Transport Scotland

A9 NORTH KESSOCK TO TORE STUDY

STAG Appraisal: Case for Change Report

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EXECUTIVE SUMMARY

Transport Scotland appointed WSP as Engineering Consultants to assess and report on the safety and operation of the A9 between North Kessock and Tore.

This study sought to identify existing problems or opportunities for improvement. The study has considered the safety and operational aspects of the corridor and the junctions, looking into the impact of existing and proposed traffic growth in the wider area as well as considering the strategic role the A9 plays for connectivity to the north of Scotland.

The study has reviewed both current and future operations, taking account of potential and future developments within the surrounding area, and has been undertaken in line with Scottish Transport Appraisal Guidance (STAG). The study represents the Initial Appraisal (Case for Change) stage of the STAG process (formerly known as the Pre-Appraisal stage) and sets out whether there is a case for change.

SCOPE OF THE STUDY

The study area includes both carriageways of the A9 from North Kessock Junction to Tore Roundabout and all junctions in between.

The objectives of the study are to:

- Develop and evidence the problems, opportunities and transport planning objectives in the form of a STAG Initial Appraisal: Case for Change Report; and
- Undertake effective stakeholder engagement that enables appropriate local representation to inform the evidence base for the appraisal.

Following completion of this Initial Appraisal: Case for Change stage, if Transport Scotland considers that there is a case for change, and there is funding available to do so, the study will continue into the Preliminary Appraisal stage.

KEY FINDINGS FROM THE STUDY

Traffic and Road Safety Analysis

The analysis of the traffic and road safety evidence identified the following:

- Traffic levels during the study period September 2020 are within 10% of those observed in September 2019 (pre-COVID).
- The traffic growth projected for the A9 between 2020 and 2035 is 9.79% between North Kessock and Tore Roundabout based on modelling informed by the adopted Inner Moray Firth Local Development Plan (2015).
- The collisions statistics show that collisions are spread out over the extent of the study area and do not exhibit any common contributory factors.
- The conflict study at Munlochy Junction shows that some drivers from the B9161 merging with the A9 southbound are not giving way to vehicles on the southbound carriageway and expect them to change lanes or slow down. A large number of conflicts were observed for this movement.
- The right turn into the B9161 presented a low number of observed conflicts.

- At Tore Roundabout, all except one of the non-motorised user (NMU) conflicts occurred on the northbound exit to the A9 where NMUs had to walk swiftly/run across the road due to the speed of the vehicles exiting the roundabout.

Stakeholder Engagement

Stakeholder engagement formed an important element of this study and has been undertaken to include views from stakeholders on the problems and opportunities in the study area. Given the COVID-19 restrictions, stakeholder engagement has been carried out mainly through online meetings and workshops that have been facilitated in smaller groups to allow opportunities for all stakeholders to express their views and concerns.

At the Case for Change stage, the process did not include a broader public consultation as the engagement sought to identify the problems and opportunities (as opposed to consultation on presented options). If the study progresses to further stages where options are developed and appraised, public consultation will be undertaken at that point to gather views on the options presented.

PROBLEMS AND OPPORTUNITIES IDENTIFIED

The following problems and opportunities were identified:

Problems:

- North Kessock to Tore
  - 1 - Perceived safety risks due to right turn movements from side roads across the A9
  - 2 - Perceived safety risks for general traffic and buses merging onto the A9 at intermediate junctions
- Munlochy Junction
  - 3 - Conflicts arising from vehicles merging from the B9161 onto the A9 southbound
  - 4 - Perceived safety risks for right turning movements from the A9 onto the B9161
  - 5 - Safety risks due to queues forming on northbound right turn lane and extending onto the main northbound carriageway
- Tore Roundabout
  - 6 - Perceived safety risks to pedestrians and cyclists at Tore Roundabout
  - 7 - Conflicts arising from vehicles movements at Tore Roundabout

Opportunities:

- 1 - Improve road safety and support the Scottish Road Safety Framework to 2030
- 2 - Encourage walking and cycling by local residents.

TRANSPORT PLANNING OBJECTIVES

From the analysis of the problems and opportunities identified through the consideration of analytical evidence and stakeholder inputs, the following Transport Planning Objectives (TPOs) were identified:

- **TPO 1**: A reduction in conflicts for active modes at the junctions along the A9 between North Kessock and Tore to encourage the use of active travel modes.

- **TPO 2:** To achieve an improvement in vehicular road safety and a reduction in conflicts at the Munlochy Junction (A9/B9161) in the short (3 years), medium (3-10 years) and longer term (beyond 10 years).
- **TPO 3:** To achieve an improvement in vehicular road safety and a reduction in conflicts at Tore Roundabout (A9/A832/A835) in the short (3 years), medium (3-10 years) and longer term (beyond 10 years).
- **TPO 4:** To achieve an improvement in vehicular road safety and a reduction in conflicts at intermediate junctions along the A9 from north of the North Kessock junction up to but not including the Tore Roundabout in the short (3 years), medium (3-10 years) and longer term (beyond 10 years).

CONCLUSIONS

This Initial Appraisal: Case for Change report has set out the context for the appraisal of the A9 section between North Kessock and Tore Roundabout and the intermediate junctions. Following STAG guidance, it has identified the transport problems as well as the opportunities alongside the issues and constraints of the study area. This analysis provided the basis for objective setting and the generation of a longlist of potential options to be further considered.

This report sets out that there are identified and evidenced problems at locations along the A9 between North Kessock and Tore, with most stakeholder views generally aligning with road safety analysis (supported by collision statistics and a conflicts study). A longlist of options which could potentially achieve the objectives and address the problems and opportunities has been identified.

1 INTRODUCTION

1.1 BRIEF INTRODUCTION

1.1.1. Transport Scotland appointed WSP as Engineering Consultants to assess and report on the safety and operation of the A9 between North Kessock and Tore. This study sought to identify existing problems or opportunities for improvement.

1.1.2. The study has considered the safety and operational aspects of the corridor and the junctions, looking into the impact of existing and proposed traffic growth in the wider area as well as considering the strategic role the A9 plays for connectivity to the north of Scotland.

1.1.3. The study has reviewed both current and future operations, taking account of potential and future developments within the surrounding area, and has been undertaken in line with Scottish Transport Appraisal Guidance (STAG). The study represents the Initial Appraisal stage of the STAG process (formerly known as the Pre-Appraisal stage) and sets out whether there is a case for change.

1.2 SCOPE OF THE STUDY

1.2.1. The study area includes both carriageways of the A9 from North Kessock Junction to Tore Roundabout and all junctions in between as shown in Figure 1-1.

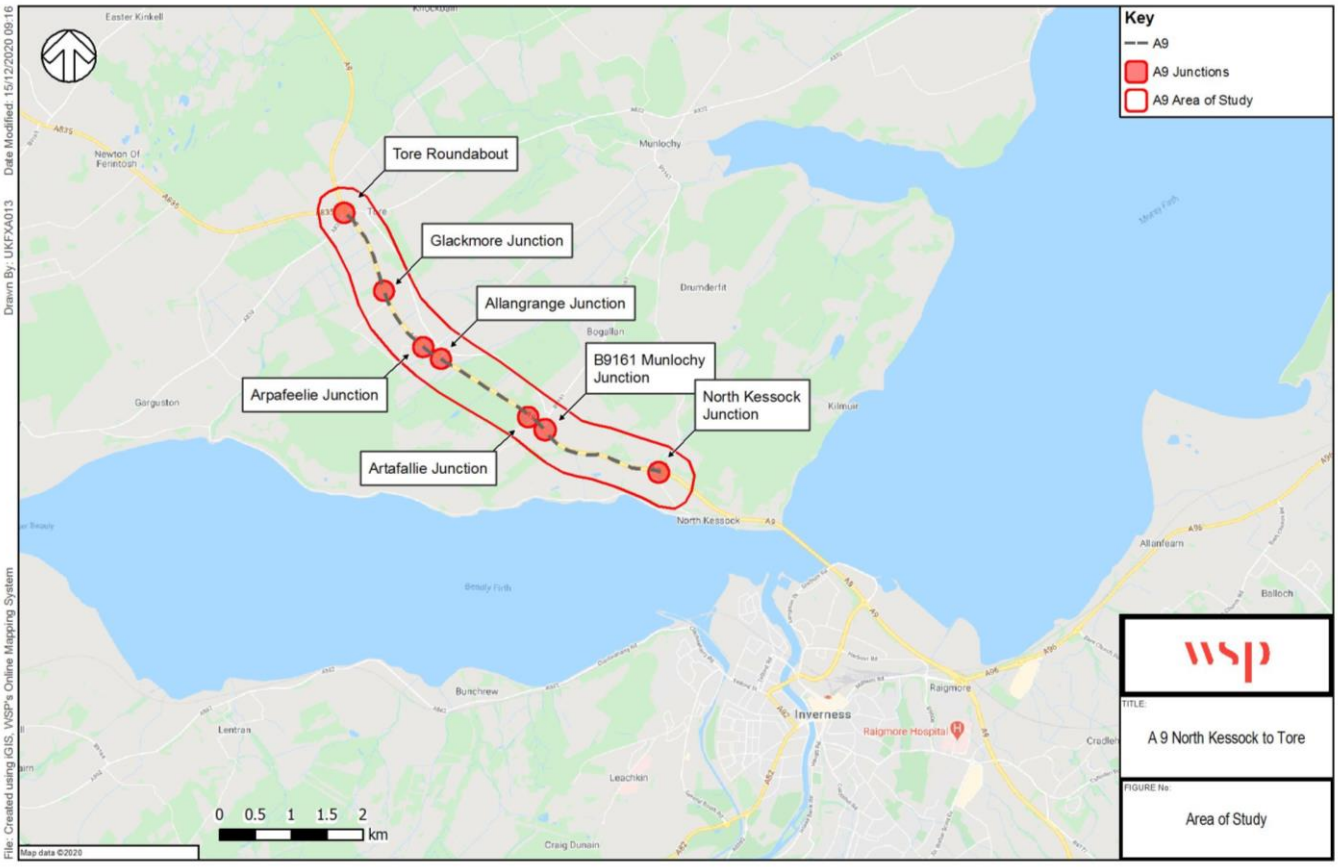


Figure 1-1: Study area

1.2.2. The North Kessock junction is grade-separated allowing all turning movements and Tore Roundabout is at-grade and connects the A9 with the A835 and the A832.

1.2.3. The five junctions between the North Kessock junction and Tore Roundabout are at-grade priority junctions sharing a similar layout, allowing movement in all directions and including right turns across the main carriageway. All the junctions have turning lanes in the central reservation to allow turning vehicles to slow down and wait before making the right turn across the opposing carriageway. In addition, some of the junctions have left turn slip lanes into and out of the side roads.

1.2.4. Of these, the B9161 junction, referred to as the Munlochy Junction in this report, has been highlighted by residents and elected representatives due to their road safety concerns. The stakeholder concerns about this junction have been reiterated through the study process during engagement with stakeholders.

1.2.5. The layout of the existing junctions in the study area are included under a separate document **Appendix A**.

1.2.6. The objectives of the study are to:

- Develop and evidence the problems, opportunities and transport planning objectives in the form of a STAG Initial Appraisal: Case for Change Report; and
- Undertake effective stakeholder engagement that enables appropriate local representation to inform the evidence base for the appraisal.

1.2.7. Following completion of this Initial Appraisal: Case for Change stage, if Transport Scotland considers that there is a case for change, and there is funding available to do so, the study will continue into the Preliminary Appraisal stage.

1.3 STRUCTURE OF REPORT

1.3.1. This report includes 12 chapters which describe the process that has been followed as part of the scope of the study. Below is an outline of the structure:

- Chapter 1: Introduction → Brief introduction and scope of study.
- Chapter 2: Methodology → Methodology followed during the study and the STAG process.
- Chapter 3: Study Context → Introduction to the main geographic and socio-economic characteristics of the area.
- Chapter 4: Policy Review → Understanding of National, Regional and Local Policy and the related objectives regarding road safety.
- Chapter 5: Current Transport Network → Description of the strategic transport network as well as local roads, public transport and active travel.
- Chapter 6: Transport Demands and Traffic Modelling → Analysis of current demand and travel patterns and consideration of future demand.
- Chapter 7: Road Safety Analysis → Analysis of road safety aspects including previous studies, collision data and conflicts.
- Chapter 8: Stakeholder Engagement → Description of the process followed during the stakeholder engagement and inputs from stakeholders.
- Chapter 9: Problems, Opportunities, Issues and Constraints → Identification of problems and opportunities from the transport and safety technical analysis and the stakeholder engagement.
- Chapter 10: Transport Planning Objectives (TPOs) → Description of TPOs identified.

- Chapter 11: Options Generation → Development of long list of options that could address the problems and opportunities and achieve the TPOs.
- Chapter 12: Next Steps → Conclusion of the Case for Change and recommendations for the further Appraisal Stages.

2 METHODOLOGY

2.1 INTRODUCTION

2.1.1. This chapter includes a description of the STAG process and the methodology that has been followed during the study which has informed this report.

2.2 STAG PROCESS SUMMARY

2.2.1. This study has been developed in accordance with STAG and this report presents the pre-appraisal stage (now called Case for Change). The Case for Change is the first stage of the STAG process, shown in Figure 2-1, and is designed to set out proportionate justification for taking the study forward to the subsequent STAG stages and includes consideration of the following aspects:

- The constraints which bind the study and issues which may affect the study area
- The problems and opportunities related to transport within the study area
- The Transport Planning Objectives (TPOs) which specify the aims of the study and will allow testing of options or intervention packages
- Development of the longlist of options which may address the identified problems and opportunities.

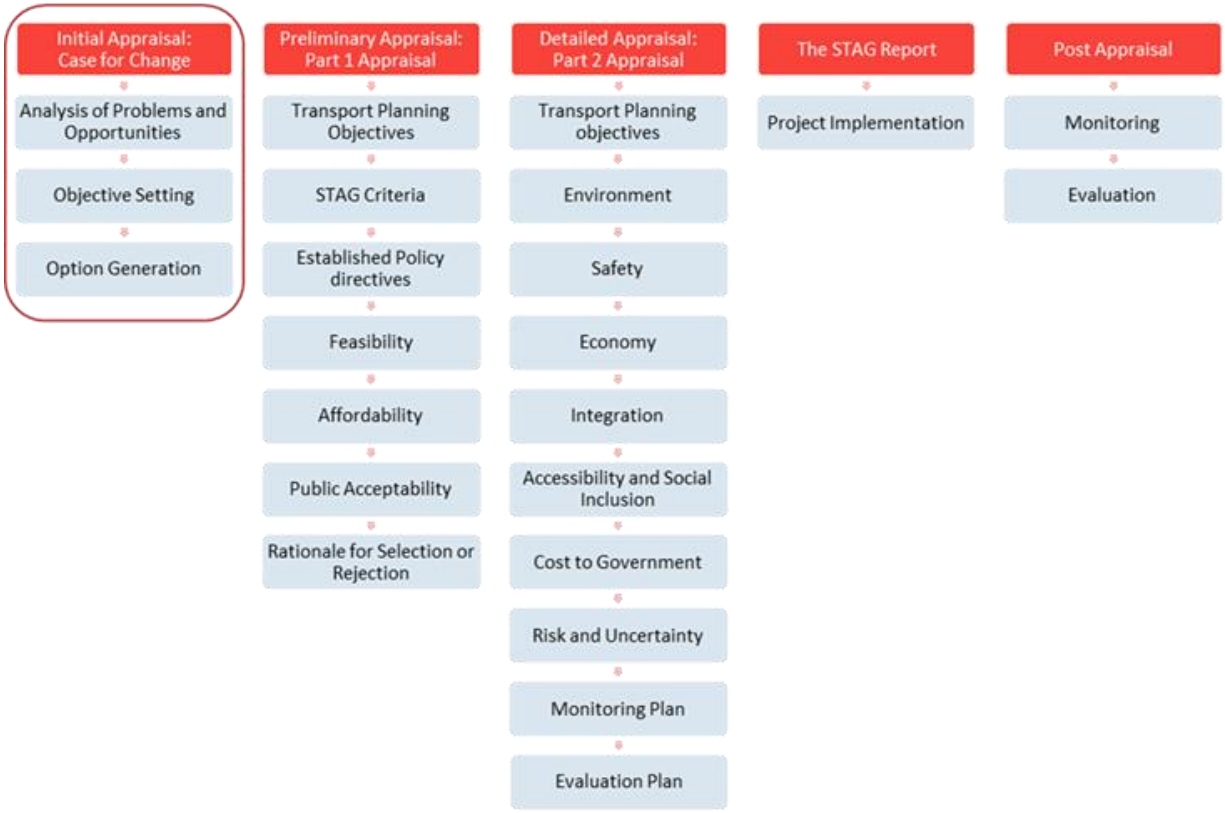


Figure 2-1: The STAG process

2.2.2. If the Case for Change is identified, and there is funding available to do so, the study would then proceed to the subsequent appraisal stages.

2.3 INITIAL APPRAISAL: CASE FOR CHANGE METHODOLOGY

2.3.1. The methodology for the study included the following activities:

- Policy and key document review
- Analysis of the current and future transport infrastructure and transport demand, including problems and issues
- Road safety analysis, including a conflicts analysis
- Stakeholder engagement
- The development and setting of Transport Planning Objectives
- The generation of an initial longlist of potential options.

POLICY AND DOCUMENT REVIEW

2.3.2. At the outset of the study a review was undertaken of all relevant local and regional policy documents, strategies, development plans and the findings from previous studies.

2.3.3. The review provided further context for the study and the Transport Planning Objectives were reviewed against this policy context to confirm their alignment with existing policy.

TECHNICAL ANALYSIS

2.3.4. The technical analysis, undertaken as part of the study, underpins the quantitative and qualitative evidence of the problems, opportunities, issues and constraints affecting the area.

2.3.5. The analysis considered the current situation as well as a “most likely” future scenario based upon the impacts of future infrastructure changes, planned development and traffic growth.

2.3.6. This report was supported by the technical inputs set out below.

- A collision analysis, which considered the period between January 2010 and September 2020 between North Kessock and Tore including the roundabout. The analysis considered the contributory factors and locations of the collisions.
- A conflict study at Munlochy Junction and at Tore Roundabout. The conflict study recorded the number of conflicts and a grading of these conflicts based on a scale of severity. The conflict study could further be used to support a monitoring and evaluation programme by providing data on conflicts before and after any interventions applied in future.
- Speed survey data collected in March 2020 to the north and south of Munlochy Junction.

2.3.7. A site visit took place on 19 and 20 August 2020 to the study area. The site visit considered existing crossing points, junction layouts, side roads and other features of the network. The study team met with Police Scotland at the Munlochy junction during the site visit on 20 August 2020.

DATA COLLECTION AND MODELLING UNDERTAKEN

2.3.8. The existing available data (as shared by the Client Team, or available from public records) was supplemented with data sourced from Transport Scotland’s traffic count database, the Police, the Highland Council traffic safety team and BEAR Scotland (Transport Scotland’s North-West Unit Operating Company).

2.3.9. Traffic surveys were undertaken in the period 10 to 12 September 2020. An overview of the locations surveyed is included in a separate document **Appendix C**, and the surveys included the following:

- Vehicle turning counts at each of the junctions in the study area
- Video footage at junctions to inform the road safety analysis
- Vehicle queue lengths
- Pedestrian and cycle counts at Tore Roundabout.

2.3.10. In order to support the technical analysis two traffic models have been developed.

- A spreadsheet model that captures the link flows and turning movements for the baseline (current) situation and the most likely future scenario. The assignment of origin-destination movements in the model (due to new developments, traffic growth and reassignment) was done using a high-level gravity-model approach. This spreadsheet model informed the analysis of the impacts of future traffic growth and/or reassignment.
- Stand-alone isolated junction models of Munlochy Junction and Tore Roundabout which were used to assess the operational performance of each junction approach in the baseline and most likely future scenario.

2.3.11. Further detail on the development of the traffic models is provided in Chapter 6.

IDENTIFICATION OF PROBLEMS AND OPPORTUNITIES

2.3.12. In line with STAG requirements the study team identified real and perceived potential problems, opportunities, issues and constraints associated with the study area.

2.3.13. The current and future problems (real and perceived) and opportunities were informed by the technical analysis and by stakeholder inputs, and consideration of the constraints and issues impacting upon the study area.

TRANSPORT PLANNING OBJECTIVES

2.3.14. Transport Planning Objectives (TPOs) have been developed in accordance with SMART principles (Specific, Measurable, Achievable, Relevant and Timed) and reflect the identified problems and opportunities and the stakeholder inputs.

OPTIONEERING AND INITIAL OPTIONEERING

2.3.15. Once the TPOs were finalised an initial optioneering exercise was undertaken to identify all potential intervention options to address the problems and opportunities identified (with a focus on road-based options).

2.3.16. The optioneering was unconstrained and all realistic options were considered, regardless of potential issues of costs, timescales, etc. The optioneering was informed by the WSP project team, the Client Team, options considered as part of previous studies (identified through the review of previous documents) and input provided by stakeholders.

2.3.17. Options have been categorised against short, medium and long-term timeframes.

STAKEHOLDER ENGAGEMENT

2.3.18. In order to draw in stakeholder input to the study during the development of the Case for Change report, the study team undertook an engagement process (in alignment with the requirements of STAG).

2.3.19. During the development of the Case for Change the approach included engagement with stakeholders (including organisations and elected members) identified in conjunction with the Highland Council and other stakeholders. At the Case for Change stage, the process did not include a broader public consultation as the engagement sought to identify the problems and opportunities (as opposed to consultation on presented options). If the study progresses to further stages where options are developed and appraised, public consultation will be undertaken at that point to gather views on the options presented.

2.3.20. The stakeholder engagement gathered technical data and views from stakeholders regarding perceived problems, opportunities, issues and constraints on the A9 (relevant to the study area) through the use of pre-engagement meetings, written submissions and stakeholder workshops. Through the careful recording of stakeholder inputs throughout the process, this report provides evidence of consensus and conflicting stakeholder views on the problems and opportunities in the study area.

2.3.21. The engagement was undertaken over three phases.

- Phase 1 - Pre-workshop engagement with stakeholders through telephone discussions and written submissions. This included gathering information/local knowledge and supporting technical data (where available)
- Phase 2 - Workshop 1 – gathered views on existing and future problems and opportunities, and inputs to the development of Transport Planning Objectives
- Phase 3 - Workshop 2 – gathered views on the proposed Transport Planning objectives and inputs to the potential options informing the longlist.

2.3.22. All stakeholder inputs are reflected in this report and the workshop reports included in a separate document **Appendix D**.

3 STUDY CONTEXT

3.1 OVERVIEW

3.1.1. This chapter provides a summary of the geographic and socio-economic context of the study area, including Inverness and the Inner Moray Firth. It considers topics for the study area such as demographics, areas of deprivation, economic activity, car ownership and commuting patterns. Information was obtained from secondary sources such as Scotland's Census and National Records of Scotland.

3.1.2. Data from the 2011 census has been referenced in this chapter. This represents the most reliable and the most recent source for broader socio-economic and travel pattern data. The next census is planned for 2022. Whilst the 2011 data is older than would ideally be used to inform a study, it would require a disproportionate effort to gather the same information for a specific study. Further, the purpose of the data is to describe the broad socio-economic patterns and these are unlikely to have changed (since 2011) to the extent that it would alter any conclusions drawn from this study.

