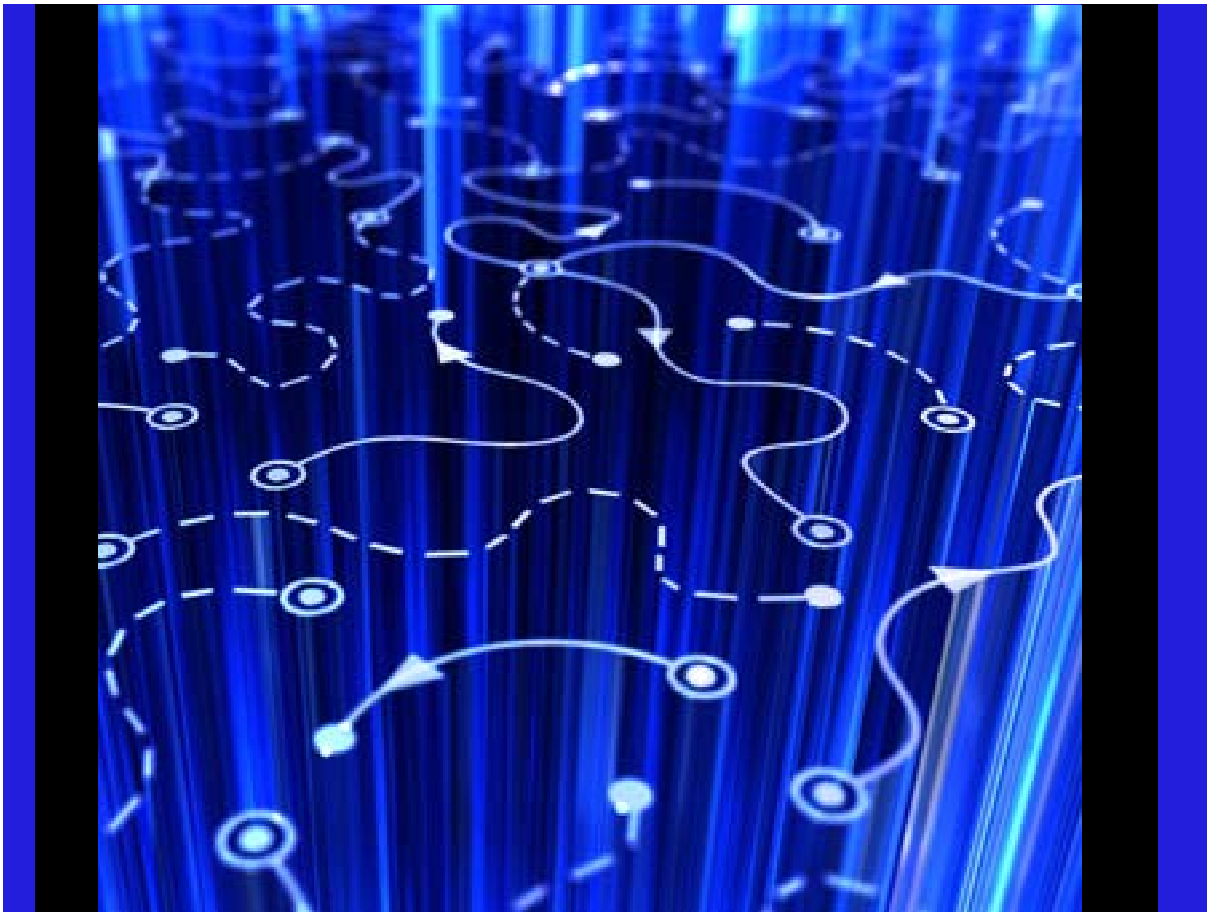
Central Lancashire Local Plan
Stage 1B: Transport Evidence

Version: 0

Lancashire County Council

Central Lancashire Local Plan



Central Lancashire Local Plan
Stage 1B: Transport Evidence

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Jacobs U.K. Limited

1 City Walk
Leeds, West Yorkshire LS11 9DX
United Kingdom

T +44 (0)113 242 6771
F +44 (0)113 389 1389
www.jacobs.com

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1. Introduction

1.1 Background

Central Lancashire, encompassing the areas of Preston, Chorley, and South Ribble, operates as a unified local economy and commuting zone. The three Central Lancashire Planning Authorities - Preston City Council, South Ribble Borough Council, and Chorley Council - have decided to review the Joint Core Strategy and individual local plans and have formally agreed to work together to create a unified plan. Jacobs has been appointed by Lancashire County Council (LCC) to provide transport planning consultancy support to the Local Plan process.

In July 2012, the three councils adopted the existing Core Strategy, a crucial document in the statutory development plan for the area, which outlines the strategic planning policies for Central Lancashire. This strategy is supported by individual local plans developed by each council in 2015.

In 2018, the review of the Core Strategy and individual local plans commenced with the aim of creating a single Central Lancashire Core Strategy that reflects both shared strategic policy objectives and more detailed non-strategic policies.

Once adopted, the new Core Strategy will replace the extant Central Lancashire Core Strategy (2012). The new Core Strategy will address local housing needs, economic factors, environmental considerations including the climate emergency, community infrastructure, and strategic infrastructure needs, in a sustainable way.

The Preferred Options Consultation (Part One) for the new Core Strategy in Central Lancashire was completed in February 2023. The next stage, known as the Publication Stage, is anticipated to occur in early 2025, followed by the submission of the final Core Strategy to the Secretary of State for examination in June 2025. The adoption of the new Core Strategy is expected by late 2026.

The Core Strategy will also make site-specific strategic allocations to meet the identified development needs. Once the Core Strategy has completed all its formal statutory stages, it will be adopted as the development plan for all three councils and used to assess planning applications.

As part of the Core Strategy update, transport evidence needs to be developed by assessing the transport impacts and needs of the spatial growth options being considered. The methodology is based on the guidance included in the National Planning policy Framework and DfT's guidance on Transport evidence bases in plan making and decision taking. It also takes into account National Highways feedback on the Central Lancashire Core Strategy (CLLP) Preferred Options – Part One Consultation (December 2022). The assessment is being undertaken in following three stages:

- Stage 0: This stage involves assessment of the site allocations to assist the Core Strategy team in evaluating the identified sites from a transportation perspective. Assessment criterion to assess each site or development area with regards to current and future transport connectivity has been defined. This report contains the assessment criteria and results of Stage 0.
- Stage 1: This stage involves the preparation of a Transport Evidence Base (TEB) which draws together all available evidence on existing transport provision and movement within the three districts, the transport issues, and the infrastructure measures necessary to mitigate the unacceptable impacts.

The TEB has a focused spatial remit, looking at transport connections within the three districts and to neighbouring settlements to provide a deeper analysis and understanding of the mobility trends, opportunities, and network constraints.

- Stage 2: This stage will involve more detailed analysis and transport modelling of development scenarios, including sites, access and movement parameters, and mitigation options. This will inform the final Transport Assessment for Local Plan publication for examination, which will present proposed site allocations and a comprehensive mitigation strategy.

1.2 Scope of Transport Evidence Base

Transport considerations play a critical role in ensuring the effectiveness and sustainability of local plans. Integrating transport-based evidence into local plan testing allows for a comprehensive assessment of transportation needs, impacts, and compatibility with existing infrastructure. LCC's new Local Plan covers the period between 2023 and 2041, which identifies the key sites which the council would allocate for development to meet housing and employment land targets. This report sets out the updated transport evidence base which will allow the selection of the most appropriate sites for development within the plan period during Stage 1 of the Transport Assessment process.

The purpose of this report is to evaluate the connectivity of existing settlements, identify the most sustainable options for future development in the district, and determine how infrastructure can be enhanced to better support the proposals in the emerging Local Plan. The assessment must consider several common themes within the reviewed policies:

- Reducing the need to travel through land use and development policies
- Enhancing active travel and public transport networks
- Decarbonising transport impacts through new technology for necessary road journeys
- Using traffic data and traffic models proportionately, shifting from predict and provide to decide and provide
- Developing a robust evidence base to explain current and future challenges and transport's role in addressing them

1.3 Stakeholder Collaboration

An active engagement and consultation with relevant stakeholders and consultees are being undertaken throughout the process to gather valuable insights and feedback. A Transport Strategy Working Group (TSWG) has been established specifically for this purpose, to address and manage the strategic transport issues and opportunities within the LP area.

The TSWG provides strategic management at project and work stream level. It provides assurance to the project that the key objectives are being met and that the project is performing within the boundaries set by the TSWG. The TSWG primarily consists of representatives from LCC and National Highways but also includes representatives from various organizations, including the three local authorities, Active Travel England, bus operators, and rail operators. Initially, only the Active Travel England representative is involved, with other consultees likely to join at later stages.

The remit of the TSWG is to oversee the development of a robust transport evidence base to support the LP, including transport modelling work and the development of an informed transport strategy to support the LP which satisfies the requirements of National Planning Policy Framework (NPPF), DfT Circular 01/2022 The Strategic Road Network, Town and Country Planning Development Management (Procedure) Order (England) 2015 (DMPO) and the Delivery of Sustainable Development ("the Circular) and National Planning Practice Guidance (NPPG). The TSWG also has the remit to address strategic cross-boundary transport issues and opportunities in the LP area.

Monthly meetings with the TSWG are ongoing and are proposed for the full duration of the project.

2. Policy Consideration

It is important to recognise the policy context within which the Local Plan sits. This section provides an overview of the existing policies and strategies influencing the Local Plan at a national, subnational and local level. Whilst this is not an exhaustive list, it provides information which has been gathered as part of the update of the transport evidence base, thereby demonstrating that the subsequent transport assessment has been undertaken in accordance with appropriate guidance using up-to-date and accurate data. .

2.1 National Policy Context

National Planning Policy Framework (December 2024)

The National Planning Policy Framework[11] sets out the Government's planning policies for England and how these should be applied. It provides guidance as to how the transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. The note states that this should involve:

a) making transport considerations an important part of early engagement with local communities;

b) ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places;

c) understanding and addressing the potential impacts of development on transport networks;

d) realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated;

e) identifying and pursuing opportunities to promote walking, cycling and public transport use; and

f) identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.

The note emphasises that the significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.

1.1.

[1] https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf

Transport evidence bases in plan making and decision taking' (2015) – Ministry of Housing, Communities and Local Government

This Guidance Note was published in March 2015[2] and sets out how strategic Transport Assessments should be undertaken to support Local Plans. The note states that the key issues the transport evidence bases should seek to consider are:

- The existing situation and likely generation of trips over time by all modes and the impact on the locality in economic, social and environmental terms;
- The opportunities to support a pattern of development that, where reasonable to do so, facilitates the use of sustainable modes of transport;
- The promotion of opportunities to reduce the need for travel where appropriate;
- Identification of opportunities to prioritise the use of alternative modes in both existing and new development locations if appropriate;
- Consideration of the cumulative impacts of existing and proposed development on transport networks;
- Assessment of the quality and capacity of transport infrastructure and its ability to meet forecast demands; and
- Identification of the short, medium and long-term transport proposals across all modes.

The baseline information required to inform the Transport Assessment includes:

- All current transport issues as they affect all modes and freight covering, for example, accessibility, congestion, mobility, safety, pollution, affordability, carbon reduction across the whole Plan area and, within relevant areas of the Plan, including existing settlements and proposed land allocations;
- The potential options to address the issues identified and any gaps in the networks in the short, medium and longer term covering, for example, accessibility, congestion, mobility, safety, pollution, carbon reduction;
- The locations of proposed land allocations and areas/corridors of development and potential options for the provision of sustainable transport and transport networks to serve them;
- Solutions to support a pattern of development that, where reasonable to do so, facilitates the use of sustainable modes of transport;
- The scope and options for maximising travel planning and behavioural change; and
- Accessibility of transport nodes such as rail/bus stations to facilitate integrated solutions.

1.1.

[2] https://www.gov.uk/guidance/plan-making

While many of the aforementioned requirements will impact the later stages of the Transport Assessment process, this Stage 1 report aims to establish a comprehensive baseline, which will allow full analysis to take place in accordance with all assessment elements.

Strategic road network and the delivery of sustainable development (December 2022)

This circular[3] explains how the National Highways (NH) engage with the planning system to assist the delivery of sustainable development. With regards to plan making, NH will engage in the Local Plan process to reduce the potential for creating congestion on the strategic road network, in order to make most efficient use of the limited available capacity on the strategic road network, and because additional physical capacity is difficult, costly and takes time to provide.

In framing its contribution to the development of Local Plans, the aim of NH will be to influence the scale and patterns of development so that it is planned in a manner which will not compromise the fulfilment of the primary purpose of the strategic road network.

In order to develop a robust transport evidence base, NH will work with the local authority to understand the transport implications of development options. The TA scope includes assessing the cumulative and individual impacts of the Local Plan proposals upon the ability of the road links and junctions affected to accommodate the forecast traffic flows in terms of capacity and safety. The assessments has been carried out in line with current Department for Transport guidance or on a basis otherwise agreed with the NH.

Capacity enhancements and infrastructure required to deliver strategic growth will be identified at the next stage, which provides the best opportunity to consider development aspirations alongside the associated strategic infrastructure needs. Enhancements should not normally be considered as fresh proposals at the planning application stage.

For the Local Plan transport assessment, stakeholder engagement, including NH, is being conducted. The scope addresses issues and impacts on the SRN, emphasizing how transport and land use planning can collaboratively create a more sustainable future. The Transport Assessment will identify potential impacts on the SRN from development proposals and work with NH to find solutions for improving the Strategic Road Network to accommodate future local traffic growth.

CIHT Better planning, better transport, better places (2019)[4]

This document was produced by a working group led by the Chartered Institution of Highways and Transportation (CIHT) and is intended to provide practical advice for everyone involved in planning on how the transport planning process can support the delivery and scale of economic and housing growth required by government, whilst delivering more sustainable transport and planning outcomes for people and places.

1.1.

[3] https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development/strategic-road-network-and-the-delivery-of-sustainable-development#the-role-of-this-document

[4] https://www.ciht.org.uk/media/10218/ciht-better-planning-a4_updated_linked_.pdf

The report was produced based on the industry opinion that the current practice and interpretation of policies leads to more car-based development, contrary to the aims of national planning policy and contributing to unhealthy lifestyles and climate change.

On plan making, the document suggests ways to integrate planning and transport to achieve better outcomes, including setting place-based objectives for developments. The key objective should be to delivery maximum sustainable transport accessibility while delivering new and affordable homes (and employment land). All new developments should put people rather than vehicles at their heart, facilitate easy access to day-to-day services and be designed to prioritise walking, cycling and the use of public transport to provide real choices for everyone.

With regards to evidence bases, plan makers should prepare a high-quality and proportionate evidence base that is fit for purpose when assessing the needs and issues for communities and places, in order to ensure the Plan is deliverable. The transport evidence base must offer credible and robust evidence to identify transport-related opportunities and constraints to the development strategy within the Plan. It should challenge the traditional 'predict and provide' methodology that leads to car-dominated environments by utilising methodologies which are forward facing.

The report also emphasises on collaborative and strategic partnerships to ensure effective and ongoing joint working between plan-making authorities and other key stakeholders takes place throughout the process.

During the transport assessment process, we have actively collaborated with the TWSG through regular meetings. This joint effort aims to mitigate any unintended adverse effects of individual land-use decisions on broader policy initiatives. Additionally, it supports the development of the joint vision and objectives, to support the development and delivery of the Local Plan.

