contracts are capable of being developed in a manner, whether for the MIM Option or the Hybrid Option, that effectively addresses the issues noted.

2.2 Quantitative Appraisal

2.2.1 Key Assumptions

Quantitative commercial VfM for a project is typically calculated by comparing the Net Present Cost of the respective costs of delivery of the options under consideration. The key assumptions and sources of information that inform this assessment are as set out earlier in this Commercial Case and further detail on these is provided in the table below.

2.2.1.1 D&B Option

Key assumptions used in deriving the NPV of Cost of the D&B Option are set out in the table below.

Assumption	Description & Source
Capital costs (core construction costs)	Capital cost estimate for each underlying project has been provided by TS's technical design consultants ("DCs"). These costs include core construction costs, advance works, construction of side roads, land acquisition and utility works. Capital cost estimates prepared by the DCs have a base date of September 2019. These have been inflated to the relevant period based on application of BCIS tender price indices including actual movements in the index to date and a long-term forecast rate thereafter of 4% p.a.
Programme construction duration	It is assumed that the Programme is split into 3 "waves" of construction activity, with 2 to 3 projects generally under construction at any one time. This is based on the current status of projects and feedback from the market. Project construction durations are in line with the Design Manual for Roads and Bridges (DMRB) Stage 3 reports.

O&M costs	In order to enable a fair comparison between options, HMT Green Book requires that the any public sector comparator should be comparable to a PPP option in terms of service quality and output and also levels and quality of asset maintenance. As such the same base O&M costs have been assumed for the D&B Option, the MIM Option and the Hybrid Option. O&M costs are based on DC's estimates (including risk and contingency) profiled over a 30-year operating period following completion of each D&B contract, for equivalence to the contract lifetime of the MIM contracts. O&M cost estimates prepared by the DCs have a base date of September 2019. These have been inflated to the relevant period based on application of CPI indices including actual movements in the index to date and a long-term forecast rate thereafter of 2% p.a. (based on the Bank of England's long term target for CPI).
Lifecycle costs	As for O&M costs, the same base lifecycle costs are assumed for the D&B Option, the MIM Option and the Hybrid Option to enable a like for like comparison. The lifecycle cost assumptions are based on DC's estimates (including risk and contingency) profiled over a 30-year operating period following completion of each D&B contract and include work necessary to achieve an equivalent asset condition as provided by the MIM contracts handback requirements. Lifecycle cost estimates prepared by the DCs have a base date of September 2019. These have been inflated to the relevant period based on application of CPI indices including actual movements in the index to date and a long-term forecast rate thereafter of 2% p.a. (based on the Bank of England's long term target for CPI).
Insurance Costs	Construction phase insurance costs are assumed to be the comparable for all options and are derived based on benchmarking against similar recent road sector projects. Operational phase insurance costs are assumed to be c.30% of the MIM operational insurance costs. This is an estimate agreed between TS and its advisors at this stage and reflects the much lower scope of insurance cover required under a D&B contract where the public sector effectively self-insures the value of the underlying asset.

2.2.2.2 MIM Option

Key assumptions used in deriving the NPV of Cost of the MIM Option are set out in the table below.

Assumption	Description & Source
Concession Length	A 30-year concession length (from construction completion) has been assumed based on recent precedent from other schemes in Scotland and Wales and feedback on funding availability during market testing.
Capital Costs (core construction cost)	Capital cost estimates provided by DCs for each package have been used for the analysis. These costs have been profiled based on the expected construction programmes for these contracts. Capital cost estimates prepared by the DCs have a base date of September 2019. These have been inflated to the relevant period based on application of BCIS tender price indices including actual movements in the index to date and a long-term forecast rate thereafter of 4% p.a.
Construction Duration	4 to 5 years construction duration per package has been assumed based on DCs' advice, market feedback and construction duration observed in the market for similar road PPP projects (adjusted for project complexities).
O&M Costs	O&M costs are based on DC's estimates (including risk) profiled over the 30 year concession period. O&M cost estimates prepared by the DCs have a base date of September 2019. These have been inflated to the relevant period based on application of CPI indices including actual movements in the index to date and a long-term forecast rate thereafter of 2% p.a. (based on the Bank of England's long term target for CPI).
Lifecycle Costs	Lifecycle costs are based on DC's estimates (including risk) profiled over the 30 year concession period. These costs have been profiled based on similar road PPP projects. Lifecycle cost estimates prepared by the DCs have a base date of September 2019. These have been inflated to the relevant period based on application of CPI indices including actual movements in the index to date and a long-term forecast rate thereafter of 2% p.a. (based on the Bank of England's long term target for CPI).
SPV Running and Insurance Costs	These are based on similar road PPP Projects and adjusted to reflect project specifics.
Funding Costs and Structure	The structure of private finance assumed for the MIM Option and the associated funding costs (in terms of debt margins, fees and key covenants) have been benchmarked against similar road PPP projects

<table>
<tr><th>Assumption</th><th>Description & Source</th></tr>
<tr><td></td><td>
recently reaching financial close and direct feedback from the funding market.

Given the rapidly changing macroeconomic environment, bank reference rates have been based on the forward market rates, taken as at 28 September 2023, for the SONIA 6m sterling swap curve forecast at the following dates:

29 October 2025 (Package 1 Financial Close);
27 October 2027 (Package 2 Financial Close); and
31 October 2029 (Package 3 Financial Close).

It is not possible to obtain a forward rate for gilts, but the bond rates assumed in this analysis reflect the current price of the gilts maturing closest to the dates of the forward swap prices. As these are current rates, they build in the market expectation of higher short-term rates and so have been discounted by the same difference that exists between today's swap price and the forward swap prices to get a proxy on the assumption that gilt prices follow the downward trend of swaps. This is an assumption for modelling purposes and not a prediction of future gilt prices and there is no guarantee that gilts will follow swaps or vice versa. They are detailed below.
<table>
<tr><th></th><th>Senior Bank Debt</th><th>Bond Finance</th></tr>
<tr><td>Reference rate</td><td>P1: 4.23%
P2: 4.20%
P3: 4.20%</td><td>P1: 4.75%
P2: 4.72%
P3: 4.74%</td></tr>
<tr><td>Margin (construction)</td><td>1.60%</td><td>1.70%</td></tr>
<tr><td>Margin (operations)</td><td>1.60%</td><td>1.70%</td></tr>
<tr><td>Arrangement fee</td><td>1.25%</td><td>0.75%</td></tr>
<tr><td>Commitment fee</td><td>0.56% (35% of margin)</td><td>0.60% (35% of margin)</td></tr>
</table>
It is noted that future reference rate movements are uncertain (and could be upward or downward) so these will need to be revised at future stages of the business case process to reflect the up to date information available at the time. There is currently no reasonable basis upon which to assume a material change to the suitability of these reference rates in the short term.
</td></tr>
</table>

Assumption	Description & Source
Other	It has also been assumed that capital budget will be made available to fund advance works, construction of side roads, land acquisition and utility works. The profile of these costs are based on CaF and DC assumptions.

2.2.2.3 Hybrid Option

The assumptions for the Hybrid Option are similar in principle to those noted above for the D&B Option and the MIM Option as they apply to D&B contracts and MIM contracts respectively

2.2.2.4 Timing and discount rate assumptions

All of the options have been appraised over a consistent period of time (construction period followed by a 30 year operations period) and are compared on a Net Present Value (NPV) basis using a consistent discount rate, as summarised in the table below.

Assumption	**Comments**
Timing	Construction completion is assumed to be achieved by late 2035 under the D&B Option and by late 2033 under the MIM Option and the Hybrid Option. To provide a like for like comparison all options have been assessed assuming a 30-year operations period following construction completion for each contract, in order to derive net present costs.
NPV discount rate	The net present value is calculated based on the revised guidance set out in the HMT Green Book (2022 edition). The guidance indicates a real discount rate of 3.5% continues to be applied but that forecast nominal cashflows should be deflated using the GDP deflator published in the most recent OBR Fiscal Sustainability Report, currently 2.3% for long time horizons. The resulting nominal discount rate is 5.88%. An NPV base date of 01 April 2023 has been assumed.

2.2.2.5 Risk

Risk allocation assumptions across the three options are summarised in the table below.

Assumption	Comments
D&B Option	Both client retained risk and contractor allocated risk have been included in the capital budget costs for the D&B Option.
MIM Option	Under the MIM option, allocated risk to the contractor has been modelled in the shadow bid model unitary charge, which contributes to the MIM revenue costs, and client contingency for retained risk has been allocated to the MIM capital budget.
Hybrid Option	The above assumptions apply in respect of the D&B contracts and MIM contracts which together form the Hybrid Option.

2.2.2 Comparative Results

The table below summarises the outcomes of the quantitative analysis undertaken at this stage. All figures are expressed in 1 April 2023 prices.

	NPV of D&B Option (£000)	NPV of MIM Option (£000)	NPV of Hybrid Option (£000)	Difference (£,%) MIM vs PSC	Difference. (£,%) Hybrid vs PSC
Capital Budget	2,034,126	311,675	797,090		
Revenue Budget (Unitary Charge incl irrecoverable VAT[120])	354,369	2,563,158	1,963,575		
Sub-Total	**2,388,495**	**2,874,833**	**2,760,665**		
Corporation tax payable to public sector by MIM SPV[121]	N/A	(77,869)	(56,134)		
Sub-Total (pre public sector equity)	**2,388,495**	**2,797,144**	**2,704,530**	**408,650 17.1%**	**316,036 13.2%**
Add: public sector equity investment (15%)	N/A	24,184	17,523		

[120] The proportion of VAT on the UC estimated as being irrecoverable has been based on analysis undertaken in respect of the position agreed with HMRC on other similar projects.

[121] HMT Green Book (2020) Annex A4, p103 (A4.8) notes that when comparing a PPP option to the PSC, adjustments should be made to reflect the distortions caused by "differences in effective tax rates between the public and private sector". It is recommended that "as far as possible estimates of the effective tax rate based on tax paid" are used. The adjustment applied reflects the forecast tax paid in the shadow bid model using tax treatment considered typical for projects of this type. No equivalent tax adjustment is necessary for the PSC.

	NPV of D&B Option (£000)	NPV of MIM Option (£000)	NPV of Hybrid Option (£000)	Difference (£,%) MIM vs PSC	Difference. (£,%) Hybrid vs PSC
Less: public sector equity distribution (15%)	N/A	(47,222)	(34,466)		
Total	**2,388,495**	**2,774,107**	**2,687,58**	**385,612 13.9%**	**299,092 11.1%**

2.2.3 Quantitative Summary

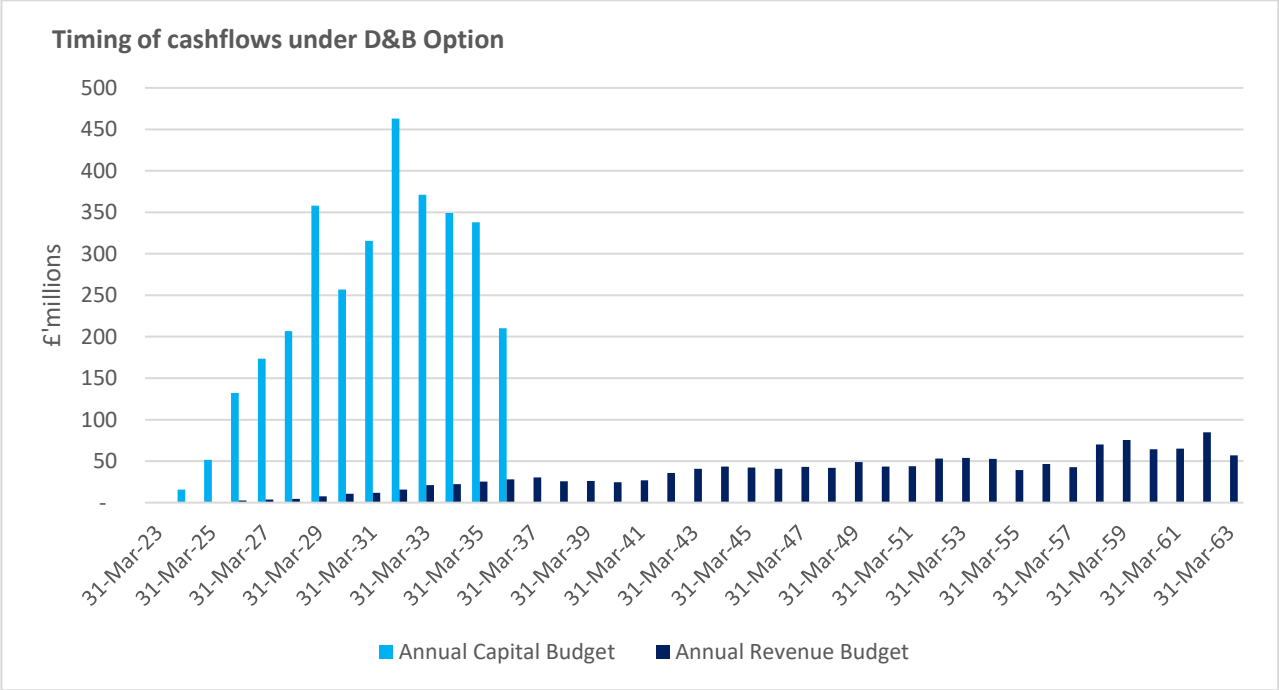
The figures above indicate that:

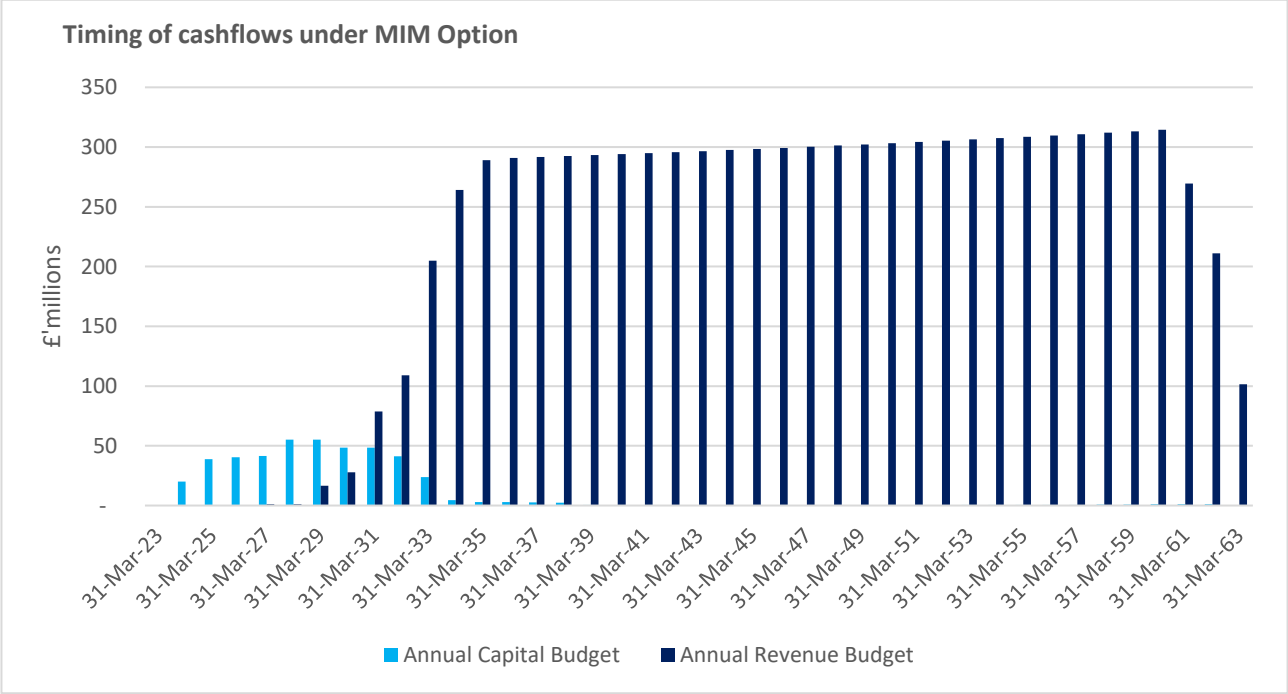
- Completing the Programme by means of the D&B Option is the lowest cost option in NPV terms;
- The MIM Option is the highest cost option, with a difference in cost compared to the D&B Option of c. £385.6m (13.9%) in April 2023 prices, when corporation tax receipts and public sector equity investment and return are included.
- The Hybrid Option is between the two, with a difference in cost compared to the D&B Option of c. £299m (11.1%) in April 2023 prices, when corporation tax receipts and public sector equity investment and return are included.

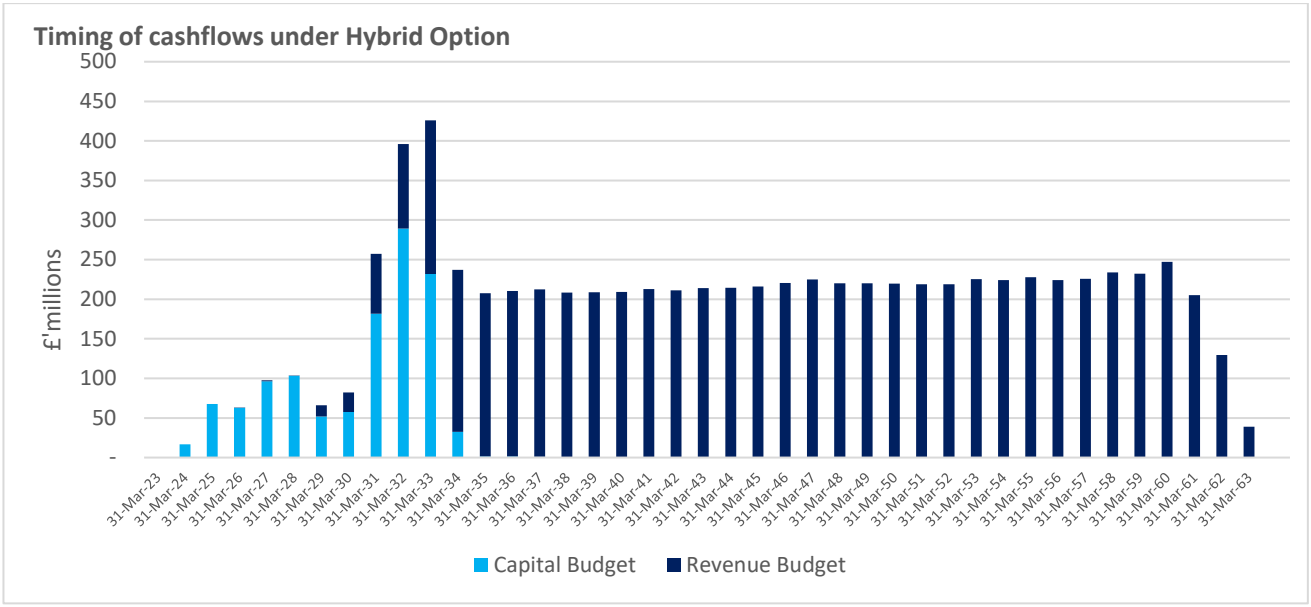
In addition to the difference in costs when considered in terms of NPV, the nominal costs differ significantly due to the timing of the cash outflows from the Scottish Government for delivery of the Programme under each option.

Under a D&B contract, the Scottish Government directly incurs the development and construction costs arising during the construction phase, which, as near-term cash outflows, are not subject to many periods of discounting under the NPV method. By contrast, under a MIM contract, the same upfront construction costs are financed by the private sector and recouped over the 30-year operating concession via the Unitary charge. As the Unitary Charge is paid over time, it is subject to greater discounting under the NPV method, recognising the time value of money. The difference in the profile of payments by the Scottish Government is shown in the charts below for each of the options considered.

Profile of Payments - Charts






Timing of cashflows under Hybrid Option
£'millions
500
450
400
350
300
250
200
150
100
50
-
31-Mar-23
31-Mar-24
31-Mar-25
31-Mar-26
31-Mar-27
31-Mar-28
31-Mar-29
31-Mar-30
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31-Mar-58
31-Mar-59
31-Mar-60
31-Mar-61
31-Mar-62
31-Mar-63
Capital Budget
Revenue Budget

3. Conclusion

The qualitative and quantitative analysis of the comparative commercial VfM offered by the D&B Option, the MIM Option and the Hybrid Option has identified the following findings:

- All options face significant issues in relation to the availability of sufficient funding. Resolution of this issue ultimately depends on Ministerial views on the priority to be given to the A9 Dualling Programme relative to other programmes and projects, and views on the preferred funding source are likely to be determinative of the preferred option.
- The most significant difference in Critical Success Factor is in respect of "Potential Achievability", where the use of D&B contracts that provide lower levels of risk transfer are likely to present significant resourcing risks if delivered to the timetable proposed for the D&B Option, with the Hybrid Option considered to provide slightly lower resourcing risks and the MIM Option the lowest resourcing risk.
- Overall the MIM Option performs slightly better in respect of "Critical Success Factors".
- Appraisal of "Qualitative Issues to Consider" suggests that MIM contracts are capable of being developed in a manner that effectively addresses the issues noted.
- In terms of NPV of Cost, the D&B Option offers a potential quantitative benefit of 13.9% when compared with the MIM Option, including corporation tax and equity investment costs and returns, and 11.1% when compared to the Hybrid Option on the same basis.
- The D&B Option entails significantly higher spend from capital budgets and significantly lower spend from resource budgets over the period assessed.
- The MIM Option entails significantly lower spend from capital budgets and significantly higher spend from resource budgets over the period assessed.
- Although the Hybrid Option entails lower capital funding than the D&B Option and lower resource funding than the MIM Option, it still requires significant levels of funding over the period assessed.
- MIM contracts offer a greater potential for risk transfer to the private sector as compared to the D&B contracts and reduce Transport Scotland's exposure to increased costs due to the occurrence of low likelihood/high impact risks

5 The Financial Case

5.1 Introduction

The Financial Case sets out the financial assessment undertaken of:

- the MIM Option to complete the A9 Dualling Programme via three separate, resource budget funded MIM contracts; and
- for comparison, the Hybrid Option to complete the A9 Dualling Programme, comprising two separate resource budget funded MIM contracts and three separate capital budget funded D&B contracts replacing the Package 3 contract of the above MIM Option.

There are four key sections of this Financial Case setting out the:

- **Section 5.2**: Approach taken to estimating the financial implications of completion of the Programme under a MIM Option;
- **Section 5.3**: Summary of key inputs and assumptions used in the analysis;
- **Section 5.4**: Results of the base case and financial sensitivity analysis for the MIM Option and the Hybrid Option, and;
- **Section 5.5**: Assessment of other financial considerations including budgetary implications.

5.2 Summary of Approach

Under a MIM model, the capital costs of delivering the Programme are paid for as they are incurred during the construction period by the private sector Project Company (ProjectCo). The ProjectCo for each MIM contract would raise a finance package from the private sector to meet these construction costs as they arise. The private sector finance package would include both debt and equity, namely senior debt from commercial banks and/or capital market institutions; mezzanine and/or junior debt from financial investors/consortium members; and equity from the shareholders.

During the operational phase of the Programme, once construction has been completed and the road is opened for use, Transport Scotland would be obliged to make regular service payments to the ProjectCos in the form of a Unitary Charge (UC) where the road meets the contractually agreed availability and performance standards. The UC is a fixed payment from the public sector that varies only with inflation and any deductions levied for failure to meet specified contractual obligations. Within the UC the ProjectCo manages and meets the following costs:

- Repayment of the private sector finance package used to pay for the construction of the asset including repayment of and interest on junior/senior debt and shareholder returns on equity;
- Operating and maintenance costs associated with the asset; and,
- The ProjectCo running costs.

To assess the financial impact of delivering the Programme via a MIM procurement route, a financial model has been developed to estimate the potential cost of bids for the A9 Dualling Programme from the market for each of the three MIM DBFO Packages identified, three for the MIM Option and two for the Hybrid Option. This is known as a 'shadow bid model' and estimates the potential level of UC that would be payable to each ProjectCo over the operational life of the Project. The shadow bid model has been developed by the Programme's Commercial and Financial advisors (CaF) from previous template models that have been successfully utilised as a shadow bid model or live bid model on other similar projects.

The detailed assumptions adopted in the MIM Option base case at this stage in the development of the Programme are set out in section 5.3 below. At this early stage of the Programme's development and with financial close ranging between 2.5-6.5 years away for the MIM Option, and 2.5-4.5 years away for the Hybrid Option, it will be necessary to revisit these assumptions over the course of the business case and procurement process for each MIM Package to ensure they remain valid and reflect ongoing feedback from the market. To reflect this future uncertainty, a number of sensitivities have been performed as set out in section 5.4.3. to consider the potential variability of the UC to changes in key assumptions.

In addition to the cost of the UC to resource budgets, Transport Scotland (TS) will also need to fund a number of delivery costs that will not be covered in the scope of works procured from the MIM contractor. These are covered at section 5.4.

The same core cost inputs as documented below for the MIM Option have also been used for the Hybrid Option. These costs are assumed to be funded through respective capital and resource budgets as they fall due rather than being smoothed out over time through the use of private finance.

5.3 Base Case Assumptions

5.3.1 Overview

The base case shadow bid models have been developed to reflect an expected, or 'most likely' financial case. At this stage, the shadow bid model is mainly influenced by the estimated capital costs of the reference design. The key base case assumptions underpinning the financial model include:

- **Technical assessment of capital costs**: Transport Scotland and its Design Consultants (DCs) have produced a cost estimate (including contractor risk allowance) for delivery of the reference design for each underlying project.
- **Assessment of O&M and lifecycle costs**: O&M and lifecycle cost schedules for delivery of the reference design project have been developed by the Design Consultants;
- **Private Finance Costs**: The key assumptions regarding the cost of private finance have been developed by CaF based on relevant market data points, feedback obtained from ongoing Market Consultation, relevant precedent projects which have most recently reached financial close, and a general analysis of current market conditions; and
- **Macro-economic assumptions**: the key macro-economic assumptions (e.g. long term inflation) have been developed by CaF based on relevant precedent projects, public sector guidance and an analysis of current market conditions;
- **Optimism bias (OB)**: OB has not been included in the base case modelling, which follows normal practice for the assessment of PPPs. The sensitivity analysis contained within this section of the Financial Case replaces the need for OB to be applied separately. Further consideration will be given to both the risk assessment and sensitivity analysis at subsequent OBC stages of each contract in accordance with normal practice.