3.1 GEOGRAPHICAL CONTEXT

3.1.1. The study area is located north of Inverness between the North Kessock junction and the Tore Roundabout. In this section, the A9 is a dual carriageway road which serves as the strategic road corridor linking the north of Scotland and the Isles through the A9 and A835 respectively, as well as connecting the local communities along the route through a number of local single carriageway roads that connect into the A9 (mostly through at-grade junctions).

3.1.2. The Inner Moray Firth area, as defined in the adopted Inner Moray Firth Local Development Plan (2015), is shown in Figure 3-1 and is the most densely populated area of the Highlands. It contains the Black Isle area, as well as Inverness, which are directly located in the catchment area served by the A9 corridor. Inverness is the largest city in the north of Scotland and serves as a main administrative, economic and financial centre for the wider area. Inverness also serves as the main transport hub, being served by main roads such as the A9, A82 and A96.

3.1.3. Other transport links include local roads, Inverness rail station and Inverness Airport which is located east of Inverness and which served just under one million passengers in 2019.

3.2 SOCIO-ECONOMIC CONTEXT

3.2.1. This section includes key demographic and economic indicators in the Inner Moray Firth, including population, economic activity, travel to work/school, car ownership and multiple deprivation. The understanding of the socio-economic context supports an understanding of the role that transport plays in the local and wider context, supporting residents, businesses and commuters.

POPULATION

3.2.2. According to mid-year estimates by the national Records of Scotland, the Highland Council area, which includes the Inner Moray Firth area, had a population of 235,830 of which roughly 38% live in Inverness and the Black Isle peninsula.

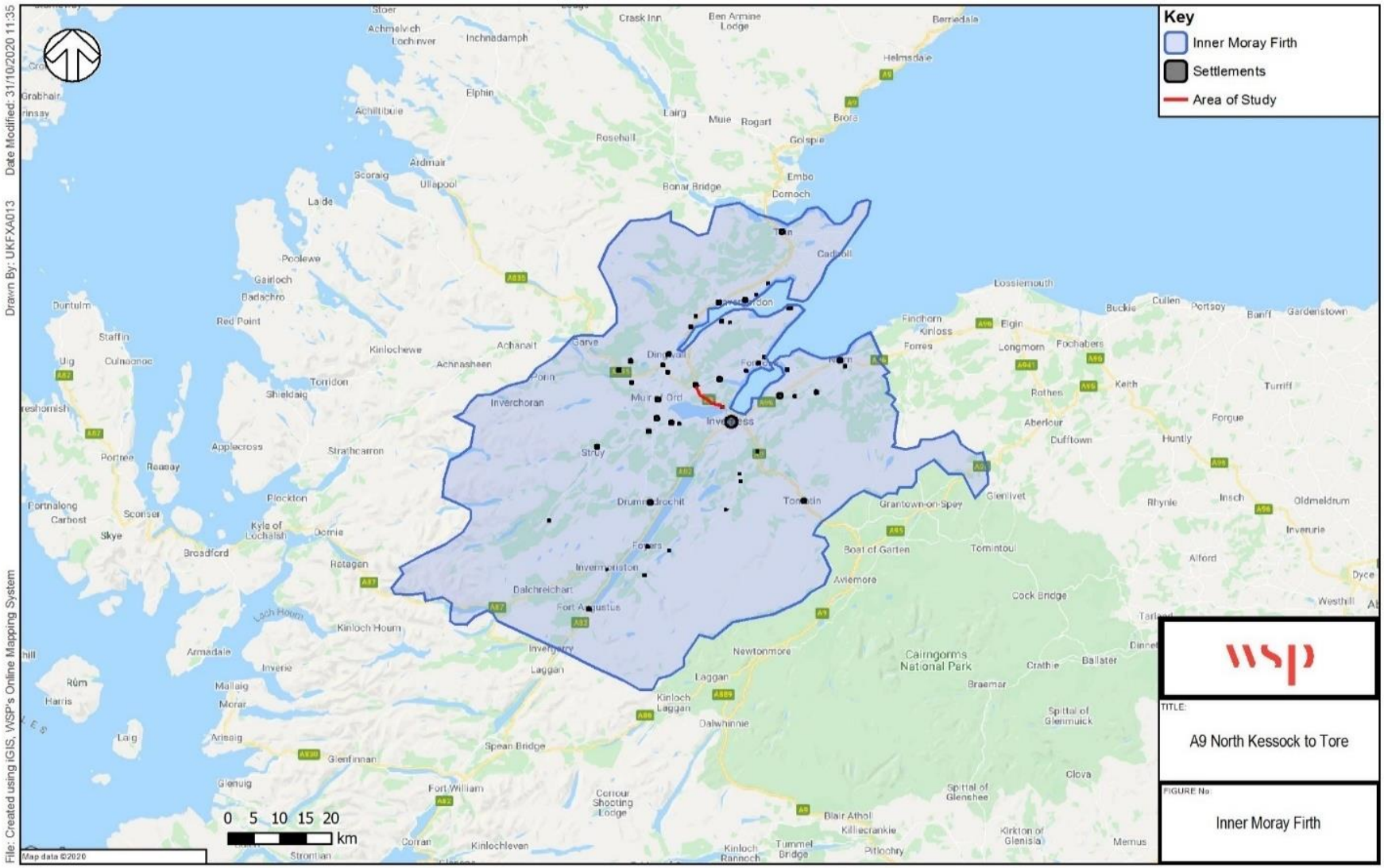


Figure 3-1: Inner Moray Firth geographical context

3.2.3. The population age distribution (Figure 3-2) shows that the percentage of population in working age has remained relatively constant in the Highland Council since 2001. However, the population in the area is ageing as there is now a higher percentage of people over 65. In comparison, Scotland has a slightly higher percentage of population in working age and a smaller percentage of people over 65.

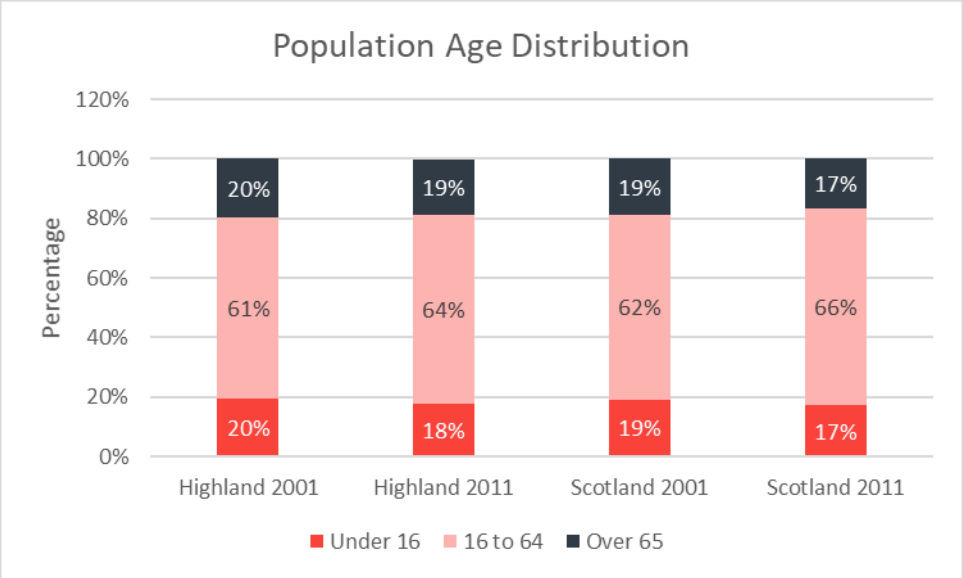


Figure 3-2: Age distribution in Scotland and Highland Council (Census 2001 and 2011)

EMPLOYMENT

3.2.4. Although the percentage of people in working age is lower in the Highland Council area than that of Scotland as a whole, Figure 3-3 shows that 72% of the population in the working age group is economically active, compared to the 69% in Scotland.

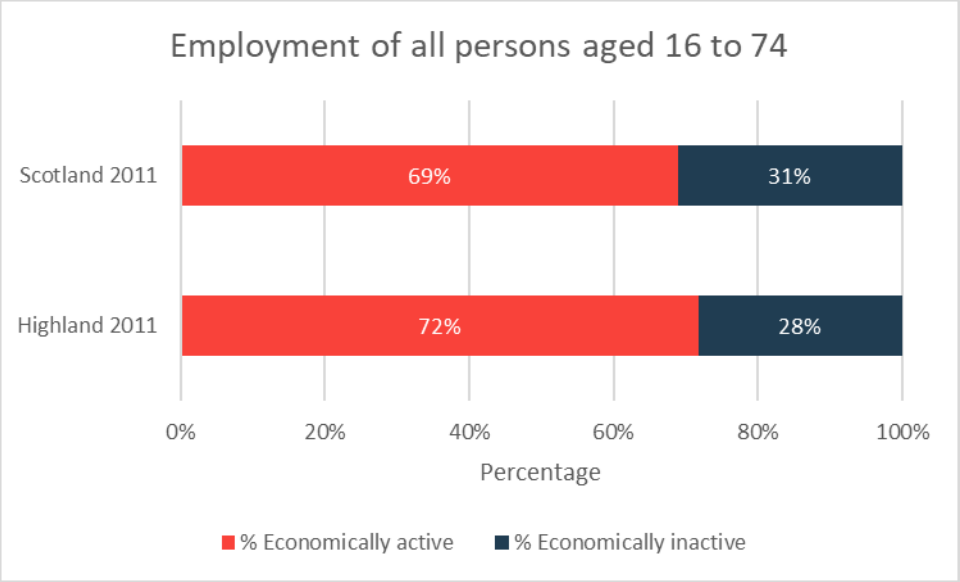


Figure 3-3: Percentage of population economically active and inactive (Census 2011)

3.2.5. Figure 3-4 shows the distribution of type of employment. There is a higher percentage of self-employed people as well as part-time employed when compared to the whole of Scotland. Unemployment is shown in Figure 3-5, indicating two different patterns: the younger population has lower levels of unemployment compared to the whole of Scotland although unemployment has increased since 2001. In the 50 to 74 age group the number of unemployed has reduced since 2001 but is still greater than in Scotland.

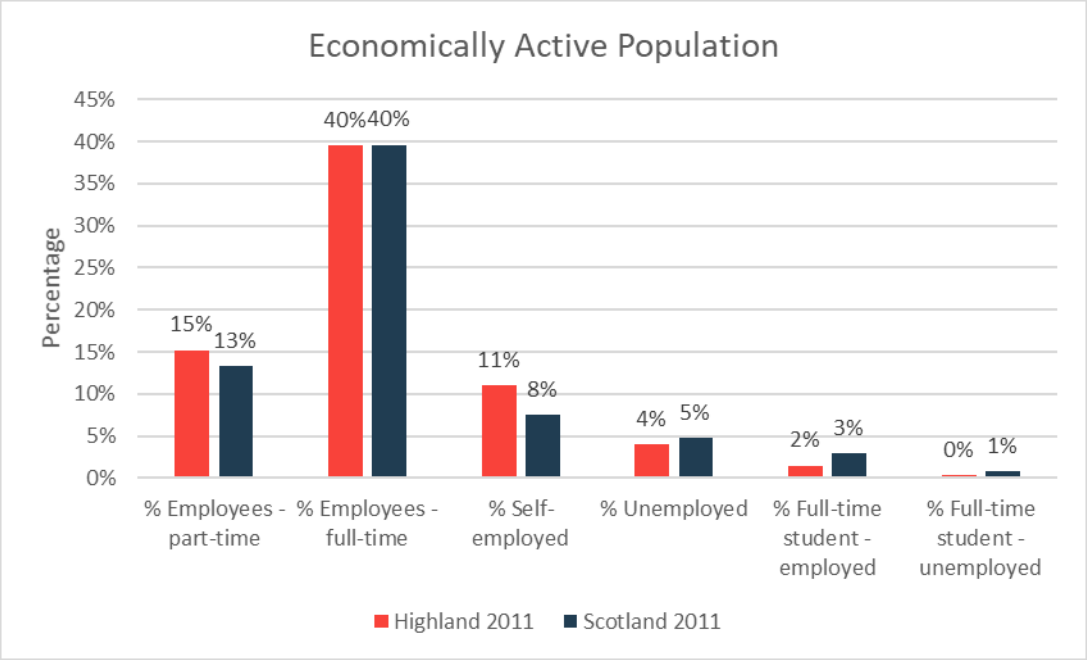


Figure 3-4: Economically active population in Scotland and Highland Council (Census 2011)

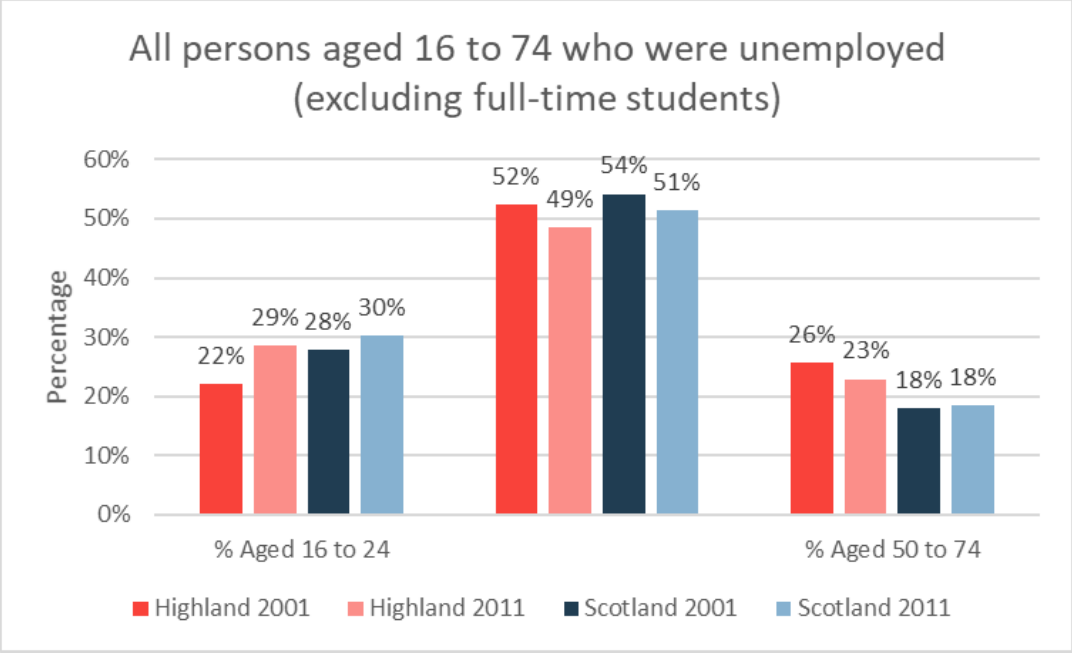


Figure 3-5: Percentage of unemployment in Scotland and Highland Council (Census 2001 and 2011)

EDUCATION

3.2.6. The level of education shown in Figure 3-6 reflects the increase in levels of education both in Scotland and the Highland Council area. Between 2001 and 2011 there was a significant decrease in the percentage of people with no qualifications as well as Level 1 and Level 2, whilst there has been an increase in the percentage of people that attain higher levels of qualification such as Level 3 and Level 4. Levels of qualification are as follows:

- Level 1: O Grade, Standard Grade or equivalent
- Level 2: SCE Higher Grade or equivalent
- Level 3: HNC, HND or equivalent
- Level 4: Degree or Postgraduate qualifications.

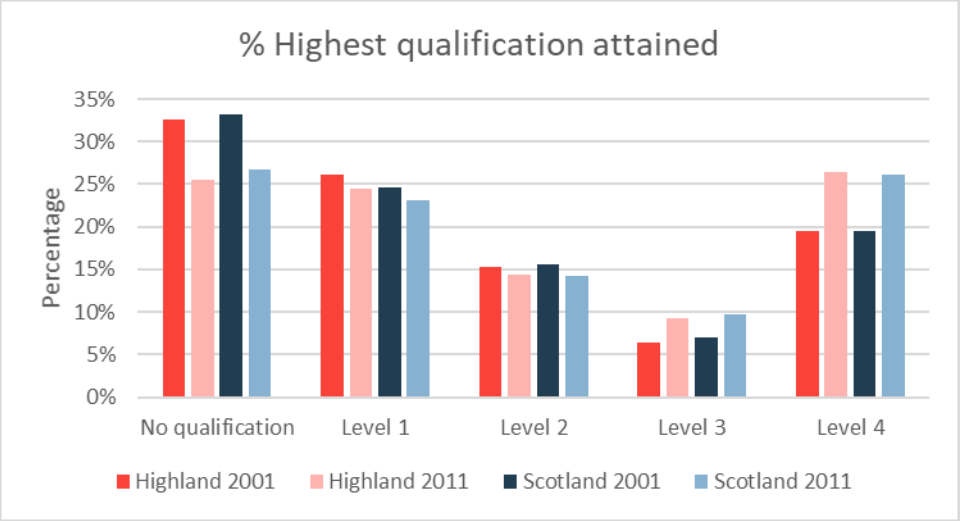


Figure 3-6: Highest qualification attained in Scotland and Highland Council (Census 2001 and 2011)

HEALTH

3.2.7. Figure 3-7 shows the classification of general health from the 2011 Census. The Highland area benefits from slightly higher levels of very good health and a lower percentage of bad health when compared to Scotland.

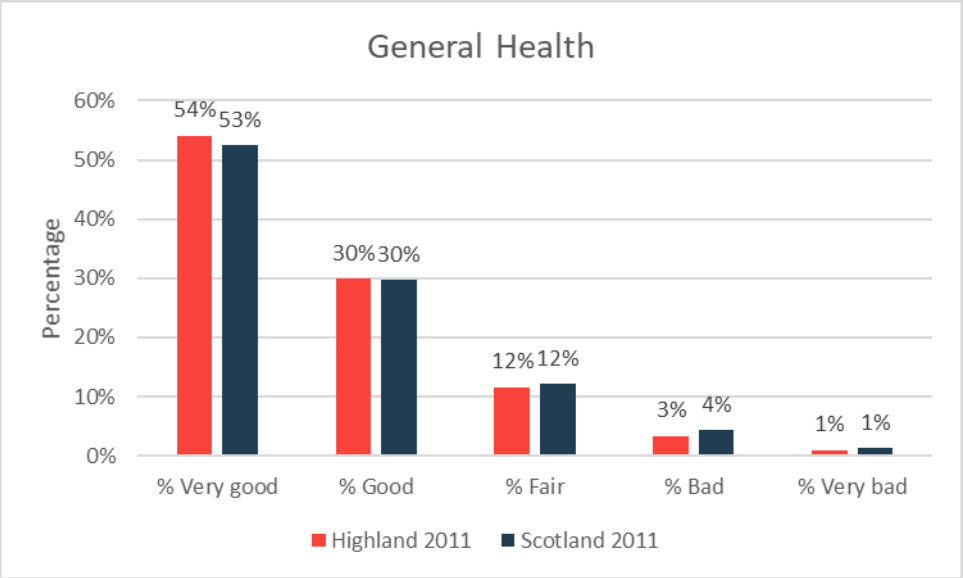


Figure 3-7: General health in Scotland and Highland Council (Census 2001)

LEVELS OF DEPRIVATION

3.2.8. The Scottish Index of Multiple Deprivation (SIMD) is the Scottish Government's official tool for identifying those places in Scotland suffering from deprivation. The SIMD incorporates several different aspects of deprivation such as employment, income, health, education, skills and training, geographic access, crime and housing and combines them into a single index. The 2016 Index provides a relative ranking for small areas in Scotland, from 1 (most deprived) to 6,976 (least deprived).

3.2.9. The figure presented in a separate document **Appendix E** shows the level of Deprivation around the study area. It reflects that the areas with the highest levels of deprivation areas lie within Inverness, particularly the rural areas of the city, as well as areas around Alness, Invergordon and Kildary. However, the rest of the towns and villages within the Inner Moray Firth are in the range of 25% to 100% percentiles of areas with the least deprivation in the SIMD.

TRANSPORTATION

3.2.10. Figure 3-8 and Figure 3-9 show the modal share of trips to work and study, respectively. Work related trips have a slightly higher car dependency than the rest of Scotland. There has been an increase in the share of trips made by public transport between 2001 and 2011.

3.2.11. Trips for the purpose of study have a higher mode share of public transport and active travel due to the proximity of schools from the origins.

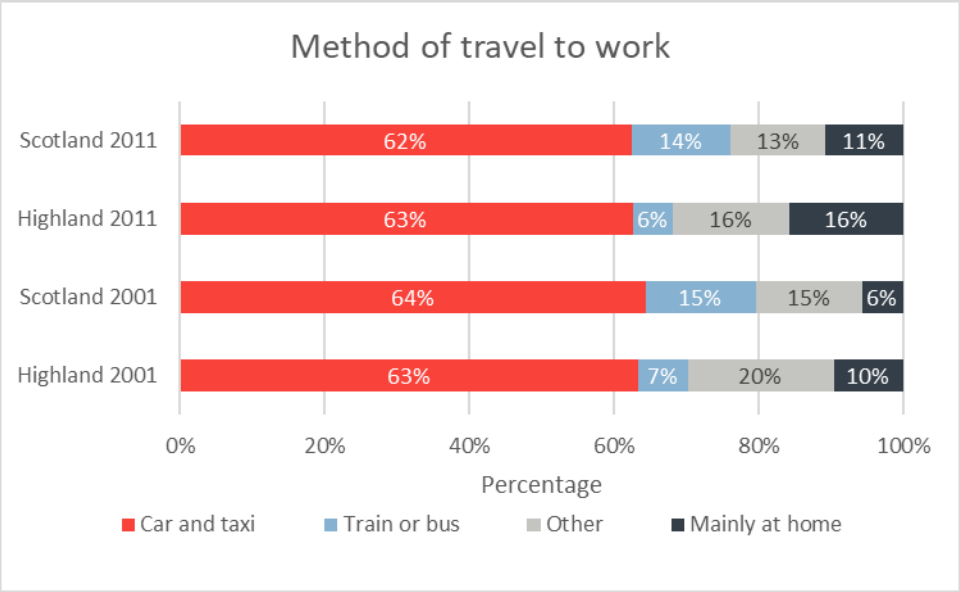


Figure 3-8: Method of travel to work Scotland and Highland Council (Census 2001 and 2011)

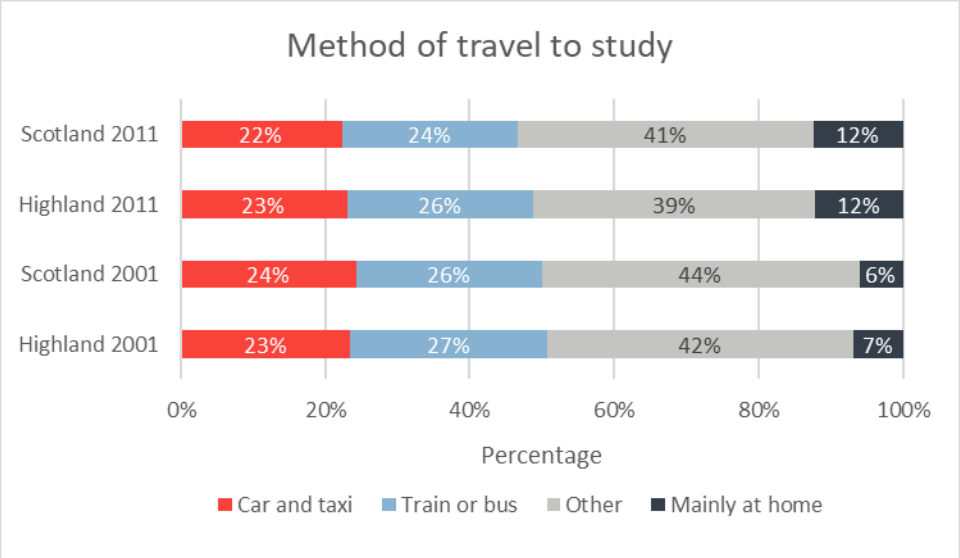


Figure 3-9: Method of travel to study Scotland and Highland Council (Census 2001 and 2011)

TRAVEL TO WORK PATTERNS

3.2.12. Figure 3-10 shows the trip distribution of journeys to work in Inverness, which is the main centre of economic, social and community activity in the north of Scotland. The figure highlights the broad geographic area from which commuters travel to Inverness and, in particular, the Black Isle, and the associated importance of the A9 and the Kessock Bridge over the Beauly Firth in connecting this region to Inverness.