Gear Change (2020)

Gear Change[5] describes the governments vision to make England a great walking and cycling nation. It sets out the actions required at all levels of government to make this a reality, grouped under four themes:

- Better streets for cycling and people;
- Cycling and walking at the heart of decision-making;
- Empowering and encouraging local authorities;
- Enabling people to cycle and protecting them when they do.

Gear Change emphasises the potential benefits of walking and cycling investment including tackling the most changeling issues we face as a society. It also sets out the key design principles that should be followed to create safe, attractive and accessible walking and cycling infrastructure. These design principles will be incorporated into the development of the infrastructure mitigation as part of the new Local Plan.

1.1.

[5] https://assets.publishing.service.gov.uk/media/5f1f59458fa8f53d39c0def9/gear-change-a-bold-vision-for-cycling-and-walking.pdf

Decarbonising Transport: A Better, Greener Britain, UK Government (2021)[6]

The government published the Transport Decarbonisation Plan in July 2021. It sets out the government's commitments, vision and the actions needed to decarbonise the entire transport system in the UK. This includes the pathway to net zero transport in the UK, the wider benefits net zero transport can deliver and the principles that underpin the government's approach to delivering net zero transport.

The document sets out strategic priorities that reflect the themes and view of the future that will pursue to decarbonise the transport system before 2050. The strategic priorities are:

- Accelerating modal shift to public and active transport – The provisions will allow public transport and active travel to become the primary choices for daily activities. Establish a cohesive, widely available, net-zero public transport network that is designed for passengers. Additionally, make provisions that will require cars less frequently and leveraging on new technology to reduce the carbon footprint.
- Decarbonising Road Transport - By 2040, all new non-zero emission road vehicles, from motorbikes to HGVs will be phased out. This transition will be supported by a world-leading regulatory framework and support packages, positioning UK at the forefront of the global race to zero-emission road transport.
- Decarbonising how we get our goods – The freight system will be decarbonised by pioneering new zero-emission technologies and large-scale demonstrators for HGVs. More freight will shift from road and air to sustainable modes, with digital solutions and data sharing optimising efficiency. The last mile will be decarbonised, and logistics solutions will be tailored to the specific needs of each area.
- UK as a hub for green transport technology and innovation - We will lead the modern industrial revolution through UK transport, becoming an internationally recognized leader in green technology, innovation, science, and research. By harnessing opportunities from green innovation and technology, we will drive UK productivity growth and create new jobs.
- Place-based solutions to emissions reduction - By 2050, every place in the UK will have its own net-zero transport network. Local transport infrastructure funding will be reformed to drive decarbonization at the local level, enabling all areas to take bold actions to decarbonize transport, radically change travel habits, and level up the UK.
- Reducing carbon in a global economy - UK aviation will achieve net zero by 2040 and UK shipping by 2050. We will significantly reduce aviation's environmental impact and ensure zero-emission ships are commonplace globally by 2050. We will continue to lead international ambition, cooperation, and collaboration.

The Government emphasizes the need to decarbonize private and commercial road vehicles by promoting zero-emissions vehicles over petrol and diesel ones. Additionally, it aims to increase the use of public transport, cycling, and walking, making these the preferred options for those who can use them. The

1.1.

[6] https://assets.publishing.service.gov.uk/media/610d63ffe90e0706d92fa282/decarbonising-transport-a-better-greener-britain.pdf

Decarbonisation Strategy suggests that new developments should prioritise accessibility and connectivity for walking and cycling, promoting the concept of 20-minute neighbourhoods.

The TA is central to achieving the government's ambitious transport decarbonization targets. As part of the mitigation strategy, future transport proposals and funding will focus on meeting these objectives.

2.2 Sub-National and Regional

TfN Strategic Transport Plan[7] (2024)

TfN's Strategic Transport Plan (STP) outlines the case and priorities for strategic transport infrastructure investment in the North of England, serving as the main pan-northern sub-national transport policy document relevant to the TCF package of interventions.

The STP highlights the opportunities and challenges for the North of England's economy, people, and communities, emphasizing the need for improved transport links to unlock the region's full potential. It acknowledges the North's diverse population, unique places, transport infrastructure, and business landscape. By better connecting key economic centers, the Plan aims to enhance economic performance, create opportunities for people, businesses, and communities, and support the rapid decarbonization of the transport system while considering the environmental impact of transport choices.

Investment in the transport system is seen as crucial for addressing complex economic, environmental, and social challenges. Therefore, the proposed approach is outcome-focused and place-based, ensuring that the transport networks of 2050 are planned and delivered as part of a cohesive ecosystem.

The strategic transport plan is built on five key principles, one of which is the importance of producing a robust evidence base. It emphasizes that plan makers should prepare a high-quality and proportionate evidence base that is fit for purpose when assessing the needs and issues for communities and places, to ensure the Plan is deliverable. The transport evidence base must provide credible and robust evidence to identify transport-related opportunities and constraints within the development strategy of the Plan.

TfN's vision is supported by three strategic ambitions for the North:

- Transforming economic performance
- Rapid decarbonisation of our transport system
- Enhancing social inclusion and health

Achieving each ambition necessitates transformational change for the North, involving a combination of investment, policy change, and behavioural shifts. The transport strategy for the new Local Plan will align with these objectives, aiming to develop and agree on holistic solutions across various policy areas. The transport evidence base for the new Local Plan will contribute towards enhancing transport schemes that encourage a modal shift towards walking and cycling and therefore, lower carbon emissions on the Central Lancashire road network.

1.1.

[7] https://www.transportforthenorth.com/wp-content/uploads/STP-Transforming-the-North-2024.pdf

Central Pennines Strategic Development Corridor Strategic Programme Outline Case[8][8]

The Central Pennines is one of seven corridors that aim to better connect the economic centres and natural assets of the North, improve links with neighbours in Scotland, Wales and the Midlands, and enhance access to our international gateways. The reports produced are the first step in providing a compelling case for the North's Investment Programme.

The Strategic Programme Outline Case (SPOC) for the Central Pennines Strategic Development Corridor (SDC) builds on the Strategic Transport Plan with specific sub-objectives and interventions for the Central Pennines SDC, which the study area falls within, to deliver the STP's broader objectives.

The SPOC sets out the following sub-objectives for the Central Pennines SDC which are relevant;

- Improving productivity across the North
- Improving links between the North's ports, airports, and strategic transport interchanges and the major transport networks for people and goods

Government is already funding a significant programme of transport interventions across the North. In addition, further investment is being planned both by central Government and local bodies. This includes road investment schemes put forward by National Highways, transport schemes developed by combined and local authorities across the North, PanNorthern schemes such as NPR being developed by TfN, and HS2, led by Central Government. It is therefore expected that significant investment in new transport infrastructure will be delivered in the coming decades to address connectivity challenges of the current transport system.

All relevant committed schemes to date have been included in the local plan Do Minimum network scenario. This will inform the strategic transport model to identify the baseline scenario and the subsequent transport mitigation strategy for the next stage.

2.3 Local

Lancashire County Council Local Transport Plan (LTP3) 2011-2021[9][9]

The Local Transport Plan (LTP3), prepared by LCC, identifies the issues facing the current transport infrastructure in Lancashire and sets out a series of transport priorities and schemes for the county to address these issues: The Local Transport Plan sets out transport priorities in Lancashire until 2021. The overarching vision of the strategy is to support strong and sustainable economic growth for Lancashire whilst at the same time enhancing it as a place and community where people can have an excellent quality of life. The vision is supported by following strategic priorities for movement :

- Improve access into areas of economic growth and regeneration;
- Provide better access to education and employment;

1.1.

[8] Central Pennines Strategic Development Corridor Strategic Programme Outline Case

[9] https://www.lancashire.gov.uk/media/234521/Environment-report.pdf

- Improve people's quality of life and wellbeing;
- Improve the safety of our streets for our most vulnerable residents;
- Provide safe, reliable, convenient and affordable transport alternatives to the car;
- Maintain our assets; and
- Reduce carbon emissions and their effects.

Chorley Local Plan

The Chorley Local Plan (adopted 2015) identifies the scale of development in each settlement and allocates sites to meet the development needs of Chorley up to the period 2026 in order to achieve the vision for growth as outlined in the Core Strategy. The Local Plan identifies key local issues and provides a set of policies to manage change which will be used by the Council to determine planning applications. The Local Plan is in general conformity with the strategic objectives of the adopted core strategy.

South Ribble Local Plan

The Local Plan (2012 – 2026) forms part of the statutory Development Plan for South Ribble. It identifies and allocates land required over a 15 year period in order to achieve the vision for growth as outlined in the Central Lancashire Core Strategy. The Local Plan was adopted at Full Council on 22 July 2015.

Preston Local Plan

This Local Plan was adopted by resolution of Full Council on 2 July 2015. It is a Development Plan Document produced under the Planning and Compulsory Purchase Act (as amended) 2004. The Preston Local Plan forms part of the statutory Development Plan for Preston. The role of the Plan is twofold:

- To identify the scale of development and allocate sites to meet the development needs of Preston in order to achieve the vision for growth as outlined in the Central Lancashire Core Strategy.
- To identify key local issues and provide a set of policies to manage change which will be used by decision makers to determine planning applications. These are known as Development Management (DM) Policies.

The Preston City Centre Plan is an Area Action Plan, and sits alongside the Preston Local Plan. It was adopted on 30th June 2016.

Preston City Centre Plan

Preston City Centre is the main retail and service centre in Central Lancashire, and is ranked first in the Lancashire Sub-region for non-food shopping. It is a centre for commercial and administrative activity and is home to a major university. It has a railway station situated on the West Coast Main Line offering excellent commuter links locally and nationally.

Given this wide-ranging role, planning positively for the future of the city centre is crucial 'Preston is open for business'. The plan will provide a framework to deliver our aspirations for the city centre.

Central Lancashire Core Strategy (2012)

The overarching planning policy document for the three districts of Preston, South Ribble and Chorley, which was adopted by all three authorities in summer 2012, sets out the broad development strategy for Central Lancashire until 2026. Its purpose is to guide and contribute towards boosting investment and employment opportunities, to encourage sustainable managed growth, and to protect and enhance green spaces and open countryside. Importantly it sets out where development will occur up to 2026 and indicates what strategic investment is necessary to deliver it.

Lancashire County Council Environment and Climate Strategy

The strategy provides a single point of reference on the council's environment and climate priorities. It gathers the action that is underway or proposed, and organises it under three areas of activity and ten objectives, which include:

- Improving air quality
- Reducing greenhouse gas emissions to lessen the impacts of climate change
- Ensuring our infrastructure, assets and services are resilient to the impacts of climate change

2.4 Summary

This section has shown that the Local Plan Transport Assessment has been conducted in accordance with relevant guidance, utilising the most up-to-date land use and infrastructure data available. The next section presents the resulting transport evidence base, which will guide the development of transport-related policies in the Local Plan and the future allocation of additional development sites.

3. Decide and Provide

The traditional Predict and Provide (P&P) approach in development planning is based on past forecasts and often fails to adapt to the uncertainties of the future. In contrast, the Decide and Provide (D&P) approach offers a more positive and integrated way of planning transportation and land use. It emphasizes walking and cycling as primary modes of transport, promoting healthier lifestyles and reducing environmental impacts.

The emerging Local Plan supports shifting away from the traditional 'predict and provide' transport approaches that have prevailed in recent years. Instead, it aims to create communities that achieve sustainable outcomes. The 'decide and provide' approach envisions a preferred future for a place and then assembles appropriate measures, which are validated through further testing. This approach emphasises that road capacity schemes should be a last resort, prioritizing space for walking, cycling, and public transport first to create attractive environments that also meet future transport needs.

3.1 Relevant Studies

Guidance Note on the Practical Implementation of the Decide and Provide Approach (February 2021)[10]

Basford Powers and Sterling Transport Consultancy, in conjunction with UWE (Professor Glenn Lyons) were commissioned to produce a TRICS Guidance Note on the Practical Implementation of the Decide & Provide Approach.

The guidance explains the rationale of why this approach should be used "The D&P approach provides the opportunity for more positive and integrated transport and land use planning. It also provides the opportunity to meaningfully implement the modal hierarchy, giving greater centrality to the up-front consideration of walking and cycling, rather than a more cursory treatment as residual or less considered modes that has sometimes, historically, been the case."

The guidance states that " Whether it is a minor planning application for, say, less than ten residential units; a major planning application for an urban extension or indeed a strategic new settlement, the visioning process to support high quality place-making is applicable, relevant and indeed necessary across all scales. The D&P approach involves thinking and deciding about how settlements can be designed that shape the environment and supports change in travel behaviour."

The guidance emphasises that it is essential to start with clearly set of vision and that is the crucial starting point. It states "Visioning is central to high quality place-making, creating better places to live, work and play. As such, there are three key questions that a plan or project needs to ask and meaningfully answer:

• What sort of place are we creating?

• What kind of activities do we need or desire to travel for?

1.1.

[10] https://www.trics.org/img/trics%20dp%20guidance_web.pdf

• How will we provide for mobility”

The note further explains that understanding the vision is crucial, as it determines how well a place can meet local needs and support short-distance access to retail, employment, education, and community services through sustainable and active travel, contributing to net zero carbon targets. This vision, along with the resulting transport strategy, directly influences parameters such as internalisation rate, localisation rate, trip rate, and mode split. The stated vision will guide how these parameters are combined to inform assessment assumptions for a specific future year. However the note also cautions that it is essential to approach this with clarity and transparency, using evidentiary sources where available and appropriate.

TRICS note further explains the importance of scenario planning, which refers to the development of a set of plausible and divergent scenarios of the future that would help expose uncertainty and, in turn, allow the uncertainty to be accommodated within plan making.

Strategic road network and the delivery of sustainable development (December 2022)

DfT’s ‘Strategic road network and the delivery of sustainable development’ states that:

Para. 15: “The Transport Decarbonisation Plan and the Future of Freight Plan also recognise that local planning and highway authorities need help when planning for sustainable transport and developing innovative policies to reduce car dependency. This includes moving away from transport planning based on predicting future demand to provide capacity (‘predict and provide’) to planning that sets an outcome communities want to achieve and provides the transport solutions to deliver those outcomes (vision-led approaches including ‘vision and validate,’ ‘decide and provide’ or ‘monitor and manage’) […]

Para 48: “Where a transport assessment is required, this should start with a vision of what the development is seeking to achieve and then test a set of scenarios to determine the optimum design and transport infrastructure to realise this vision […]”

CIHT Better planning, better transport, better places (2019)

The guidance start with the need to create a clear vision, which is collaborated upon. “Predict and provide models of transport planning should be abandoned and Local Plans should be assessed against health and well-being, lifestyle, and environmental criteria (including carbon emissions) – not just standard demographic and transport information.”

Oxfordshire D&P Transport Assessment Guidance (2022)[11]

Oxfordshire County Council has approved the implementation of 'Decide & Provide: Requirements for Transport Assessments,' a formal supplementary document to their Local Transport and Connectivity Plan. Adopted in July 2022, this plan outlines a clear vision to achieve a net-zero transport and travel system in

1.1.

[11] https://mycouncil.oxfordshire.gov.uk/documents/s62102/CA_SEP2022R12%20Annex%201_Implementing%20Decide%20and%20Provide%20-%20TA%20Requirements.pdf

Oxfordshire by 2040. A key policy to realize this vision is Policy 36, which details the adoption of a 'decide and provide' approach to transport planning.