Further detail of underlying assumptions are set out below.

5.3.2 Timing

PPP contracts of this type typically feature a concession length of between 25-35 years depending on the type of project and the anticipated useful economic life of the underlying asset being procured. Economic

infrastructure (such as roads) is typically constructed to a 50+ years asset life, whereas social infrastructure (such as school and hospital buildings) are assumed to have a much shorter useful economic life of between 20-30 years before requiring significant upgrade work to make them fit for purpose.

The base case shadow bid model assumes a 4-5 year construction period per package, as advised by the DCs based on the underlying technical assessment of each Package. Construction is followed by a 30 year operating concession, reflecting market engagement and previous concession lengths adopted in TS PPP projects, producing an overall concession length of approximately 35 years. Reflecting this, the table below sets out the key dates assumed in the analysis.

Milestone	Package 1	Package 2	Package 3
Financial close	29 Oct 2025	27 Oct 2027	31 Oct 2029
Construction start date	30 Oct 2025	28 Oct 2027	01 Nov 2029
Construction completion date	23 Oct 2030	22 Apr 2032	26 Oct 2033
Full operations phase start date	24 Oct 2030	23 Apr 2032	27 Oct 2033
Full operations phase end date	23 Oct 2060	22 Apr 2062	26 Oct 2063

For the Hybrid Option MIM Packages 1 and 2 remain unchanged and the dates for the three D&B contracts that replace Package 3 of the MM Option are as follows:

Milestone	Project 2	Project 3	Project 4
Construction start date	01 Oct 29	01 Jul 25	01 Oct 30
Construction completion date	28 Feb 33	31 Mar 28	30 Nov 33
Full operations phase start date	01 Mar 33	01 Apr 28	01 Dec 33
Full operations phase end date	28 Feb 63	31 Mar 58	30 Nov 63

5.3.3 Construction Costs

For the purposes of producing the financial appraisal, construction cost inputs to the shadow bid model were developed by the DCs following detailed engineering analysis and discussions with Transport Scotland of the technical requirements for the project. These inputs were profiled on a monthly basis from financial close based on an assumed construction programme developed by the DCs. An inflation curve was applied to this cost profile based on observed movements in the BCIS tender price index followed by a forecast assumption of 4% p.a. based on a review of a range of forecasts by TS and its commercial and financial (CaF) advisers.

FY	20/21	21/22	22/23	23/24	24/25	25/26	2026+
Rate (p.a.)	- 6.2%	6.6%	13.1%	9.1%	4%	4%	4%
Basis	BCIS Actual	BCIS Actual	BCIS Actual	BCIS Actual	Estimated (CaF)	Estimated (CaF)	Estimated (CaF)

The construction costs used in the financial models include allowances for risk but exclude optimism bias and exclude VAT (which should be largely recoverable at the ProjectCo level). However, the financial model does include a working capital facility to account for the financial impact of the timing of potentially large VAT returns being due to/from HMRC during construction.

Where the ProjectCo delivers capital works as part of a MIM contract that it does not ultimately take responsibility for operating and maintaining there is a risk that these do not meet the ESA10 requirements to achieve an off balance sheet classification. Where this were the case, TS would require to have capital budget cover in the year in which the works were completed but would also need to have resource budget available to pay the element of the UC relating to the delivery of these works by the contractor. To avoid such double counting against budgets, and reflecting the approach adopted by the Welsh Government for the A465, it is proposed that works falling into this category will be paid for via a direct capital contribution and are therefore not included in the shadow bid model as costs to be financed by ProjectCo. For the A9 Dualling Programme such cost items include the alterations required to certain Side Roads to deliver the MIM contracts with these Side Roads reverting to respective local authorities for long term O&M upon completion.

The sources and treatment of different items of cost are summarised on the table below.

Line item	Source	Included in financial model
Base cost	DCs	Yes
Profile of costs	DCs	Yes
Inflation	CaF	Yes
Risk	DCs	Yes
Optimism Bias	DCs	No – in line with HMT Green Book guidance, this is only included in costs used for economic analysis. For the purposes of financial modelling the contingency and financial sensitivity analysis undertaken performs a similar function.
Irrecoverable VAT	DCs	No – see section 5.5.2 for further detail as to how irrecoverable VAT is reflected in the MIM model.
Side Roads	DCs	No – paid for via capital contribution and reflected in capital budget estimates

The table below sets out the resulting breakdown of construction costs assumed in the MIM Option base case.

Capital construction cost (base date Q3 2019) [122]	Total (£m)	Package 1 – Central Cost (£m)	Package 2 - Northern Cost (£m)	Package 3 - Southern Cost (£m)
Core capex (excluding side roads)	1,286.7	442.4	494.2	350.1
Project risk	162.0	50.1	54.2	57.7
Total (real terms, Apr 2020)	1,448.7	492.5	548.4	407.8
Inflation (per assumptions noted above)	837.8	235.2	319.2	283.4
Total (nominal terms)	2,286.5	727.7	867.6	691.2

The table below sets out the breakdown of construction costs assumed in the Hybrid Option base case, with a key difference being some incremental inflation on capital costs for the projects in Package 3

[122] Capital cost source: A9P0S-JAC-ZZZ-Z_ZZZZZ_ZZ-MD-MG-0010 all costs 280122.xlsx dated 28-Jan-2022. As a simplifying assumption for financial modelling purposes, and to align with financial years, inflationary uplifts are assumed to arise on each 01 April commencing 01 April 2021.

(projects P2, P3 and P4) due to the longer construction programme where these are taken forward as D&B contracts

Capital construction cost (base date Q3 2019) [123]	Total (£m)	Package 1 – Central Cost (£m)	Package 2 – Northern Cost (£m)	Package 3 – Southern Cost (£m)
Core capex (excluding side roads)	1,309.0	442.4	494.2	372.4
Project risk	194.6	50.1	54.2	90.3
Total (real terms, Apr 2020)	1,503.6	492.5	548.4	462.7
Inflation (per assumptions noted above)	845.9	235.2	319.2	291.5
Total (nominal terms)	2,349.5	727.7	867.6	754.2

As the Programme proceeds greater certainty will be achieved of capital costs for individual elements enabling individual OBCs and FBCs to be prepared at appropriate stages for individual contract procurements.

5.3.4 Operation and Maintenance Costs

The routine operation and maintenance (O&M) and lifecycle costs associated with the project will be the responsibility of ProjectCo and will be covered within the UC. O&M and lifecycle cost estimates have been prepared by the DCs on the basis of keeping the asset in the condition needed to meet the MIM contract service requirements and unlock full payment of the UC. Services assumed to be provided by ProjectCo include:

- Winter maintenance,
- Roads routine maintenance,
- Road pavements lifecycle renewals,
- Structures lifecycle renewals, and
- Ancillaries lifecycle renewals.

There is 136km of new and existing duals between the southern extent of the Pass of Birnam to Tay Crossing project and the northern extent of the Dalraddy to Slochd project. The MIM Option and the Hybrid Option assumes that existing duals sections within the extents of the MIM contracts will be included in the O&M and lifecycle scope for the relevant MIM contract. This assumption will be reviewed in advance of each procurement.

30 year lifecycle costs have been prepared by the DCs on the basis of all of the assets (including any existing duals incorporated within a package) will be of a standard that meets the Services Requirements from the start of the operating period, and that periodic interventions will be required subsequently to maintain the assets in a compliant condition. This may require any necessary remedial works to be undertaken on the existing duals prior to handover to the ProjectCos and the extent of such works will be considered further in advance of each procurement.

[123] Capital cost source: A9P0S-JAC-ZZZ-Z_ZZZZZ_ZZ-MD-MG-0010 all costs 280122.xlsx dated 28-Jan-2022. As a simplifying assumption for financial modelling purposes, and to align with financial years, inflationary uplifts are assumed to arise on each 01 April commencing 01 April 2021.

The nature and timing of intervention varies with type of asset but in general reflects expected rates of deterioration and replacement cycles. Lifecycle costs have been "smoothed" to align with wider market practice for PPP projects of this type which seek to remove some level of volatility in the cost base to reflect the smoothed nature of the UC.

O&M and lifecycle costs have been prepared and profiled by the DCs in real terms at a base date of Q3 2019. A long term assumption of CPI of 2.0% has been assumed in line with the Bank of England target and actual CPI indices from Q3 2019 to date have been applied where these are published and account for recent very high levels of general inflation. These are summarised in the table below. The long-term assumption of 2% p.a. reflects the long term nature of budgeting for these items and the index with which the Unitary Charge is expected to increase in line with inflation (offering a "natural hedge" to indexing underlying cost).

FY	**20/21**	**21/22**	**22/23**	**23/24**	**24/25+**
Rate (p.a.)	0.2%	0.8%	6.4%	10.4%	2%
Basis	BoE Actual	BoE Actual	BoE Actual	BoE Actual	Estimated (CaF, based on long term BoE target)

5.3.5 Other ProjectCo Costs

During both the construction period and the operations period, ProjectCo will incur management costs and insurance costs that will be recovered via the UC. These costs have been estimated based on the experience of other similar projects. These are subject to inflation in line with a long term assumption for CPI of 2.0%.

Bid costs have also been assumed at £8.0m per package which will also be recovered via the UC. This has been estimated based on similar projects and feedback obtained from the market consultation. It is noted that this amount could change if TS elects to make a contribution towards the bid costs incurred by all final tenderers in response to market feedback, which could also include some element of contribution being funded from capital budgets.

5.3.6 Private Finance Structure

The required private sector finance package is likely to come from various private sector sources including banks, institutional investors (such as pension funds and insurance companies), contractor investment and financial investors. The amount contributed by each source will vary across bidders and will depend on the preferred approach of the entities involved and on negotiations between the debt providers and equity providers.

The shadow bid model assumes a split between senior debt and equity of 92:8 respectively which is in line with wider market practice and feedback from the market consultation exercise.

Following feedback from the market consultation exercise and reflecting recent precedent set by other similar projects (including the recent A465 project in Wales) a "hybrid" model for raising senior debt has been assumed. This consists of a senior long-term debt facility sourced from the bank market (c.40% of senior debt requirement) and a long-tenor bond facility (comprising the remaining c.60% of senior debt

requirement) assumed to be sourced from institutional investors. This hybrid approach to senior debt takes into account that recent market developments for sterling financed infrastructure projects have seen a shift away from bank debt and towards capital markets as the principal form of senior debt financing. The primary reason for this relates to the respective appetites of bank debt and capital market providers for long term exposures.

Equity is assumed to comprise mainly of a subordinated shareholder loan with a very small (pinpoint) amount of shareholder capital. The Scottish Government will have an option to contribute up to 20% of the equity investment (maximum allowed under ESA10 rules).

The base case shadow bid models assume that an equity bridge facility is used to defer the investment of the shareholder loan until the end of construction period. An equity bridge is commonly used on major infrastructure projects as a form of bridging loan to reduce the overall cost of finance by deferring the drawdown of the more expensive long-term shareholder loan. Following the collapse of Carillion there has been some debate in finance markets as to whether equity bridge loans will continue to be as readily available to all contractors going forward. This is due to potential difficulties faced by some contractors in providing bonding/letter of credit support to the equity bridge provider to secure their deferred equity/subordinated debt obligations. At the current time it is understood that the pool of potential bidders for a MIM is likely to comprise large international contractors and in this context the deliverability of an equity bridge approach (either externally financed or self-provided) is considered reasonable.
A sensitivity analysis of changes in the cost of finance has been set out in section 5.4.3 to reflect the potential impact of different solutions emerging or financial markets changing compared to the assumptions currently made.

5.3.7 Financing Costs and Assumptions

The base case shadow bid models each reflect the private finance structure set out above. The key associated funding terms and costs of this structure are summarised below and have been developed by CaF based on relevant market data points, feedback obtained from market consultation, relevant precedent projects to recently reach financial close and a general analysis of current market conditions.

General financing assumptions:

- Gearing (the proportion of debt to equity used in financing the project) of 92:8; and
- A blended, nominal internal rate of return (IRR) of 11-12% for risk capital providers.

Senior Debt Financing Assumptions	**Senior bank debt**	**Bond finance**
Reference rate	*P1: 4.13%* *P2: 4.10%* *P3: 4.10%*	*P1: 4.75%* *P2: 4.72%* *P3: 4.74%*
Margin (construction)	1.60%	1.70%
Margin (operations)	1.60%	1.70%
Arrangement fee	1.25%	0.75%
Commitment fee	0.56% (35% of margin)	0.60% (35% of margin)

Given the rapidly changing macroeconomic environment, bank reference rate assumptions adopted in the base case have been based on the forward market rates, taken as at 28 September 2023, for the SONIA 6m sterling swap curve forecast at the following dates:

- 29 October 2025 (Package 1 Financial Close);
- 27 October 2027 (Package 2 Financial Close); and
- 31 October 2029 (Package 3 Financial Close).