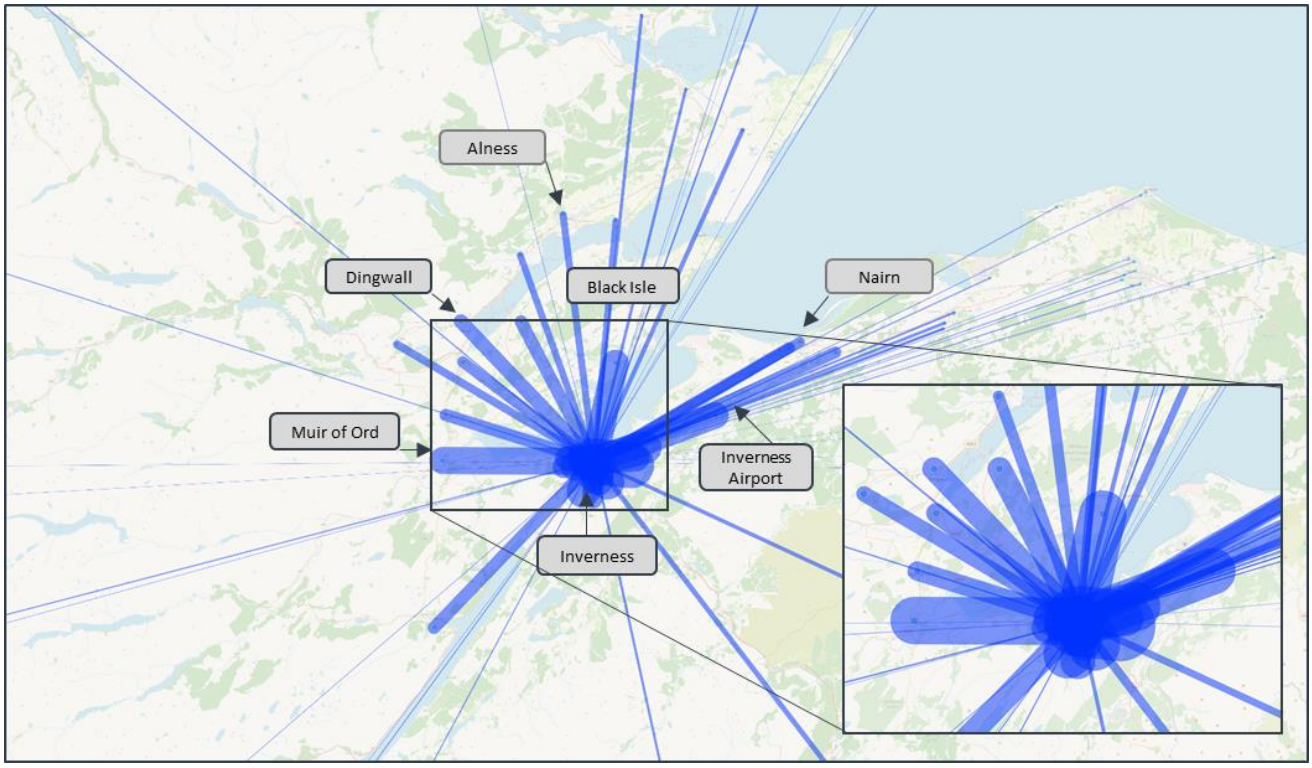


Figure 3-10: Patterns of travel to work to Inverness

3.2.13. Further detail of the road network and transport demand is presented in chapters 4.4.8 and 6.

3.3 ANALYSIS OF GEOGRAPHIC AND SOCIO-ECONOMIC CONTEXT

3.3.1. The geographic and socio-economic data indicates the following:

- The A9 in the study area serves a broad region, with pockets of population spread out over a large area, which would place a greater reliance on car as the mode of travel to work.
- The population is aging but levels of employment are slightly higher than in the rest of Scotland. The higher levels of employment suggest a greater requirement for transport connections to employment areas.
- The growing levels of educational attainment (between 2001 and 2011) may result in a greater desire to travel to urban centres, such as Inverness, for higher earning employment.
- Conversely the higher levels of working from home and part time working may reduce the need for travel during the peak commuting periods on weekdays.
- There is a strong “draw” to Inverness for commuters from the Black Isle based on the 2011 Census journey to work data, and the A9 in the study area serves these commuters.
- It is also important to note that the medium- and longer-term impacts of the COVID-19 pandemic, which will have an impact on the socio-economic profile of the area, are is still unfolding and which changes are transient or more permanent is yet to be understood.

4 POLICY REVIEW

4.1 INTRODUCTION

4.1.1. This chapter sets out the policy context which informs the study, including a summary of key policy documents from all levels of governance. Strategic transportation aims and objectives are set out at a national level and are subsequently transposed into regional transport strategies which then inform local transport strategies. The relevant policy documents are summarised below.

4.2 NATIONAL POLICY

NATIONAL TRANSPORT STRATEGY 2

4.2.1. Scotland's new National Transport Strategy (NTS2), published in February 2020, sets out the vision for Scotland's transport system:

> **"We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, business and visitors"**

4.2.2. This vision is underpinned by four pillars or priorities with three associated outcomes each, as shown in Figure 4-1.

Figure 4-1: National transport strategy 2 priorities.

4.2.3. The fourth pillar aims to create a transport system that is safe and secure as well as making communities that are great places to live and which enable people to make healthier travel choices. Having a transport system that is safe and secure focuses on the prevention and reduction of incidents on the transport system.

4.2.4. According to the “Reported Road Casualties Scotland 2019” (October 2020), there were 7,638 road accident casualties reported in Scotland in 2019, a 9% decrease compared to the previous year; however, there were 165 fatalities, an increase of 2%.

SCOTLAND’S ROAD SAFETY FRAMEWORK TO 2030

4.2.5. Scotland’s Road Safety Framework to 2030 was published in February 2021, setting out the national road safety strategy for Scotland. It builds upon the work achieved by the Framework to 2020 in reducing road casualties and confirms the Government’s commitment to achieving safer road travel in Scotland by having the best road safety performance in the world by 2030, and ambitious interim targets where the number of people being killed or seriously injured on our roads will be halved by 2030 (and a 60% reduction for children aged under 16).

4.2.6. The vision of the Road Safety Framework to 2030 is “For Scotland to have the best road safety performance in the world.”

4.2.7. The Framework recognises the impact of COVID-19 on transport and, together with the actions to target the climate emergency, foresees a change in patterns by 2032, shifting away from the dominance of private car use, particularly single occupancy, to a society which has embraced more walking, wheeling, cycling, public transport and shared transport options, particularly in urban settings.

4.2.8. It also embeds the vision of the NTS2 to have a transport system that will enhance opportunities and encourage long-term, sustainable development, calling for an inclusive, safe and accessible system to help deliver a healthier, fairer and more prosperous Scotland for its communities, businesses and visitors alike.

4.2.9. The intended outcomes of the Framework are shown in Figure 4-2, and align with the five pillars of the Safe System: Safe Road Use; Safe Vehicles; Safe Speeds; Safe Roads and Roadsides; and Post-crash Response.

4.2.10. The Framework sets the following interim targets to 2030:

- 50% reduction in people killed;
- 50% reduction in people seriously injured;
- 60% reduction in children (aged <16) killed; and
- 60% reduction in children (aged <16) seriously injured.

4.2.11. These targets are supported by seven intermediate outcome targets and three intermediate measures. The Key Performance Indicators are currently being developed and will be published in the first Road Safety Annual Delivery Plan.

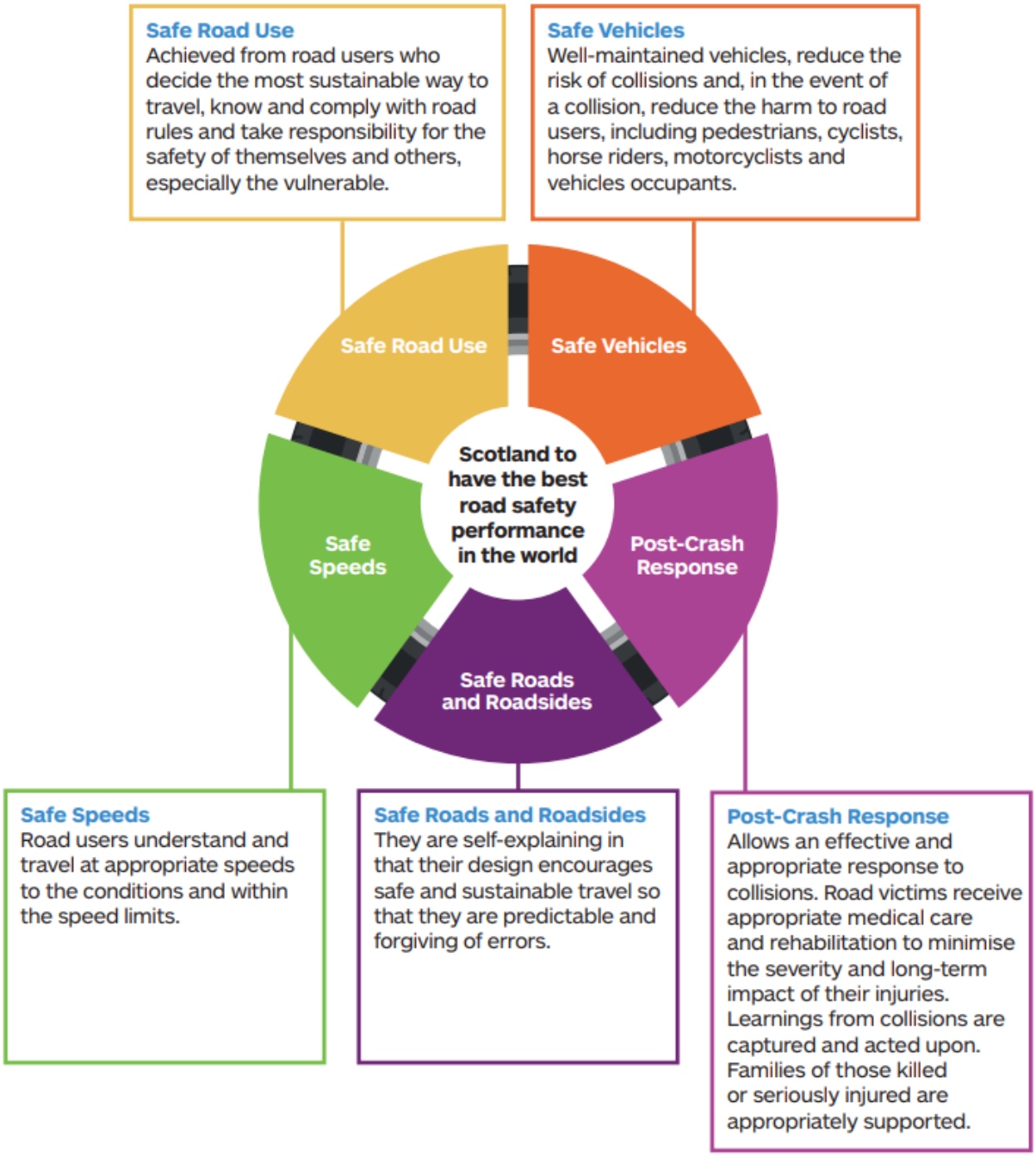


Figure 4-2 - Outcomes of the Road Safety Framework to 2030

4.2.12. The Framework identifies 12 current and emerging challenges that will make an impact on road safety. To address these challenges, the Framework proposes 12 Strategic Actions which are intended to be seen as the collective responsibility of all stakeholders and road safety partners. The delivery of these actions will be monitored and will be transferred and expanded upon in national and local delivery plans which sit outside the Framework. The 12 Strategic Actions as stated in the Framework are:

- Speed: will deliver a range of speed management initiatives to support the Safe System;

- Climate: will deliver road safety initiatives that positively impact the climate emergency and we will mitigate the negative impacts climate change may have on road safety;
- Funding & Resourcing: will improve funding streams for national and local road safety delivery;
- Change in Attitudes & Behaviour: will engage in partnership working to enable all road users to understand their road safety responsibilities, allowing them to improve their attitudes and behaviours for the safety of themselves and others;
- Technology: will research, implement and evaluate technologies for use within the Safe System and promote them as appropriate;
- Active & Sustainable Travel: will ensure road safety remains a key focus of active & sustainable travel in Scotland;
- Knowledge & Data Analysis: will ensure our actions are evidence-led to support the delivery of the Safe System;
- Enforcement: will optimise enforcement to encourage good road user behaviour to support the Safe System;
- Health: will strengthen the relationship between health and road safety, reduce the likelihood, number and severity of collisions and improve the post-crash response;
- Education: will provide opportunities for all road users to gain the knowledge, skills and experience required to become safe and responsible users;
- Engineering: will improve road infrastructure and maintenance; and
- Inequality: will reduce road safety inequality due to socio-economic disadvantage of people living in areas of deprivation.

STRATEGIC ROAD SAFETY PLAN 2016

4.2.13. The Strategic Road Safety Plan sets out how Transport Scotland delivers road safety on the trunk road network. It highlights the need to remove risk and prioritise initiatives aimed at preventing accidents and mitigating the effect when accidents occur.

4.2.14. The Road Safety Plan was published to support the outgoing Scotland Road Safety Framework to 2020 by reinforcing the use of a Safe System approach within the road transport system. This includes an Action Plan aligned with the five pillars which makes use of Transport Scotland's knowledge of the trunk road network and how to most effectively reduce casualties.

4.2.15. The Plan sets out 20 actions for the trunk road network, supporting wider engineering, education and enforcement programmes carried out by all agencies involved in road safety, which are in line with the actions set out by the Road Safety Framework to 2030.

4.3 REGIONAL POLICY

HIGHLAND-WIDE LOCAL DEVELOPMENT PLAN

4.3.1. The Highland-wide Local Development Plan (HwLDP) was adopted by the Highland Council in April 2012 setting out the overarching spatial planning policy for the whole of the Highland Council area, except the area covered by the Cairngorms National Park Local Plan. A review of the HwLDP was started in 2016 but was put on hold due to the publication of the Planning Bill published by the Scottish Government in December 2017.

4.3.2. The Plan sets out the vision and spatial strategy for the area to support the growth of all communities across the Highlands. The Plan is aligned with Scottish Government policy for sustainable development and sets out an increase in the number of houses to be built in order to meet the aspirations based on the Housing Need and Demand Assessment.

4.3.3. Further details on development and land use change is described in chapter 6.

4.3.4. The HwLDP addresses the need to work with Transport Scotland and other transport bodies to deliver transport infrastructure improvements across the area in line with Local Transport Strategies and the Scottish Government's Strategic Transport Projects Review. Although there are no specific objectives or actions related to road safety within the HwLDP, the Council recognises the importance of road safety in the Highland Local Transport Strategy.

4.3.5. The Highland Council Transport Strategy 2011 – 2014 highlights road safety as one of the 16 core policies. The objectives are closely aligned with the Road Safety Framework to 2030 and the Scottish Road Safety Targets.

4.4 LOCAL POLICY

INNER MORAY FIRTH LOCAL DEVELOPMENT PLAN

4.4.1. The Inner Moray Firth Local Development Plan (IMFLDP) was adopted in July 2015, setting out the guidance for future development alongside the Highland-wide LDP and Supplementary Guidance. It is the first of three new area local development plans used to determine planning applications in the Inner Moray Firth area. The adopted IMFLDP is currently under review.

4.4.2. The adopted IMFLDP sets out the land use strategy for delivering the vision of the plan to concentrate development in existing settlements, to create sustainable new communities and to provide the infrastructure and transport network required to support the communities whilst ensuring the protection of the area's natural and built environment.

4.4.3. The adopted IMFLDP is supported by a number of documents as follows.

- Strategic Environmental Assessment
- Habitats Regulations Appraisal
- Equalities Impact Assessment
- Transport Appraisal
- Action Programme
- Housing Land Requirement Background Paper
- Education Provision in the Inverness-Nairn Corridor.

4.4.4. In terms of transport, the adopted IMFLDP sees the potential for encouraging a shift to more sustainable forms of travel by taking advantage of the high population densities in the area, compared to the rest of the Highlands. In addition to new development being required to contribute towards local and strategic transport infrastructure requirements and contribute to the delivery of more sustainable forms of travel, the IMFLDP considered the following transport interventions:

- Encouraging more frequent and faster rail journeys
- A new rail station at Dalcross
- A park and ride in East Inverness
- Improving National Cycle Network 78
- An Inverness city centre to East Inverness walking/cycling route

- The West Link road scheme to relieve congestion in the city centre
- Delivery of priority actions detailed in Active Travel Masterplans.

Adopted Inner Moray Firth Local Development Plan – Transport Appraisal

4.4.5. The transport appraisal supports the IMFLDP by addressing the relationship between land use and transport planning. The appraisal assesses the implications of the IMFLDP vision and spatial strategy for the transport network, examines the capacity of the transport network to accommodate future development and outlines the transport interventions required to ensure that development is supported by a transport network that is fit for purpose.

Adopted Inner Moray Firth Local Development Plan – Planned Development

4.4.6. The data in a separate document **Appendix B** shows the quantum and location of development included in the IMFLDP. The sites included under a separate document, Appendix B, total more than 12,750 housing units to be delivered during the plan period up to 2035, with approximately half of these located in Inverness and Tornagrain.

4.4.7. The IMFLDP includes the Ross-shire growth area, which includes for growth in an arc from Muir of Ord through Alness, Invergordon and Tain. An extract from the IMFLDP showing the Ross-shire Growth Area is included in Figure 4-3 and shows the importance of the A9 link connecting this area to Inverness and the Inverness to Nairn Growth Area.

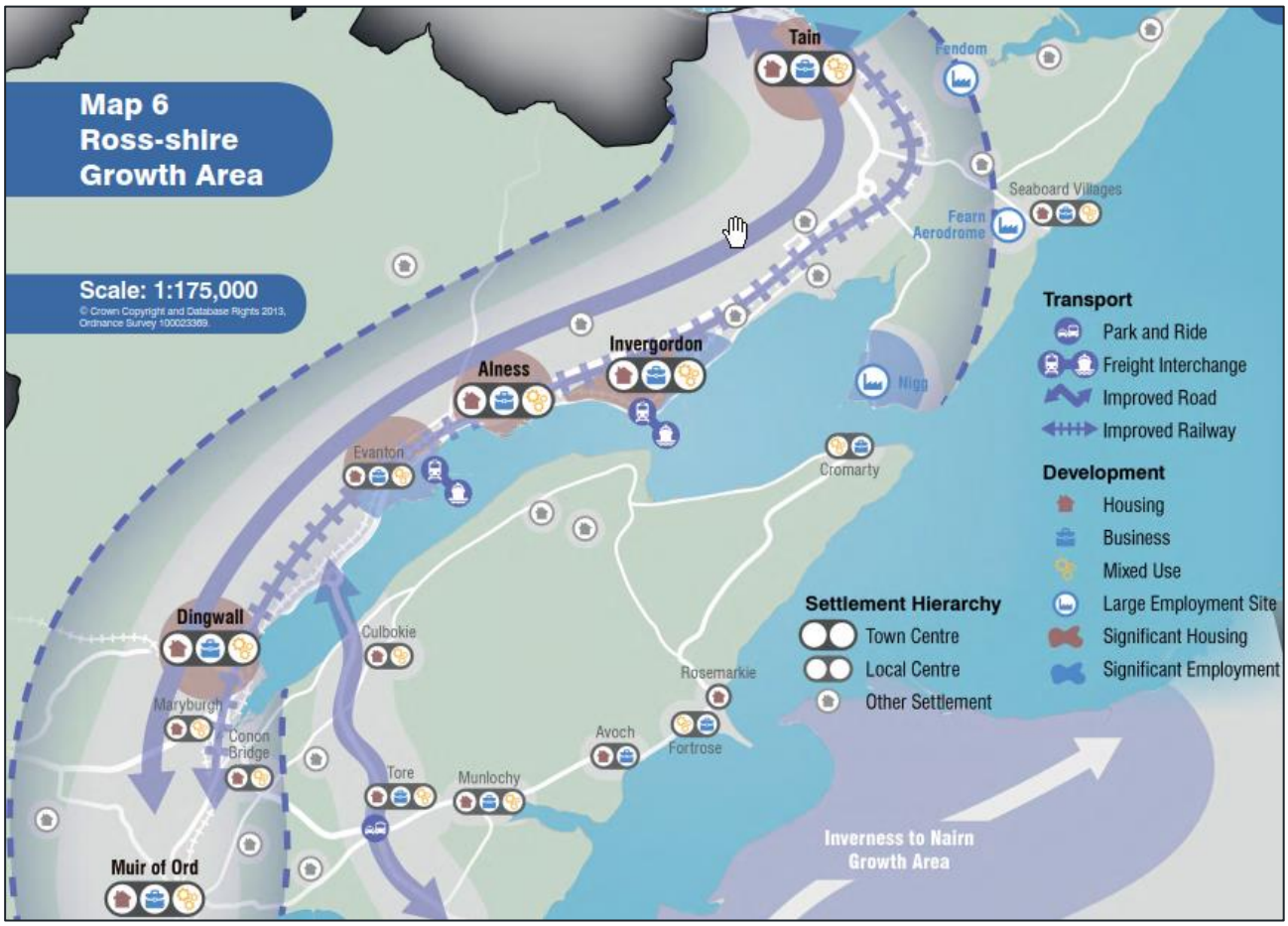


Figure 4-3: Extract from the Inner Moray Firth Local Development Plan (2015) – Map 6 showing the Ross-Shire Growth Area

4.4.8. The IMFLDP identified major infrastructure requirements for the Ross-shire Growth Area as follows:

- Improvements to important A9 junctions, in particular Munlochy (A9/B9161)
- Potential for other trunk road upgrades including overtaking lanes on the A9 and A835
- Potential for a park and ride at Tore
- Permanent bus priority measures on the Kessock Bridge.

4.4.9. The IMFLDP does not identify who is responsible for delivering the identified infrastructure.

Review of Inner Moray Firth Local Development Plan

4.4.10. At the time of drafting this report the Highland Council was undertaking a review of the IMFLDP. The Main Issues Report was published in January 2021 and is open for comments from the public until April 2021[1].