This advice seeks to help create places that "meet the requirements of the 21st century in terms of all the critical elements of environmental, economic, and social sustainability, and responding to climate change, while also effectively delivering the homes needed will be possible. The effective integration of planning and transport is fundamental to achieving this objective."

The guidance states the need to create a clear vision, which is collaborated upon: "Predict and provide models of transport planning should be abandoned and Local Plans should be assessed against health and well-being, lifestyle, and environmental criteria (including carbon emissions) – not just standard demographic and transport information."

While the document is primarily intended for use by developers and their consultants, transport officers at the county, and planning officers at the district and city councils. It is set out in three main parts: the first outlines the guiding principles that underpin this approach; the second discusses how potential traffic impacts are to be modelled and how trip rates should be appropriately evidenced; and the final part details the process for implementing the approach through transport assessments by modelling a range of plausible scenarios and monitoring and managing outcomes.

3.2 Summary

The Central Lancashire transport strategy has a vision of a place-making where we can promote more sustainable transport planning and effectively implement the transport user hierarchy by prioritizing walking, cycling, and public transport from the beginning. In order to achieve this vision, we have embraced Decide and Provide approach in each step of the transport assessment.

At Stage 0, a site assessment was undertaken to evaluate the sustainability of each site using the following metrics, which contributed in identifying the Preferred Option Strategy :

- Metric 1: Average commuter travel mode split
- Metric 2: Proximity to current sustainable transport services
    - Quality and frequency of bus and rail services
    - Type and availability of active travel connections
    - Quality of active travel connections
- Metric 3: Access to proposed local transport schemes
- Metric 4: Existing high-volume movement flows/ capacity hot spots
- Metric 5: High level analysis of trip rates
- Metric 6: Proximity to existing settlements
- Metric 7: Site vehicular accessibility

The Stage 1 transport assessment has incorporated the Decide and Provide approach in estimating the trip rates. Traditionally, transport assessments for large residential and employment sites have used data from the TRICS database to determine anticipated vehicular trip generation (or trip rates) based on recent traffic survey data from comparable sites across the country.

Trip generation is then estimated using these trip rates to identify the potential traffic impact on the highway network. This, combined with identifying connectivity needs for active and sustainable modes, allows transport modelling to pinpoint where network capacity is exceeded.

This new approach still requires proposed developments to assess their potential transport impact on the highway network. However, instead of relying solely on previous travel patterns, it considers a range of plausible scenarios. In Stage 0, scenarios related to trip rates were considered using TRICS and the National Trip End Model (NTEM) for future years.

In the next stage, trip rates will be further adjusted using similar land use data (NTEM mode splits/TRICS – by land use type/specific survey type). This adjustment will depend on:

- Whether the Local Authority has specific policies applied uniformly across all developments (e.g., minimum active mode provision, carbon emissions, reduction in car mode share)
- Region-specific vision – overall increase in active mode/public transport provision
- Development-specific mitigation – manually identifying comparable sites within TRICS

Through traffic modelling, demand calculation, and transport assessment tasks, the potential effects of the proposed development on the local transport network will be thoroughly examined. This process will facilitate informed decision-making and the identification of appropriate mitigation measures.

4. Baseline Conditions

Central Lancashire is set in the heart of Lancashire within the North West Region. The overall character of the area is a diverse mix of urban and rural including the City of Preston as well as towns, villages and sparsely populated countryside.

Central Lancashire consists of three local authority districts which are: Chorley, Preston and South Ribble. Figure 4-1 show the boundaries of these three Local Authorities that form the Central Lancashire.

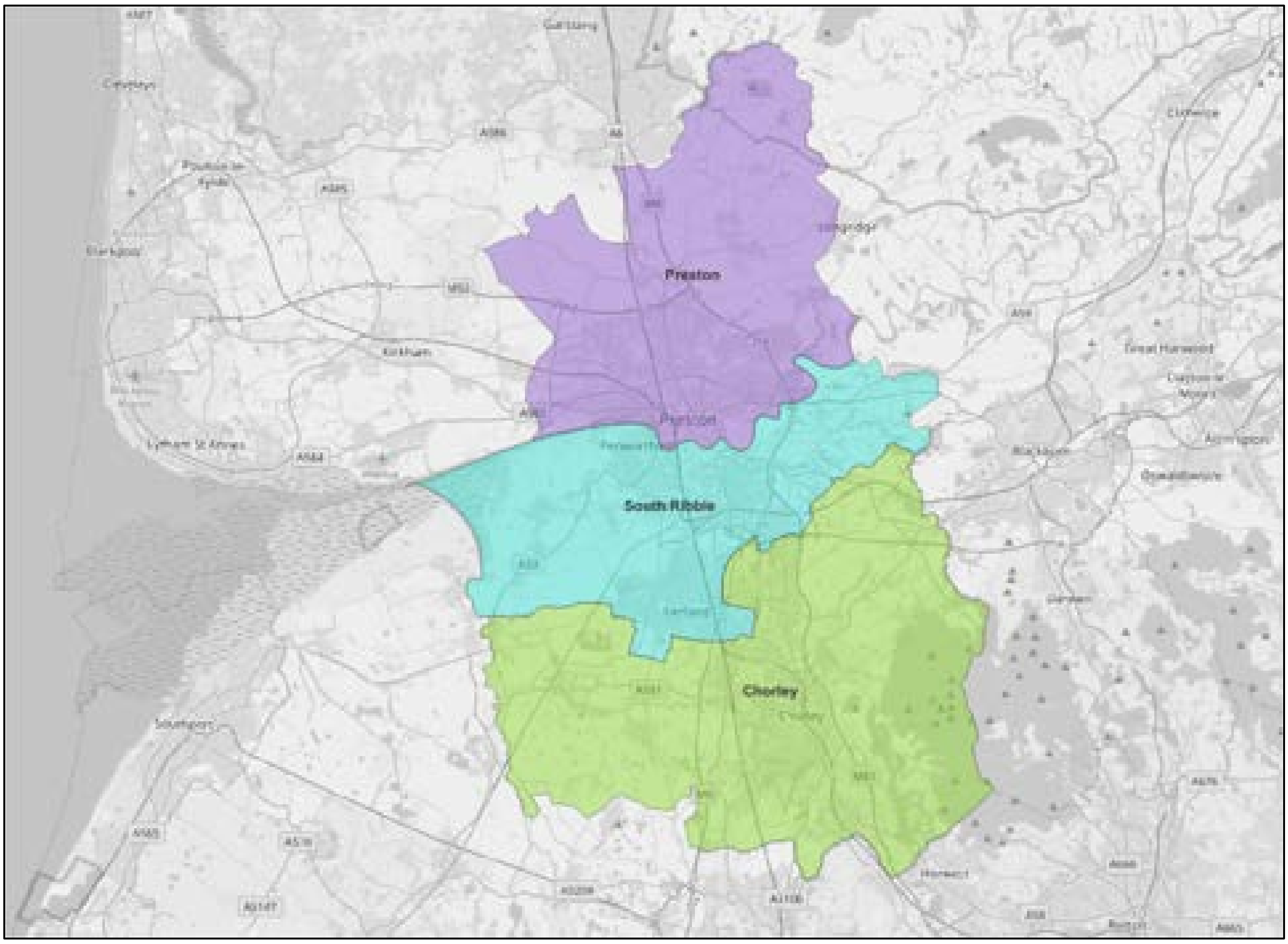


Figure 4-1: Central Lancashire Local Authorities

4.1 Road

Central Lancashire is bounded by Fylde and West Lancashire to the West, Ribble Valley and Blackburn with Darwen to the East, Wyre to the North and Greater Manchester to the South. It is well connected to the national motorway network and this is an essential requirement for local firms for both business travel and road freight. The M6, M61, M55 and M65 motorways run through the area creating good road accessibility within the sub-region.

Figure 4-2 illustrates the locations of these motorways links and other A Roads and B Roads in the Central Lancashire.

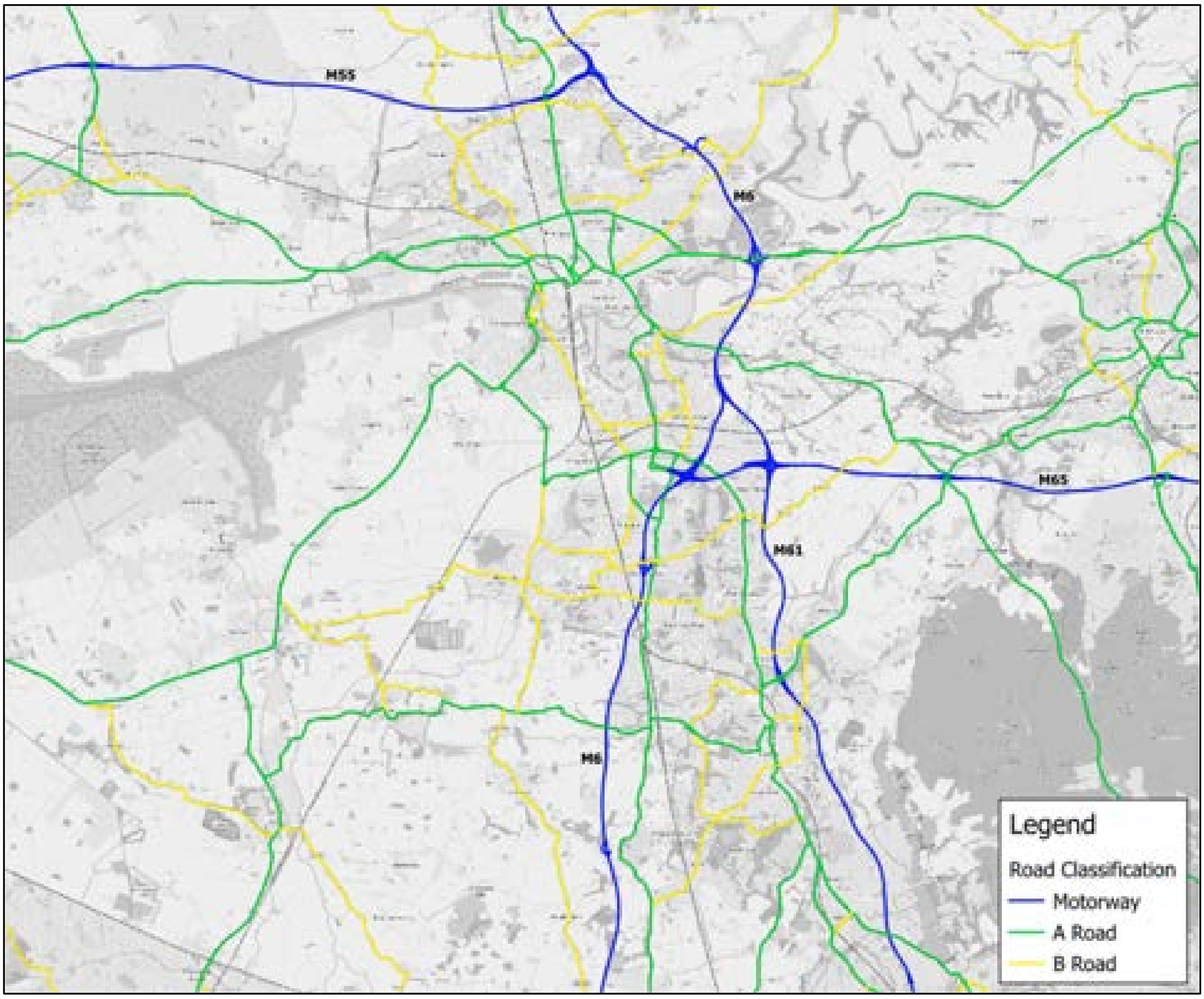


Figure 4-2: Road Infrastructure and Classification in Local Area

Analysis of 2022 INRIX data showed links where speeds change significantly between the Peak AM and PM periods and Off Peak (OP) periods.

Figure 4-3 shows a significant number of links within the urban areas within Central Lancashire show a significant reduction of speeds (more than 20kph) in the AM when compared to OP across Central Lancashire.

A similar pattern is shown within Figure 4-4, which shows the change in speeds between the PM and OP time periods.

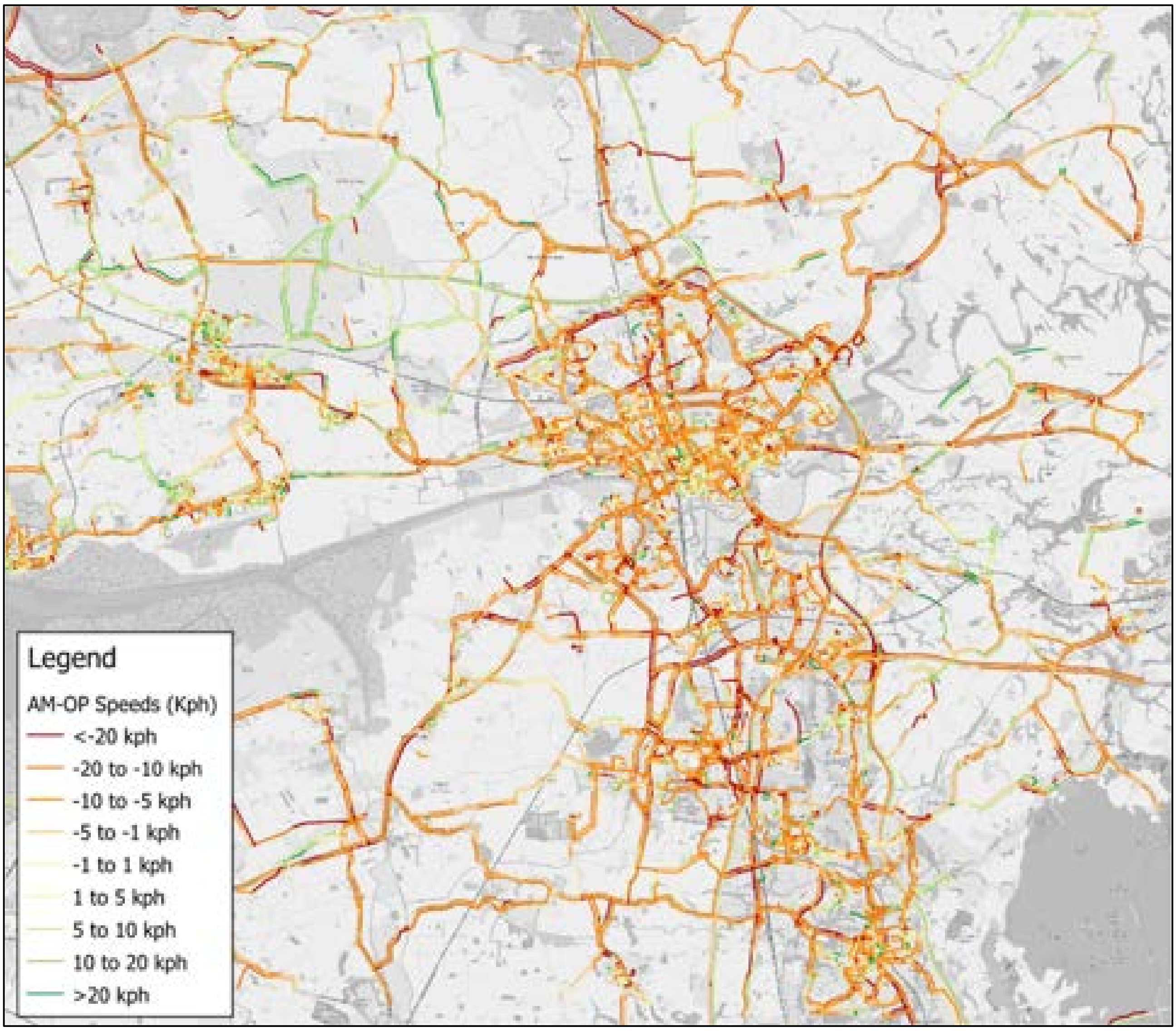


Figure 4-3: AM – OP Average Speeds (Kph)