It is not possible to obtain a forward rate for gilts, but the bond rates adopted in the base case reflect the current price of the gilts maturing closest to the dates of the forward swap prices. As these are current rates, they build in the market expectation of higher short-term rates and so have been discounted by the same difference that exists between today's swap price and the forward swap prices for the bank debt to get a proxy on the assumption that gilt prices follow the downward trend of swaps. This is an assumption for modelling purposes and not a prediction of future gilt prices and there is no guarantee that gilts will follow swaps or vice versa.

The margins and fees assumed on the senior bank debt and bond finance are reflective of current market conditions and reflect recent precedents such as A465 and Silvertown Tunnel.

It is noted that future reference rate movements and debt pricing are particularly uncertain at the current time and could be either upward or downward over the forecast time horizons to financial close for the respective MIM packages. An interest rate sensitivity of +1.0% and +/- 0.5% is therefore set out in section 5.4.3 to illustrate the potential impact of developments in finance markets over time from the assumed market terms set out above to inform budgetary planning and contingency.

5.3.8 Phasing of the Unitary Charge

In line with market practice, and in order to improve cash flow and accordingly reduce financing costs, a proportion of the UC can be paid as key sections of the road is completed and available for use rather than waiting until full completion before any payments are made.

Phased release of the UC is based on the granting of Permits to Use (PTUs) for completed sections of the road. The amount of UC released at each PTU reflects the pro rata share of total capex attributed to the completed section. The modelling undertaken assumes a phased payment of the Unitary Charge based on a series of PTUs for each package advised by the DCs. These will continue to be assessed as part of the OBC for each Package.

The phased payment of the UC also makes a contribution to the contractor’s costs of delivering services on the network during the construction period (restricted services on sections affected by new works as well as full services on sections of existing dual carriageway included in the MIM contract).

5.3.9 Indexation of the Unitary Charge

A proportion of the UC is indexed in line with CPI assumed at 2.0% for the life of the project in line with the formal Bank of England inflation target. The proportion of the UC subject to indexation has been set at a level which reflects the split between underlying costs in the model that are unindexed (being the cost of servicing and repaying debt) and indexed (being O&M and Lifecycle costs). This is intended to achieve a

"natural hedge" for the contractor against future movements in inflation by matching its indexed income to its indexed costs and is consistent with market practice.

Based on this approach, approximately 9-12% of the UC is subject to indexation in the base case models for each package.

5.3.10 Tax

It has been assumed in the analysis that any profits made by the ProjectCo would be subject to Corporation Tax at the prevailing rate and this has been accounted for within the financial analysis.

5.3.11 Capital Budget Costs not allowed for in the Shadow Bid Model

The shadow bid model only incorporates the cost of works procured from ProjectCo and funded by the UC due to the contractor over the life of the project under the MIM model.

There are a number of costs not incorporated in the inputs to the shadow bid model which are therefore not reflected in the UC reported, but which will instead be met by Transport Scotland's capital budgets. Such costs include the following items, estimated costs of which have been provided by TS and the DCs:

- Side roads, Non-Motorised User routes and private access roads;
- Public Utilities direct payments;
- Land Acquisition;
- Design costs;
- Ground Investigations;
- Client sponsored Advance/Enabling Works (including some Statutory Utility Diversions);
- Planning Fees and Other Statutory Consent related costs;
- Impact of any client retained risks (e.g. archaeological discoveries, adverse weather);
- Site Supervision;
- Adviser costs; and
- Long term contract management costs.

The budgeting requirements of both the UC and the cost items set out above is taken into consideration in the results below.

5.4 Results and Sensitivities

This section sets out the outcome of the Base Case shadow bid model analysis and the estimated capital budget costs.

A selection of upside and downside sensitivities to the shadow bid model, intended to demonstrate the impact of changing key financial assumptions, have also been provided to indicate potential variability in the UC given the timescales to Financial Close and potential uncertainty around the assumptions made prior to procurement.

5.4.1 MIM Option Base Case

5.4.1.1 MIM Option Resource Budget

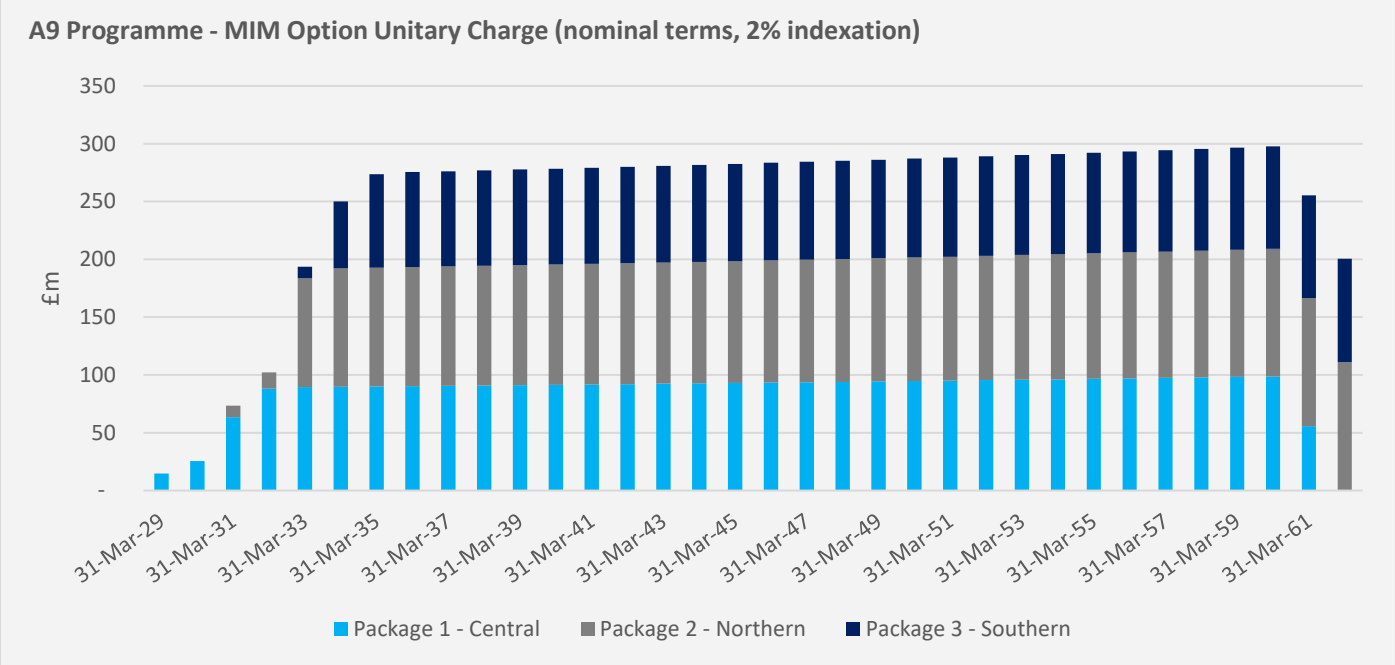
The base real terms UC (excl VAT) in Apr-2023 terms covering all three MIM packages is £267.1m per annum. A steady state UC is achieved in FY34/35 once all packages are in full operations phase. In FY34/35, the nominal UC (i.e. including inflation) is £272.4m (excluding irrecoverable VAT and Initial Services Payments).

The table below summarises the key outcomes of the Base Case prepared adopting the assumptions documented above.

MIM Option Base Case Assumptions	Total (£m)	Package 1 (Central) Cost (£m)	Package 2 (Northern) Cost (£m)	Package 3 (Southern) Cost (£m)
Construction Period Cost inputs (capex, bid costs, insurance costs, restricted service costs) (nominal outturn)[124]	2,399.0	768.7	906.9	723.4
O&M cost inputs (nominal outturn)	730.5	279.8	278.6	172.1
Lifecycle cost inputs (nominal outturn)	620.6	231.4	167.5	221.7
SPV operating cost inputs (nominal outturn)	281.9	91.2	93.9	96.8
Annual Unitary Charge (ex.VAT) (p.a. real terms, 01 Apr 2023)	267.1	87.3	100.2	79.6
Annual Unitary Charge (ex.VAT) (nominal – first full financial year per package)	n/a	88.2 (FY31/32)	102.5 (FY33/34)	80.8 (FY34/35)
Total Annual Unitary Charge (ex.VAT) (nominal - FY34/35 – first full operational year for A9 Programme)	273.6	90.1	102.7	80.8
Net present Value of Total Unitary Charge (ex.VAT) (including ISP and excluding irrecoverable VAT, base date Apr 2023, discount rate 5.8805%)	2,427.1	879.0	887.4	660.7
Net Present Value of Irrecoverable VAT on UC (base date Apr 2023, discount rate 5.8805%)	136.1	55.3	43.9	36.9
Net Present Value of resource budget requirement (Unitary Charge plus ISP and irrecoverable VAT, base date Apr 2023, discount rate 5.8805%)	2,563.2	934.3	931.3	697.6

The figure below sets out the profile of the forecast UC over time, excluding VAT, based on an assumed forecast inflation rate of 2% applied to the indexed portion of the UC for each package.

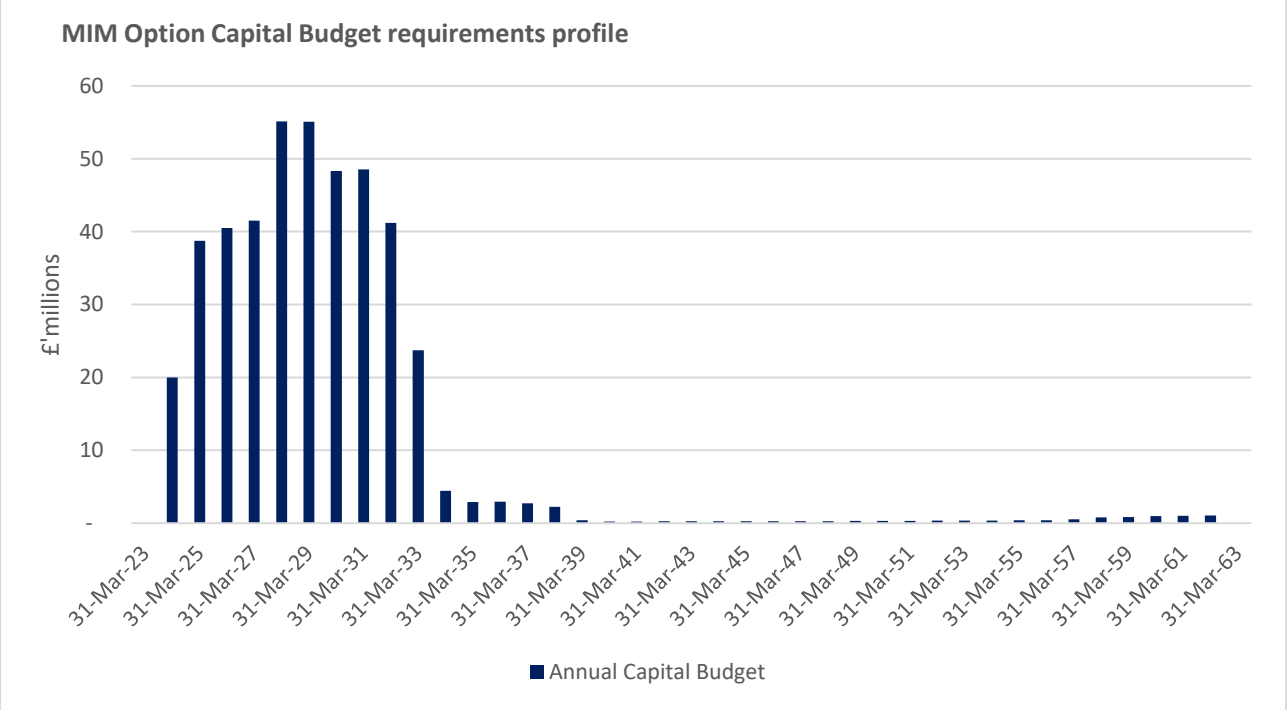
[124] includes construction cost, restricted services, SPV management costs, insurance and bid costs



Phased payment of the Package 1 UC commences in FY28/29 (£14.8m) however the first full payment for Package 1 of £88.2m is in FY31/32. The payment increases incrementally each year as packages enter into the operations period. By FY34/35, the first full UC of £273.6m is payable. Due to the indexing of the UC by 2% per annum, the UC peaks in FY59/60 at £297.8m. By FY60/61, payments begin reducing as packages approach the end of their concession period, with all payments ceasing by FY63/64.

5.4.1.2 MIM Option Capital Budget

Total capital budget costs for the Programme in nominal terms are £438.8m, including irrecoverable VAT, with a Net Present Value of £311.7m (base date Apr 2023, discount rate 5.8805%). The graph below summarises the profile of the Capital Budget of the MIM Option Base Case over the full period.


MIM Option Capital Budget requirements profile
60
50
40
30
20
10
-
£'millions
31-Mar-23
31-Mar-25
31-Mar-27
31-Mar-29
31-Mar-31
31-Mar-33
31-Mar-35
31-Mar-37
31-Mar-39
31-Mar-41
31-Mar-43
31-Mar-45
31-Mar-47
31-Mar-49
31-Mar-51
31-Mar-53
31-Mar-55
31-Mar-57
31-Mar-59
31-Mar-61
31-Mar-63
Annual Capital Budget

5.4.1.3 MIM Option Capital and Resource Budget over Contract Lifetime

The table below sets out in nominal terms the capital and resource budget costs over the lifetime of the MIM contracts.