4.4.11. The main issues identified in the report published for consultation are:

- Addressing the Climate and Ecological Emergency
- Supporting a strong, diverse and sustainable economy
- Growing the most sustainable places
- Delivering affordable housing
- Matching development with infrastructure capacity
- Creating a more healthy, sustainable transport network
- Identifying and safeguarding valued, local green space
- Placemaking
- Meeting the needs of an ageing population.

4.4.12. A draft Transport Appraisal[2] has been undertaken to support the Main Issues Report. This document has not informed this Case for Change Report, as it is still in draft, but the Transport Appraisal will be considered in future appraisal stages.

[1] https://consult.highland.gov.uk/kse/event/35403
[2] https://highland.objective.co.uk/creation/download/5715972

5 CURRENT TRANSPORT NETWORK

5.1 OVERVIEW

5.1.1. This chapter provides details of the existing transport network, information of any planned improvements and identified current issues on the network.

5.2 STRATEGIC TRANSPORT NETWORK

5.2.1. The A9 corridor is the main strategic link connecting the north of Scotland. It is currently undergoing an ambitious dualling programme between Perth and Inverness, upgrading 80 miles of road from single to dual carriageway. According to Transport Scotland, £3 billion (2020) is being invested in the programme which is aimed at delivering economic growth through improved road safety and reduced travel times. The scheme also considers active travel and facilities for public transport.

5.2.2. North of Inverness, the Kessock Bridge carries the A9 across the Beauly Forth as dual carriageway road up to Tore Roundabout. From Tore Roundabout northwards the A9 is a single carriageway road. The A835 connects the A9 to the north of Scotland and serves as a strategic corridor to Ullapool and the connecting ferries to the Western Isles, as seen in Figure 5-1.

5.2.3. Other transport links include Inverness rail station and Inverness Airport which are the main hubs for rail and air travel in the north of Scotland. Inverness rail station is served by the Highland mainline from Perth to Inverness and the east line connecting with Aberdeen, Dundee and Edinburgh. From Inverness, there are connections to Wick and Thurso in the north and Kyle of Lochalsh in the northwest, with corresponding intermediate stations, providing alternative transport links to the A9 and A835 north of Inverness.

5.3 ROAD NETWORK

5.3.1. The strategic road network described in the previous section is supported by a number of local roads. Relevant to the study area are the B9161 connecting the A9 to the village of Munlochy, the A832 connecting Tore to Munlochy to the east and Muir of Ord to the west. Furthermore, a network of rural roads and paths serve the farms and industry in the region.

5.3.2. Of particular importance in this study is the B9161 Junction, which connects communities in the south of the Black Isle to the A9 via the B9161. The Black Isle lies within the Inverness travel to work area, as described in chapter 3, which (as shown in chapter 4) has seen considerable development growth in recent years and this has had an impact upon traffic volumes on the road network. A review of current demand and travel patterns, as well as future development and the impact on the network has been carried out and is presented in chapter 6.

5.3.3. Through ongoing monitoring of accident patterns across the trunk road network, an accident cluster (3 Personal Injury Accidents in 3 years) developed at the A9/B9161 junction. Transport Scotland's policy in this situation is to commission an accident investigation and prevention study provided there is the possibility of a common treatable cause of the accidents. In the case of the A9/B9161 junction, partly because of the concerns raised by stakeholders regarding safety and the impact of development on the Black Isle, and also because of the number of previous road safety improvements, Transport Scotland made the decision to undertake the Case for Change study (under STAG).

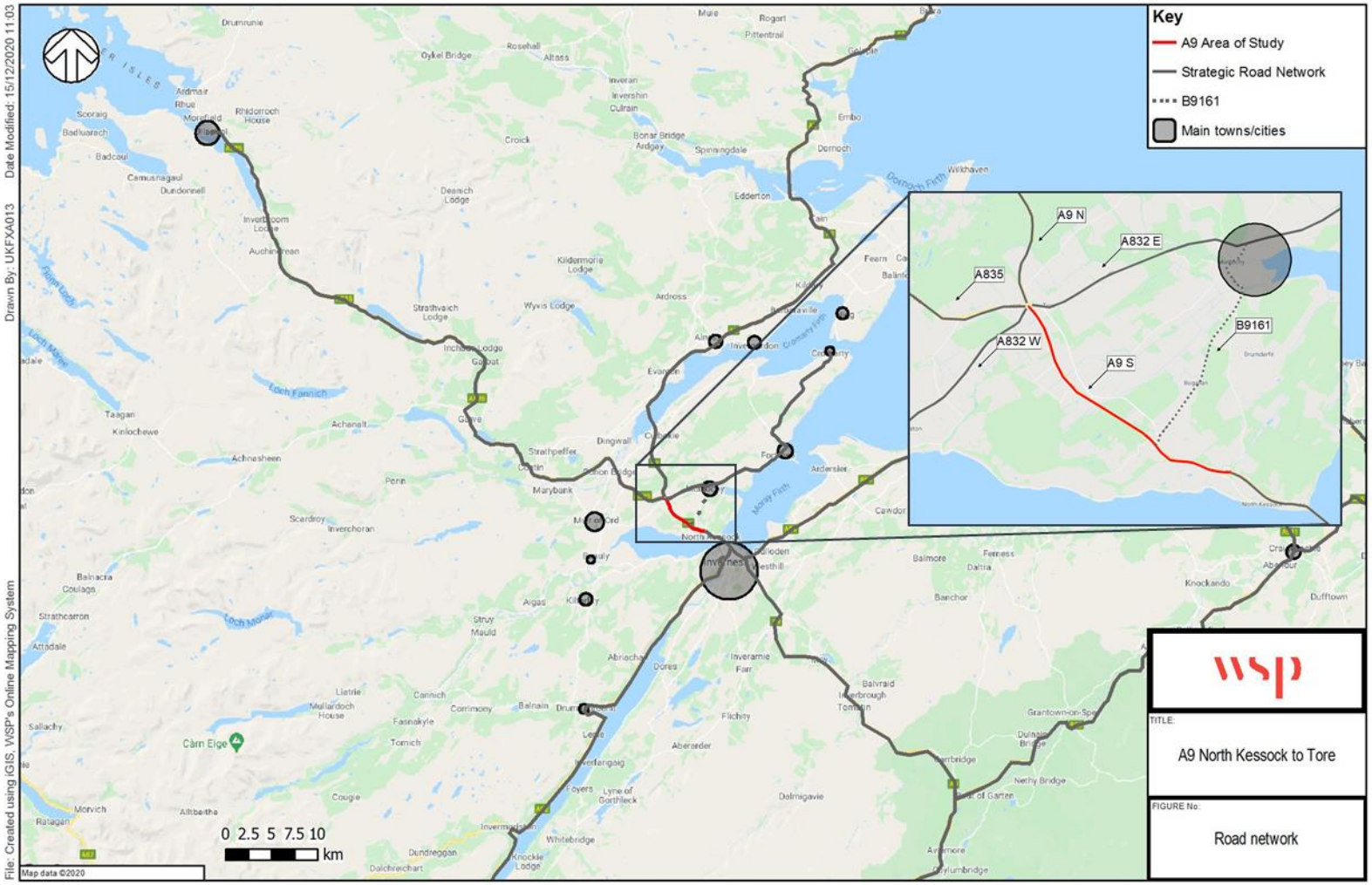


Figure 5-1: Strategic road network in the north of Scotland

5.3.4. A detailed Road Safety Analysis is presented in chapter 7 which reviews information from previous studies as well as the surveys commissioned for this study to assess the collision data, conflicts and safety issues.

5.4 BUS NETWORK AND ACTIVE TRAVEL

5.4.1. The study area is served by long and short distance bus services. Bus stops that serve residents are located in the settlements and local roads as well as along the A9 on both directions. The bus stops and services provided (as of September 2020) are shown in Figure 5-2.

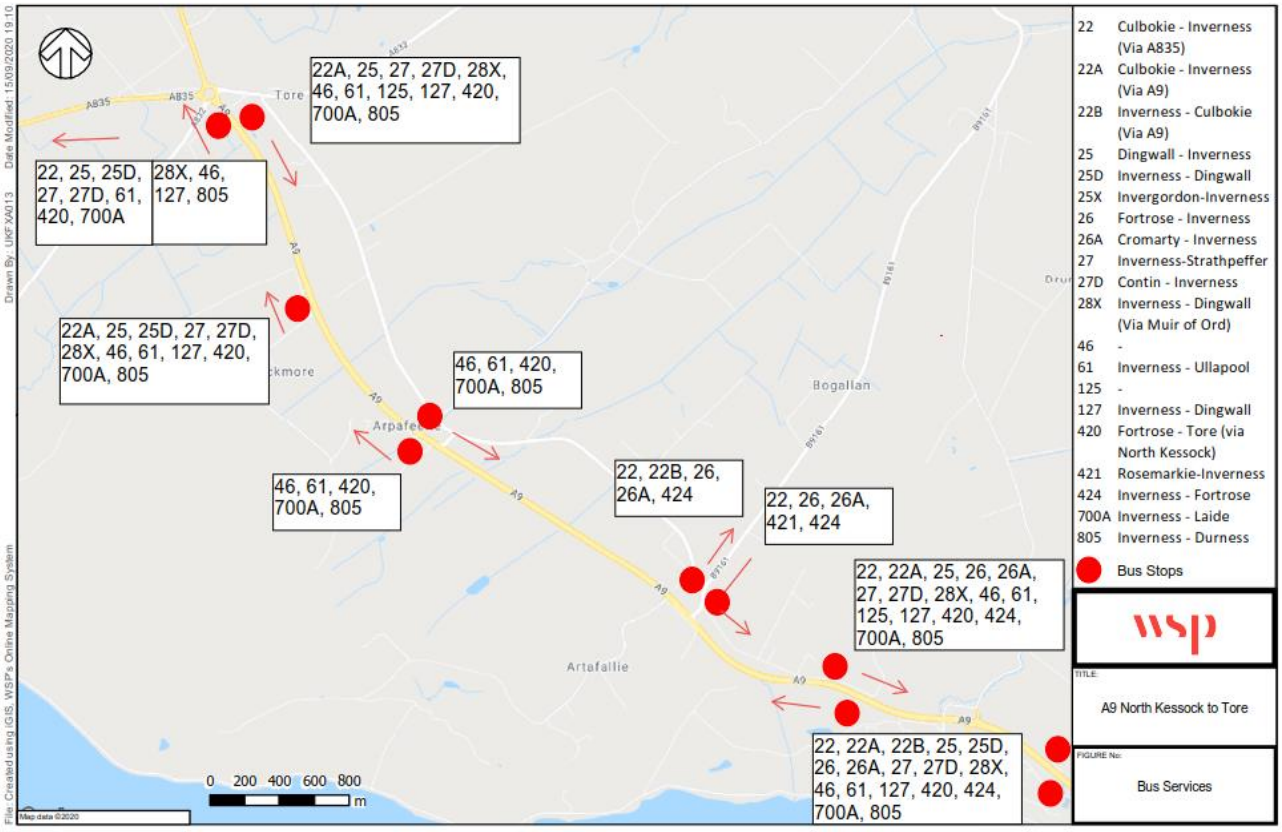


Figure 5-2: Bus stops and services

5.4.2. There are active travel provisions in the study area as shown in Figure 5-3. These include the National Cycle Network Route 1 connecting Inverness to Tain and Dingwall in the north. This section is composed of a mixture of on-road and traffic-free paths as well as pedestrian and cycling crossings.

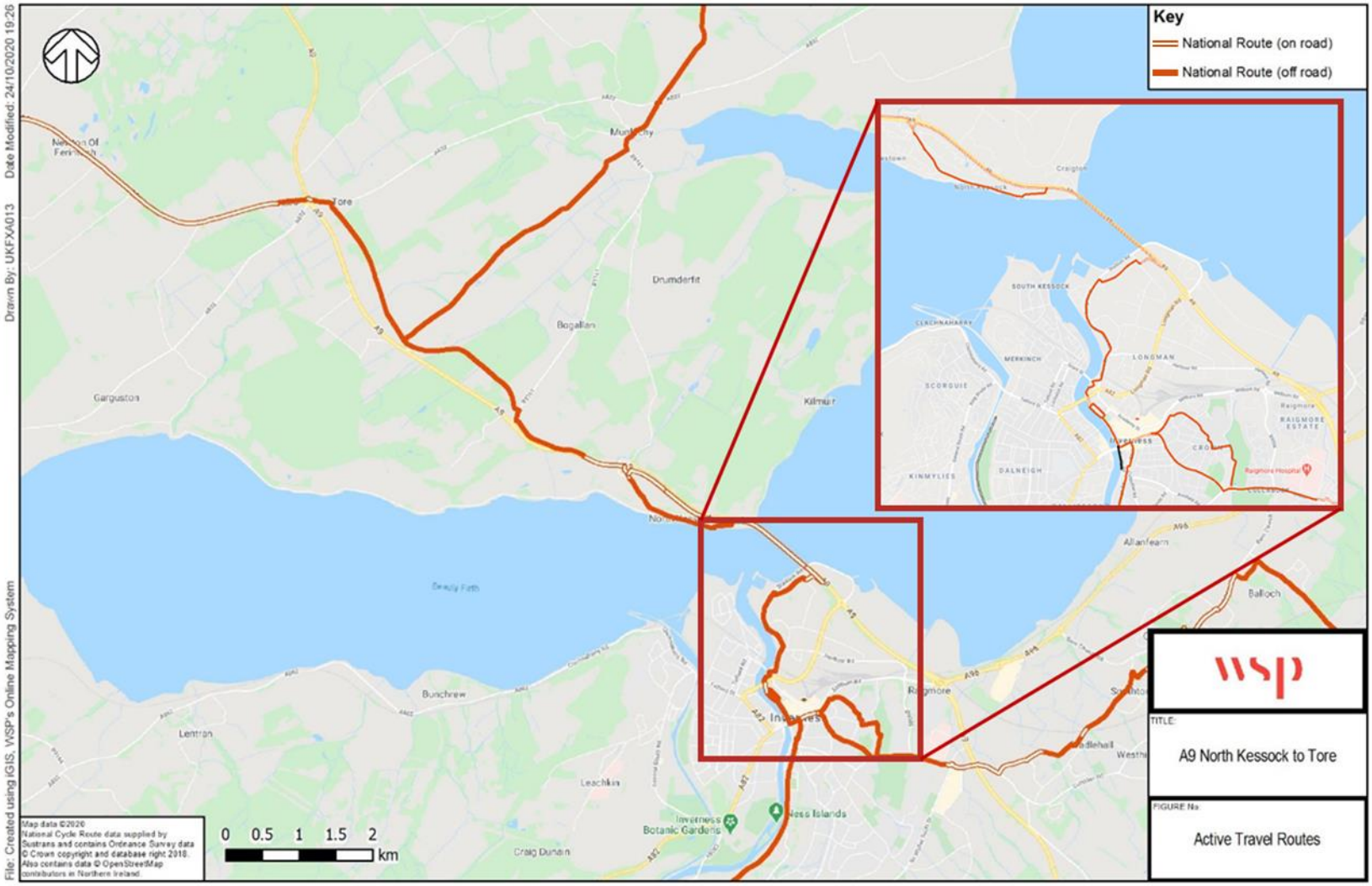


Figure 5-3: Active travel routes

6 TRANSPORT DEMAND AND TRAFFIC MODELLING

6.1 INTRODUCTION

6.1.1. This chapter sets out an analysis of the existing demand on the transport network described in the previous chapter, informed by the available data, new traffic surveys, and traffic modelling assessments which considered the current situation (2020) and the most likely future scenario (2035).

6.2 EXISTING TRANSPORT DEMAND

6.2.1. The existing transport demand was identified by analysing the following information:

- Department for Transport / Transport Scotland permanent traffic counters
- Speed surveys carried out in March 2020 by Transport Scotland
- Traffic counts carried out in September 2020.

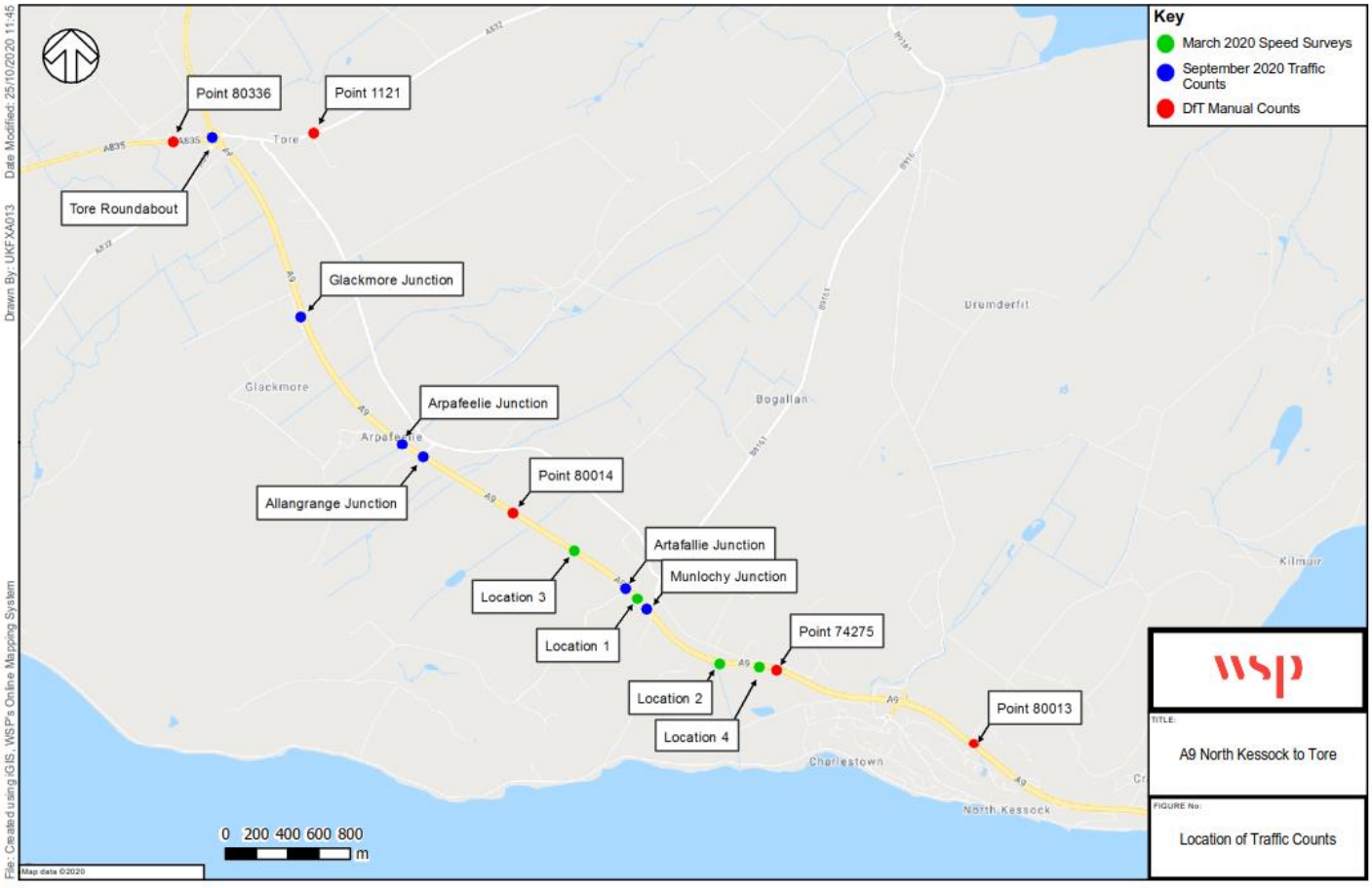


Figure 6-1: Location of traffic counts (September 2020) and speed surveys (March 2020)

6.2.2. Data from the permanent counters just west of the Kessock Bridge were used to identify the overall change in flows between September 2019 and September 2020 in order to ascertain whether traffic volumes had reduced due to the impacts of the COVID-19 pandemic.

6.2.3. Transport surveys were undertaken between 10 September 2020 (Thursday) and 12 September 2020 (Saturday), including turning counts, queue lengths as well as pedestrian counts at crossings on Tore Roundabout. Details of the locations surveyed are included in a separate document **Appendix C.**

6.2.4. Results from the surveys carried out during September, as well as information publicly available, were used to understand the travel patterns around the study area. This includes trips between major generation and attraction centres such as Inverness, the Black Isle area, Tore, and long-distance trips going to the north and north-west of Scotland.

Consideration of COVID-19 impacts on traffic survey data

6.2.5. The ongoing COVID-19 pandemic has had an impact on the traffic levels observed on the whole of Scotland's network. Government restrictions on travel has meant a reduced number of vehicles on the roads, including the A9. For this reason, traffic levels were compared between September 2019 and September 2020.

6.2.6. The comparison shows that although traffic demand has not fully returned to pre-pandemic levels, through traffic flows are within 10% of that observed in 2019 and hence the traffic data can be considered to be reasonably representative and suitable for the purposes of this study. This is shown in Figure 6-2 which compares information recorded by counter 104540, located just west Kessock Bridge, between September 2019 and September 2020.

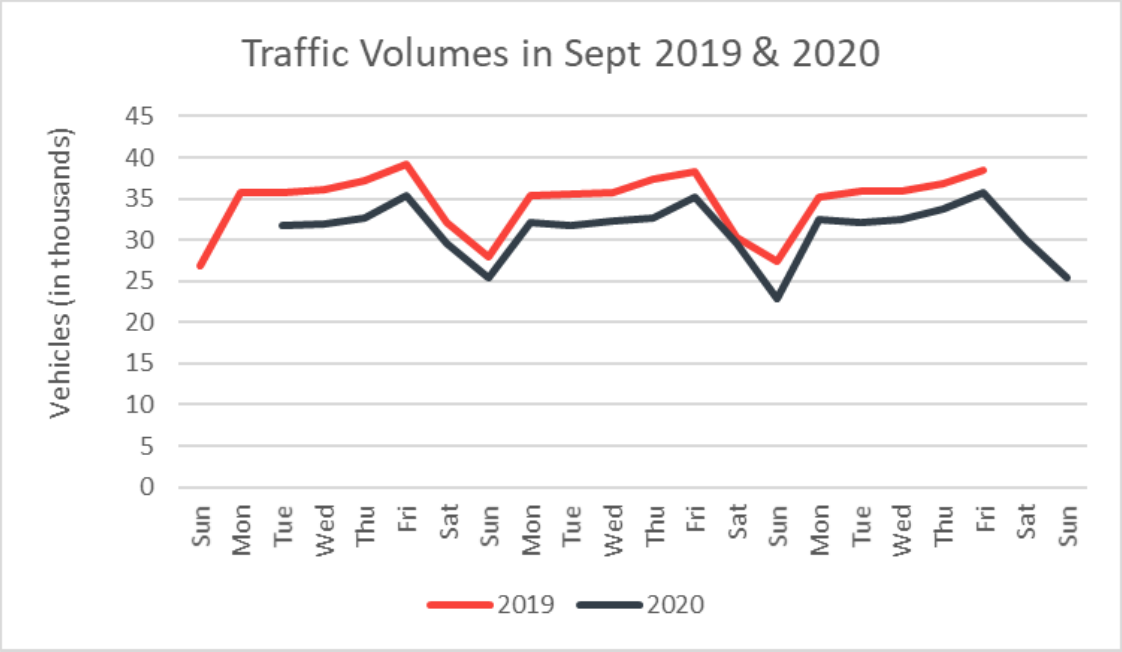


Figure 6-2: Traffic volumes comparison between 2019 and 2020 at counter 104540

Traffic Profiles

6.2.7. In this section, the A9 acts as a strategic corridor for long distance trips as well as a commuting route to/from the areas mentioned above. This is reflected by the variation in traffic volumes in different directions during peak hours. Figure 6-3 shows the hourly southbound profile on the A9 while Figure 6-4 shows the northbound profile.