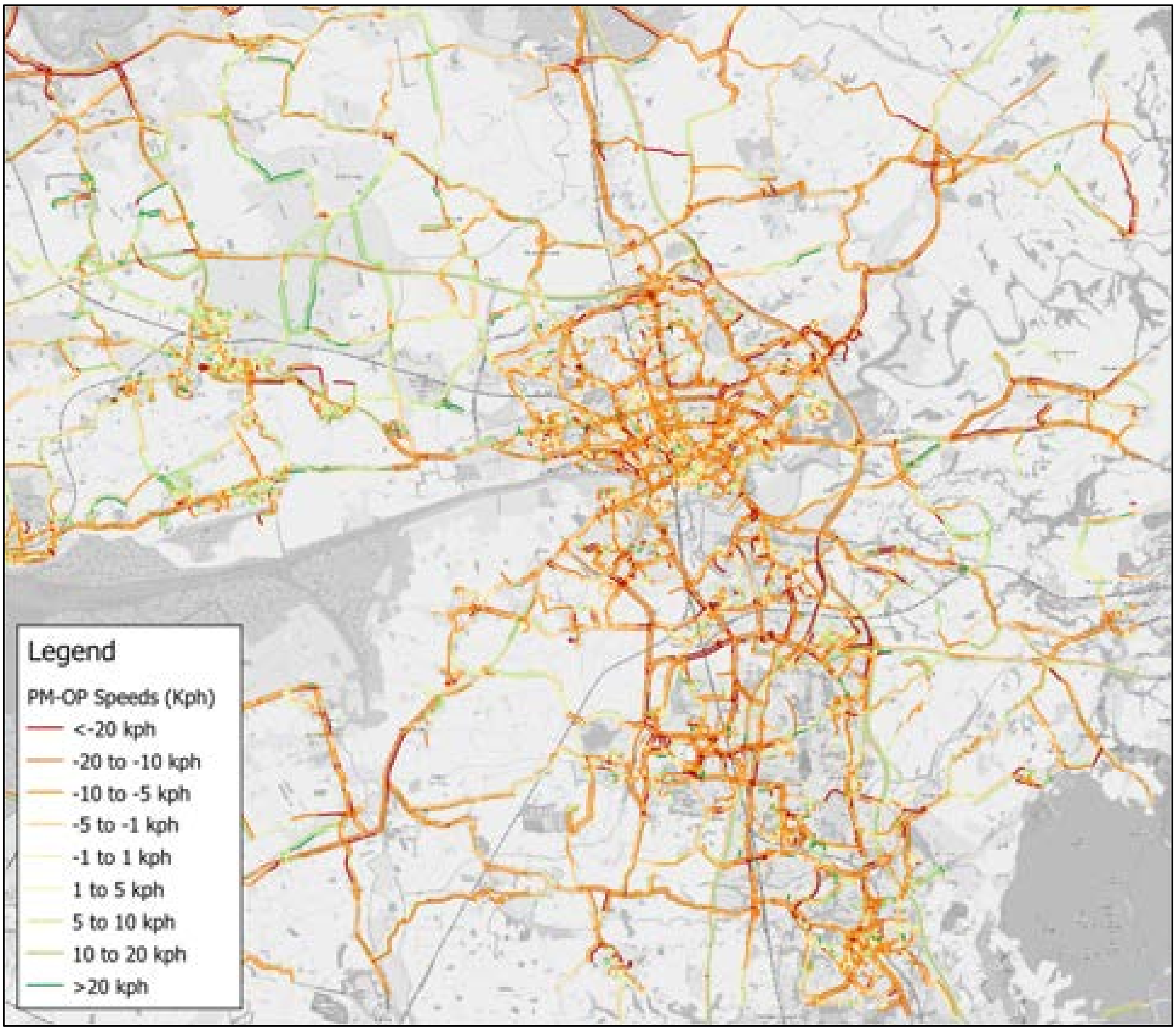


Figure 4-4: PM – OP Average Speeds (Kph)

Current Schemes and Proposals

The Central Lancashire highways and transport masterplan (March 2013) sets how the transport network can be improved for everyone who travels in central Lancashire and for the communities and businesses. These are shown in Figure 4-5 and Table 4-1 lists the different schemes corresponding to their reference number in the map.

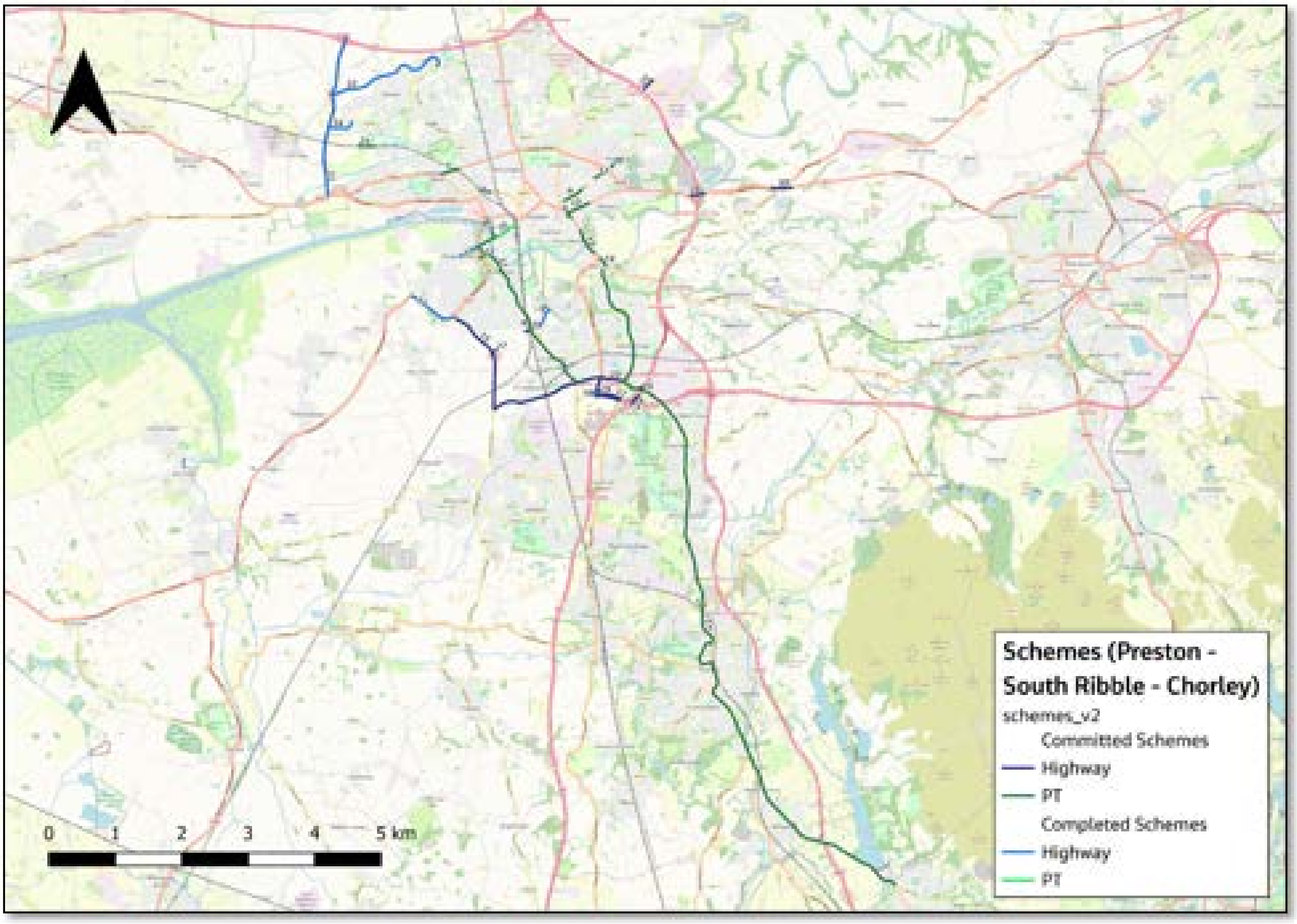


Figure 4-5 Proposed local transport schemes

Table 4-1 Proposed local transport schemes

Reference number	Description	Scheme Type	Stage
1	Northbound bus lane on Preston Road	PT	Committed
2	A6 SB bus lane from Harwood Rbt to Euxton Rbt	PT	Committed
3	Bus Gate and/or Traffic signals at Park Road/Preston Road	PT	Committed
4	Parking and waiting restrictions	PT	Committed
5	A6/ Service 125 corridor bus stop review and bus priority	PT	Committed
6	A59 New Hall Lane and junction of New Hall Lane/ Stanley Street/ London Road, Preston	PT	Committed
7	Bus Service Improvement Plan Blackpool Road	PT	Committed
8	Bus Service Improvement Plan Fylde Rd/Turketh Brow	PT	Committed

9	Bus Service Improvement Plan Ribbleton Lane	PT	Committed
10	Bus Service Improvement Plan New Hall Lane	PT	Committed
11	Bus Service Improvement Plan Ribbleton Lane	PT	Committed
12	Bus Service Improvement Plan Ribbleton Lane	PT	Committed
13	Bus Service Improvement Plan London Road	PT	Committed
14	Bus Service Improvement Plan Victoria Road	PT	Committed
15	A582 improvements and Tech pack	Highway	Committed
16	Lancashire Central Improvements	Highway	Committed
17	Lancashire Central Improvements	Highway	Committed
18	Lancashire Central Improvements	Highway	Committed
19	Lancashire Central Improvements	Highway	Committed
20	Lancashire Central Improvements	Highway	Committed
21	B5254 Improvements	PT	Committed
22	Penwortham Triangle Signals	PT	Committed
23	Fishergate Hill Active Travel Components	PT	Committed
24	Cottam Parkway Station	PT	Committed
25	Roman Farm mitigation scheme at M6 J31a	Highway	Committed
26	Samlesbury LDO mitigation schemes	Highway	Committed
27	Pickerings Farm access to A582	Highway	Committed
28	Pickerings Farm access to Leyland Road	Highway	Committed
29	The southern part of M6 J29	Highway	Committed
30	Samlesbury LDO mitigation schemes	Highway	Committed
31	Preston Western Distributor Road	Highway	Completed
32	East West Link Road	Highway	Completed
33	John Horrocks Way	Highway	Completed
34	Cottam Link Road	Highway	Completed
35	Fishergate Hill Active Travel Components	PT	Completed
36	The Cawsey	Highway	Completed
37	Penwortham cycle way and Cop Lane junction improvements	Highway	Completed

4.2 Private Car

Ownership

According to the Car or van availability from Census 2021 (TS045) , the dependence of the population on automobiles is evident in the high rates of car ownership. Figure 4-6 shows that 85% of households in Chorley and 86% of households in South Ribble have at least one car or van, significantly higher than the rate for Preston (72%) or the North West region (75%). Furthermore, two or more cars are owned by 43% of households in South Ribble and 45% in Chorley. In contrast, across England, 77% of households own at least one car or van, and 35% have two or more.

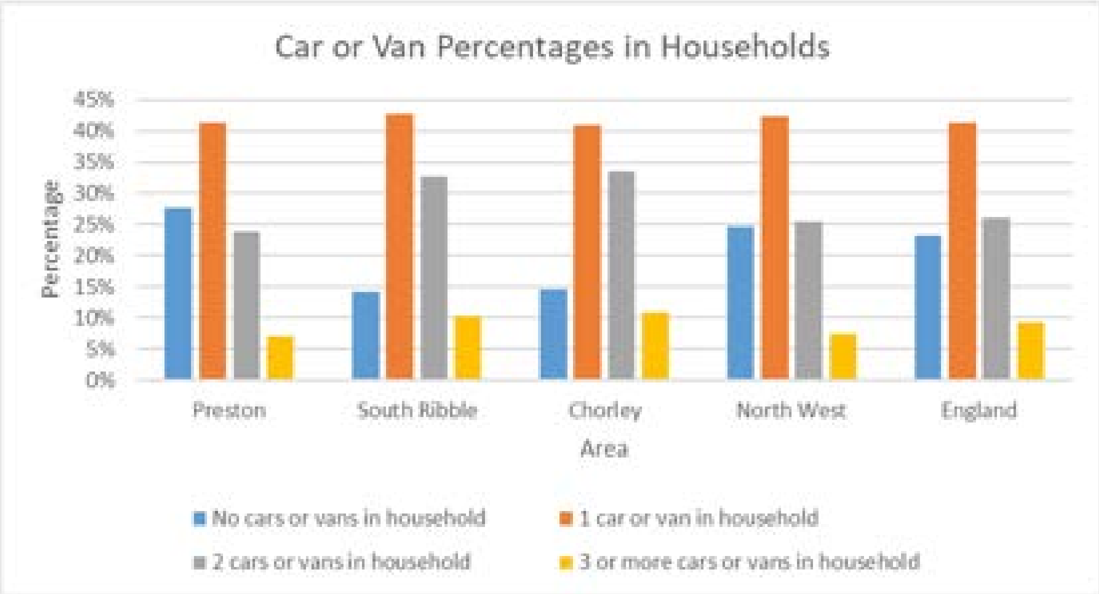


Figure 4-6: Car Ownership (Census 2021)

Usage

Since 1952 we have seen a significant rise in mobility, driven by the private car in England. Individual car usage has tripled since 1952, from 2,500 miles per person each year, to 7,500 Miles[12].

1.1.