Cost Element	Nominal Total (£m)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	41/42	42/43	43/44
Capital Budget	439	20	39	41	42	55	55	48	49	41	24	4	3	3	3	2	0	0	0	0	0	0
SG Equity Investment	42	0	0	0	0	0	0	0	13	0	16	12	0	0	0	0	0	0	0	0	0	0
SG Investment Distributions	(200)	0	0	0	0	0	0	0	0	(2)	(2)	(4)	(5)	(5)	(5)	(5)	(5)	(5)	(6)	(5)	(5)	(5)
Subtotal Capital Budget	**281**	**20**	**39**	**41**	**42**	**55**	**55**	**48**	**62**	**39**	**37**	**13**	**(2)**	**(2)**	**(3)**	**(3)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**
Unitary Charge	8,681	0	0	0	0	0	15	25	73	102	194	250	274	275	276	277	278	278	279	280	281	282
Initial Service Payments	6	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Irrecoverable VAT	485	0	0	0	0	0	1	2	4	6	11	14	15	15	15	15	16	16	16	16	16	16
Corporation Tax	(204)	0	0	0	(1)	(2)	(4)	(5)	(7)	(7)	(7)	(6)	(5)	(5)	(5)	(6)	(6)	(6)	(6)	(6)	(6)	(6)
SG Investment Distributions	(200)	0	0	0	0	0	0	0	0	(2)	(2)	(4)	(5)	(5)	(5)	(5)	(5)	(5)	(6)	(5)	(5)	(5)
Subtotal Resource Budget	**8,967**	**0**	**0**	**0**	**0**	**(1)**	**13**	**23**	**72**	**102**	**198**	**258**	**284**	**286**	**286**	**287**	**287**	**288**	**289**	**290**	**290**	**291**
Subtotal Budget Requirement	**9,248**	**20**	**39**	**41**	**42**	**55**	**68**	**71**	**134**	**141**	**236**	**271**	**282**	**283**	**284**	**284**	**282**	**283**	**283**	**285**	**285**	**286**

	44/45	45/46	46/47	47/48	48/49	49/50	50/51	51/52	52/53	53/54	54/55	55/56	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	
Capital Budget	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	
SG Investment Distributions	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(9)	(16)	(14)	(15)	(6)	(8)	
Subtotal Capital Budget	**(5)**	**(4)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(4)**	**(8)**	**(15)**	**(13)**	**(14)**	**(6)**	**(8)**	
Unitary Charge	283	283	284	285	286	287	288	289	290	291	292	293	294	295	297	298	255	201	96	51	
Irrecoverable VAT	16	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	14	10	5	3	
Corporation Tax	(6)	(6)	(6)	(7)	(7)	(7)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(5)	(4)	(3)	(1)	(1)	
Subtotal Resource Budget	**292**	**293**	**294**	**295**	**296**	**297**	**298**	**299**	**300**	**301**	**302**	**304**	**305**	**306**	**307**	**309**	**265**	**208**	**100**	**53**	
Subtotal Budget Requirement	**287**	**289**	**289**	**290**	**291**	**292**	**293**	**294**	**295**	**296**	**297**	**299**	**300**	**302**	**299**	**294**	**253**	**194**	**94**	**46**	

NOTE: Due to rounding to nearest £1m, nominal totals for Capital and Revenue Budget may not be accurate, however, the Total Resource Requirement is accurate.

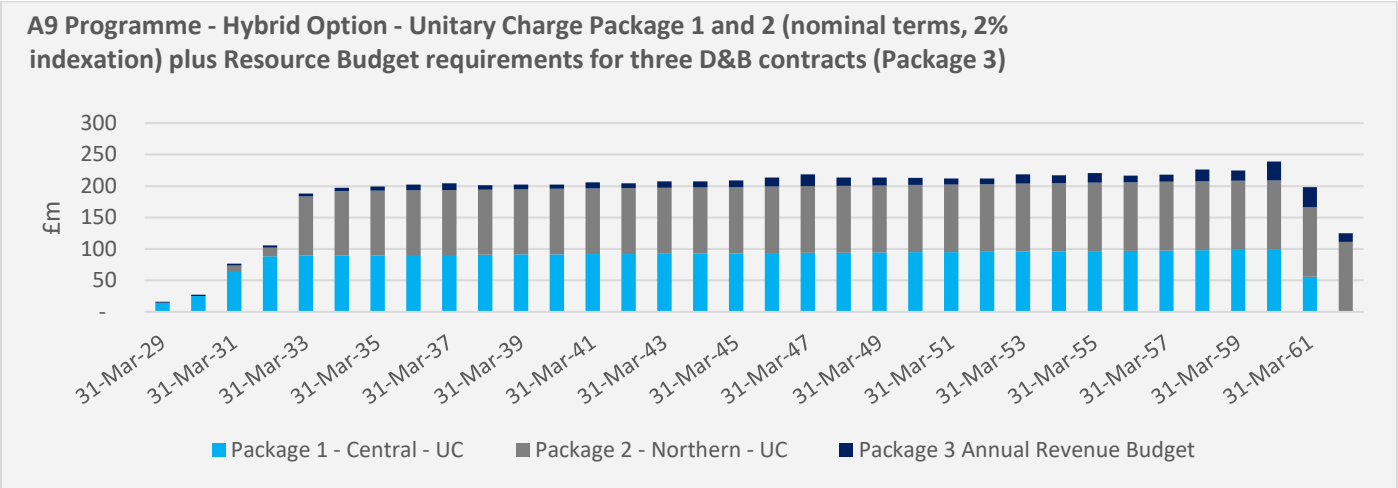
5.4.2 Hybrid Option Base Case

5.4.2.1 Hybrid Option Resource Budget

The resource budget costs for the Hybrid Option mirror the results for the Package 1 & 2 MIM Option and in addition include the O&M costs for the three D&B contracts that replace Package 3 of the MIM Option. The key results as follows:

	Hybrid Total (£m)	Package 1 MIM (£m)	Package 2 MIM (£m)	Projects 2,3,4 D&B (£m)
Resource Budget O&M & Lifecycle costs (nominal outturn)	425.6	N/A	N/A	425.6
Annual Unitary Charge (p.a. real terms, 01 Apr 2023)	187.5	87.3	100.2	N/A
Annual Unitary Charge (nominal – first full financial year per package)	n/a	88.2 (FY31/32)	102.5 (FY33/34)	N/A
Total Annual Unitary Charge (nominal - FY33/34 – first full operational year for A9 Programme)	192.3	89.8	102.5	N/A
Net present Value of Unitary Charge (including ISP and excluding irrecoverable VAT, base date Apr 2023, discount rate 5.8805%)	1,766.4	879.0	887.4	N/A
Net Present Value of Irrecoverable VAT on UC (base date Apr 2023, discount rate 5.8805%)	99.2	55.3	43.9	N/A
Net Present Value of total resource budget requirement (UC and O&M & Lifecycle Costs) (Unitary Charge plus ISP and irrecoverable VAT, base date Apr 2023, discount rate 5.8805%)	1,963.6	934.3	931.3	97.9

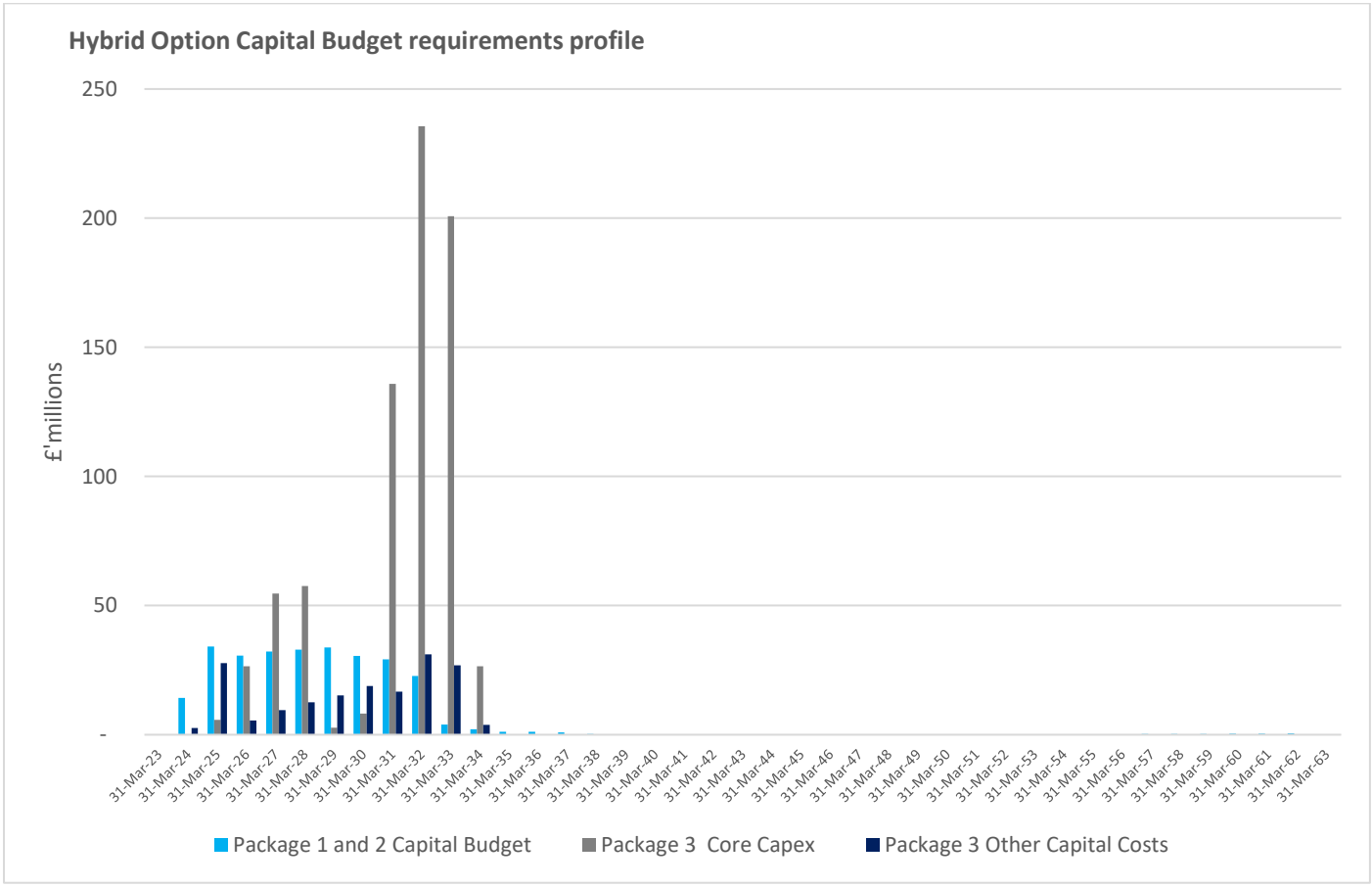
The figure below sets out the profile of the forecast UC over time, excluding VAT, based on an assumed forecast inflation rate of 2% applied to the indexed portion of the UC for each package.



UC payments for the Hybrid Option commence in FY28/29 (£14.8m) with the first full year of UC in FY33/34 of £192.3m. The indexed portion of the UC (c.9-12%) increases at 2% per annum and peaks in FY59/60 at £209.1m.

5.4.2.2 Hybrid Option Capital Budget

Total capital budget costs for the Hybrid Option comprise the capital costs that are not delivered by the MIM contractor and so incorporated in the UC for packages 1 & 2 (e.g. advance works) plus the capital costs of constructing the projects P2, P3 and P4- (that comprise Package 3 of the MIM Option) as three D&B contracts. Total capital budget costs in nominal terms are £1,088m (including irrecoverable VAT) and are substantially incurred between 2024 and 2034. The Net Present Value of these costs is £797.1m (base date Apr 2023, discount rate 5.8805%). The graph below summarises the profile of the Capital Budget of the Hybrid Option Base Case over the full period.


Hybrid Option Capital Budget requirements profile
250
200
150
100
50
-
£'millions
31-Mar-23
31-Mar-24
31-Mar-25
31-Mar-26
31-Mar-27
31-Mar-28
31-Mar-29
31-Mar-30
31-Mar-31
31-Mar-32
31-Mar-33
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31-Mar-55
31-Mar-56
31-Mar-57
31-Mar-58
31-Mar-59
31-Mar-60
31-Mar-61
31-Mar-62
31-Mar-63
Package 1 and 2 Capital Budget
Package 3 Core Capex
Package 3 Other Capital Costs

5.4.2.3 Hybrid Option Capital and Resource Budget over Contract Lifetime

The table below sets out in nominal terms the capital and resource budget costs over the lifetime of the Hybrid Option contracts.