6.2.8. The southbound hourly profile shows the morning peak for commuters going to Inverness, which is particularly noticeable at 7:00 am for Thursday and Friday. The Saturday peak appears later during the day, in line with similar weekend travel patterns observed in other routes, and is higher than the peaks observed for Thursday and Friday.

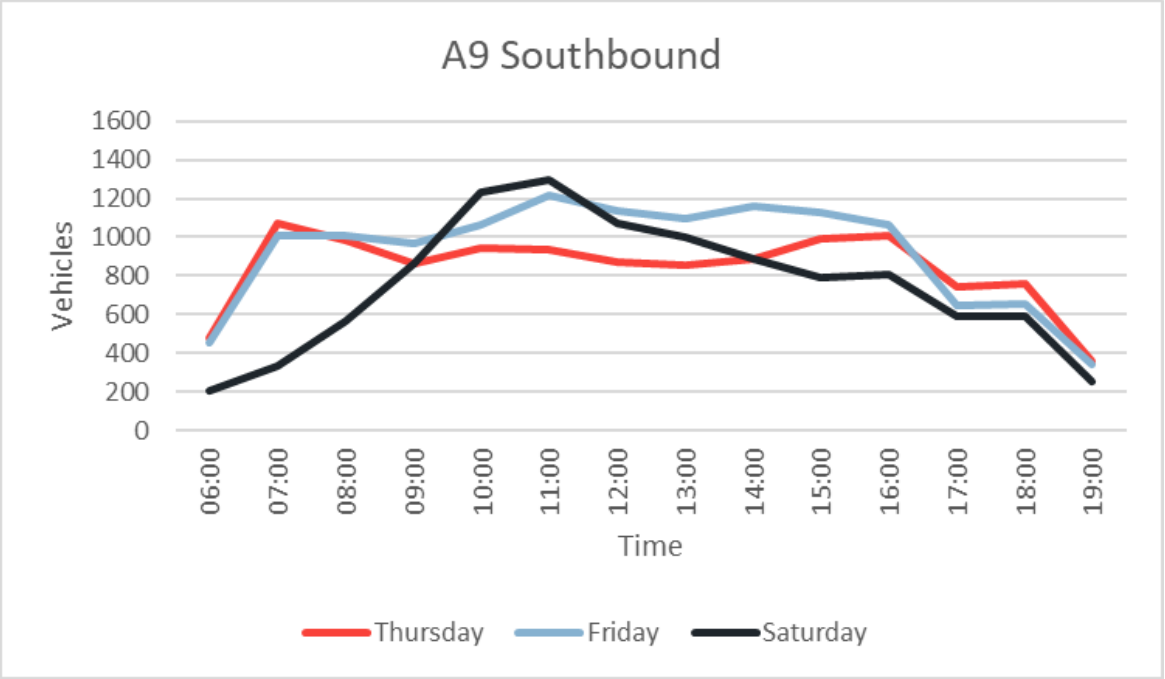


Figure 6-3: A9 Southbound hourly profile (September 2020)

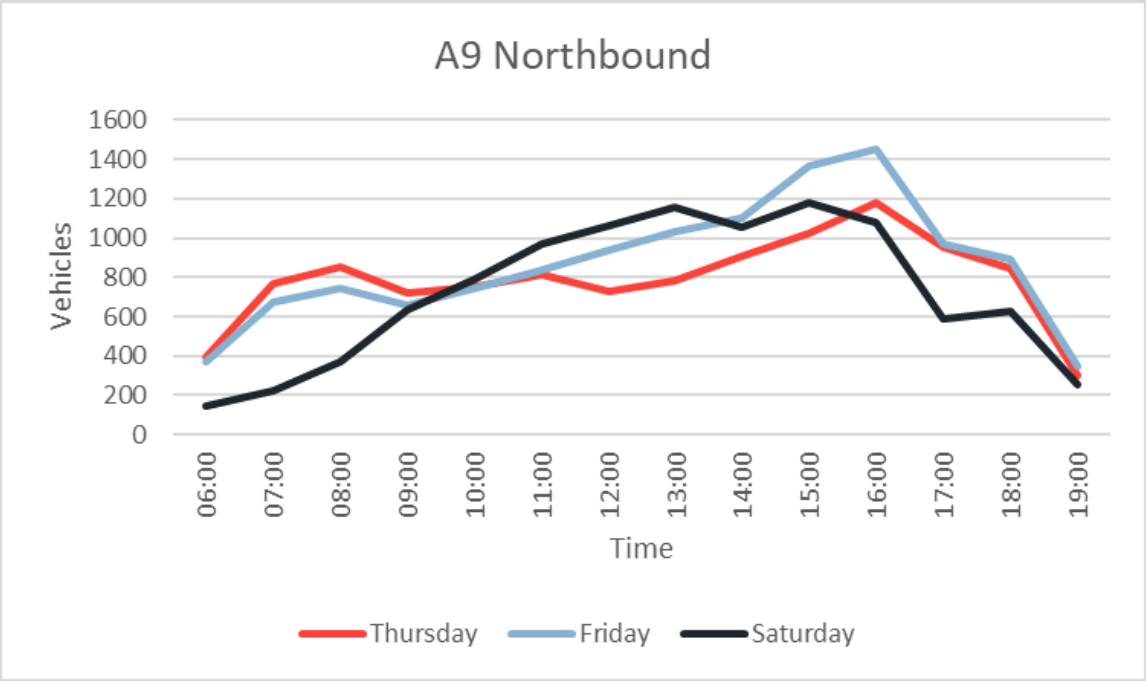


Figure 6-4: A9 Northbound hourly profile (September 2020)

6.2.9. In contrast, the northbound profile reflects the PM peak of commuters heading home from Inverness into different areas of the Black Isle and the wider Inner Moray Firth area. The Friday evening peak is the highest, which may be the result of evening commuters combined with leisure trips northbound for the weekend.

6.2.10. Of particular interest to the study are the travel patterns between Inverness and the north-eastern parts of the Black Isle. The two main routes to access the north-eastern parts of the Black Isle are the B9161 and the A832 (via Tore Roundabout), as described in previous chapters.

6.2.11. Although the A832 is a major road, there is a strong preference to use the B9161 as it provides a more direct route and is (based on stakeholder views) in a better condition than the A832 which is mainly used by HGVs and farming vehicles. However, using the B9161 means users must make a right turn off the A9 dual carriageway.

6.2.12. Table 6-1 shows the proportion of vehicles that use the B9161 and the A832 to go between the north-eastern parts of the Black Isle and Inverness. Information from the surveys carried out in September 2020 show that roughly between 70% and 80% of the trips are made through the B9161, with 20%-30% through the A832. In absolute values, these figures amount to a total of over 4,000 vehicles per day going from the A9 to the north-eastern part of the Black Isle using both junctions and, during the PM peak hour, this amounts to almost 300 vehicles turning right towards the northeast part of the Black Isle.

Table 6-1: Travel patterns between Inverness and the north-eastern parts of the Black Isle through the study area (September 2020)

To Munlochy (northbound)	Peak AM hour Vehicles	Peak AM hour Proportion	Peak PM hour Vehicles	Peak PM hour Proportion	Saturday Vehicles	Saturday Proportion
Via B9161	115	76%	242	81%	207	79%
Via A832	36	24%	56	19%	54	21%
From Munlochy (southbound)	**Peak AM hour Vehicles**	**Peak AM hour Proportion**	**Peak PM hour Vehicles**	**Peak PM hour Proportion**	**Saturday Vehicles**	**Saturday Proportion**
Via B9161	288	88%	176	78%	208	79%
Via A832	40	12%	49	22%	54	21%

Vehicle Mix

6.2.13. Cars account for 79% of trips using the A9, while heavy goods vehicles make up 5%. For trips to and from the Black Isle area the mix on the B9161 is cars (82%) other vehicles (15.5%) and HGV's (2.5%). By contrast the A832 carries a higher percentage of HGVs (15%) to/from Munlochy and the wider Black isle area, with cars making up 68% of the total traffic volume and other traffic (17%).

6.3 QUEUE ANALYSIS

6.3.1. Queues were recorded in all junctions as part as the surveys carried out in September 2020. A detailed queue analysis was carried out for Munlochy Junction and Tore Roundabout as part of the analysis. The intermediate junctions (Glackmore, Arpafeelie, Allangrange and Artafallie) recorded maximum queue lengths of between one and two vehicles and, as a result, detailed analysis was not carried out in these junctions.

MUNLOCHY JUNCTION

6.3.2. At Munlochy Junction the survey data shows a maximum queue of 25 vehicles waiting to turn right into the B9161 from the A9. This queue was detected on 10 September 2020 (Thursday) during the PM peak. The queue did not extend to beyond the extent of the right turning lane but the queue reached to the maximum capacity of the turning lane.

6.3.3. The profile of queuing at this right turn movement is shown in the figure below, which shows that the maximum queue of 25 vehicles only occurred at a single five minute interval in the peak period.

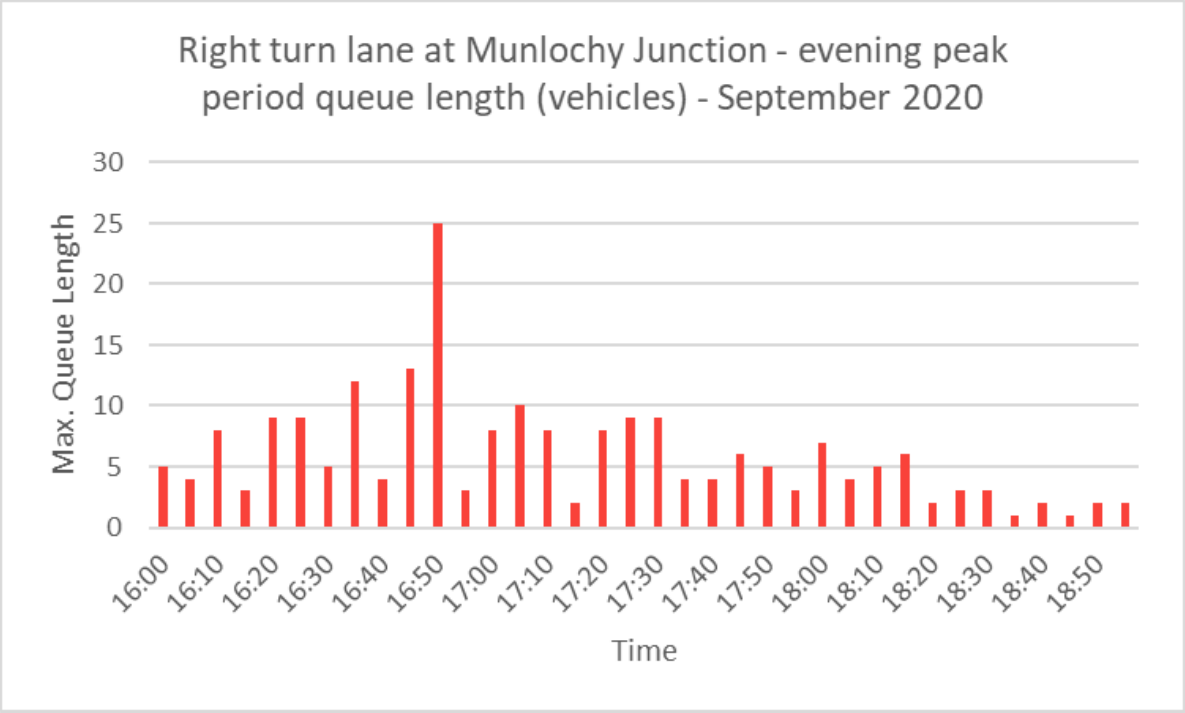


Figure 6-5: Five-minute interval queue profile (Thursday 10th September 2020) for A9 Northbound right turn from into B9161

6.3.4. During the build-up of the observed maximum queue length, one vehicle was recorded to be in the queue for around 2.5 minutes waiting to turn right.

6.3.5. It was noted that traffic appeared to arrive at the Munlochy Junction in platoons during the evening peak which could be attributed to the traffic signals at Longman Roundabout to the south of the Kessock Bridge.

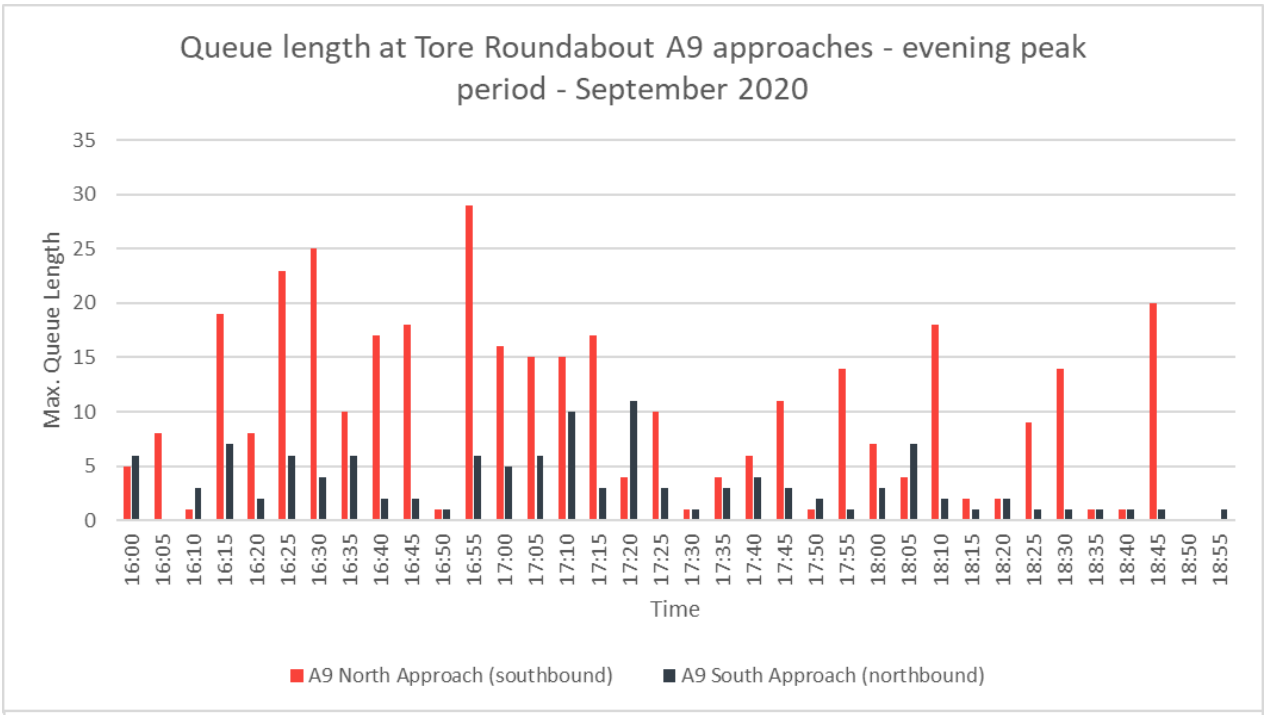
TORE ROUNDABOUT

6.3.6. At Tore Roundabout, the maximum number of vehicles queueing on the A9 north approach (southbound) to the roundabout was 29 vehicles, which occurred at 16:55 on 10 September 2020 (Thursday). The maximum on the A832 west approach (eastbound) to the roundabout was 19 vehicles at 17:05 on the same day.

6.3.7. The maximum on the A9 south approach (northbound) to the roundabout was 11 vehicles at 17:20 on 10 September 2020 (Thursday) and repeated at 16:00 on 11 September 2020 (Friday).

6.3.8. The maximum queue length on the A832 east approach (westbound) to the roundabout was 20 vehicles at 07:15 on 10 September 2020 (Thursday) and on the A835 east approach (westbound) it was 39 vehicles at 16:10 on 11 September 2020 (Friday).

6.3.9. The maximum queue profiles are shown in Figure 6-6.



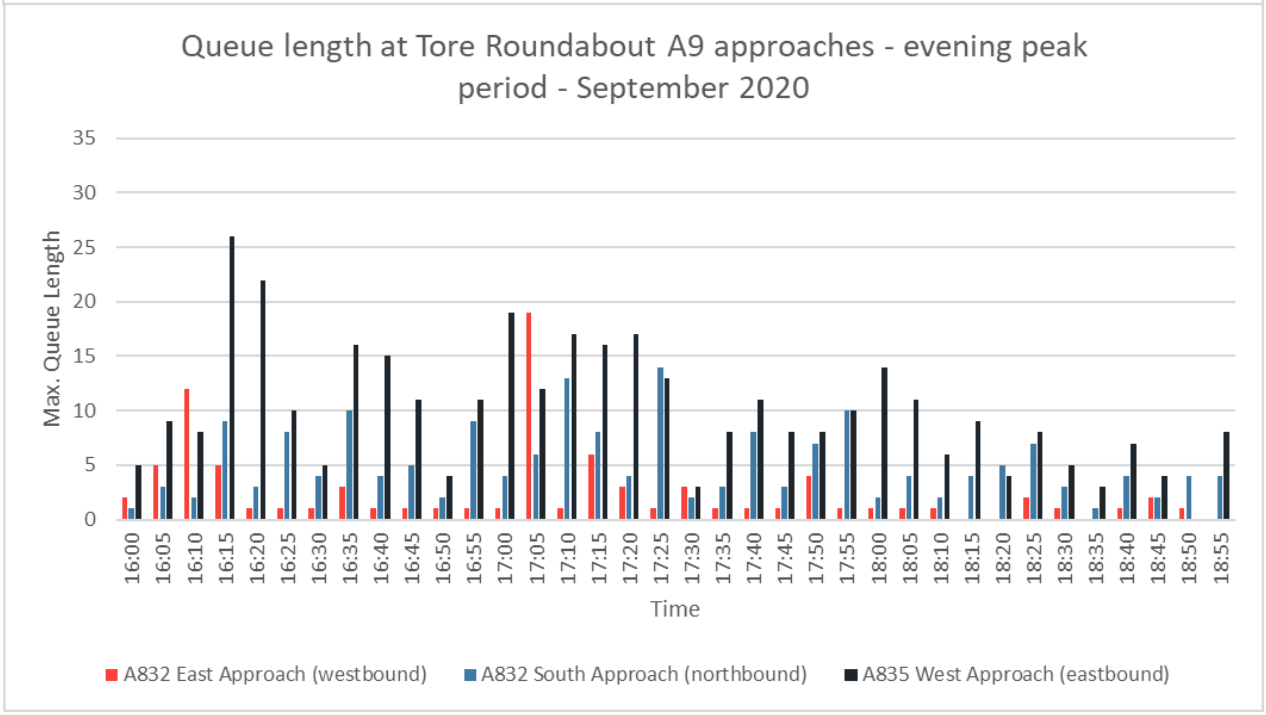


Figure 6-6 - Five-minute interval queue profile (Thursday 10 September 2020) - Tore roundabout approaches

6.4 TRAFFIC MODELLING OF EXISTING AND FUTURE DEMAND

6.4.1. The traffic counts informed the existing traffic volumes and movements at the junctions and provided the evidence for the road safety analysis. In addition to the transport surveys, information from the Inner Moray Firth Local Development Plan and the Highland-wide Local Development Plan provide information on the proposed future development in the area to 2035.

SPREADSHEET MODELLING OF THE STUDY AREA NETWORK

6.4.2. A spreadsheet traffic model is included in a separate document **Appendix F.** The model represents the current situation and the future situation with development growth included. The inputs used for the model, as described throughout this report, have included traffic counts and the forecast growth was based on information from Transport Scotland's Transport Model for Scotland (TMfS).

6.4.3. The objective of the traffic model was to reflect the current and forecast traffic demands as accurately as possible based on available data and assumptions. A number of assumptions were applied which included:

- No change in existing infrastructure
- No change in travel behaviours (i.e. no additional modal shift into sustainable modes of transport or changes due to COVID-19 pandemic)
- Growth in line with that used in the IMFLDP, which is what has informed the TMfS forecasts. This growth does not include development not considered in the IMFLDP.

6.4.4. Growth from TMfS (as applied in the model for this study) is 9.79% between 2020 and 2035. The model takes land use changes and transport supply impacts into consideration, i.e. the impact of congestion and potential mode shift.

6.4.5. Further consideration of forecast growth scenarios will be undertaken at future stages of the study (should it proceed) to inform the detailed appraisal of options.

LOCAL ISOLATED JUNCTION MODELLING – EXISTING SITUATION

6.4.6. The results from the spreadsheet model have been used to inform the Junctions 9 models for Munlochy junction and Tore Roundabout respectively. The main outputs from the Junctions 9 models are the current capacity and levels of service at which the junctions are operating. The levels of service assign a qualitative grade based on the performance including speed, congestion, delays and density. These levels of service range from A, indicating free flow with no congestion or delays, through to F, indicating an uneven or broken flow, heavily congested and with long delays. The full reports from Junctions 9 are included in a separate document **Appendix G.**

6.4.7. Descriptions of the Level of Service (LOS) categories reported in this section are provided below:

- LOS A: Free flow, traffic flows at speed limit or above with complete mobility between lanes, vehicle separation is around 27 car lengths.
- LOS B: Reasonably free flow, traffic flows at speed limit or above with manoeuvrability between lanes slightly restricted, vehicle separation is around 16 car lengths.
- LOS C: Stable flow, traffic flows at speed limit and mobility between lanes requires more awareness from drivers, vehicle separation is around 11 car lengths.
- LOS D: Approaching unstable flow, reduced speed and manoeuvrability, driving comfort decreases, vehicle separation is around 8 car lengths.
- LOS E: Unstable flow, speed varies rapidly, unable to reach speed limit, reduced gaps to manoeuvre, vehicle separation is around 6 car lengths.
- LOS F: Breakdown flow, every vehicle moves in lockstep with the vehicle in front, no space to manoeuvre, no separation between vehicles.

6.4.8. Table 6-2 shows the level of service for each of the movements at Munlochy junction, while Table 6-3 shows the delays in seconds experienced by users at each of the approaches. Overall, the junction is operating with levels of service in the range between A and C at peak times.

6.4.9. The results are consistent with the observed conditions on site, with more vehicles seeking to turn right from the A9 (northbound) onto the B9161 during the PM peak and the left turn from the B9161 to the A9 (southbound) during the AM peak, translating into greater delays and lower levels of service.

6.4.10. The results for Tore Roundabout are presented in Table 6-4 and Table 6-5, where the modelling output indicates that the junction is operating with good level of service (levels A to C), having delays of no more than 15 seconds per vehicle accessing the roundabout during the weekday peaks.