[12] Department for Transport: Passenger transport: by mode, annual from 1952

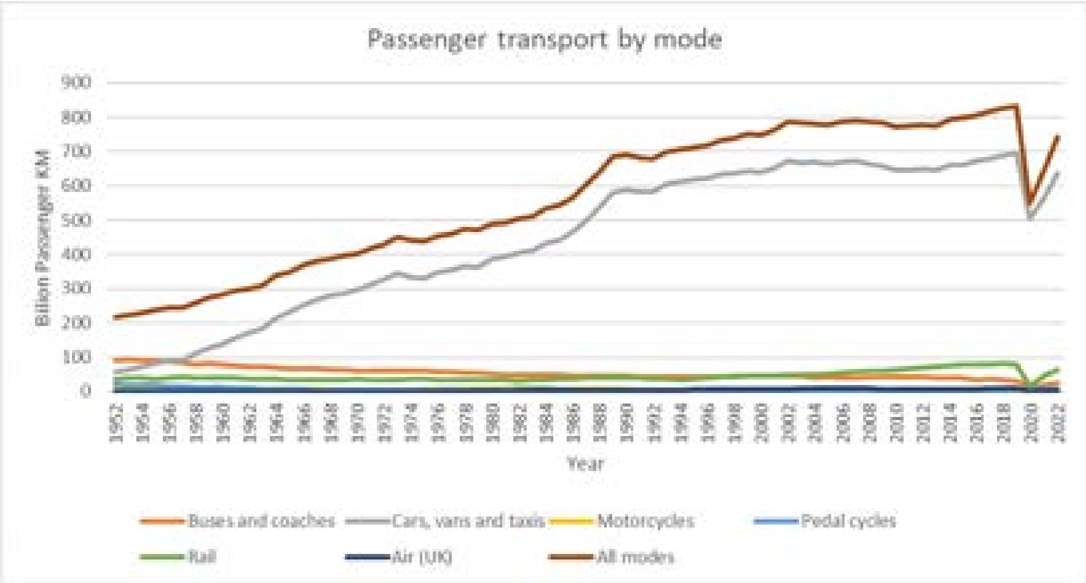


Figure 4-7: Passenger transport by mode

Figure 4-7 shows that whilst the trend of increasing car use has slowed since 1990, the total vehicle miles driven continues to increase, with the exception of the COVID-19 impacts. In England, total vehicle miles driven have increased by 26% between 1993 and 202213. This trend has also been reflected in Lancashire where total vehicle miles driven have increased by 24% between 1993 and 2022. Figure 4-8 shows that in 2022 total vehicle miles driven in Lancashire passed 7 billion for the first time since 2019 following the effects of COVID-19 (DfT, car vehicle traffic (vehicle miles) by local authority in Great Britain, annual from 1993).

This continued increase in private car usage is not sustainable and will further compound existing issues such as congestion, parking and air quality. It is therefore essential that a plan is set out to address this trend.

As mentioned above, COVID-19 had a significant impact on car travel. There was a drastic 22% decrease in car vehicle miles in Lancashire from 2019 to 2020. However, this decrease was lower than the national average (25%).

It remains to be seen what the long-term impact of the COVID-19 pandemic on travel will be beyond the latest figures provided for 2022.

1.1.

[13] Department for Transport: Car vehicle traffic (vehicle miles) by local authority in Great Britain, annual from 1993

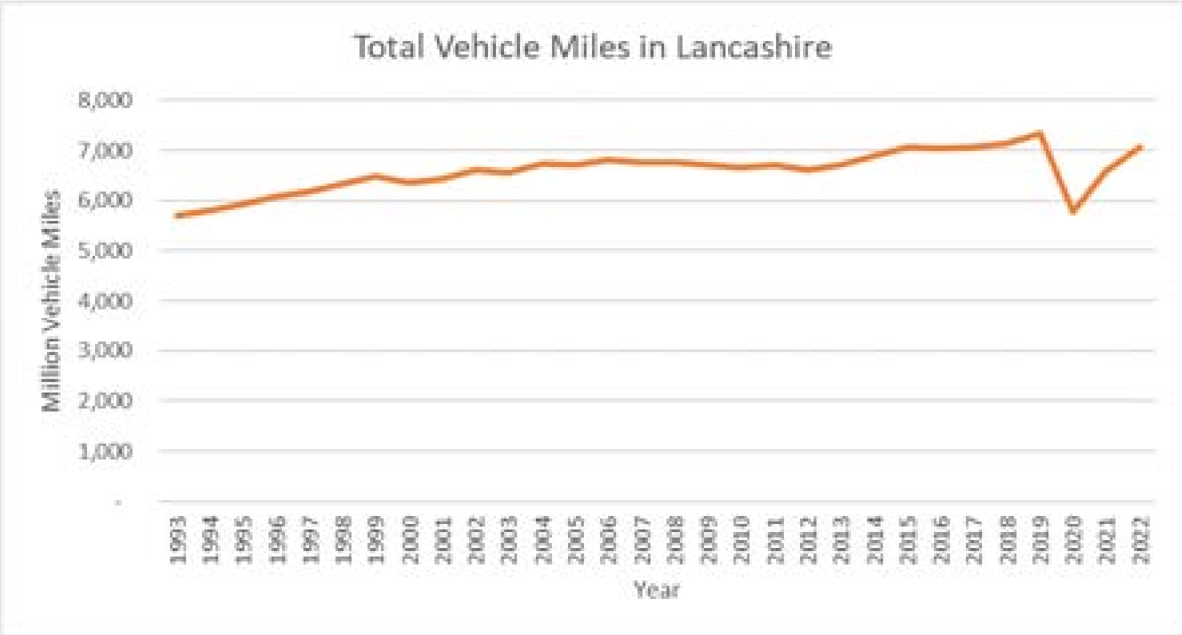


Figure 4-8: Total vehicle miles in Lancashire

Congestion 2019-2023

The reduction in congestion due to the COVID-19 pandemic resulted in UK drivers saving £2.6 billion. Congestion cost the average UK driver £291 in 2020 compared to £904[14]. Tackling congestion can therefore play a significant role in supporting the UK economy.

As expected, a result of the COVID-19 pandemic was an increase in average speeds and decrease in delays on the SRN when comparing 2020 to 2019. Average speeds increased by 3%, with the average delay decreasing by 34%[15].

Similarly, average speeds on local 'A' roads increased between 2019 and 2020. Nationally, average speeds on urban 'A' roads increased by 10% and speeds on rural 'A' roads increased by 4%. Central Lancashire local 'A' roads reflected this trend with an 5% increase in average speeds[16].

The impacts of COVID-19 demonstrate the benefits that can be delivered by reducing the number of vehicles on the road.

Comparisons between 2019 and 2023, show that average speeds on SRN Roads nationally have remained relatively similar with a 2% reduction in speeds.

1.1.

[14] INRIX Global Traffic Scorecard 2020

[15] Department for Transport: Average speed on the Strategic Road Network in England: monthly and year ending from April 2015

[16] Department for Transport: Monthly and 12 month rolling average speeds on local 'A' roads in England

Similarly, local 'A' Roads nationally have remained very similar when comparing 2019 with 2023 data, with 0% difference in average speeds from before COVID-19. There is a similar reflection within Lancashire with a 1% speed increase since 2019[17].

Vehicle Speed Compliance

The Department for Transport publishes estimates of car compliance with speed limits in free-flowing conditions on roads in Great Britain. These are based on speed data from a sample of Department for Transport's Automatic Traffic Counters. Whilst not specific to Lancashire, these statistics provide us with an insight into speeds at which drivers choose to travel when free to do so. This helps to inform our policies on road safety, notably our proposals on 20mph zones.

As shown in Table 4-2, the analysis found that in 2022, under free-flowing traffic conditions, 50% of cars exceeded the speed limit on 30mph roads compared to 45% on motorways and 11% on national speed limit single carriageway roads[18].

This trend was reflected for all vehicle types, with speed compliance tending to be highest on National Speed Limit (NSL) single carriageways and lowest on 30mph roads as shown on the table below.

Table 4-2: Percentage of vehicles exceeding the speed limits by road class, 2022

Road	Cars	Vans	Articulated HGV	Rigid HGV	Short buses	Long buses	Motorcycles
Motorways	45	48	2	-	-	-	55
NSL single carriageways	11	-	35	41	47	53	28
30mph roads	50	51	39	42	29	32	56

The proportion of cars exceeding the speed limit by over 10mph on 30mph roads was 5%. On NSL single carriageway roads and motorways the proportion was 1% and 8% respectively.

The average free-flow speeds at which drivers choose to travel as observed at sampled locations is also included, and illustrated in Figure 4-9. This analysis found that for motorways and national speed limit single carriageway sites, the average free-flow speed is at or below the designated speed limit for each vehicle type.

For 30mph sites the average free-flow speed is slightly above the speed limit for 2 vehicle types (light commercial vehicles and motorcycles), with averages for all vehicle types ranging from 28mph to 32mph overall.

1.1.

[17] Average speed on local 'A' roads by local authority in England

[18] https://www.gov.uk/government/statistical-data-sets/vehicle-speed-compliance-statistics-data-tables-spe

For the 20mph sites sampled (the DfT state that these are not thought to be representative of all 20mph roads), the average speed is above the speed limit for all vehicle types, ranging from 22mph to 28mph but below the average speeds seen on the 30mph roads.

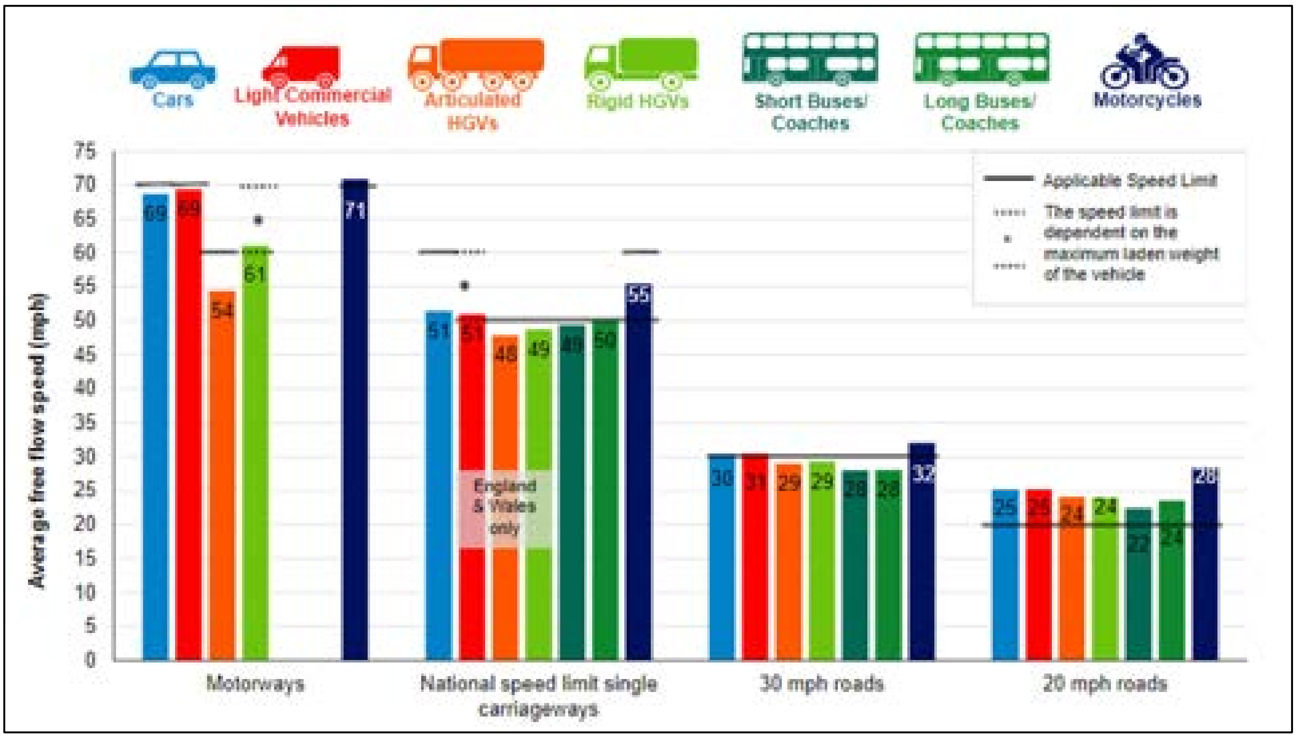


Figure 4-9: Average free-flow speeds by vehicle type and road type in Great Britain

Ultra-Low emission vehicles

An Ultra-low emission vehicle (ULEV) is defined as one which emits less than 75g of carbon dioxide from the tailpipe per kilometre travelled. It typically refers to Battery Electric Vehicles (BEVs) and hybrid vehicles.

BEVs include cars, motorcycles, scooters, buses and trucks. Large BEVs such as buses and medium/large trucks are less common, but development is ongoing, and vehicles of this type are likely to become more common on Lancashire roads over the coming years.

The number of registered ULEV's has grown rapidly in the last 13 years, particularly in the last 7 years since the publication of LTP4. ULEV's have the potential to reduce the environmental impact of car travel as they produce significantly fewer emissions. However, it should be noted that they do not address all issues. ULEV's still produce particulate matter from tyre and brake pad wear and will not address congestion issues.

There has been an increase in the number of registered ULEV's of over 16000% in England since 2011. This trend has been replicated in Lancashire with a growth in the number of registered ULEV's of over 13000% since 2011[19].

Electric Vehicle Chargepoints

To support the vision of reducing transport-related emissions and protecting the environment, LCC is helping residents transition to electric vehicles. Their modelling indicates that by 2030, Lancashire will need approximately 6,665 charge points. Forecasts predict around 240,000 electric vehicles on Lancashire's roads by the end of the decade, making up about 36% of all cars and vans, with numbers expected to rise further beyond 2030.

The Lancashire and Blackburn with Darwen Electric Vehicle Infrastructure Strategy[20] outlines a detailed plan to provide more 'close to home' charge points across Lancashire. This strategy aims to deliver affordable electric vehicle charging options for residents, businesses, and visitors without access to off-street charging, alongside charge points from commercial operators, to meet the growing demand as electric vehicle ownership becomes more affordable.

Currently, EV charging in Chorley is available on Market Street with 3 bays. In Preston, there are 4 locations with a total of 23 bays, and in South Ribble, there is 1 location in Leyland with 4 bays.

Summary

- There are high levels of car ownership across the county.
- Since 1952 there has been a significant increase in car usage in the UK. This trend has been reflected in Lancashire, with vehicle miles increasing.
- Congestion is affecting journey times across Lancashire. Steps are required to address this and ensure the county remains thriving and attractive.
- COVID-19 significantly reduced vehicle miles and associated data. Further monitoring is required; however, it is expected that vehicle usage will return to pre-pandemic levels in the near future.
- 30mph roads generally have the lowest levels of speed compliance.
- For 20mph roads the average speed is above the speed limit for all vehicle types, but below the average speeds seen on the 30mph roads.
- The number of Ultra-low emission vehicles in Lancashire is continuing to grow rapidly and so provisions for these vehicles will be required.

1.1.

[19] Department for Transport: Ultra low emission vehicles (ULEVs) licensed at the end of the quarter by upper and lower tier local authority, United Kingdom

from 2011

[20] https://www.lancashire.gov.uk/media/945415/the-lancashire-and-blackburn-with-darwen-electric-vehicle-infrastructure-strategy.pdf

4.3 Public Transport

Bus Usage

The number of passenger journeys on local buses has been falling over the last decade in England. The number of journeys in England (outside London) has fallen by 46.8% since 2009/10. Total local bus passenger journeys in England were 3.38 billion in England in 2023, a 19% increase from the previous year but a 22% decrease from 2019 (prior to COVID-19)[21].

Bus mileage has also seen a decreasing trend across England. Vehicle miles on local bus services in England have decreased by 22% since 2009/10 and were at 1.02 billion vehicle miles in 2023. This was a 4.6% decrease when compared to the previous year, and a 13.1% decrease from 2019 (prior to COVID-19).