Cost Element	Nominal Total (£m)	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	41/42	42/43	43/44
Capital Budget	**1,200**	17	68	63	96	103	52	58	182	289	232	32	1	1	1	0	0	0	0	0	0	0
SG Equity Investment	**29**	0	0	0	0	0	0	0	13	0	16	0	0	0	0	0	0	0	0	0	0	0
SG Investment Distributions	**(141)**	0	0	0	0	0	0	0	0	(2)	(2)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(3)
Subtotal Capital Budget	**1,088**	**17**	**68**	**63**	**96**	**103**	**52**	**58**	**195**	**287**	**245**	**29**	**(3)**	**(3)**	**(3)**	**(3)**	**(4)**	**(4)**	**(4)**	**(4)**	**(4)**	**(3)**
Unitary Charge	**6,085**	0	0	0	0	0	15	25	73	102	184	192	193	193	194	194	195	195	196	197	197	198
Initial Service Payments	**4**	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrecoverable VAT	**340**	0	0	0	0	0	1	2	4	6	10	11	11	11	11	11	11	11	11	11	11	11
Corporation Tax	**(146)**	0	0	0	(1)	(2)	(4)	(5)	(6)	(5)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Package 3 D&B Resource Budget	**426**	0	0	0.4	1	1	1	2	3	4	4	5	6	9	11	7	7	7	10	8	10	10
Subtotal Resource Budget	**6,709**	**0**	**0**	**0**	**1**	**0**	**14**	**25**	**76**	**107**	**194**	**204**	**206**	**209**	**211**	**208**	**209**	**209**	**213**	**211**	**214**	**214**
Subtotal Budget Requirement	**7,796**	**17**	**68**	**63**	**97**	**103**	**66**	**82**	**270**	**394**	**440**	**233**	**204**	**207**	**208**	**205**	**205**	**205**	**209**	**208**	**210**	**211**

	44/45	45/46	46/47	47/48	48/49	49/50	50/51	51/52	52/53	53/54	54/55	55/56	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	
Capital Budget	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
SG Investment Distributions	(3)	(3)	(3)	(4)	(4)	(4)	(4)	(3)	(4)	(4)	(4)	(4)	(3)	(3)	(5)	(14)	(12)	(14)	(2)	0	
Subtotal Capital Budget	**(3)**	**(3)**	**(3)**	**(3)**	**(4)**	**(3)**	**(3)**	**(3)**	**(3)**	**(4)**	**(4)**	**(3)**	**(3)**	**(3)**	**(5)**	**(13)**	**(12)**	**(13)**	**(2)**	**0**	
Unitary Charge	198	199	200	200	201	202	202	203	204	204	205	206	207	208	208	209	166	111	6	0	
Irrecoverable VAT	11	11	11	11	11	11	11	11	11	11	11	12	12	12	12	12	9	6	0	0	
Corporation Tax	(4)	(4)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(3)	(2)	(0)	0	
Package 3 D&B Resource Budget	11	14	19	13	13	11	10	9	15	13	16	11	11	19	16	30	32	14	32	13	
Subtotal Resource Budget	216	220	225	220	220	220	219	219	225	224	228	224	225	234	232	247	204	129	39	13	
Subtotal Budget Requirement	**213**	**217**	**222**	**217**	**217**	**216**	**215**	**215**	**222**	**220**	**224**	**221**	**222**	**231**	**227**	**234**	**193**	**116**	**37**	**13**	

NOTE: Due to rounding to nearest £1m, nominal totals for Capital and Revenue Budget may not be accurate, however, the Total Resource Requirement is accurate.

5.4.3 Unitary Charge Sensitivities

A range of sensitivities have been presented below in respect of the UC estimates forecast by the shadow bid model for both the MIM Option (all three MIM packages) and the Hybrid Option (MIM packages 1 and 2 only). The sensitivities presented for each option consider movements both:

- **Pre-Financial Close:** changes in the base input cost and cost of finance assumptions to the shadow bid model prior to financial close. This recognises that market conditions may change as the procurement develops given the elapsed time from now until financial close for each MIM contract; and,
- **Post-Financial Close:** while most underlying cost risk is expected to transfer to the ProjectCo at financial close, the cost of the project to Scottish Ministers will be affected by impact of inflation applying to the indexed portion of the UC.

For the Hybrid Option, the sensitivities presented show only the impact of changes in the specified assumptions on the UCs for the two MIM contracts for Package 1 and 2. The capital and resource budget sensitivities associated with taking forward the MIM Package 3 projects as three D&B contracts are not presented below as these can be assessed outside of the shadow bid model as required.

5.4.3.1 MIM Option– (all three packages UC)

The tables below show a comparison of the sensitivities against the results of the Base Case financial appraisal for all three MIM packages under the MIM Option.

Pre Financial Close (pre fixing of UC)

Debt Interest Rate Sensitivity Analysis	**Interest rate** (senior bank / bond)	**Base UC (excl. ISP and Irrecoverable VAT)** (real – Apr 2023) (£m)	**Net Present Value of UC** (£m, Apr 2023, excl. Irrecoverable VAT on UC and ISP)
Base	P1: 4.126% / 4.748% P2: 4.098% / 4.72% P3: 4.102% / 4.744%	267.1	2,423.2
+1.0%	P1: 5.126% / 5.748% P2: 5.098% / 5.72% P3: 5.102% / 5.744%	298.0	2,689.0
+0.5%	P1: 4.626% / 5.248% P2: 4.598% / 5.22% P3: 4.602% / 5.244%	282.6	2,556.4
-0.5%	P1: 3.626% / 4.248% P2: 4.598% / 4.22% P3: 3.602% / 4.244%	255.3	2,321.3

Capital Cost Sensitivity Analysis	Capital Costs (nominal terms) (£m)	Base UC (excl. ISP and Irrecoverable VAT) (real - Apr 2023) (£m)	Net Present Value of UC (£m, Apr 2023, excl. Irrecoverable VAT on UC and ISP)
Base	2,399.0	267.1	2,423.2
+20%	2,869.9	312.6	2,814.6
-20%	1,928.1	221.9	2,034.3

O&M and Lifecycle Sensitivity Analysis	O&M Costs (nominal terms) (£m)	Base UC (excl. ISP and Irrecoverable VAT) (real - Apr 2023) (£m)	Net Present Value of UC (£m, Apr 2023, excl. Irrecoverable VAT on UC and ISP)
Base	1,351.1	267.1	2,423.2
+20%	1,621.3	276.1	2,500.3
-20%	1,080.9	259.0	2,353.0

Post Financial Close (impact of inflation on the indexed proportion of the UC after FC)

Inflation Sensitivity Analysis	Inflation	Base UC (excl. ISP and Irrecoverable VAT) (real - Apr 2023) (£m)	Net Present Value of UC (£m, Apr 2023, excl. Irrecoverable VAT on UC and ISP)
Base	2.0%	267.1	2,423.2
+1.5%	3.5%	267.1	2,562.0
-1.5%	0.5%	267.1	2,325.5

5.4.3.2 Hybrid Option (Package 1 and 2 UC)

The tables below show the impact of movements in the UC for the Package 1 & 2 MIM schemes forming part of the Hybrid Option in response to changes in the specified assumptions. As noted above the impact on capital and resource budgets for MIM Package 3 projects being delivered as three D&B contracts are not shown as these are more readily estimable outside of the shadow bid model as required.

Pre Financial Close (pre fixing of UC)

Debt Interest Rate Sensitivity Analysis	**Interest rate** (senior bank / bond)	**Base UC Package 1 & 2 (excl. ISP and Irrecoverable VAT on UC)** (real - Apr 2023) (£m)	**Net Present Value of Package 1 & 2 UC** (£m, Apr 2023, excl. Irrecoverable VAT on UC)
Hybrid Base	P1: 4.126% / 4.748% P2: 4.098% / 4.72% P3: 4.102% / 4.744%	187.5	1,763.3
+1.0%	P1: 5.126% / 5.748% P2: 5.098% / 5.72% P3: 5.102% / 5.744%	209.2	1,957.5
+0.5%	P1: 4.626% / 5.248% P2: 4.598% / 5.22% P3: 4.602% / 5.244%	198.4	1,860.4
-0.5%	P1: 3.626% / 4.248% P2: 4.598% / 4.22% P3: 3.602% / 4.244%	178.8	1,686.0

Capital Cost Sensitivity Analysis	**Capital Costs** (nominal terms) (£m)	**Base UC Package 1 & 2 (excl. ISP and Irrecoverable VAT on UC)** (real – Apr 2023) (£m)	**Net Present Value of Package 1 & 2 UC & Capital Budget Costs** (£m, Apr 2023, excl. Irrecoverable VAT on UC)
Hybrid Base	1,675.5	187.5	1,763.3
+20%	2,003.8	219.5	2,049.4
-20%	1,347.3	155.8	1,480.3

O&M and Lifecycle Sensitivity Analysis	**O&M Costs** (nominal terms) (£m)	**Base UC Package 1 & 2 (excl. ISP and Irrecoverable VAT on UC)** (real - Apr 2023) (£m)	**Net Present Value of Package 1 & 2 UC and Resource Budget Costs** (£m, Apr 2023, excl. Irrecoverable VAT on UC)
Hybrid Base	957.3	187.5	1,763.3
+20%	1,148.7	193.6	1,818.0
-20%	765.8	181.8	1,711.9

Post Financial Close (i.e. after UC is fixed)

Inflation Sensitivity Analysis	Inflation	Base UC Package 1 & 2 (excl. ISP and Irrecoverable VAT on UC) (real - Apr 2023) (£m)	Net Present Value of Package 1 & 2 UC (£m, Apr 2023, excl. Irrecoverable VAT on UC)
Hybrid Base	2.0%	187.5	1,763.3
+1.5%	3.5%	187.5	1,860.4
-1.5%	0.5%	187.5	1,694.4

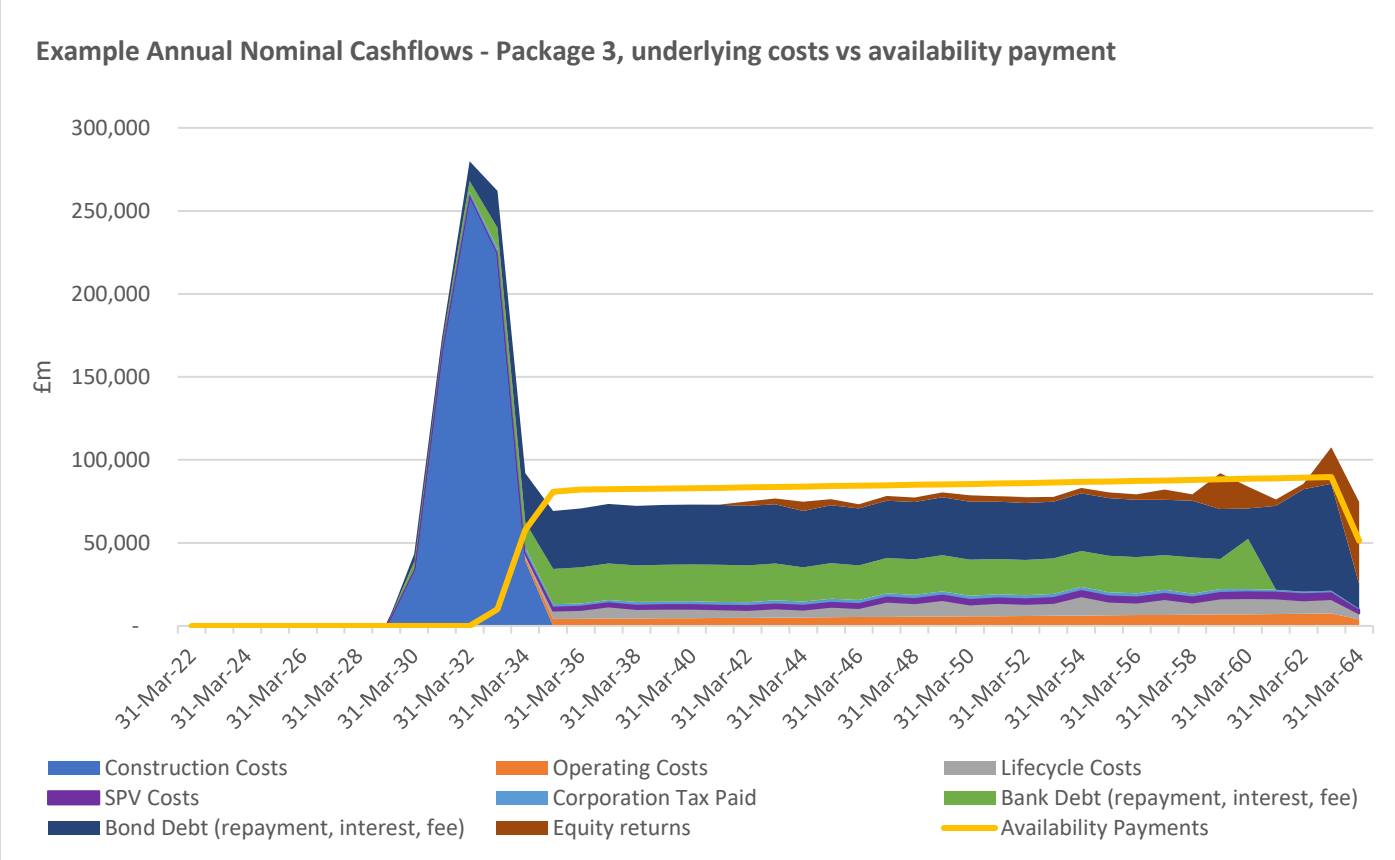
5.5 Other Financial Considerations for MIM

This section takes account of the analysis and results set out above and considers other financial impacts associated with progressing with the Programme using MIM contracts.