Table 6-2: 2020 Average Level of service at Munlochy Junction

Movement	Weekday AM Peak	Weekday PM Peak	Saturday
A9 (Southbound) - B9161	A	A	A
B9161 - A9 (Northbound)	B	B	B
B9161 - A9 (Southbound)	C	A	B
A9 (Northbound) - B9161	B	B	B

Table 6-3: 2020 Average Modelled Delays (in seconds) at Munlochy Junction

Movement	Weekday AM Peak	Weekday PM Peak	Saturday
A9 (Southbound) - B9161	0.00	0.02	0.03
B9161 - A9 (Northbound)	10.36	12.05	11.78
B9161 - A9 (Southbound)	20.36	9.99	13.68
A9 (Northbound) - B9161	10.02	14.08	13.91

Table 6-4: 2020 Average Level of service at Tore Roundabout

Approach	Weekday AM Peak	Weekday PM Peak	Saturday Peak
A9N (Southbound)	B	A	B
A832 (E)	A	A	A
A9S (Northbound)	A	A	A
A832 (W)	A	A	A
A835	B	B	C

Table 6-5: 2020 Average Modelled Delays (in seconds) at Tore Roundabout

Approach	Weekday AM Peak	Weekday PM Peak	Saturday Peak
A9N (Southbound)	10.22	9.58	13.76
A832 (E)	5.09	4.94	5.29
A9S (Northbound)	4.00	8.24	3.30
A832 (W)	4.47	5.03	3.91
A835	12.47	14.39	16.02

Modelled Queuing vs Observed Queuing

6.4.11. The observed queuing for the right turn movement from the A9 onto the B9161 at Munlochy Junction is higher than the modelled maximum queue lengths. Whilst a reasonable effort was made to calibrate the model to the observed conditions, the profile of observed queuing does suggest the queues are influenced by the arrivals of platoons of northbound traffic over the Kessock Bridge, which cannot be replicated in an isolated junction model.

6.4.12. There may be other localised elements that influence the calibration of the junction models such as the gap acceptance behaviour of local drivers. This calibration was beyond the proportional scope at the Case for Change stage but would be revisited at subsequent more detailed options appraisal stages.

6.4.13. Similarly, at Tore Roundabout the observed queuing is influenced by the presence of slow-moving vehicles (HGVs or agricultural vehicles) which cause delays and queuing when attempting to enter the roundabout. The isolated junction model is unable to replicate this impact and the modelled queue lengths (which are also averaged over both lanes) are shorter than the observed queues.

6.4.14. However, the models are considered to be suitably robust to support an assessment of the relative impact of traffic growth to be made (supporting the Case for Change report).

6.5 FORECAST CHANGES TO THE TRANSPORT SUPPLY AND DEMAND

6.5.1. There is projected traffic growth due to housing development and employment in the wider Inner Moray Firth Area. The following documents have been analysed for the planned land-use development:

- The Highland-wide Local Development Plan (HwLDP)

- Inner Moray Firth Local Development Plan (IMFLDP)
- Recent planning applications submitted.

HIGHLAND-WIDE LOCAL DEVELOPMENT PLAN

6.5.2. The Plan notes that the Inner Moray Firth, with Inverness at its centre, is the engine of the wider Highland economy and experiences pressures from development, as well as constraints from its infrastructure. The plan identifies that capacity in the existing transport network may be a constraint for future development.

6.5.3. The Spatial Strategy for the Inner Moray Forth identifies planned major housing expansion at Dingwall, near the A835 trunk road northwest of the study area, as well as new housing and employment at Evanton, Alness and Invergordon on the A9, north of the study area.

6.5.4. Within Inverness, strategic growth areas are concentrated in the south and east of the city, including at sites in proximity to the A9 including Milton of Leys, Inshes. Raigmore, the former Longman landfill site and at South Kessock.

6.5.5. The plan also identifies that the majority of growth around Inverness up to 2031 will be concentrated along the A96 corridor between Inverness and Nairn, which is dependent on infrastructure upgrades to facilitate increased transport demand.

INNER MORAY FIRTH LOCAL DEVELOPMENT PLAN

6.5.6. The areas identified in the adopted Inner Moray Firth Local Development Plan (2015) for future development are shown in a separate document **Appendix B** and Figure 6-7. The plan also identifies areas within the Inner Moray Firth considered as a Special Landscape Area or Rural Hinterland, which guides development in the countryside.

6.5.7. The Black Isle is identified in the Plan as predominantly Rural Hinterland, with growth areas focussed north and south of the Black Isle, along the A9 between Tain and Dingwall to the north of the study area, and along the A96 between Nairn and Inverness to the south of the study area. Growth is also identified in proximity to the A835 and the North Highland Line railway between Dingwall and Muir of Ord.

Rural Hinterland Land Use Policy

6.5.8. Policy 35 of the Highland-wide LDP (Housing in the Countryside) sets a presumption against approving housing development in the rural hinterland outside of existing settlements, with exceptions in limited circumstances such as redevelopment of disused buildings or development on brownfield sites which cannot be returned to a natural state. With this policy in place, development within the study area is constrained to existing settlements, with major new developments unlikely.

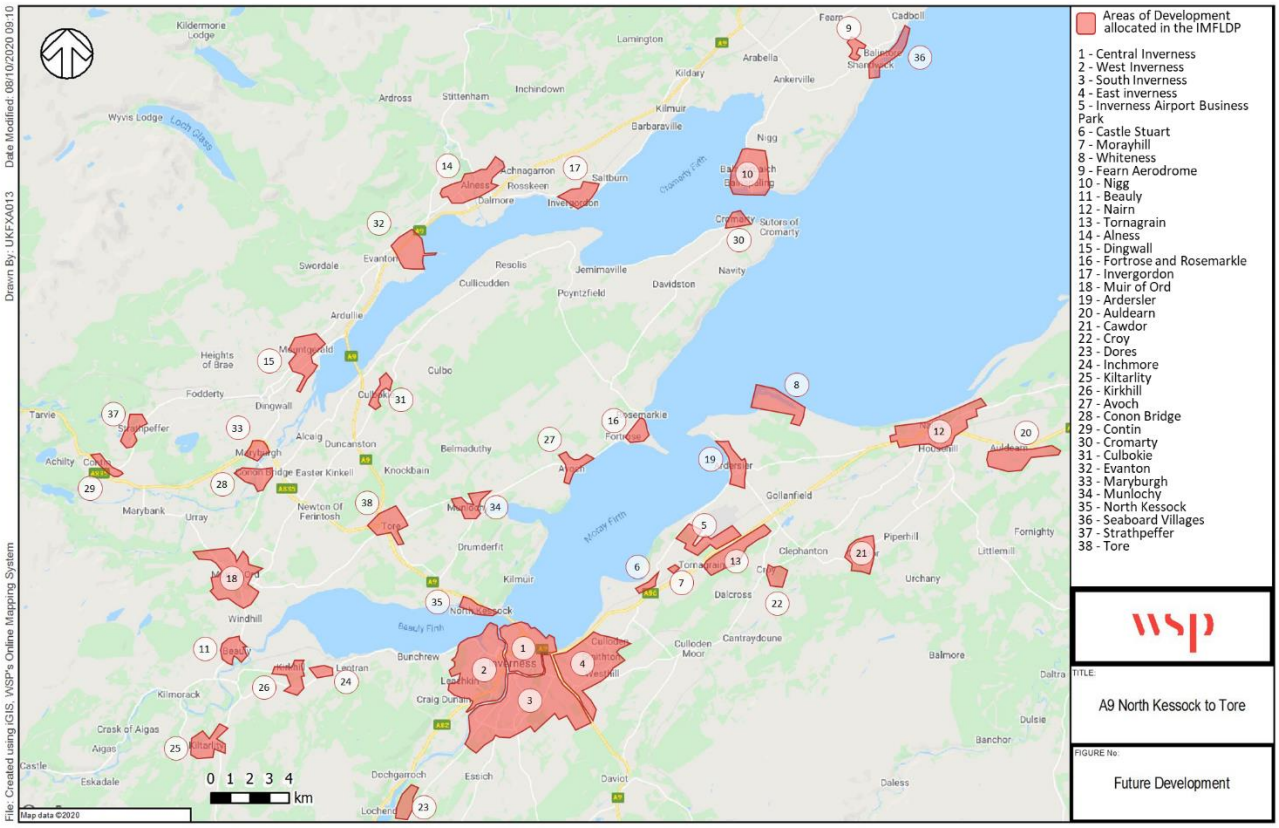


Figure 6-7: Planned development proposed in the adopted Inner Moray Firth Local Development Plan (2015)

Ross-shire Growth Area

6.5.9. As described in section 4.4, the IMFLDP has identified the Ross-shire Growth Area as a strategic location for housing and employment sites.

6.5.10. The IMFLDP identifies land for 5,750 new homes in the Ross-shire Growth Area between 2011 and 2031, with up to 1,404 houses in the Mid Ross area between 2021 and 2031 concentrated in the growth area focussed around Dingwall. Outside of the significant housing expansions identified along the A9 corridor between Tain and Dingwall, opportunities for more limited housing are identified in Mid Ross at Tore and Munlochy.

Inverness to Nairn Growth Area

6.5.11. The Inverness to Nairn Growth Area is expected to see up to 18,350 new homes built between 2011 and 2031, focussed on existing settlements along the A96. A new town at Tornagrain is identified, dependent on major infrastructure improvements requiring central government support. Infrastructure improvements to support the delivery of development in the Inverness to Nairn Growth Area includes proposals for an ‘East Link’ road, connecting the A9 with the A96, dualling of sections of the A96 trunk road, including a Nairn bypass, and upgrading of key junctions such as Inshes Roundabout.

6.5.12. The ongoing review of the IMFLDP (at the time of writing) includes an increased focus on a more sustainable transport network. However, as the review was still in an early review stage at the time of this study, it was agreed with the Highland Council that the growth assumptions for the Case for Change stage of the study be based on the adopted IMFLDP.

QUANTUM OF FUTURE GROWTH

6.5.13. The future growth considered for the traffic modelling has been obtained from the Transport Model for Scotland (TMfS). A selection of the A9 northbound and southbound links was made on the model to extract the flows, giving the results shown in Table 6-6.

Table 6-6: Modelled daily traffic flows on the A9 in the study area (from TMfS)

Direction	2017	2022	2027	2032	2037	2042
NB	13,419	14,200	14,841	15,077	15,452	15,712
SB	14,687	15,554	16,186	16,336	16,843	17,191

6.5.14. The modelled flows have been interpolated to obtain 2020 as base year and 2035 as future year, resulting in a growth factor of 9.79% as an average for both directions along the corridor. This growth has then been applied to the spreadsheet model to generate the flows for 2035.

6.5.15. The full output from the TMfS model is included under a separate document **Appendix H.**

LOCAL ISOLATED JUNCTION MODELLING – FORECAST SITUATION

6.5.16. The spreadsheet model for 2035 builds from the current situation and applies expected growth in the area to assess the impacts of increased demand and pressure on the transport network. Results of the junction modelling for Munlochy junction are included in Table 6-7 and Table 6-8.

Table 6-7: 2035 Average Level of service at Munlochy Junction

Movement	Current LOS Weekday Peak AM	Current LOS Weekday Peak PM	Current LOS Saturday Peak	Forecast LOS Weekday Peak AM	Forecast LOS Weekday Peak PM	Forecast LOS Saturday Peak
A9 (Southbound) - B9161	A	A	A	A	A	A
B9161 - A9 (Northbound)	B	B	B	B	B	B
B9161 - A9 (Southbound	C	A	B	D	B	C
A9 (Northbound) - B9161	B	B	B	B	C	C

Table 6-8: 2035 Modelled average delays (in seconds) at Munlochy Junction

Movement	Current Delays Weekday Peak AM	Current Delays Weekday Peak PM	Current Delays Saturday Peak	Forecast Delays Weekday Peak AM	Forecast Delays Weekday Peak PM	Forecast Delays Saturday Peak
A9 (Southbound) - B9161	0.00	0.02	0.03	0.00	0.02	0.04
B9161 - A9 (Northbound)	10.36	12.05	11.78	11.90	14.46	14.01
B9161 - A9 (Southbound	20.36	9.99	13.68	30.52	11.41	17.20
A9 (Northbound) - B9161	10.02	14.08	13.91	11.24	17.60	17.52

6.5.17. The levels of service and modelled delays at Tore Roundabout for 2035 are shown in Table 6-9 and Table 6-10.

Table 6-9: 2035 Average Level of service at Tore Roundabout

Approach	Current LOS Weekday Peak AM	Current LOS Weekday Peak PM	Current LOS Saturday Peak	Forecast LOS Peak AM	Forecast LOS Peak PM	Forecast LOS Saturday Peak
A9N (Southbound)	B	A	B	B	B	C
A832 (E)	A	A	A	A	A	A
A9S (Northbound)	A	A	A	A	B	A
A832 (W)	A	A	A	A	A	A
A835	B	B	B	C	C	D

Table 6-10: 2035 Modelled average delays (in seconds) at Tore Roundabout

Approach	Current Delays Weekday Peak AM	Current Delays Weekday Peak PM	Current Delays Saturday Peak	Forecast Delays Weekday Peak AM	Forecast Delays Weekday Peak PM	Forecast Delays Saturday Peak
A9N (Southbound)	10.22	9.58	13.76	14.63	13.25	23.29
A832 (E)	5.09	4.94	5.29	5.74	5.55	6.05
A9S (Northbound)	4.00	8.24	3.30	4.64	13.55	3.69
A832 (W)	4.47	5.03	3.91	5.06	5.91	4.25
A835	12.47	14.39	16.02	19.31	24.18	29.27

MODELLING QUEUE LENGTHS – COMPARISON OF 2020 AND 2035 CONDITIONS

Munlochy Junction – right turn movement from A9 to B9161

6.5.18. The modelled queue lengths for the 2020 and 2035 scenarios are lower than observed queue lengths (for the reasons described under paragraph 6.4.11), and don't reflect the maximum observed queue length at the right turn from the A9 northbound to the B9161 of 25 vehicles. As stated in the queue analysis, this is close to the capacity of the turning lane and any further vehicles would overspill onto the main carriageway.

6.5.19. The modelling does indicate that an increase in traffic flows would result in an increase in this queue length, as could be logically expected. Hence, although the maximum observed queue is not constant and occurs during vehicle platoons, the modelled growth would result in the maximum queue extending to beyond the capacity of the slip lane, and stationary traffic would be queuing on the northbound carriageway posing a significant risk to road safety.

Tore Roundabout – all approaches

6.5.20. The modelled queue lengths for the 2020 and 2035 scenarios are shown in the table below for all approaches at the Tore Roundabout.

Table 6-11: 2020 and 2035 Average Queue Lengths (in vehicles) – Tore Roundabout

Movement	Weekday AM Peak 2020	Weekday PM Peak 2020	Saturday Peak 2020	Weekday AM Peak 2035	Saturday PM Peak 2035	Saturday Peak 2035
A9(N)	1.8	1.7	1.8	2.8	2.6	2.8
A832(E)	0.3	0.4	0.3	0.4	0.4	0.4
A9(S)	1.3	3.7	1.3	1.6	6.5	1.6
A832(S)	0.4	0.4	0.4	0.5	0.5	0.5
A835(W)	2.0	2.1	2.0	3.4	3.9	3.4

6.5.21. Acknowledging that the modelled 2020 queue lengths are shorter than the observed 2020 queues (refer to section 6.4.11), the modelling indicates that average queue lengths will increase between 2020 and 2035.

6.6 OVERVIEW OF TRANSPORT SUPPLY AND DEMAND

6.6.1. As a result of the transport analysis including current and future demand it has been possible to identify key issues that should be taken into consideration as part of the overall review of the A9 between North Kessock and Tore. These key issues are summarised in the list below.

- The A9 is the main strategic corridor connecting Inverness with the north of Scotland
- There is a high number of commuter trips between Inverness and the Black Isle Area, using the A9 as the main route to/from Inverness
- The main route of travel to/from the Black Isle is the B9161 (via Munlochy Junction) with 20%-30% of drivers using the A832 (via Tore Roundabout) to access the area from the A9
- Traffic levels during the study period are within 10% of those observed in the same month in 2019
- Tore Roundabout and Munlochy Junction are currently operating with levels of service between A and C (based on isolated junction modelling) which indicates that they are operating within capacity
- The growth projected for the A9 between 2020 and 2035 is 9.79% between North Kessock and Tore Roundabout based on modelling informed by the adopted Inner Moray Firth Local Development Plan (2015)
- The queue length for the right turn at Munlochy Junction from the A9 onto the B9161 is projected to increase (due to traffic growth) beyond 25 vehicles between 2020 and 2035 (which is the capacity of the right turn slip lane). This would result in stationary traffic queuing on the northbound carriageway posing a significant risk to road safety.

7 ROAD SAFETY ANALYSIS

7.1 INTRODUCTION

7.1.1. This chapter describes the road safety analysis which was undertaken to support the study. This analysis included consideration of collision data, a conflict study and speed surveys, as well as an understanding of the concerns along the A9 between North Kessock and Tore Roundabout and the intermediate junctions raised by stakeholders.

7.1.2. To assist in the readers' understanding of comments made in this chapter, reference is made to the existing junction layouts included in a separate document **Appendix A** and to the more detailed layout of the A9/B9161 junction (Munlochy) in the figure below.

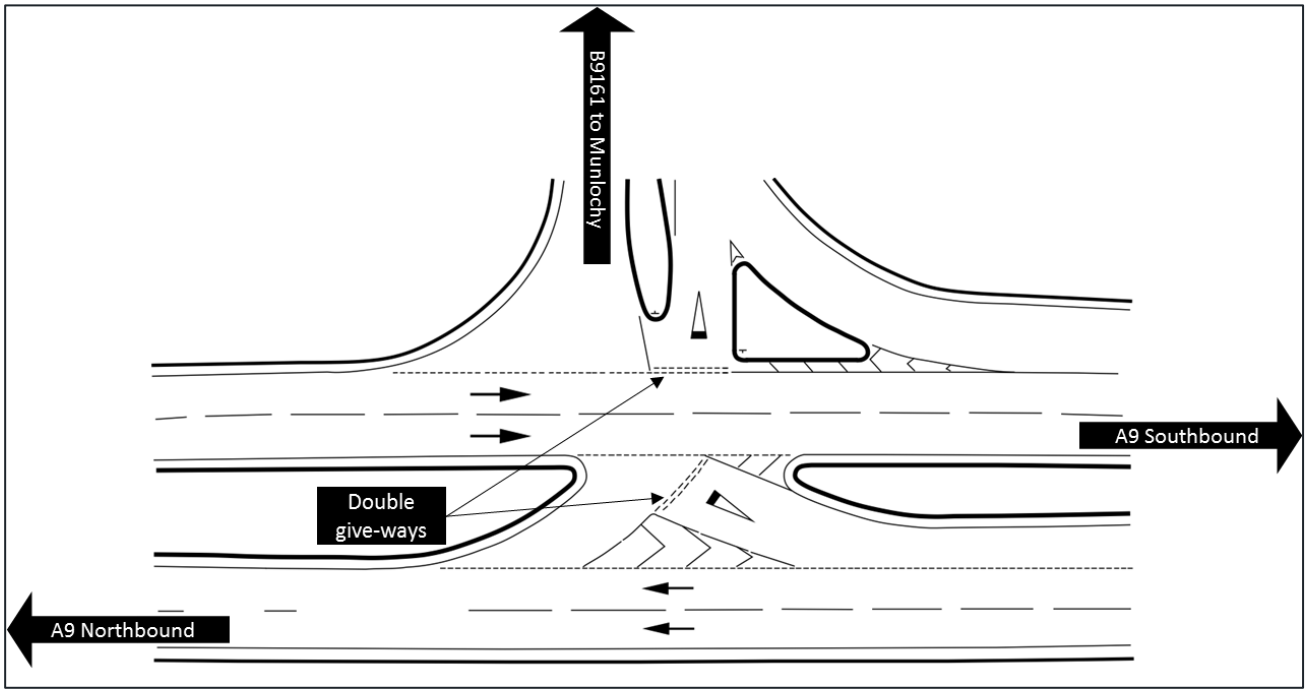


Figure 7-1: Existing layout of the A9/B9161 junction (Munlochy Junction)

7.2 PREVIOUS STUDIES

7.2.1. A number of previous studies have been undertaken regarding road safety at Munlochy Junction and Tore Roundabout.

- **A9 Tore Non-Motorised User Review – TMS Consultancy 2014**
  - The review considered walking and cycling movements at Tore Roundabout.
  - Following the study, improvements were completed to the A9 Non-Motorised User (NMU) crossing points. These crossing points were supplemented with the extension of lighting and the installation of pedestrian-activated electronic signs.

- **A835 Tore conflict study – BEAR 2014**
  - The purpose of the study was to investigate the level of traffic conflicts at the A835 junction at the access road to Tore Primary School and Village Hall, following concerns expressed by the community regarding road safety at Tore.
  - No problems within the injury accident data were identified and a conflict study was carried out to identify and quantify any operational issues which could present a safety problem.
  - The study concluded that the current road layout at this location is in line with the DMRB standards for traffic flows and further upgrades could not be justified in terms of accident savings or conflict severity.
- **B9161 Munlochy Junction Safety Review – BEAR 2015**
  - The scope of the report was to investigate the types and causations of injury accidents and to recommend measures to reduce injury accidents and casualty severity.
  - Following the review, BEAR Scotland installed improved signage, road markings and vehicle restraint systems as well as landscaping. The new road markings included the give way markings (shown in Figure 7-1).
- **A9 Munlochy Junction – Feasibility Assessment – JMP 2016**
  - This study looked at the feasibility of constructing a roundabout at Munlochy Junction as Transport Scotland had concerns regarding the future operational performance of this junction arising from increased usage, particularly from a road safety perspective.
  - The study's conclusions are that a roundabout might be a feasible solution, offering benefits in terms of capacity and road safety. However, layout and potential impacts on existing land required further consideration.
- **A9 Munlochy Queue Length Survey (BEAR Scotland) – September 2019**
  - The purpose of the survey (undertaken over four weekdays) was to measure queue lengths at Munlochy Junction and identify the number of times queues extended onto the main carriageway.
  - The survey did not identify any queuing that extended beyond the end of the right turn lane.

7.2.2. In 2017 the vehicle-activated signs for the right turn queuing were installed. These signals illuminate once queues exceed a specified threshold.

7.2.3. As part of Transport Scotland's annual review of the safety performance of the trunk road network, BEAR Scotland carried out a screening exercise to identify all locations where three or more personal injury accidents have occurred over a three-year period to prioritise interventions where considered necessary. Through this analysis, no locations in the study area were identified that meet the threshold for further investigation in the 2018 and 2019 annual reviews.

7.2.4. However, in 2020 this threshold was met in the study area leading to this study. As stated in paragraph 5.3.3 Transport Scotland made the decision to undertake the Case for Change study (under STAG).

7.3 COLLISION DATA

7.3.1. NOTE: the contributory factors referenced throughout this chapter are based on data recorded on the day of the collision/incident and are not the factors identified from any follow up police investigations.