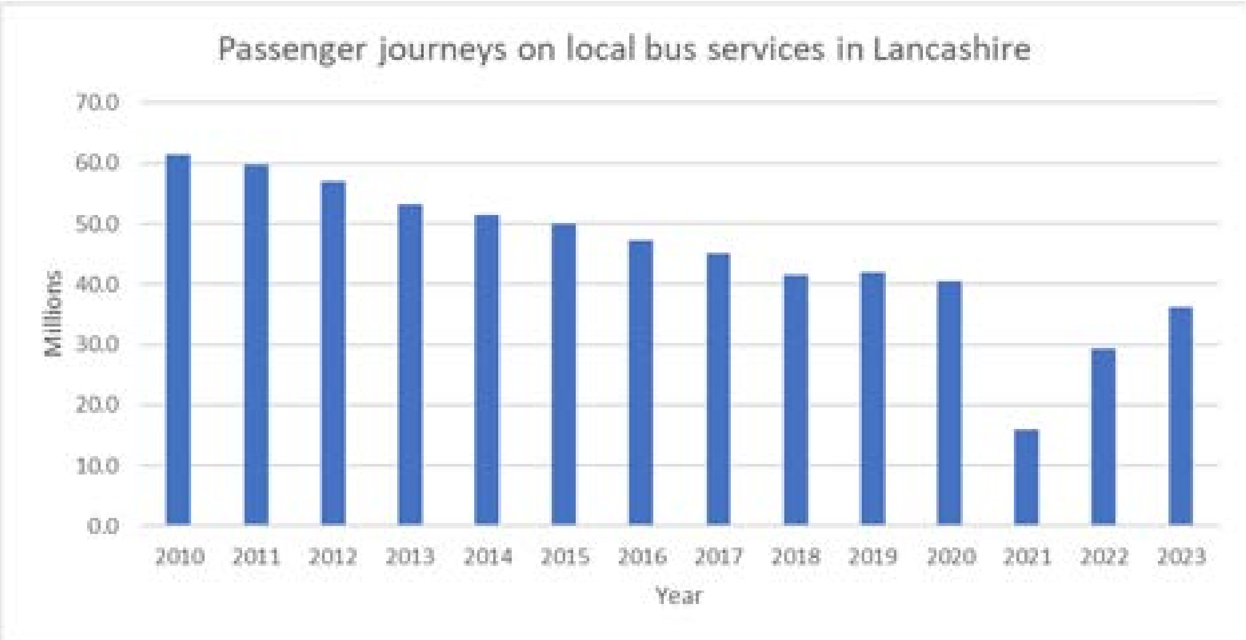


Figure 4-10: Passenger journeys on local bus services in Lancashire

There is a similar trend at both national, regional, and local authority level within Lancashire, with a general decrease in bus usage since 2010, taking into account the increase in bus usage since 2021[22]. Figure 4-10 shows that Lancashire has seen a 41% decrease in the number of passenger journeys since 2010.

Similarly, Figure 4-11 shows that Lancashire has seen the number of passenger journeys on local bus services per head of the population decrease from an average of 53 per year in 2010 to 29 in 2023, a 45%

1.1.

[21] Department for Transport: Annual Bus Statistics: England 2022/23

[22] Department for Transport: Passenger journeys on local bus services by local authority: England, from 2009/10

decrease[23]. This is considerably higher decrease than the national average of a 33% decrease in passenger journeys per head of population.

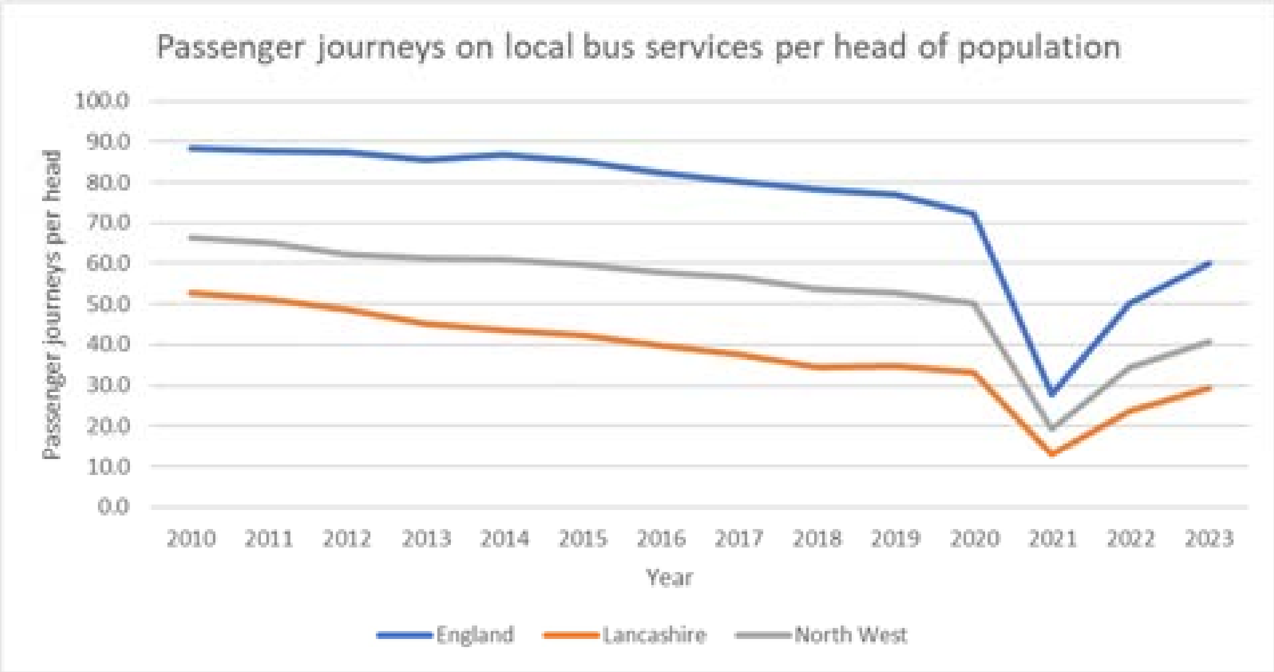


Figure 4-11: Passenger journeys on local bus services per head of population

Lancashire's journeys per head of the population remains considerably below the average for the North West and England. Work is therefore needed to rectify these trends, encourage bus usage and improve connectivity across the county.

Bus affordability

The cost of transport is also a key determining factor affecting its use. Whilst there is no statistics relating to bus fares in Lancashire, national data provides a helpful overview of changes.

In the year to December 2023, local bus fares in England have decreased by 1.1%, in contrast to the annual all items Consumer Prices Index rate of inflation (3.9% increase), meaning bus fares have decreased in real terms (Department for Transport: Annual Bus Statistics: England 2023/24).

Local bus fares in England increased by 83% between March 2005 and March 2023. The all items Consumer Prices Index (CPI) has increased by 66% over the same period. Travel costs are therefore likely to now make up a larger proportion of residents spending. Unaffordable travel costs could act as a further deterrent to bus use and make it harder for residents to travel around the county by public transport.

1.1.

[23] Department for Transport: Passenger journeys on local bus services per head by local authority: England, from 2009/10

In the pre-budget speech of October 2024, the Prime Minister announced that single bus fares will be capped at £3 until the end of 2025, as part of a £1 billion investment in buses. The current £2 cap on single bus fares, which was set to expire on 31 December 2024, will be replaced by a new £3 cap starting from 1 January 2025 through to the end of December 2025. This initiative aims to ensure that millions of people can access affordable bus fares and better opportunities across the country, particularly benefiting passengers in rural communities and towns, saving them up to 80% on some routes. Under this scheme, no single bus fare on included routes will exceed £3. Routes with fares currently below £3 will only be allowed to increase by inflation, ensuring some fares remain under £3. This fare cap is designed to help millions of people access better opportunities and encourage greater use of bus services.

Within Central Lancashire, currently there are other ticket and fare offers including reduced evening fares, reduced Sunday fares, and day and weekly tickets agreed with the bus operators.

Bus reliability

Reliability is another factor that plays an important role in bus patronage. Case studies have shown that improving bus service times and reliability will deliver increased patronage.

Figure 4-12 shows that up to 2019, due to a lack of data available since 2019, the reliability of frequent bus services in Lancashire had been decreasing in recent years prior. This is shown by the increase in average excess waiting time from 0.4 in 2014 to 0.9 minutes in 2019 on the graph below (Department for Transport: Average excess waiting time for frequent services by local authority: England, annual from 2004/05). Averages for the North West and England are not available to compare with.

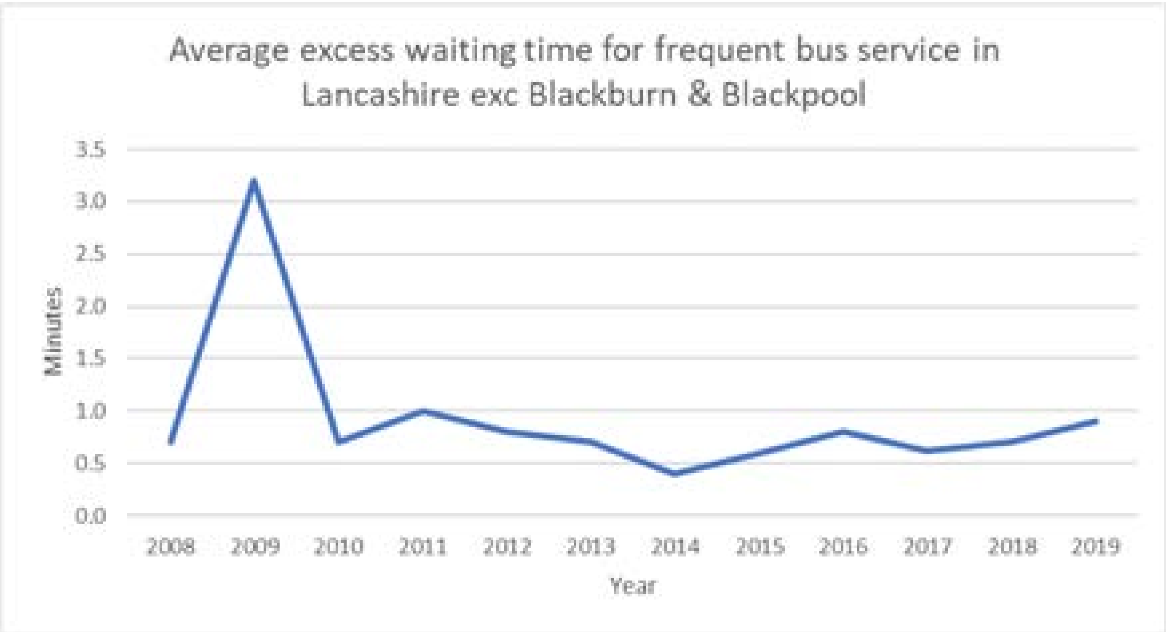


Figure 4-12: Average excess waiting time for frequent bus service in Lancashire (exc Blackburn and Blackpool)

Figure 4-13 shows that the percentage of non-frequent bus services running on time has been increasing over the last 10 years. There has been an 21% increase in the number of these services running on time since

2006 to 84% of services in 2023. However, despite this increase Lancashire remains below the average for the North West (87%), although higher than the average for England (80%).

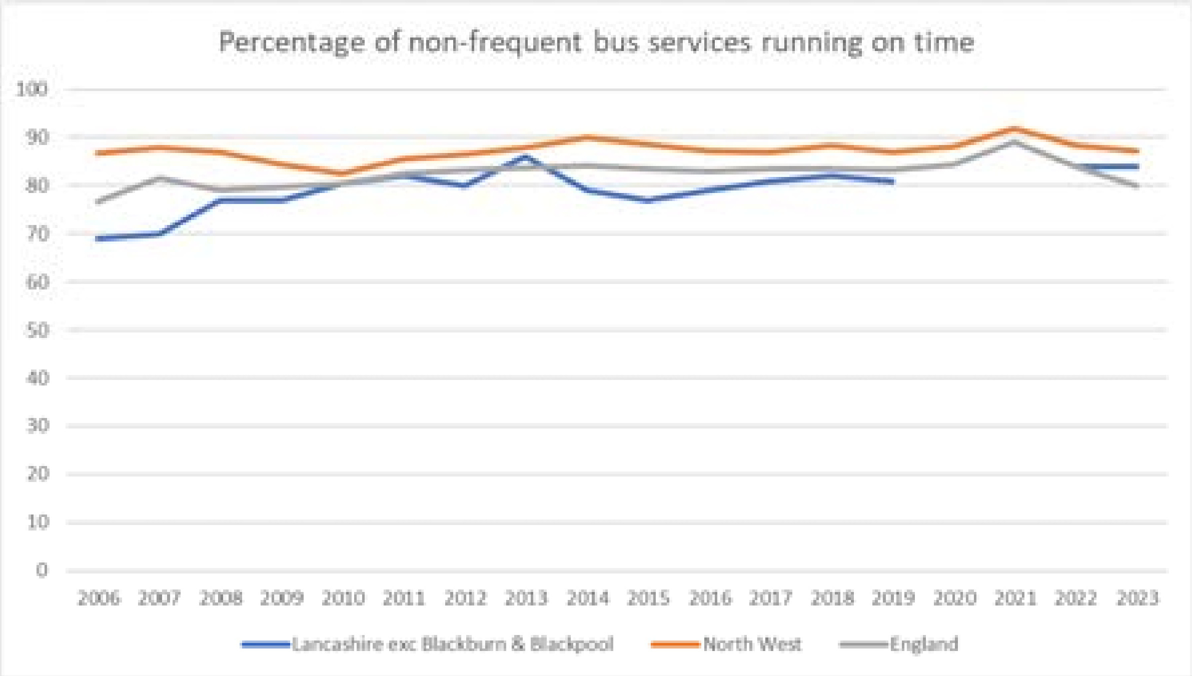


Figure 4-13: Percentage of non-frequent bus services running on time

Rail Usage

In Chorley, there are five rail stations – Chorley rail station, Adlington railway station, Croston railway station Euxton and Buckshaw Parkway.

Chorley railway station, located in Lancashire, England, is a key stop on the Manchester–Preston line. Since 2004, it has been connected to the Chorley Interchange bus and coach station. Northern Trains operates all services at this station. Northbound services include two trains per hour (tph) to Blackpool North and one tph to Lancaster, with some continuing to Barrow-in-Furness and Windermere. Southbound, there are three tph to Manchester Airport, with varying stops along the way.

Adlington railway station, serves the town of Adlington on the Bolton - Chorley - Preston line.

Buckshaw Parkway, opened in 2011, is another station on the Manchester to Preston Line, offering regular services to Manchester Airport and Blackpool North. There is a chargeable car park for around 200 cars.

Croston railway station, serving the village of Croston, is on the Ormskirk Branch Line and operates an hourly service to Preston and Ormskirk on weekdays.

Euxton Balshaw Lane is one of two railway stations situated in Euxton. It is a local station on the Blackpool North to Liverpool Lime Street route, on the stretch between Wigan and Preston.

In South Ribble, there are three rail stations – Bamber Bridge, Lostock Hall and Leyland railway station.

Bamber Bridge railway station provides hourly services to Preston and Blackburn, with additional peak services.

Leyland railway station, located on the West Coast Main Line, offers express services to Manchester Airport and semi-fast services to Liverpool Lime Street. Lostock Hall railway station serves the village of Lostock Hall with hourly services to Preston and Blackburn, and additional peak services.

Lostock Hall railway station is a railway station serving the village of Lostock Hall. On weekdays, there is an hourly service from Lostock Hall heading westbound to Preston and eastbound to Blackburn, Burnley, and Colne. On Sundays, a two-hourly service runs in each direction, with through services to Blackpool South. Additionally, there are two extra morning peak services from York and Leeds to Preston, and one evening service in the opposite direction to Blackburn and York.

In Preston, there is only one station, Preston railway station, which is a major interchange on the West Coast Main Line, providing extensive rail links to Scotland, the Midlands, and London. It is served by multiple operators, including Avanti West Coast, Northern Trains, and TransPennine Express, and connects to various branch lines.