5.5.1 Project Cash Flow

The main cash flow implications for Transport Scotland are the payment of the UC once each MIM contract completes.

The graph below illustrates the profile of underlying costs projected in the Base Case for Package 3 alongside and compared to the smooth profile of the UC. This illustrates that most underlying cash flow requirements associated with delivering the scheme, including the capital costs, operating costs, lifecycle costs and ProjectCo costs are financed and managed by the ProjectCo, as the profile of the UC is smooth over time. ProjCos typically use reserve accounts to manage fluctuations in underlying expenditure linked to, for example, lifecycle maintenance, within the smoothed level of the UC. A similar cashflow profile is expected across the other packages.



In addition to payment of the UC, TS will also incur a number of other costs that are not reflected in the ProjectCos shadow bid models and therefore the analysis above. These include the capital budget costs associated with the items set out at section 5.3.11 above.

5.5.2 VAT Considerations

The UCs presented in this Financial Case are exclusive of VAT unless otherwise indicated.

Under a MIM contract, it is assumed that ProjectCo will be able to recover the VAT incurred on the majority of its input costs (including construction and O&M costs). ProjectCo will be required to charge VAT on the UC at the current rate of VAT of 20%. It is anticipated, based on the experience of other similar projects, that a proportion of the VAT levied by the contractor on the UC will be recoverable by Scottish Ministers. Detailed analysis of VAT recoverability will be required as part of the business case process and upon receipt of final contractor tenders.

Initial analysis has been undertaken to assess the potential recoverability of VAT and it is currently estimated that up to 68-75% of VAT may be recoverable across the different packages.

The key assumptions underpinning this estimate, based on experience from other similar projects, are:

- VAT is assumed to be recoverable on the proportion of the UC associated with O&M and that HMRC will accept using the IFRS financial asset accounting assumptions as a proxy for the proportion of the UC relating to O&M. It is estimated, on this basis, that c. 40-46% of the UC relates to O&M costs across the three different packages.

- VAT is assumed to be recoverable on capital costs that are incurred within the existing boundary of a road. Analysis undertaken by TS's Design Consultants suggests that, on an apportionment of cost basis, c. 41-59% of capital costs will be incurred on land within an existing road boundary.
- The total recoverability of the VAT ranges from 68% to 75% across the different packages.

The table below provides a breakdown of this analysis.

Item	Source / calculation	Package 1 (%)	Package 2 (%)	Package 3 (%)
% of total IFRS financial asset value relating to capex (proxy for % of UC related to capex – partially recoverable) **(A)**	Taken from financial model	54%	60%	55%
% of total IFRS financial asset value relating to O&M (proxy for % of UC related to O&M – recoverable) **(B)**	**1-A**	46%	40%	45%
Design Consultant estimate of Recoverable VAT as a % of total VAT on Capital Costs (C)	DCs	41%	59%	49%
Estimated VAT recoverable on % of UC relating to capex (D)	**A*C**	22%	36%	27%
Recoverable VAT (E)	**B+D**	68%	75%	72%
Irrecoverable VAT	**1-E**	32%	25%	28%

5.5.3 Accounting Treatment

Under a MIM option, it is anticipated that in accordance with International Financial Reporting Standards (IFRS) the newly upgraded A9 Dual Carriageway will be within the scope of IFRIC 12 ("Service Concessions"). IFRIC 12 is applicable to all infrastructure assets, including roads, and in accordance with IFRIC 12 the upgrade of the A9 would therefore be accounted for as "on balance sheet" for Transport Scotland.

IFRIC 12 guidance states that the asset should be recognised and measured at its fair value in accordance with International Accounting Standards (IAS) 16 Property Plant and Equipment with a corresponding finance lease liability recognised in accordance with "IAS 17 Leases" with the unitary payment split into its component parts such as; principal, interest and service payments. This balance sheet treatment should be distinguished from the statistical treatment or classification under the European System of Accounts, (commonly referred to as ESA10) which affects how payments of UC to ProjectCo are accounted for against government capital and revenue budgets.

5.5.4 Budgetary Treatment

It is expected that the contracts for the MIM Option would be based on that developed by Welsh Government and recently used to procure the A465 Dualling Project, which reached financial close in October 2020. The MIM standard form project agreement used by Welsh Government has been reviewed by the Office for National Statistics (ONS) who have classified projects procured under it to the private sector. As a result, assets procured under the Welsh MIM contract do not score against government Capital Budgets (CDEL) and instead qualify as a resource funded procurement model where payment of the UC will score against resource budgets (RDEL) over the duration of the concession period.

As part of the business case process, Transport Scotland would seek review by ONS to "pre-clear" any proposed changes of the A9 MIM contract from the A465 MIM contract and to confirm a private sector classification of the proposed project agreement prior to procurement commencement. It is expected that ongoing compliance will be assessed during the tender process through a derogations and key stage review/gateway review process and with input from external advisers.

5.5.5 Affordability and Sustainability

The Scottish Futures Trust report on options appraisal to examine profit sharing finance schemes ("SFT report") sets out two ratios to test the affordability and sustainability of the MIM model for infrastructure projects in Scotland across various sectors. These ratios are:

- Cost Multiplier ratio - Calculated as the ratio of 'total revenue commitment over the entire contract length period' to 'total construction cost'; and
- Revenue Commitments ratio - Calculated as the ratio of 'First Year Revenue Commitment' to the 'total construction cost' of the Programme.

The table below sets out these ratios for the A9 Programme, based on current cost estimates, against the guideline estimates suggested in the SFT report for road sector projects. As can be seen from the table, the ratios are above the SFT guideline estimates.

SFT Affordability and Sustainability Ratios	SFT guideline estimates	A9 Programme
Cost multiplier ratio*	3.70	4.01
Revenue commitments ratio*	9-12%	12.6%

*Note: irrecoverable VAT has been included in calculating the ratios.

It should be noted that the inclusion of existing dual sections within the MIM contracts means that there are sections of road that will require O&M/lifecycle spend but which do not have a corresponding construction cost spend. As a consequence, the figures for these ratios are higher for the A9 Programme than would be the case were sections of existing dual carriageway not included in the MIM contracts.

In addition to the ratio tests above, the SFT report also notes the "Scottish Government's self-imposed revenue finance investment limit of 5 per cent of the Scottish Government budget". The report estimates that, in Financial Years 2023/24 and 2024/25, the Scottish Governments' share of long-term commitments under resource financed investments will be c.3%.

Based on current cost assumptions, analysis suggests that the Unitary Charge for the A9 Programme will equate to 0.6% of the Scottish Government's forecast resource budget in Financial Year 2034/35 (which is

the full first year of operations for all three packages). Assuming no new material resource financed investments since the date of the report, and year on year growth in the total resource budget in line with general inflation at c.2.0% p.a., this ratio would steadily decrease in the subsequent years of the contract, as only a proportion (c.9-12%) of the Unitary Charge for the MIM contracts is subject to inflation.

It is therefore considered that, based on the current estimates of future Scottish Government resource budget commitments together with current cost estimates for the A9 Programme, adopting the MIM Option or Hybrid Option to deliver the A9 Programme is unlikely to see the 5% cap on investment commitment being breached.

6 The Management Case

6.1 Introduction

The purpose of this section is to identify the team that will deliver the Programme, to confirm that they have the appropriate level of skills and experience and to outline the Programme and project management framework that is in place to ensure the successful delivery of the Programme and its constituent projects. The Governance roles for major road infrastructure projects promoted by Transport Scotland are set out in Transport Scotland's "Governance Procedures for Investment Decision Making and Monitoring and Review", in line with the requirements of the Scottish Government Public Finance Manual.

This Outline Business Case has been prepared for the A9 Dualling Programme as a whole to assist in decision making between procurement options under consideration. Following such decision making, the individual Outline Business Cases prepared to assist in decisions making at the point of proceeding to procurement will revisit the particular arrangements for each procurement to ensure that these remain appropriate for the scope of work envisaged.

6.2 Wider Programme Management Arrangements

The A9 Dualling Programme forms part of Transport Scotland's wider programme to upgrade and improve the trunk road network. Although the A9 Dualling Programme has its own governance arrangements, reporting and decision making responsibility remains in line with Transport Scotland's wider Investment Decision Making programme management arrangements, unless specific delegated authority to the contrary has been confirmed in writing.

6.3 A9 Dualling Programme and Project Management Arrangements

6.3.1 Programme and Project Reporting Structure and Roles and Responsibilities

Specific governance and management arrangements for the A9 Dualling Programme and its constituent projects are as follows:

- A9 Dualling Programme: The A9 Dualling Programme Board has been established to provide governance across the Programme as a whole, covering all constituent projects and the work of both the Design & Development and the Project Delivery teams. The Design & Development and Project Delivery teams report to the A9 Dualling Programme Board.

- A9 Design & Development Team: This team is responsible for progressing individual projects from inception to completion of statutory processes, following which responsibility for further delivery passes to the A9 Project Delivery Team, with certain exceptions, for example compensation related to acquisition of land.

- A9 Project Delivery Team: This team is responsible for taking projects forward following completion of statutory processes, agreeing and implementing appropriate procurement strategies, administering construction and related contracts to bring the completed works into use, following which responsibility for ongoing operation and maintenance of the completed works passes to Roads Directorate colleagues, with certain exceptions depending on the nature of the contract that has been procured.

Both the A9 Design & Development Team and the A9 Project Delivery Team are responsible for reporting to the A9 Dualling Programme Board on progress and issues related to the overall Programme as well as progress and issues related to individual projects.

The primary differences that the D&B Option and the MIM or Hybrid Option make to the Management Case for the Programme is the implications for the detailed structure and resource requirements of the A9 Project Delivery Team:

- If the D&B Option is selected, the A9 Project Delivery Team will include three project management teams, each responsible for delivery of either two or three projects. As this option is anticipated to require to be based on a form of contract that results in Transport Scotland retaining more risk than has been the case under its historic D&B contracts and entails a higher contract administration burden, it is expected that a larger team of officials would be required to deliver this option than would be required to deliver the MIM or Hybrid Option;

- If the MIM or Hybrid Option is selected, the A9 Project Delivery Team will include two project management teams, each responsible for delivery of either one or two MIM contracts comprising a 'package' of projects. If the Hybrid Option is selected these teams would be responsible for managing the delivery of D&B contracts alongside MIM contracts. As the MIM contracts included in these options are anticipated to be based on a form of contract similar to those recently used for delivery of both the M8 M73 M74 Motorway Improvements and the AWPR/B-T, which transfer more risk to the contractor and entail a lower contract administration burden, it is expected that a smaller team of officials would be required to deliver these contracts than would be required to deliver D&B contracts.

Although the different procurement options have implications for the structure of the A9 Project Delivery Team, the general reporting structure and roles and responsibilities are the same whichever option is selected, and are based on the principle that decisions required by the A9 Dualling Programme should be taken at the appropriate level. Within Transport Scotland, individuals have delegated financial authority which specifies the limit to which a commission or contract may be varied. These are set out in the Transport Scotland "Governance Procedures for Investment Decision Making and Monitoring and Review".

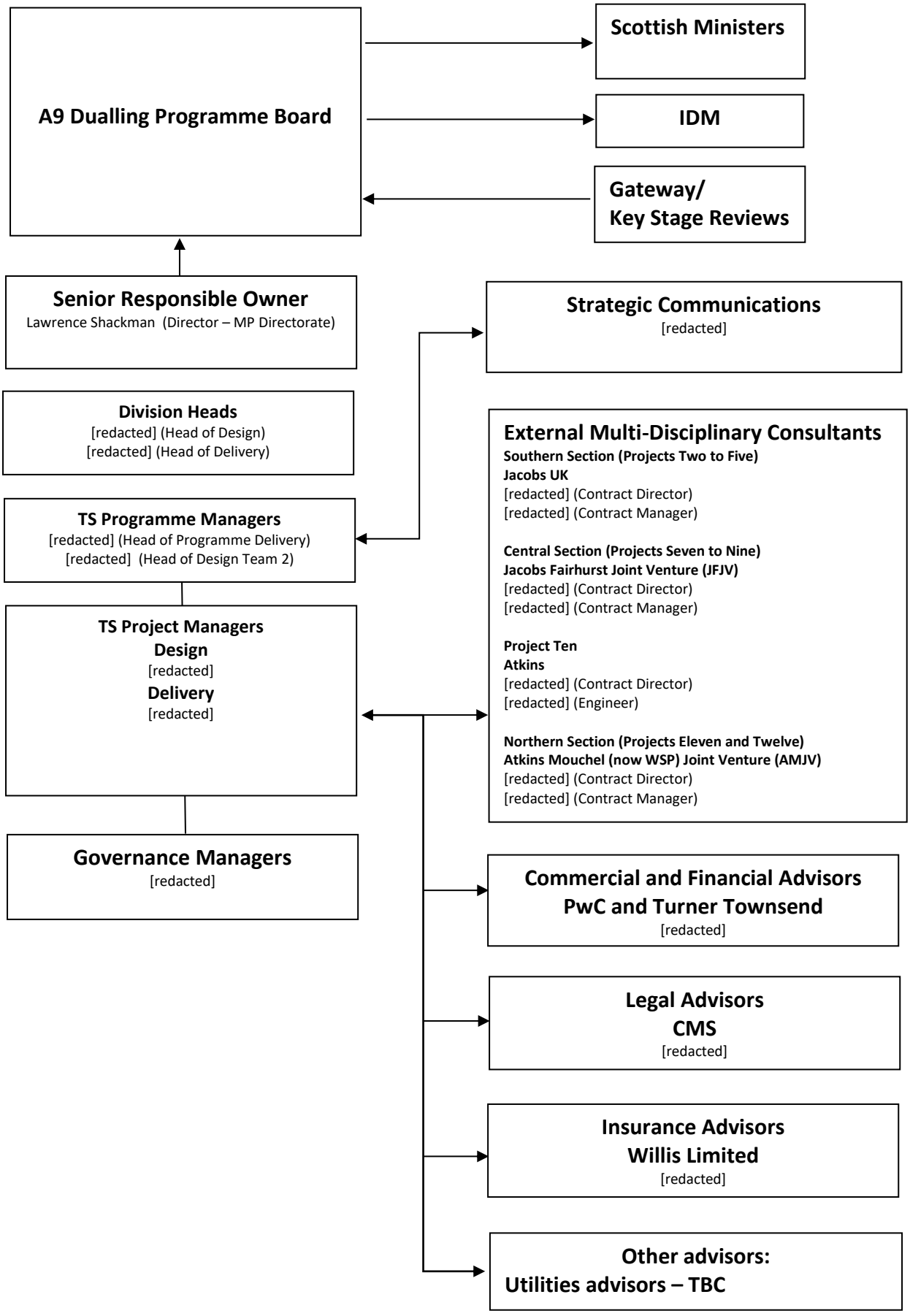
Those financial limits do not, however, necessarily reflect the magnitude or importance of the risk which a change represents to the project. The following are indicative decision making levels in respect of the Programme. The magnitude of any change should be assessed and the consequences referred to the appropriate level for decision where required. In all cases where there is doubt, reference should be made up the decision ladder.