7.3.2. There have been 29 personal injury collisions from 1 January 2010 to 6 September 2020 between the North Kessock and Tore Roundabout. A summary of these collisions is shown in Table 7-1:

Table 7-1: Personal injury collisions from North Kessock up to and including Tore Roundabout

Year	Fatal	Serious	Very Serious[3]	Moderately Serious[1]	Less Serious[1]	Slight	Total
2010	0	0	-	-	-	2	**2**
2011	0	1	-	-	-	1	**2**
2012	0	1	-	-	-	2	**3**
2013	0	0	-	-	-	3	**3**
2014	0	0	-	-	-	5	**5**
2015	0	0	-	-	-	2	**2**
2016	0	0	-	-	-	6	**6**
2017	0	0	-	-	-	1	**1**
2018	0	0	-	-	-	1	**1**
2019	1	-	0	1	0	1	**3**
2020 (to 06/09/20)	0	-	0	0	0	1	**1**
TOTAL	**1**	**2**	**0**	**1**	**0**	**25**	**29**

[3] From summer 2019, Police Scotland introduced a new system for recording traffic collisions. Due to improved recording and categorisation processes, it is expected that there will be an increase in the number of casualties and accidents on Scottish roads that are classified as serious. The evidence from other police forces within the UK that introduced the same system is that this increase will be around 20%.

Serious Injuries were split into three levels as follows:

- Less Serious - Other Head Injury, Deep Cuts/Lacerations, Fractured Arm/Collar Bone/Hand, Fractured Lower Leg/Ankle/Foot
- Moderately Serious - Multiple Severe Injuries (conscious), Deep Penetrating Wound, Other Chest Injury that is not bruising, Fractured Pelvis or Upper Leg, Loss of Arm or Leg (or part)
- Very Serious - Multiple Severe Injuries (unconscious), Internal Injuries, Severe Chest Injury, any difficulty breathing, Severe Head Injury (unconscious) Broken Neck or Back.

7.3.3. The location of all the collisions are plotted in Figure 7-2.

Figure 7-2: Locations of collisions between 1st January 2010 and 6th September 2020

TORE ROUNDABOUT

7.3.4. At Tore Roundabout there have been seven injury collisions within the investigation period (1st Jan 2010 to 6th Sept 2020).

7.3.5. These can be broken down as follows:

- in the vicinity of the southbound exit to the A9 - four collisions occurred with contributory factors including poor lane discipline (e.g. changing lanes without indicating), travelling too close to the next vehicle and sun glare
- on the northbound approach – a car ran into the back of another car
- on the A835 exit - single car leaving the road in the rain
- on the A9 northwest corner of the roundabout - both cars were turning right with one car leaving the road and hitting a tree.

Summary

7.3.6. There have been four collisions attributed to poor lane discipline, one not having enough space with the vehicle in front, one due to loss of control on wet surface and one sun glare. The roundabout is lit with street lighting and only one collision occurred during the hours of darkness.

TORE ROUNDABOUT TO MUNLOCHY JUNCTION

7.3.7. Between Tore and the Munlochy Junction, in a section of approximately 4.2km, there have been 10 injury collisions within the investigation period. Collisions are spread out over the section and contributory factors included:

- Collision with another car which was changing lanes and overturned – northbound approach to Tore Roundabout
- Collisions with vehicles turning right onto A9 northbound
- Loss of control due to defective tyres, sun glare, snow and wet conditions.

Summary

7.3.8. Out of 10 injury collisions in this section, five collisions were weather-related (three attributed to sun glare, one to snow and another to wet conditions). Two collisions at the Allangrange junction involved right turn movements onto the northbound carriageway; one involved changing lanes, another crossing the central reserve and one involved defective tyres. Only one collision occurred during the hours of darkness at the Allangrange junction.

MUNLOCHY JUNCTION

7.3.9. At the Munlochy Junction there have been 9 injury collisions within the investigation period. Contributory factors included:

- Northbound vehicles turning right into B9161 and being hit by a southbound car
- Collision due to skidding in wet conditions
- Vehicle carrying out a U-turn and being struck by a southbound car
- Collisions while merging from the B9161 slip road with southbound vehicles
- Vehicles turning right from the B9161 colliding with northbound vehicles.

Summary

7.3.10. There have been four right turn collisions from the A9 to the B9161, two collisions of vehicles merging from the B9161 onto the A9 southbound, 2 turning right from the B9161 onto the A9 northbound and one loss of control in wet weather. Two collisions occurred during the hours of darkness at this junction.

MUNLOCHY JUNCTION TO KESSOCK JUNCTION

7.3.11. Between Munlochy Junction and North Kessock junction there have been three injury collisions within the investigation period, summarised as follows:

- Loss of control in fog
- Collision with farm vehicle after been dazzled by headlights
- Collision with southbound cars merging at North Kessock junction.

Summary

7.3.12. One collision was attributed to weather, one involved being dazzled by headlights and the other was merging traffic at the North Kessock Interchange. Two collisions occurred during the hours of darkness on this stretch of road.

CONCLUSIONS – COLLISION ANALYSIS

7.3.13. The collisions statistics indicate that collisions are spread out along the extent of the A9 in the study area and over the investigation period , with a drop in the rate of collisions over recent years (with the exception of 2019, and 2020 which is anomalous). There do not appear to be any common factors contributing to the collisions.

7.4 VIDEO SURVEYS

7.4.1. As part of the analysis Transport Scotland commissioned a video survey to cover three days from 10 to 12 September 2020. This survey included videos at all six junctions from North Kessock Junction to the Tore Roundabout. The video footage was recorded for 24 hours of each day, with the traffic counts processed for the period between 6am and 8pm.

7.4.2. The video surveys supported the counting of NMU's movements on all arms of the Tore Roundabout.

7.4.3. Maximum queue lengths on the approaches to Tore Roundabout and Munlochy Junction were recorded.

7.5 CONFLICT STUDY

7.5.1. A conflict study was carried out (using the video footage gathered during the September 2020 traffic surveys) in line with the best practice advice provided in the RoSPA (Road Safety Engineering Manual) Road Safety Engineering Manual. Table 7-2 shows the five grades of conflict. Unusual traffic manoeuvres were also recorded as part of this study.

Table 7-2: Gradings of conflicts

Conflict Severity
1. Precautionary conflict (i.e. Braking for vehicle waiting to emerge, precautionary lane change or anticipatory braking).
2. Controlled braking or lane change to avoid collision, but with ample time for manoeuvre.
3. Rapid deceleration, lane change or stopping to avoid collision, resulting in a near miss situation. No time for steady controlled manoeuvre.
4. Emergency braking or violent swerve to avoid collision resulting in near miss or occurrence of a minor collision.
5. Emergency action, followed by collision.

7.5.2. The conflict study was carried out to identify whether the concerns raised by stakeholders were reflected in evidence of conflicts and risk-taking behaviour. Stakeholders had intimated that there were concerns about turning manoeuvres at Munlochy Junction to and from the A9 Southbound from the B9161. There were also concerns with the roundabout at Tore A9 southbound (exit) and NMU movements crossing all arms.

7.5.3. To help readers understand the nature of some of the conflicts identified, key images were captured from the videos and are included in a separate document **Appendix I**.

MUNLOCHY JUNCTION

7.5.4. A conflict study was undertaken at Munlochy Junction using video survey footage from 10 and 11 September 2020 between 0700-0900 and 1600-1800 on each day (focussed on the peak traffic periods), recording any conflicts between vehicles that occurred during the right turn manoeuvre from the A9 northbound to the B9161 and the left turn (and merge) from the B9161 to the A9 southbound.

7.5.5. Table 7-3 and Table 7-4 show the number of conflicts for the two turning manoeuvres at Munlochy Junction.

Table 7-3: Munlochy Junction northbound right turn A9 to B9161

Diagram of Occurrence	Conflict Severity	Thu 10th Sept 7:00 - 9:00	Thu 10th Sept 16:00 - 18:00	Fri 11th Sept 7:00 - 9:00	Fri 11th Sept 16:00 - 18:00
Movement 1 - Northbound Right Turn from A9 to B9161	1. Precautionary conflict (i.e. Braking for vehicle waiting to emerge, precautionary lane change or anticipatory braking).	0	1	0	0
Movement 1 - Northbound Right Turn from A9 to B9161	2. Controlled braking or lane change to avoid collision, but with ample time for manoeuvre.	0	0	0	0
Movement 1 - Northbound Right Turn from A9 to B9161	3. Rapid deceleration, lane change or stopping to avoid collision, resulting in a near miss situation. No time for steady controlled manoeuvre.	0	0	0	1
Movement 1 - Northbound Right Turn from A9 to B9161	4. Emergency braking or violent swerve to avoid collision resulting in near miss or occurrence of a minor collision.	0	0	0	0
Movement 1 - Northbound Right Turn from A9 to B9161	5. Emergency action, followed by collision.	0	0	0	0

7.5.6. From the videos and the conflict assessment it was observed that drivers turning right into the B9161 were being cautious when making the right turn movement across the A9 southbound carriageway (i.e. vehicles were observed to not cross the carriageway when there was – in the opinion of the study team – sufficient gaps to cross safely).

7.5.7. Only two conflicts were recorded during the conflict study period. The first one involved a right turning car stopping beyond the give-way line (intruding onto the southbound carriageway) and southbound vehicles had to move towards the centreline to avoid any collision. The second involved two simultaneous right turners (one from the A9 and the other from the B9161) getting confused about which vehicle had right of way and nearly collided.

Table 7-4: Munlochy Junction southbound merge B9161 to the A9 southbound

Diagram of Occurrence	Conflict Severity	Thu 10th Sept 7:00 - 9:00	Thu 10th Sept 16:00 - 18:00	Fri 11th Sept 7:00 - 9:00	Fri 11th Sept 16:00 - 18:00
Movement 2 – Southbound Merge	1. Precautionary conflict (i.e. Braking for vehicle waiting to emerge, precautionary lane change[4] or anticipatory braking).	100	91	48	88
Movement 2 – Southbound Merge	2. Controlled braking or lane change to avoid collision, but with ample time for manoeuvre.	11	11	4	0
Movement 2 – Southbound Merge	3. Rapid deceleration, lane change or stopping to avoid collision, resulting in a near miss situation. No time for steady controlled manoeuvre.	0	0	0	1
Movement 2 – Southbound Merge	4. Emergency braking or violent swerve to avoid collision resulting in near miss or occurrence of a minor collision.	0	0	0	0
Movement 2 – Southbound Merge	5. Emergency action, followed by collision.	0	0	0	0

7.5.8. At the left turn merge (from B9161 to the A9) a large number of conflicts were recorded during each time period.

7.5.9. These conflicts can be put into two categories:

- 1 – merging vehicles do not give way to southbound vehicles and instead expect vehicles (already on the southbound carriageway) to move from the inside lane to the outside lane or (if they cannot change lanes) to brake suddenly to avoid a collision.

[4] The movement of vehicles to the outside lane was considered within the proximity of the junction and did include vehicles that were in the outside lane already. Included vehicles that - if they didn't change lane - would have collided with another vehicle.

- 2 – if the merging vehicles cannot join the southbound lane due to vehicles (already on the southbound carriageway) not moving into the outside lane, the merging vehicles have to brake on the merge lane and stop, then attempt to join the A9 from a standing start.

7.5.10. The number of conflicts recorded on the Friday morning of the survey (when conditions were wet) was approximately half of the Thursday morning (when conditions were dry). Traffic volumes did not differ significantly between the two survey days: the volume turning left on Thursday was 497 (in peak 2 hours) compared to 444 on the Friday, with the A9 mainline flows at 2,059 on the Thursday compared to 2,016 on the Friday.

7.5.11. Within the assessment periods studied, five vehicles were observed making a U-turn movement from the northbound carriageway to the southbound carriageway at Munlochy Junction.

7.5.12. Even though the National Cycle Network Route 1 is signposted on a parallel route to the A9, one cyclist was recorded cycling from the B9161 to the A9 southbound.

7.5.13. The recorded traffic figures at this junction were between 4,000 and 4,800 vehicles per day turning into and out of the B9161. The mainline flows along the A9 range between 23,000 and 30,000 vehicles per day.

ARTAFEELIE JUNCTION

7.5.14. A conflict study was not carried out at this junction due to the low traffic flows of around 200 vehicles per day turning into and out of this junction.

7.5.15. It was recorded that school minibuses use this junction to transport pupils to and from school.

7.5.16. The maximum number of vehicles queueing on the Artafallie approach was three with only one vehicle waiting to turn on the A9 SB.

ALLANGRANGE JUNCTION

7.5.17. A conflict study was not carried out at this junction due to the low flows of around 300 vehicles per day turning into and out of this junction. Observations included a cyclist crossing the A9 southbound carriageway and then cycling up along the central reservation.

7.5.18. Agricultural vehicles were observed turning right at this junction out of the side road and, due to the narrow width of the central reservation, larger agricultural vehicles had to stop in the main carriageway blocking the southbound lane before completing their turning manoeuvres.

7.5.19. The maximum number of vehicles queueing on the side road was two.

ARPAFEELIE JUNCTION

7.5.20. A conflict study was not carried out at this junction due to the low flows of around 50 vehicles per day turning into and out of this junction.

7.5.21. Agricultural vehicles were observed turning right at this junction out of the side road and these vehicles managed to wait in the central reservation before making the turn. However, they had to position themselves parallel with the flow of traffic (having to rely on their wing mirrors for visibility) in order to fit into the central reservation.

7.5.22. The maximum number of vehicles queueing on the side road was two.

GLACKMORE JUNCTION

7.5.23. A conflict study was not carried out at this junction due to the low flows of around 120 vehicles per day turning into and out of this junction.

7.5.24. Agricultural vehicles use this junction to join the A9 from the side road. School buses also use the diverge taper to stop and pick up school pupils.

7.5.25. The maximum number of vehicles queueing on the side road was three.

TORE ROUNDABOUT

7.5.26. A conflict study was carried out on Tore Roundabout - shown in Table 7-5. The study focussed on the southeast exit to the A9 southbound (as there was a collision cluster at this location) using data from 10 and 11 September 2020 between 0700-0900 and 1600-1800.

Table 7-5: Tore Roundabout southeast exit

Diagram of Occurrence	**Conflict Severity**	**Thu 10th Sept** 7:00 - 9:00	**Thu 10th Sept** 16:00 - 18:00	**Fri 11th Sept** 7:00 - 9:00	**Fri 11th Sept** 16:00 - 18:00
Movement 1 - South East Exit	1. Precautionary conflict (i.e. Braking for vehicle waiting to emerge, precautionary lane change or anticipatory braking).	2	5	4	3
Movement 1 - South East Exit	2. Controlled braking or lane change to avoid collision, but with ample time for manoeuvre.	0	0	0	0
Movement 1 - South East Exit	3. Rapid deceleration, lane change or stopping to avoid collision, resulting in a near miss situation. No time for steady controlled manoeuvre.	0	0	0	0
Movement 1 - South East Exit	4. Emergency braking or violent swerve to avoid collision resulting in near miss or occurrence of a minor collision.	0	0	0	0
Movement 1 - South East Exit	5. Emergency action, followed by collision.	0	0	0	0

7.5.27. The southbound exit to the A9 has a small number of conflicts recorded within the timescale. A number of these conflicts occurred when slow moving vehicles (HGV's and agricultural vehicles) pulled out from the A832 causing other vehicles on the roundabout to brake or change lane.

7.5.28. Further observations highlighted that there were some vehicles from the A835 that should exit the roundabout in lane 2 of the dual carriageway but were observed to cut across and exit in lane 1 of the dual carriageway, reflecting poor entry and lane discipline.

NMU MOVEMENTS AT TORE ROUNDABOUT

7.5.29. Over the three days there were 22 pedestrians and 129 cyclists recorded crossing any of the legs at Tore.

7.5.30. A conflict analysis was carried out on the observed NMU movements (shown in Table 7-6).

7.5.31. All except one of the conflicts occurred on the northbound exit to the A9 where NMUs had to walk swiftly/run across the road due to the speed of the vehicles exiting the roundabout.

7.5.32. The other conflict involved a cyclist running beside his bicycle across the A9 southbound lane at the pedestrian crossing point. A number of NMUs crossing the A9 southbound approach crossed through stationary traffic that was waiting to enter the roundabout. A small number of NMUs crossing the A9 north arm southbound lane were observed to not use the dropped crossing point and crossed to the north of the crossing point. This may be attributable to (what the study team believes to be) poor visibility resulting from gorse hedges obscuring the sight lines from the existing crossing point to the oncoming traffic.

Table 7-6: Tore Roundabout - NMU crossings

Diagram of Occurrence	Conflict Severity	Nr of Conflicts Observed
Movement 1 - NMU Crossing	1. Precautionary conflict (i.e. Braking for vehicle waiting to emerge, precautionary lane change or anticipatory braking). Pedestrians walking swiftly across the road.	4
Movement 1 - NMU Crossing	2. Controlled braking or lane change to avoid collision, but with ample time for manoeuvre. Pedestrians running across the road.	2
Movement 1 - NMU Crossing	3. Rapid deceleration, lane change or stopping to avoid collision, resulting in a near miss situation. No time for steady controlled manoeuvre.	0
Movement 1 - NMU Crossing	4. Emergency braking or violent swerve to avoid collision resulting in near miss or occurrence of a minor collision.	0
Movement 1 - NMU Crossing	5. Emergency action, followed by collision.	0

7.5.33. One pedestrian was observed walking down the southbound verge to the bus stop rather than using the crossing point across the dual carriageway.

CONFLICTS STUDY CONCLUSIONS

7.5.34. The conflict study indicates the following:

- A large number of conflicts on the left turn merge from the B9161 to the A9 southbound. 100 conflicts were identified during the two-hour morning peak period where vehicles had to take action to prevent a collision (based on the Thursday morning observations).
- A lower number of conflicts for this movement were observed on the Friday morning (of the survey period) when conditions were wet.
- Two conflicts were observed for the right turn from the A9 to the B9161. This is fewer than was observed for the left turn out of the B9161 to the A9 (despite the number of turning movements being similar).
- Most of the conflicts at the southeast corner of Tore involved slow moving HGVs or agricultural vehicles entering the roundabout from the A832(E) arm and causing vehicles already in the roundabout to brake or change lane.
- All except one of the conflicts observed involving NMU's were all at the A9 northbound exit arm of Tore Roundabout; the other was a cyclist running beside their bike south of the roundabout.

7.6 SPEED SURVEY

7.6.1. A speed survey was carried out on both A9 carriageways either side of the Munlochy Junction for one week from 6 March 2020.

7.6.2. The results are shown in Table 7-7 and shows that there are a high number of vehicles that are travelling past the Munlochy Junction at speeds in excess of the posted speed limit. Location of the survey sites is shown in Figure 6-1.

Table 7-7: Seven-day speed survey along A9 at Munlochy Junction (March 2020)

Site Location	7-Day Average Speed	7-Day Average 85th percentile Speed	% of vehicles travelling over 70mph	% of vehicles travelling 15mph over 70mph
Northbound Site 1	70.1 mph	78.9 mph	52.80%	3.70%
Northbound Site 2	69.0 mph	78.3 mph	47.70%	3.00%
Southbound Site 3	71.5 mph	80.2 mph	59.00%	5.60%
Southbound Site 4	70.2 mph	78.9 mph	51.90%	3.90%

7.7 SUMMARY

7.7.1. The collisions statistics show that collisions are spread out over the extent of the study area and from the information recorded in Stats 19, do not exhibit any common contributory factors (noting that these factors are not necessarily those reflected in the final police investigations).

7.7.2. The conflict study at Munlochy Junction shows that drivers from the B9161 merging with the A9 southbound are not giving way to vehicles on the southbound carriageway and expect them to change lanes or slow down. A large number of conflicts were observed for this movement, with approximately one conflict per minute during the morning peak period, which suggests – on the basis that a higher rate of conflicts represents a higher probability of collision occurrence – that road safety risks are present at this junction. There have been two collisions between January 2010 and September 2020 involving vehicles carrying out this merge manoeuvre. The right turn into the B9161 presented a low number of conflicts relative to the volume of turning vehicles and the number of conflicts resulting from other manoeuvres at the junction.

7.7.3. The conflicts at Tore appear to result primarily from slow moving vehicles entering the circulatory carriageway (and these larger vehicles also appear to cause longer queues on the approach arms).

7.7.4. All except one of the conflicts occurred on the northbound exit to the A9 where NMUs had to walk swiftly/run across the road due to the speed of the vehicles exiting the roundabout. Some pedestrians were observed avoiding the A9(N) east side crossing point which could be attributed to a lack of visibility, either due to the layout of the carriageway and crossing points or a lack of vegetation management.

7.7.5. Speed surveys recorded more than 50% of vehicles exceeding the speed limit of 70 mph (for general traffic) at three of the four sites on the A9 passing Munlochy Junction.

8 STAKEHOLDER ENGAGEMENT

8.1 INTRODUCTION

8.1.1. Stakeholder engagement formed an important element of this study and has been undertaken to include views from stakeholders on the problems and opportunities in the study area.

8.1.2. Given the current COVID-19 restrictions, stakeholder engagement has been carried out mainly through online meetings and workshops which have been facilitated in smaller groups to allow opportunities for all stakeholders to express views and concerns.

8.2 STAKEHOLDER ENGAGEMENT AND WORKSHOPS

8.2.1. In order to demonstrate active and collaborative engagement with stakeholders as evidence to the Case for Change report the STAG-aligned process outlined below was followed.

8.2.2. During the development of the Case for Change the approach included engagement with stakeholders (including organisations and elected members) identified in conjunction with the Highland Council and other stakeholders.

8.2.3. At the Case for Change stage, the process did not include a broader public consultation as the engagement sought to identify the problems and opportunities (as opposed to consultation on presented options). If the study progresses to further stages where options are developed and appraised, public consultation will be undertaken at that point to gather views on the options presented.

8.2.4. The stakeholder engagement aimed to gather technical data and inputs from stakeholders regarding perceived problems, opportunities, issues and constraints on the A9 (in the study area) through pre-engagement meetings and stakeholder workshops.

8.2.5. Engagement included the following stakeholders:

- Transport Scotland
- BEAR Scotland
- Police Scotland
- Scottish Ambulance Service
- Scottish Fire and Rescue Service
- NHS Highland
- Members of the Scottish Parliament and/or their staff
- Councillors (Highland Council)
- The Highland Council
- Community Councils
- HiTRANS.

8.2.6. A full list of Stakeholders that were engaged with is included in a separate document **Appendix J**.

8.2.7. The Engagement Plan consisted of three phases:

- Phase 1 - Pre-workshop engagement with stakeholders through telephone discussions and written submissions. This included gathering information/local intelligence and supporting technical data

- Phase 2 - Workshop 1 – seeking views on problems and opportunities, and the development of Transport Planning Objectives
- Phase 3 - Workshop 2 – seeking inputs to the finalisation of the Transport Planning Objectives, and seeking potential options that could address the problems, unlock the opportunities and achieve the objectives.

PROCESS LETTER

8.2.8. The first step which was undertaken was the drafting and distribution of a "Process Letter" which was sent on 3 September 2020. This document provides an overview of the study, a description of the process, and the intended outcome (i.e. making the evidenced case for change).

PHASE 1 - PRE-WORKSHOP ENGAGEMENT WITH STAKEHOLDERS

8.2.9. Prior to the first stakeholder workshop, a series of pre-engagement calls with stakeholders took place in order to achieve the following:

- An understanding of the previously identified issues and concerns from the perspective of officers, users and members
- Input as to the stakeholders that should be considered for the first and second workshops, and the opportunity to focus the number of stakeholders at the workshops to a manageable number
- Technical data inputs to support the analysis
- Demonstrating and evidencing a robust engagement approach to the stakeholders and responding to the high level of interest in the study.