Office of Rail and Road (ORR) releases quarterly statistical release contains information on passenger rail usage in Great Britain. Passenger rail usage (January to March 2024) states that a total of 1,610 million journeys (1.61 billion) were made by rail passengers in Great Britain in the latest year (1 April 2023 to 31 March 2024). This is a 16% increase on the 1,380 million journeys (1.38 billion) in the previous year (1 April 2022 to 31 March 2023). Figure 4-17 depicts the journey of passengers across Great Britain from 2018 to 2024, highlighting a significant decline during the COVID lockdown period. Recent data shows that although demand has been steadily increasing since the COVID period, it remains below pre-COVID levels. Similar patter is observed for the rail stations in Central Lancashire and is shown in Figure 4-15.

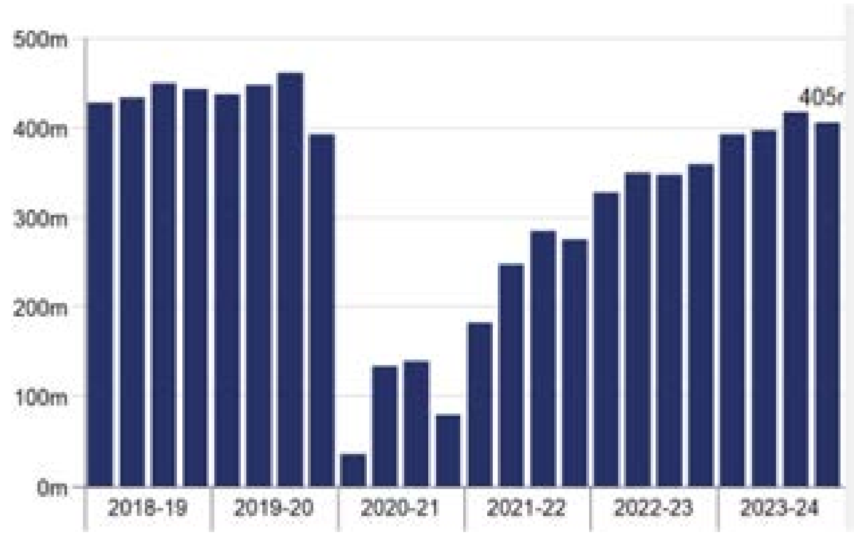


Figure 4-14: Passenger journeys, Great Britain, quarterly data, 1 April 2018 to 31 March 2024

Figure Source: ORR Passenger Rail Usage (Until March 2024)

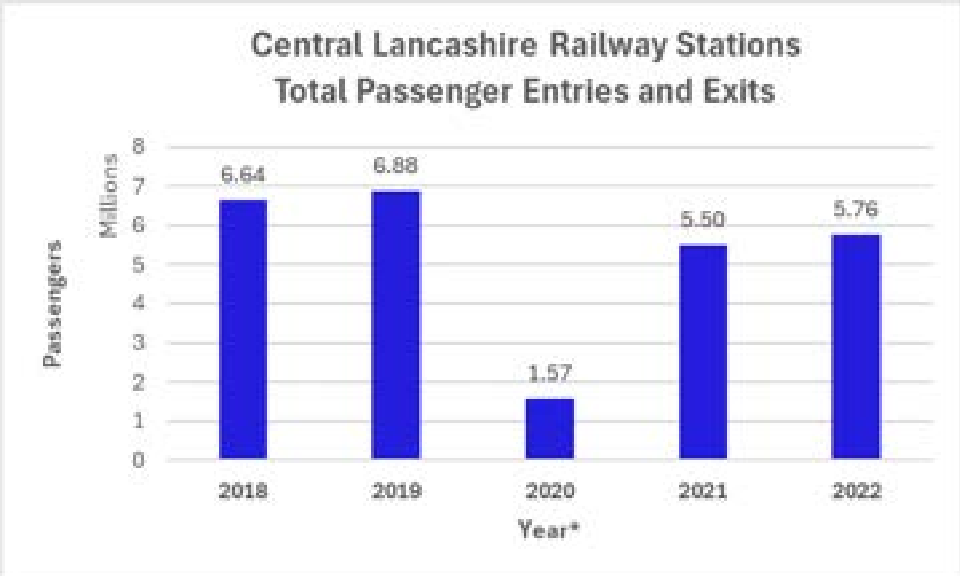


Figure 4-15: Total Passenger Entries and Exits – Central Lancashire Stations

Data Source: ORR Passenger Rail Usage (Until March 2024)

Among all the stations, Preston records the highest number of passenger entries and exits, followed by Chorley and Leyland. Figure 4-16 illustrates the station usage share based on the 2024 rail passenger data published by ORR.

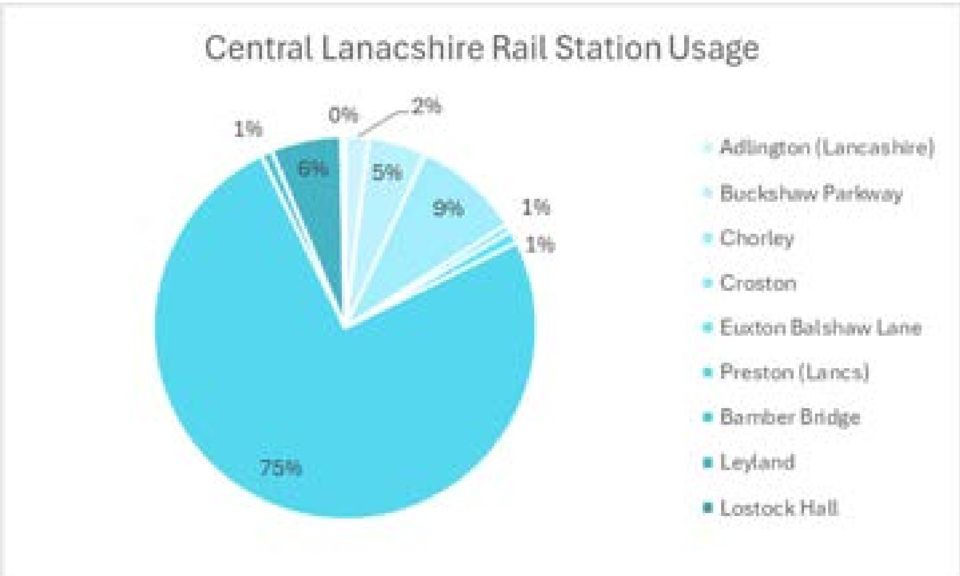


Figure 4-16: Central Lancashire Station Usage

Future Rail Improvements

The proposed new London to Manchester section of the High Speed 2 (HS2) would have incorporated a connection onto the existing West Coast Main Line to the south of Wigan, later amended to be south of Crewe. This would have enabled HS2 trains to serve additional destinations in the North West *en route* to Scotland. It was envisaged that the new route would give a journey time from Preston to London of just one hour and 24 minutes, and from Preston to Birmingham of 53 minutes. This phase of HS2 was cancelled in October 2023 but at the same time a new plan called Network North was published allocating £36 billion to various transport projects, not necessarily rail based, in the northern regions. None of these appear to be in Lancashire. Although the HS2 track will only reach as far north as Birmingham, the new bullet train style vehicles will run on existing parts of the West Coast Main Line all the way to Glasgow.

Work to electrify more rail routes in the North West is now complete. The programme including the 25 mile route between Manchester and the intersection with the West Coast Mainline at Euxton was completed in early 2019. The 17 mile route between Blackpool North and Preston was completed in early 2018. The developments allow a number of local services that pass through Lancashire to be operated by quicker and more reliable electric trains.

A consultation has been held on the proposed new Cottam Railway Station. This will be situated on the line between Preston and Kirkham. It would be only the second station in the Preston City area. While primarily serving the relatively new suburb of Cottam it also has a direct link to western parts of North Preston via the recently completed Preston Western Distributor Road..

Summary

- There is general decrease in bus and rail usage at national, regional, and local levels in Lancashire since 2010. Demand for bus services has been steadily increasing since the COVID period but remains below pre-COVID levels.
- The current £2 cap on single bus fares will be replaced by a £3 cap from January 1, 2025, to December 31, 2025. Local plan policy needs to revisit the local cap and other concessionary fares.
- Reliability of frequent bus services in Lancashire has been decreasing in recent years. New transport strategies need to ensure that these are addressed to improve this.
- The proposed London to Manchester section of HS2, which would have connected to the West Coast Main Line, was cancelled in October 2023. A new plan, Network North, allocates £36 billion to various transport projects, but none in Lancashire.
- Electrification of rail routes in the North West is complete, improving the speed and reliability of local services.
- A new station is proposed between Preston and Kirkham is expected to serve the suburb of Cottam and north western parts of Preston.

4.4 Walking and Cycling

Walking Levels

The percentage of residents that do any walking is slightly below the national average in Lancashire and has remained similar over the last 5 years as shown in Figure 4-17. The percentage of residents that walk once per month for any purpose has remained around 76% from 2015 to 2022 and is the same as the national average of 76%[24]. This trend is fairly consistent across the authorities within Central Lancashire with a high of 81% in South Ribble and a low of 72% in Preston.

Similarly, the percentage of residents within Lancashire that do any walking three times per week has increased from 39% to 43% since 2015. This is also similar to the national average of 43%. There has been a notable increase in the percentage of residents that do any walking three times per week within Preston that has changed from 37% to 44%.

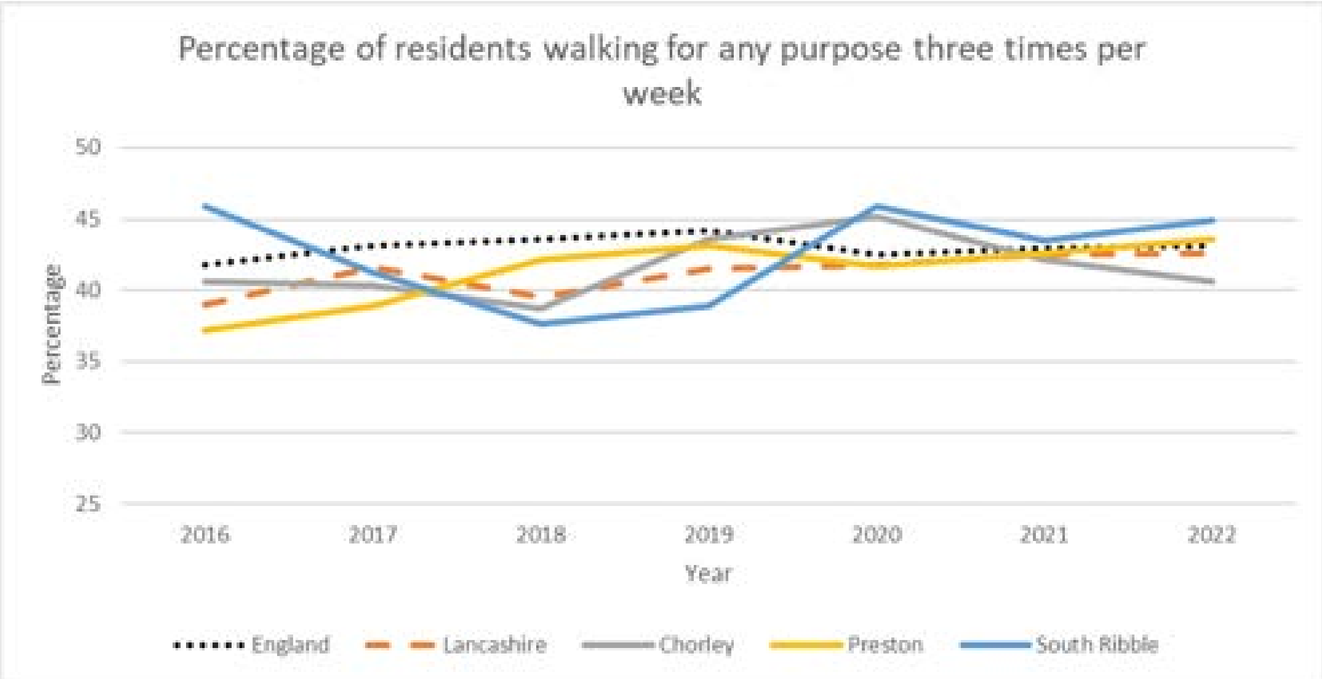


Figure 4-17: Percentage of residents walking for any purpose three times per week

The percentage of residents walking for travel in Lancashire is below the national average. In Lancashire 34% of residents walk for travel once per month and 14% walk for travel three times per week compared to the national averages of 42% and 17% respectively.

1.1.

[24] Department for Transport: Proportion of adults that walk, by frequency, purpose and local authority, England, 2023

Chorley, Preston and South Ribble show similar patterns to the Lancashire average, with the percentage of residents walking for travel once per month at 31%, 39% and 37% respectively, and the number of residents walking for travel at least 3 times per week at 15%, 20%, and 14% respectively.

Within Lancashire, the percentage of residents walking for travel has declined since 2016. Notably the percentage of residents walking for travel at least once a month has decreased by as much as 12% in Chorley since 2016.

Figure 4-18 shows that within Lancashire and authorities within Central Lancashire there has been a steady decline in the number of residents walking for travel five times per week. However, in from 2021-2022 there appears to be signs of an increase in residents walking five time or more per week.

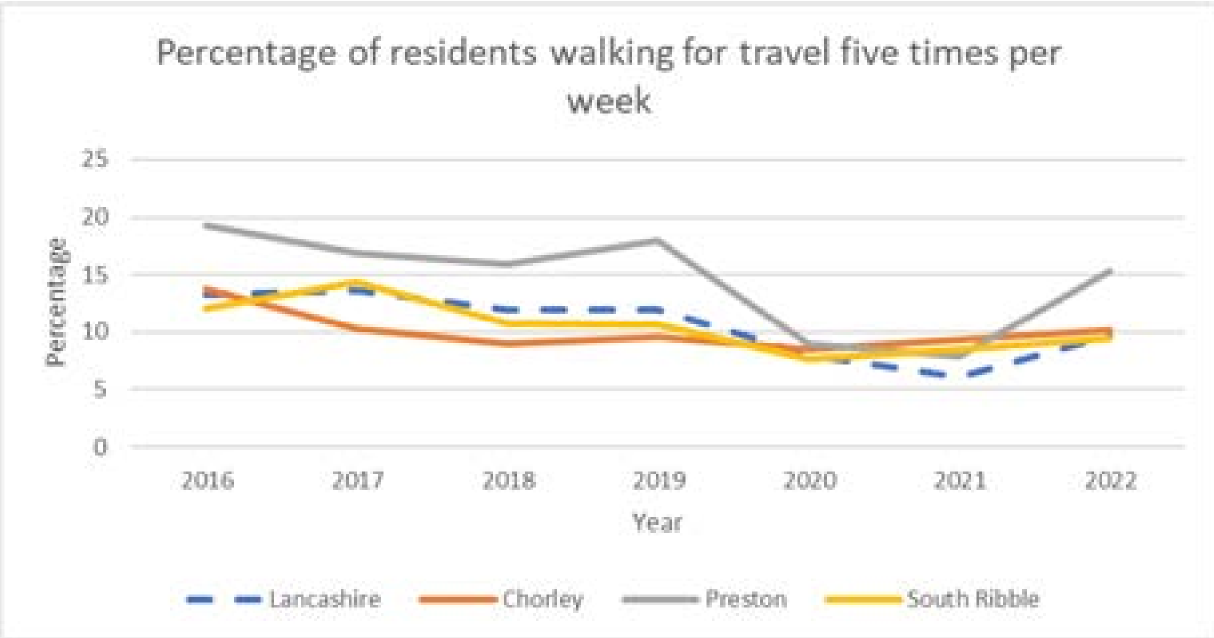


Figure 4-18: Percentage of residents walking for travel five times per week

Recent declines in the percentage of people walking for travel in Lancashire could be part of a longer-term trend that would need to be addressed.