Indicative level of responsibilities	Level at which decisions should be taken
Authority required to proceed at significant milestone points such as publication of Orders and the commitment of significant expenditure such as awarding of a construction contract	**IDM Board**
Strategic decisions which represent a major risk to the project budget (e.g. risk of major delay to the project for technical, financial or political reasons). "Major delay" would be of such magnitude as would require exceptional reporting to Ministers	**Programme Board**
Strategic management of Programme and change within budgets.	**Senior Responsible Owner and Project Sponsor**
Overall programme management within agreed budgets and timescales agreed by Senior Responsible Owner.	**Project Sponsor**
Day to day management of component parts of the Programme. First line contact for stakeholders. Guidance to and control of consultants.	**Project Manager**
Day to day administration of Programme including supervision of statutory procedures.	**Project Administrator**

Authority Level	Named Individuals
IDM Board	Alison Irvine Interim Chief Executive Officer, supported by Lawrence Shackman Director of Major Projects, Hugh Gillies Interim Director of Roads and Kerry Twyman Director of Finance & Corporate Services
Programme Board	Lawrence Shackman Director of Major Projects, Hugh Gillies Director of Roads, Kerry Twyman Director of Finance & Corporate Services and Fiona Brown Director of Transport Strategy and Analysis
Senior Responsible Owner	Lawrence Shackman Director of Major Projects
Project Sponsor	[redacted] Head of Programme Delivery
Project Manager	[redacted] Design & Development Team Lead [redacted] Design & Development Team Lead [redacted] Design & Development Team Lead [redacted] Programme Delivery Team Lead [redacted] Delivery Team Lead

The relationship between the parties supporting the A9 Dualling Programme is illustrated on the organogram below.

6.3.2 Programme Organogram



6.4 Programme Plan

The Programme will involve the performance of several preparation, construction and post construction appraisal activities to complete the dualling of the A9 between Perth and Inverness and any ancillary, advance or accommodation works:

The design of the route

- DMRB (Design Manual for Roads and Bridges) stage 2 and 3 scheme assessments (including traffic, economic and environmental);
- Undertake an Environmental Impact Assessment of the proposals;
- Associated ground investigation surveys;
- Preparation of cost estimates;
- Value management/engineering and risk workshops.

Securing statutory consents

- Publication of Schemes and Orders under the Roads Scotland Act 1984, Compulsory Purchase Orders, and any other Orders that may be required;
- Publication of Notice of Determination and Environmental Statement to allow consultation on the broad environmental impacts;
- Process for resolving objections, including Public Local Inquiry if required;

Acquiring land necessary for the project

- The identification of the envelope of land required for the project and the individual ownerships and rights within that envelope;
- Compulsory Purchase Orders for land required for the project (including land for engineering works, landscaping and environmental mitigation where within CPO powers);
- Agreements for land required beyond CPO powers or as expedient;
- Compensation for land acquisition;
- Compensation for injurious affection by statutory nuisance.

Identifying the preferred procurement and funding option

- Producing information as required to inform decision making on the preferred procurement approach. This will include evaluating the implications of the D&B Option, the MIM Option and the Hybrid Option.

Preparing for delivery of construction

- Preparing the Contract Documents;
- Advertise for suitably qualified contractors;
- Preparing the Tendering documents;
- Market preparation and selection of participating contractors;
- Tender process.

Delivery of construction

- Award of Contract;
- Supervision of works delivery and certification of completion.

Health and Safety

- Construction (Design and Management) Regulations 2015.

Project Quality assurance

- Gateway/Key Stage reviews (as appropriate);
- Ad hoc Peer reviews;
- Project completion review; and
- Benefits Realisation (STRIPE).

6.5 Change, Continuity and Contract Management

The change control mechanism is outlined within the Governance and change management section of the Programme's Project Execution Plan (PEP), which involves a hierarchy of reviews at which changes will be fed into the risk register, reviewed and referred to the appropriate level for review/decision.

It is not intended that this mechanism should remove the facility for direct referral to senior management on occasions where this is justified and urgent. The framework of review meetings is as follows but may be amended from time to time as the exigencies of the scheme dictate. The general diet of meetings is shown below in hierarchical form and the flowchart following illustrates the change control cycle which flows from them.

Transport Scotland Meetings	Project Management Meetings
Investment Decision Makers' Meetings which will take finance, policy, procurement and programme decisions on behalf of Transport Scotland.	**Monthly Progress Meetings** at which all aspects of progress will be reviewed with advisers and/or Contractor (during construction). This is the primary mechanism for identifying any change and/or risk.
A9 Programme Board Meetings which take place Quarterly or ad-hoc as necessary where the Programme Team keeps the directing board appraised of progress and seeks decisions, guidance and support in delivering the project to the agreed timescales.	**External Consultation Meetings** with statutory and non-statutory consultees, ad hoc on specific issues, landowners. This is a secondary mechanism for identifying change and/or risk.
Quarterly Scheme Progress Meetings to review progress across the Transport Scotland Major Projects portfolio allowing the inter – reaction of the this and other projects to be examined	**Monthly Risk Register Meetings** this is the primary mechanism for reviewing the risk register and reviewing/referring changes to the programme.
Directorate Senior Management Meetings to review programme management at a local level and put the necessary resources in place to progress the programme.	**Weekly Advisor Support Group Meetings** this provides a regular forum for discussing progress of issues that require support across the advisor team.

6.6 Risk Management

Management of risk, both threats and opportunities, is an integral part of delivering against Transport Scotland's Corporate Plan and also each Directorate Business Plan.

The Transport Scotland Risk Management Framework summarises the risk processes applied within Transport Scotland to ensure that it follows the best practice set out for Scottish Government. It provides practical guidance about applying sound risk management principles at the project level, Directorate level; and for the TS (Transport Scotland) Corporate Risk Register.

Major Projects Directorate has an overarching Risk Management Strategy (as part of Transport Scotland corporate requirements) and is put in place to cover Directorate and Project Level Risk Procedures. In support of this wider strategy a bespoke A9 Dualling Programme Risk Management guidance document has been produced to work with existing corporate and project risk guidance but to take account of any management of programme level risks has been developed. The purpose of the A9 Dualling Programme Risk Management guidance is to set out a consistent approach to the implementation of risk management at Project, Programme and Major Projects Directorate (Strategic) level. The guidance covers the general approach and attitude to risk, risk management roles and responsibilities, high level descriptions of each stage of the risk management process and an approach to escalation and management of risks across the key interfaces.

As part of the Risk Strategy and Framework staff are required to develop and maintain Project Risk Registers for all schemes. The Project Risk Register format is to be based on the Corporate Risk Register.

Pending decision making on the preferred procurement approach, risk registers have been maintained at both project and package level, for reference in relation to the D&B Option, the MIM Option or the Hybrid Option respectively. The Project Manager is responsible for developing and maintaining the Project/Package Risk Register. It is anticipated that following selection of the procurement approach to be adopted only the risk registers required to support that approach will be maintained.

The Project Risk Registers identifies both strategic and quantified risks, by risk number, risk type (business, reputational, operational, financial, political, strategic, programme or external), inherent risk scoring, risk description, risk owner, mitigation controls including owner, residual risk scoring, and further actions including owner and target date. The structure of the Risk Registers categorise risks it into component parts, each containing both Project and Programme risks, applicable to the Advance Works, New Works, and O&M components. The Registers are reviewed on a regular basis. The A9 Dualling Programme Risk Register is located in the PEP (Project Execution Plan).

Whilst Programme-level risks are reported in the Project/Package Risk Registers for Risk Quantification and Cost Estimating purposes, these risks are also reported in the A9 Dualling Programme Risk Register for management of risks across the Programme and for reporting and escalation purposes. The Programme Risk Register is reported monthly at Major Projects Directorate Risk Management Meetings for review and challenge, to the Programme Board Quarterly.

6.7 Project Evaluation

Evaluation is defined as the retrospective analysis of a project to assess how successful or otherwise it has been and what lessons can be learnt for the benefit of future projects.

A Scottish Trunk Road Infrastructure Project Evaluation (STRIPE) Plan has been prepared for the Programme in accordance with the guidance provided in the document “Governance Procedures for Investment Decision Making and Monitoring and Review. The Plan sets out who is responsible for the delivery of specific benefits, how and when they will be delivered, and how and when they will be evaluated on completion of the project. A copy of the project STRIPE Plan is included in the A9 Dualling Programme PEP.

Transport Scotland assesses the impact of each road improvement scheme and compares conditions after the schemes have opened with predictions made during their design and development. The main areas evaluated include:

- Operation;
- Environment;
- Safety;
- Economy;
- Integration;
- Accessibility and social inclusion;
- Cost to government; and
- Scheme objectives.

The evaluation is carried out usually one and three years after scheme opening. Results of the evaluation are closely monitored to ensure that the schemes designed and developed meet the needs of Scotland's trunk road users.

Formal evaluation reports for the A9 Dualling Programme will be prepared by Transport Strategy and Analysis Directorate, liaising with relevant Project Manager/s and stakeholders as required.

6.8 Gateway Review/Key Stage Reviews

Transport Scotland's IDM procedures will be adopted for investment decision making at defined decision points. Depending on the procurement approach selected, the assurance process adopted to support this decision making process may comprise Gateway Reviews (D&B contracts) or Key Stage Reviews (MIM contracts).

Initial discussions have been held with the Scottish Government's Infrastructure Investment Directorate and Scottish Futures Trust on the assurance arrangements that would apply were MIM contracts to be used, and these discussions are ongoing at present.

6.9 Conclusions

Consideration of the Management Case for the A9 Dualling Programme confirms that:

- Appropriate governance and Programme and project management controls and structures are in place for current purposes;

- These controls and structures can be further developed to respond to the requirements of whichever delivery option is selected, noting that is a greater resource requirement and contract administration burden associated with the D&B Option than would be the case for the MIM Option or the Hybrid Option;

- The established Programme and project management arrangements will support effective control of change and contract management, and will maintain continuity of approach both within and across the Programme and across other projects;

- Arrangements are in place for monitoring benefit realisation, undertaking risk management, and supporting project evaluation; and

- The detailed management arrangements for individual procurements will be set out in the Outline Business Cases and Full Business Cases prepared to support decision making on proceeding to procurement and proceeding to contract award respectively.

7 Conclusions

In summary, it is considered that:

- The Strategic Case demonstrates that the there is a clear need for the A9 Dualling Programme, completion of which fits with a wide range of Scottish Government policies;
- The Socio-Economic Case demonstrates that the combination of the expected quantified and unquantified costs and benefits provides sufficient value for money for the A9 Dualling Programme to proceed;
- The Commercial Case demonstrates that, subject to Ministerial preferences on timetable for delivery, risk appetite and funding source, any of the procurement options considered can be expected to result in a viable procurement of the remaining sections of the A9 Dualling Programme;
- The Financial Case demonstrates that Ministerial prioritisation is required in relation to other programmes and projects if any of the procurement options is to be considered affordable for completion of the remaining sections of the A9 Dualling Programme; and
- The Management Case demonstrates that any of the procurement options considered is capable of having robust arrangements made for the delivery, monitoring and evaluation of procurement and completion of the remaining section of the A9 Dualling Programme.


A9
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