8.2.10. The pre-engagement calls with stakeholders took place ahead of the workshops in order to overcome the practical constraints caused by the COVID-19 pandemic and to gather as much information before the workshops to make these more practically manageable.

8.2.11. The information gathered from the pre-workshop engagement informed the preparation for the first workshop.

8.2.12. The pre-workshop engagement included stakeholders from the following groups:

- Local authority officers, including officers from the Highland Council road safety team
- Community Council members
- Road user representatives, including bus operators and active travel user groups
- Local members, including MSPs.

PHASE 2 - WORKSHOP 1 (PROBLEMS/OPPORTUNITIES/TPOS)

8.2.13. The first workshop drew in the views of stakeholders about the actual and perceived problems and opportunities relating to this stretch of road, both currently and in the future.

8.2.14. The workshop further gathered views from the stakeholders on the development of potential Transport Planning Objectives (TPOs).

8.2.15. The actual and perceived problems and opportunities identified from the workshop are included under a separate document **Appendix D**.

PHASE 3 – WORKSHOP 2 (FINALISING OBJECTIVES/INITIAL OPTIONEERING)

8.2.16. The second workshop followed on from the collation of the problems and opportunities and focussed on agreeing the final TPOs with the stakeholders and taking comments on these.

8.2.17. The workshop invited stakeholders to contribute ideas for interventions that would address the problems and opportunities and achieve the objectives.

8.2.18. The comments on the draft TPOs and the suggested options from the workshop are included under a separate document **Appendix D**.

8.3 PROBLEMS AND OPPORTUNITIES IDENTIFIED BY STAKEHOLDERS

8.3.1. The key problems and opportunities identified by stakeholders are set out below and represent the stakeholders' views which may nor may not be supported by evidence.

WHOLE STUDY AREA

- High traffic speeds, especially approaching Munlochy junction and Tore Roundabout
- Growth in traffic will increase safety problems at Tore Roundabout and Munlochy junction
- Concerns that any interventions in one location may shift problem to another
- Mix of traffic on the network, with commuters, heavy goods and agricultural vehicles interacting
- Safety risks at intermediate junctions due to large agricultural vehicles turning across the high-speed carriageway

MUNLOCHY JUNCTION

- Layout of Munlochy junction – requiring at-grade crossing of a high-speed dual carriageway
- High traffic volumes (in particular during the PM peak) putting pressure on right-turners from A9 at the junction, and reducing the available gaps
- Long queue for right turn movement on northbound approach
- Short length of slip lane from B9161 to merge onto A9 southbound
- Lack of visibility at junction/sun glare

TORE ROUNDABOUT

- Pedestrian and cyclist safety concerns at Tore Roundabout – crossing the dual carriageway at-grade
- High speed on approaches/sudden braking at approaches to Tore Roundabout
- Lack of adequate lighting and markings on junctions and the pedestrian crossing points.

8.3.2. The list above is not comprehensive and full details of the stakeholder comments are included in a separate document **Appendix D**.

9 PROBLEMS, OPPORTUNITIES, ISSUES AND CONSTRAINTS

9.1 INTRODUCTION

9.1.1. This section identifies and provides evidence of the actual and perceived problems and opportunities related to the study area. The analysis and identification of problems and opportunities sets the basis for the development of Transport Planning Objectives and the option generation.

9.1.2. Issues and constraints are considered in parallel to the problems and opportunities. According to STAG, issues described are uncertainties that the study is not in a position to resolve and constraints may represent the bounds which limit the scope of the study as well as specific limitations to certain options.

9.1.3. The evidence underpinning the identification of existing and future year problems and opportunities along the A9 between the North Kessock junction and Tore Roundabout has been described throughout this report and includes:

- Review of previous studies
- Stakeholder inputs
- Travel demand and traffic modelling
- Road safety analysis.

9.1.4. In addition to identifying and understanding existing problems and opportunities, it is important to consider changes that may impact the future scenarios. The identification of future problems has focussed on assessing the current situation and understanding the impact on future growth and development in the area as well as any changes in travel patterns.

9.2 PROBLEMS

9.2.1. The study area is the section of the A9 between the North Kessock junction and Tore Roundabout and it includes all intermediate junctions. The analysis of problems has been split into the following three main sections:

- A9 North Kessock to Tore (mainline and intermediate junctions)
- Munlochy Junction
- Tore Roundabout.

A9 NORTH KESSOCK TO TORE (MAINLINE AND INTERMEDIATE JUNCTIONS)

9.2.2. The current and future problems identified in this section can be further divided into the following:

Problem 1 – Perceived safety risks due to right turn movements from side roads across the A9

9.2.3. During the stakeholder engagement, it was highlighted that the nature of the A9 in the section between North Kessock and Tore Roundabout means that it serves as a strategic corridor for long distance trips as well as local communities, industries and farms. There are slow moving vehicles such as trucks, farm vehicles and heavy goods vehicles as well as the caravans of holidaymakers using this section of the A9.

9.2.4. Stakeholders highlighted the perceived safety risks resulting from large agricultural vehicles attempting to turn right across the high-speed carriageway.

9.2.5. Risks arise from vehicles standing in the narrow central reserve (and extending out into the carriageway) whilst awaiting the opportunity to complete the turning movement.

9.2.6. This perceived risk is highest during peak periods when the traffic demand on the A9 is highest.

9.2.7. The risk is potentially increased during the summer/holiday periods when a larger number of users that are unfamiliar with the area and the layout of the A9 junctions in this section may not be as aware of the potential hazards at the junctions. There are also peaks in the movements of slow-moving agricultural vehicles at certain times of the year.

9.2.8. This perceived risk would increase in the future if traffic demand on the A9 were to grow as vehicles would have fewer gaps in which to make the turning movements, resulting in vehicles spending more time waiting on side roads and/or in the central reserve to complete the movements.

Evidence: this problem is highlighted through stakeholder views and is supported by observations from the conflict study (albeit the vehicles were observed to complete the turning movements safely) and collision data (two collisions at Allangrange involved agricultural vehicles).

Problem 2 – Perceived safety risks for general traffic and buses merging onto the A9 at intermediate junctions (Glackmore, Arpafeelie, Allangrange and Artafallie)

9.2.9. Stakeholders raised concerns that the left turn slips at the intermediate junctions which should facilitate traffic from the side roads merging with the A9 are not long enough length to allow vehicles to speed up sufficiently in order to join the A9 in a safe manner.

9.2.10. At present there are no merge tapers at any of the intermediate junctions as the design standards (CD123) require there to be more than 450 vehicles/day turning left before a merge taper is considered. The highest recorded number of vehicles turning left at any of the four junctions was at the Allangrange junction, with 133 daily vehicles observed on Thursday 11th September 2020.

9.2.11. Bus operators have noted that certain services are unable to use bus stops along the A9 as buses are unable to stop and then merge back into traffic in a safe manner. This limits the bus services that can be provided to the existing bus stops on the A9 in the study area.

Evidence: this problem is highlighted through stakeholder views.

MUNLOCHY JUNCTION

9.2.12. The current and future problems identified in this section can be further divided into the following:

Problem 3 – Conflicts arising from vehicles merging from the B9161 onto the A9 southbound

9.2.13. There are observed conflicts that arise from left turn and merging movements from the B9161 onto the A9. Drivers turning left were observed to not slow down/give way to the A9 mainline vehicles, resulting in a large number of conflicts as vehicles on the A9 southbound changed lanes or slowed down to avoid collisions.

9.2.14. Stakeholders raised concerns about risks resulting from all movements at the at-grade Munlochy Junction, with mention made of the potential impact of drivers unfamiliar with the area and of the impact of solar glare.

9.2.15. This section of the A9 does not have street lighting (excluding Tore Roundabout). There is a perceived risk by some stakeholders that poor visibility at Munlochy Junction (as a result of a lack of lighting) increases the likelihood of near misses and/or collisions. These concerns regarding visibility

increase during the winter months when there is less natural light and poorer weather conditions, with driving conditions made more challenging by road surface water, snow and ice.

9.2.16. Stakeholders commented that driver frustration during peak morning and evening peak periods may contribute to this problem.

9.2.17. This problem would increase in the future if traffic demand on the A9 and side roads were to grow as vehicles would have fewer gaps (to allow merging movements), potentially leading to driver frustration and risk-taking behaviours.

Evidence: this problem is highlighted through extensive stakeholder views and is supported by collision data (two collisions). Data from the conflict study at this location indicated that this movement results in up to 100 conflicts during the two-hour morning peak period at Munlochy Junction.

Problem 4 – Perceived safety risks for right turning movements from the A9 onto the B9161

9.2.18. Stakeholders raised concerns about risks resulting from all movements at the at-grade Munlochy Junction, with particular mention made of the right turn movement from the A9 northbound onto the B9161 across the high-speed southbound carriageway of the A9.

9.2.19. Stakeholders commented that driver frustration during peak morning and evening peak periods may contribute to this risk. Due to higher volumes of traffic on the A9 southbound carriageway during these periods, there are reduced gaps for completing the right turn across the carriageway which results longer waiting times (with 2.5 minutes waiting time observed for one vehicle during the study surveys) and the build-up of queues. Drivers that have been waiting for a longer time may get frustrated and pressure builds up to complete the right turn, resulting in drivers perhaps taking greater risks whilst trying to cross the southbound carriageway.

9.2.20. This perceived risk would increase in the future if traffic demand on the A9 were to grow as vehicles would have fewer gaps in which to make the turning movements which may result in risk-taking.

9.2.21. The conflict study observed instances of driver confusion over the give-way in the central reserve between movements from the A9 into B9161 and movements from the B9161 to the A9 northbound.

Evidence: this problem is highlighted through extensive stakeholder views and is supported by collision data (four collisions involving vehicles making this turning movement). Data from the conflicts study, however, indicated few conflicts for this movement.

Problem 5 – Safety risks due to queues forming on northbound right turn lane and extending onto the main northbound carriageway

9.2.22. Stakeholders raised concerns about the queue for the right turn movement from the A9 northbound onto the A9 extending beyond the length of the right turn slip lane during the evening peak period. Queuing appears to be impacted by platoons of northbound vehicles arriving over the Kessock Bridge.

9.2.23. BEAR Scotland installed a warning system, including an electronic vehicle active sign (VAS), to inform drivers of possible queue formation extending onto the northbound carriageway.

9.2.24. Survey data during the study (and the most recent BEAR Scotland study) did not show queuing extending beyond the end of the slip lane, but it did extend to the limit of the lane. There is anecdotal evidence from stakeholders that the queue extends beyond the limit of the lane.

9.2.25. Traffic modelling (which assumes that routing remains unchanged and that the platooning caused by the Longman Roundabout signals continues) projects that the queue length for the right turn movement would increase (due to traffic growth) from the maximum 25 observed in 2020, extending beyond the extent of the right turn slip lane. This would result in stationary traffic queuing on the northbound carriageway posing a significant risk to road safety.

Evidence: this problem is highlighted through stakeholder views, is supported by survey data of current maximum queue lengths and traffic modelling.

TORE ROUNDABOUT

9.2.26. The current and future problems identified in this section can be further divided into the following categories:

Problem 6 – Perceived safety risks to pedestrians and cyclists at Tore Roundabout

9.2.27. As Tore Roundabout (and associated approaches) divides the village of Tore, there is a requirement for residents (including school pupils) to cross the carriageway on a regular basis in order to access the village's facilities.

9.2.28. Stakeholders raised concerns about the risks to the safety of pedestrians and cyclists crossing the A9 approaches to Tore Roundabout at grade. There were concerns raised that drivers are not fully aware of the crossing points.

9.2.29. The conflict study identified pedestrians running across the carriageway (suggesting risk-taking behaviour) and using alternative crossing locations with better visibility (due to vegetation growth).

9.2.30. The previous study "A9 Tore Non-Motorised User Review" carried out in 2014 identified areas of improvement at the crossing points which have been delivered.

Evidence: this problem is highlighted through stakeholder views and is supported by observations from the conflict study.

Problem 7 – Conflicts arising from vehicle movements at Tore Roundabout

9.2.31. Stakeholders raised concerns about conflicts between vehicles entering and travelling through Tore Roundabout, in particular on the southeast quadrant (exit onto the A9 southbound).

9.2.32. The collision analysis and conflict study identified that there are instances of poor lane behaviour by vehicles in the roundabout. Stakeholders commented that there had been instances where vehicles left the carriageway whilst making manoeuvres to avoid other vehicles already in the roundabout.

9.2.33. Stakeholders noted that queues form on the approaches to Tore Roundabout, affecting the A835 and A832. Video observations suggest that these could be the result of slow-moving vehicles finding it challenging to enter the roundabout. There is a risk that this queuing may increase driver frustration and may result in risk-taking behaviour which may contribute to conflicts.

9.2.34. Conflicts observed at the southeast corner of Tore Roundabout involved slow moving HGVs or agricultural vehicles entering the roundabout from the A832(E) arm and causing vehicles already in the roundabout to brake or change lane.

9.2.35. Evidence from the queue analysis shows that the maximum queue on the A835 approach was 39 vehicles, 29 vehicles on the A9 southbound approach, 20 vehicles on the A832(W) approach, 19 vehicles on the A832(E) approach and 11 vehicles on the A9 northbound approach.

9.2.36. The isolated traffic model for the junction projects an increase in queues from 2020 to 2035, which may lead to greater driver frustration and potential risk-taking behaviours.

9.2.37. Comments made during the stakeholder engagement highlighted that the position of signs on the approaches to the roundabout could be improved. Signs on the A9 northbound approach are at a greater distance from the roundabout resulting in driver confusion as to where the roundabout is located, leading to drivers slowing down (expecting to enter into the roundabout) and then speeding up again when the roundabout does not appear, leading to higher speeds on the approach to the roundabout.

9.2.38. The A9 northbound, south of Tore Roundabout, is a dual carriageway that allows overtaking and observations support that drivers take this as a "last opportunity to overtake" before entering the single carriageway section north of Tore Roundabout. This results in increased speeds on the approach to the roundabout and overtaking manoeuvres on the roundabout. This is exacerbated by vehicles arriving in platoons from across Kessock Bridge.

Evidence: this problem is highlighted through extensive stakeholder views and is supported by collision data (four collisions). Observations and data from the conflict study supports that there is poor lane behaviour by vehicles within the roundabout and conflicts with slow-moving vehicles in the roundabout.

9.3 COMMENTARY ON STAKEHOLDER INPUTS

9.3.1. It should be noted that two elements of stakeholder input regarding problems have been addressed in this report, but are not included in the list above:

- Concerns that any interventions in one location may shift the problem to other locations:
  - This will be addressed as part of the appraisal of any options, as the Transport Planning Objectives (included in section 10) include separate objectives related to Munlochy Junction and Tore Roundabout. Hence, if there is a transferred impact from one location to another, this will be reflected in the appraisal against all the Transport Planning Objectives.
- Concerns that growth in traffic will increase safety problems at Tore Roundabout and Munlochy junction:
  - This will be considered as part of the appraisal of any options in subsequent stages – each option will be considered against existing and future traffic conditions.

9.4 OPPORTUNITIES

9.4.1. The problems identified in the previous section can be grouped into categories where opportunities have been identified as described below:

Opportunity 1: Improve road safety and support the Scottish Road Safety Framework

9.4.2. The National Transport Strategy 2, together with the Scottish Road Safety Framework to 2030, the Strategic Road Safety Plan 2016 and Local Policy, have a vision to reduce the number of accidents and fatalities on Scottish roads. It is the objective of Scottish Government and Transport Scotland to improve road safety and this can be achieved by addressing the problems identified above in a short, medium and long term.

Opportunity 2: Encourage walking and cycling by local residents

9.4.3. There is the opportunity to not only address the identified problems for pedestrians and cyclists at Tore Roundabout (improving the safety of their journeys) but also to facilitate and encourage a higher number of local journeys using active travel modes.

9.4.4. This would support the priorities of the National Transport Strategy (NTS2) by promoting greener, cleaner and healthier travel choices, reducing emissions and helping to make the transport network safer for all to use.

9.5 ISSUES

9.5.1. The Inner Moray Firth Local Development Plan (adopted in 2015) sets out the planned development across the Inner Moray Firth area. The adopted plan is currently under review and the new plan had not been published at the time of drafting this report.

9.5.2. The COVID-19 pandemic will impact on travel behaviours and the future demand for travel represents an area of uncertainty. If the study progresses into the next stage the appraisal will include consideration of this uncertainty in the future year scenarios analysed.

9.6 CONSTRAINTS

9.6.1. Other than the constraints of land ownership outside of the A9 extents, no specific constraints were identified during the study.

9.6.2. Further constraints will be considered as part of further appraisal stages.

10 TRANSPORT PLANNING OBJECTIVES

10.1 INTRODUCTION

10.1.1. This chapter describes the development of the Transport Planning Objectives (TPOs).

10.2 TRANSPORT PLANNING OBJECTIVES

10.2.1. The evidence gathered during the technical analysis, including current transport infrastructure and future demand and the road safety analysis, as well as the inputs provided by the stakeholders during the engagement process, informed the analysis of problems, opportunities, issues and constraints.

10.2.2. In response to these transport problems, opportunities, issues and constraints, the following TPOs were developed. It should be noted that no weighting is applied to any of the objectives and the numbering system is for presentation purposes only.

TPO 1: A reduction in conflicts for active modes at the junctions along the A9 between North Kessock and Tore to encourage the use of active travel modes.

Proposed indicator:

- Primary: reduction in number/scale of severity of conflicts
- Secondary: increase in the number of trips made by active modes on the network within the study area.

Supports National Objective:

- A reliable and resilient strategic transport system that is safe and secure for users
- A cohesive strategic transport system that enhances communities as places, supporting health and wellbeing.

Supports Regional Objective:

- Reduce transport-related casualties in line with reduction targets
- Increase the share of active travel for shorter, everyday journeys.

TPO 2: To achieve an improvement in vehicular road safety and a reduction in conflicts at the Munlochy Junction (A9/B9161) in the short (3 years), medium (3-10 years) and longer term (beyond 10 years).

Proposed indicator:

- Reduction in Collision Numbers/Severity (STATS 19)/Collision description
- Reduction in number/scale of severity of conflicts resulting from driver behaviour
- Reduction in the number of unusual manoeuvres at the junction.

Supports National Objective:

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

Supports Regional Objective:

- Reduce transport-related casualties in line with reduction targets.

TPO 3: To achieve an improvement in vehicular road safety and a reduction in conflicts at Tore Roundabout (A9/A832/A835) in the short (3 years), medium (3-10 years) and longer term (beyond 10 years).

Proposed indicator:

- Reduction in Collision Numbers/Severity (STATS 19)/Collision description
- Reduction in number/scale of severity of conflicts resulting from driver behaviour
- Reduction in the number of unusual manoeuvres at the junctions (e.g. passing within the roundabout).

Supports National Objective:

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

Supports Regional Objective:

- Reduce transport-related casualties in line with reduction targets.

TPO 4: To achieve an improvement in vehicular road safety and a reduction in conflicts at intermediate junctions along the A9 from north of the North Kessock junction up to but not including the Tore Roundabout in the short (3 years), medium (3-10 years) and longer term (beyond 10 years).

Proposed indicator:

- Reduction in Collision Numbers/Severity (STATS 19)/Collision description
- Reduction in number/scale of severity of conflicts resulting from driver behaviour
- Reduction in the number of unusual manoeuvres at the junctions.

Supports National Objective:

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

Supports Regional Objective:

- Reduce transport-related casualties in line with reduction targets.

10.3 CONSISTENCY WITH PROBLEMS, ISSUES, CONSTRAINTS AND OPPORTUNITIES

10.3.1. Table 10-1 shows the alignment between the identified problems and opportunities with the TPOs.

Table 10-1: Relationship between TPOs and identified Problems and Opportunities

Problem	TPO 1	TPO 2	TPO 3	TPO 4
North Kessock to Tore				
1 - Perceived safety risks due to right turn movements from side roads across the A9	x	x	x	✓
2 - Perceived safety risks for general traffic and buses merging onto the A9 at intermediate junctions	x	x	x	✓
Munlochy Junction				
3 - Conflicts arising from vehicles merging from the B9161 onto the A9 southbound	x	✓	x	x
4 - Perceived safety risks for right turning movements from the A9 onto the B9161	x	✓	x	x
5 – Safety risks due to queues forming on northbound right turn lane and extending onto the main northbound carriageway	x	✓	x	x
Tore Roundabout				
6 – Perceived safety risks to pedestrians and cyclists at Tore Roundabout	✓	x	x	x
7 - Conflicts arising from vehicles movements at Tore Roundabout	✓	x	✓	x
Opportunity	**TPO 1**	**TPO 2**	**TPO 3**	**TPO 4**
General				
1 – Improve road safety and support the Scottish Road Safety Framework	✓	✓	✓	✓
2 – Encourage walking and cycling by local residents	✓	x	x	x

11 OPTION GENERATION

11.1 INTRODUCTION

11.1.1. Following the development of the TPOs a longlist of potential options that could address the problems and achieve the TPOs was identified.

11.1.2. At the Case for Change stage the focus is on identifying a long list of options that could potentially provide solutions that would meet the Transport Planning Objectives and alleviate the problems or address the opportunities identified. This is to provide confidence that – should the study proceed to the next stage of appraisal – that there are potential options that could be further considered.

11.2 OPTION GENERATION

11.2.1. In line with STAG guidance, a do-minimum scenario needs to be considered as part of the initial appraisal. The do-minimum scenario considered at this stage does not include changes to the existing network and assumes a growth in line with the existing LDP.

11.2.2. The list of options generated are shown in a separate document **Appendix K**. Options are divided into short, medium and long-term interventions and were initially appraised against the performance against the Transport Planning Objectives.

12 CONCLUSIONS AND NEXT STEPS

12.1 THE CASE FOR CHANGE

12.1.1. This Initial Appraisal: Case for Change report has set out the context for the appraisal of the A9 section between the North Kessock junction and the Tore Roundabout and the intermediate junctions. Following STAG guidance, it has identified the transport problems as well as the opportunities alongside the issues and constraints of the study area. This analysis provided the basis for objective setting and the generation of a longlist of potential options.

12.1.2. This report sets out that there are identified and evidenced problems at locations along the A9 between North Kessock and Tore, with most stakeholder views generally aligning with road safety analysis (supported by collision statistics and a conflicts study).

12.1.3. A longlist of options which could potentially achieve the objectives and address the problems and opportunities has been identified.

12.2 PRELIMINARY APPRAISAL

12.2.1. If the study proceeds beyond the Case for Change, the next stage would be the preliminary appraisal. The purpose of the Preliminary Options Appraisal, as established in the Brief and in line with the STAG process, will examine the options generated in this report against a number of criteria that includes:

- Scheme objectives (in more detail)
- Policy alignment review
- STAG criteria (environment, safety, economy, integration, and accessibility and social inclusion)
- Affordability
- Feasibility
- Acceptability.

12.2.2. This criterion provides a framework to ensure all impacts are considered within the national, regional and local objectives. Following the Preliminary Appraisal, if funding is available, a more detailed appraisal may be carried out for the options that perform well against the TPOs and STAG criteria.

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