Current walking levels are also nowhere near the levels required to reduce private car usage, improve air quality and address public health issues. Therefore, further and more extensive work is required to encourage walking across Central Lancashire.

Cycling Levels

In 2022, cycling accounts for just 2% of all trips made nationally and 1% of all distance travelled[25]. The number of trips made has remained largely steady since 2002 but the distance travelled has increased by 41%. However, approximately 80% of trips in England are 5 miles or under, with other 38% being 2 miles or under[26]. There is therefore significant potential to increase the proportion of residents that cycle.

In line with national trends, the percentage of Lancashire residents that do any cycling has declined slightly across the last 5 years. The percentages of residents cycling within Lancashire are slightly lower than the national average. For example, Figure 4-19 shows that in Lancashire the percentage of residents cycling once per month (11%) and one time per week (8%) are slightly lower than the national averages of 13% and 9% respectively.

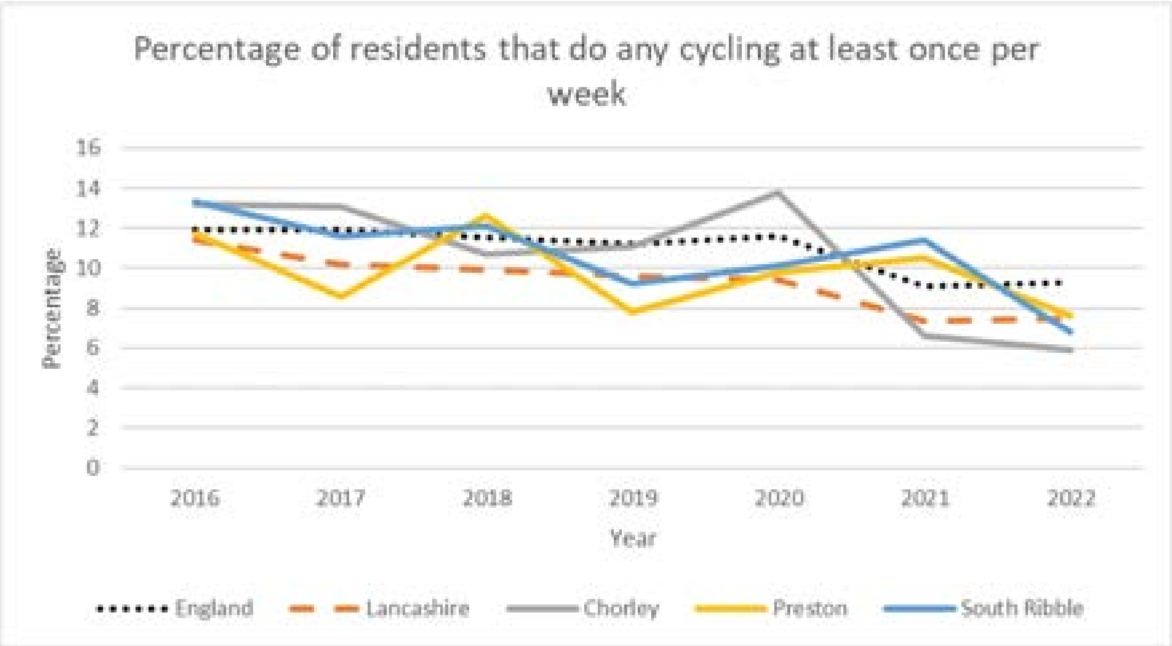


Figure 4-19: Percentage of residents that do any cycling at least once per week

The proportion of residents cycling for leisure is fairly consistent within Lancashire overall, Chorley, Preston and South Ribble. The countywide averages for residents cycling for travel once per month or at least once per week are 5% and 4% respectively. This is roughly a quarter of the national averages of 7% and 6%.

The trend in the decline in the proportion of residents cycling at least once a week is similar at a national and regional level, with the current proportion of residents cycling at least once a week lower in Lancashire, Chorley, Preston and South Ribble slightly lower than the national average.

1.1.

[25] Department for Transport: Walking and Cycling Statistics, England: 2022

[26] Department for Transport: National Travel Survey; Average number of trips by trip length: England, from 2002-2022

As with walking, Lancashire has similar issues and opportunities with cycling that need to be addressed. The percentage of residents cycling has seen a steady decease across the county over the last 5 years.

Cycling Safety

Road safety is a significant barrier to cycling. This has been highlighted in the National Travel Survey where safety was cited by 25% of respondents as to why they do not cycle more and too much traffic was also cited by 12% of respondents[27].

Access to Local Services

Central Lancashire Local Cycling & Walking Infrastructure Plan (LCWIP, June 2023), analysed the settlement catchments of three key urban areas within Central Lancashire by producing walking and cycling isochrones to show areas that can be reached within typical journey times from a central starting point in each settlement. The maps highlighted severance issues related to walking and cycling, referring to physical barriers or obstacles that hinder pedestrian and cyclist movement. Key aspects of severance in Central Lancashire include a lack of crossings at rivers, roads, and railway lines. The motorway network and rail lines, which generally run north/south through Central Lancashire, contribute to this severance.

The isochrone maps illustrated areas reachable within 10 and 20 minutes by cycling and walking. It shows that most amenities in each urban area can be reached within a 10-minute walk, and neighbouring villages can be reached within a 10-minute cycle, except for Preston, which is more dispersed.

Preston

Preston is the main retail and service hub in Central Lancashire, with major motorway access and a key railway station on the West Coast Main Line. Few central amenities are within a 10-minute walk from the city centre, but a 20-minute walk includes more facilities like community centres and museums, with the University of Central Lancashire (UCLAN) being the main educational institution. Enhancing the walking network could extend these ranges and reduce car use. Most attractors and suburbs are reachable within 20 minutes by bike, though fewer amenities are within a 10-minute cycle. New LCWIP routes are expected to reduce cycling times and encourage cycling, especially in areas like Bamber Bridge, Longton, and Lostock Hall."

1.1.

[27] Department for Transport: Walking and Cycling Statistics, England: 2023

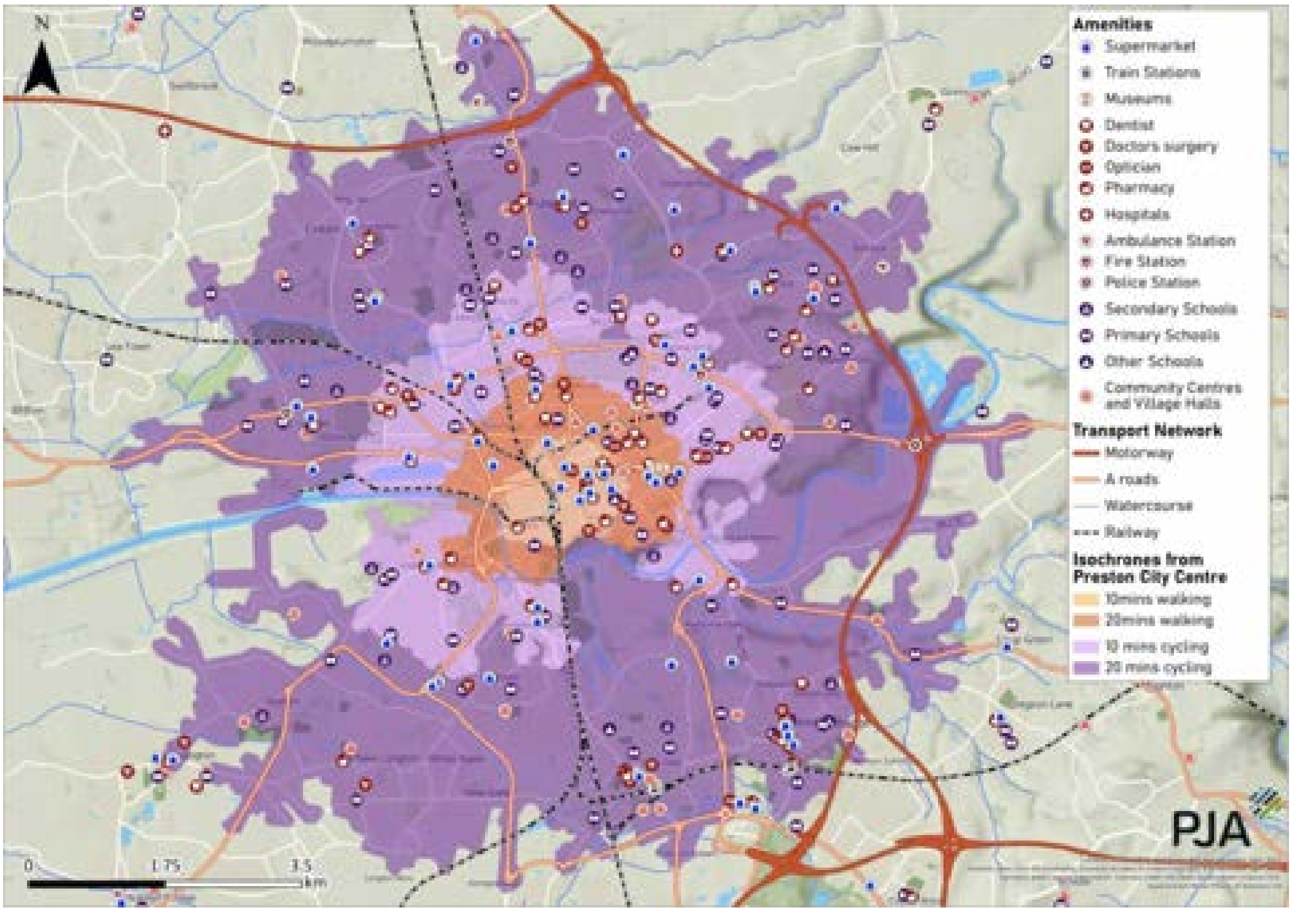


Figure 4.20: Preston Amenities and Walking & Cycling Isochrones

Source: Central Lancashire Local Cycling & Walking Infrastructure Plan (June 2023)

Leyland

Leyland is the main shopping and employment hub in the South Ribble district, but its town centre lacks pedestrianised areas, resulting in heavy vehicle traffic that impacts the visitor experience. Enhancing the active travel route network aims to reduce car dependency. Most key services and attractions are within a 10-minute walk from the town centre, making strong active travel links between the town centre and surrounding residential areas essential. The current 10-minute cycling range is limited and doesn't cover many key residential areas on the outskirts. Improving the cycle network will expand this range and encourage more people to cycle to and from Leyland, including from nearby areas like Chorley and Bamber Bridge.

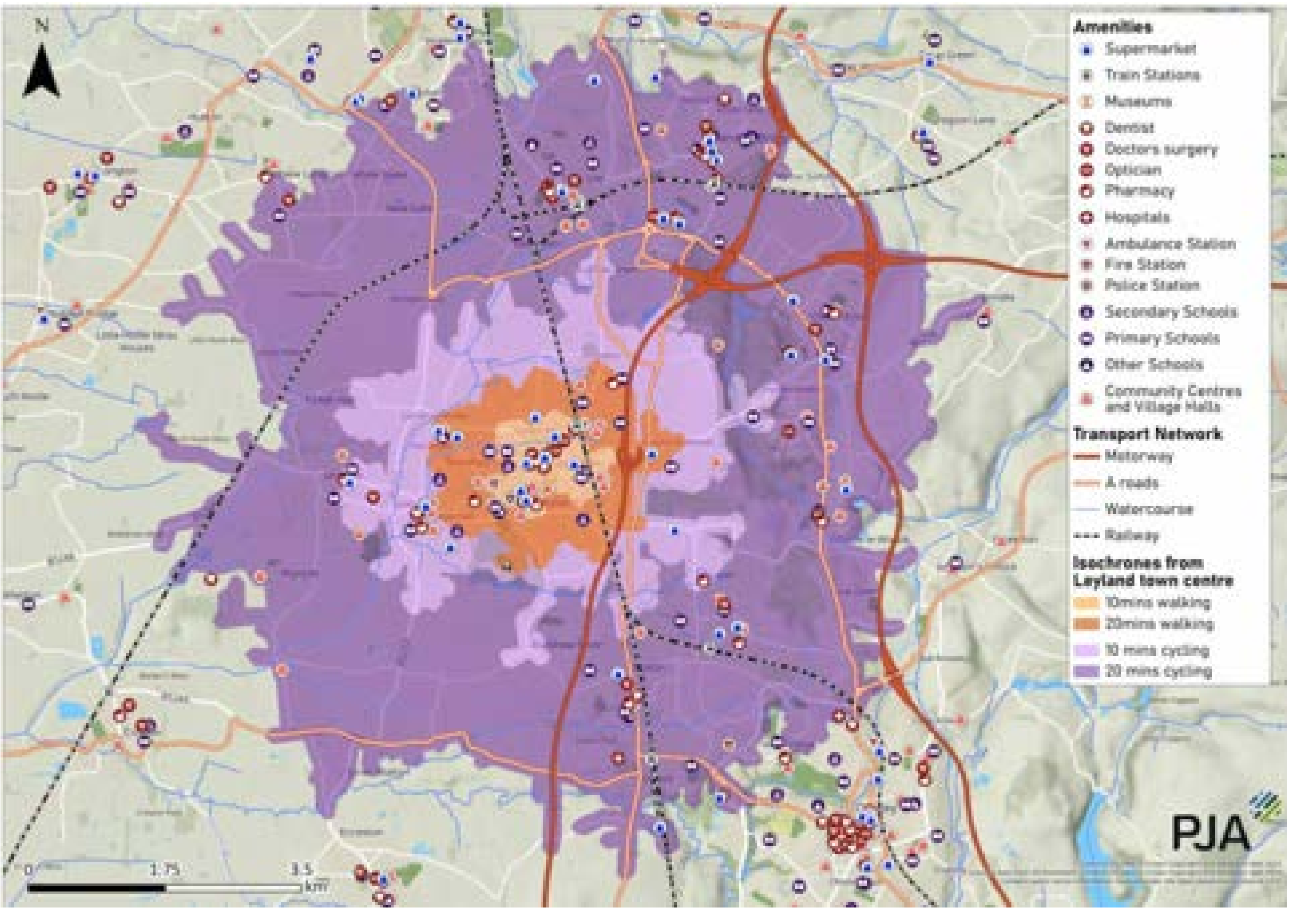


Figure 4.21: Leyland Amenities and Walking & Cycling Isochrones

Source: Central Lancashire Local Cycling & Walking Infrastructure Plan (June 2023)

Chorley

Chorley, is well-connected by public transport with easy rail access to Bolton and Preston. While pedestrian routes in the town centre are convenient and most key services are within a 10-minute walk, access from the outskirts is hindered by poor road crossings, inadequate lighting, and unattractive streets. Similarly, cycle accessibility is limited. Enhancing safer, more attractive routes could make cycling a more viable option for accessing the town centre.

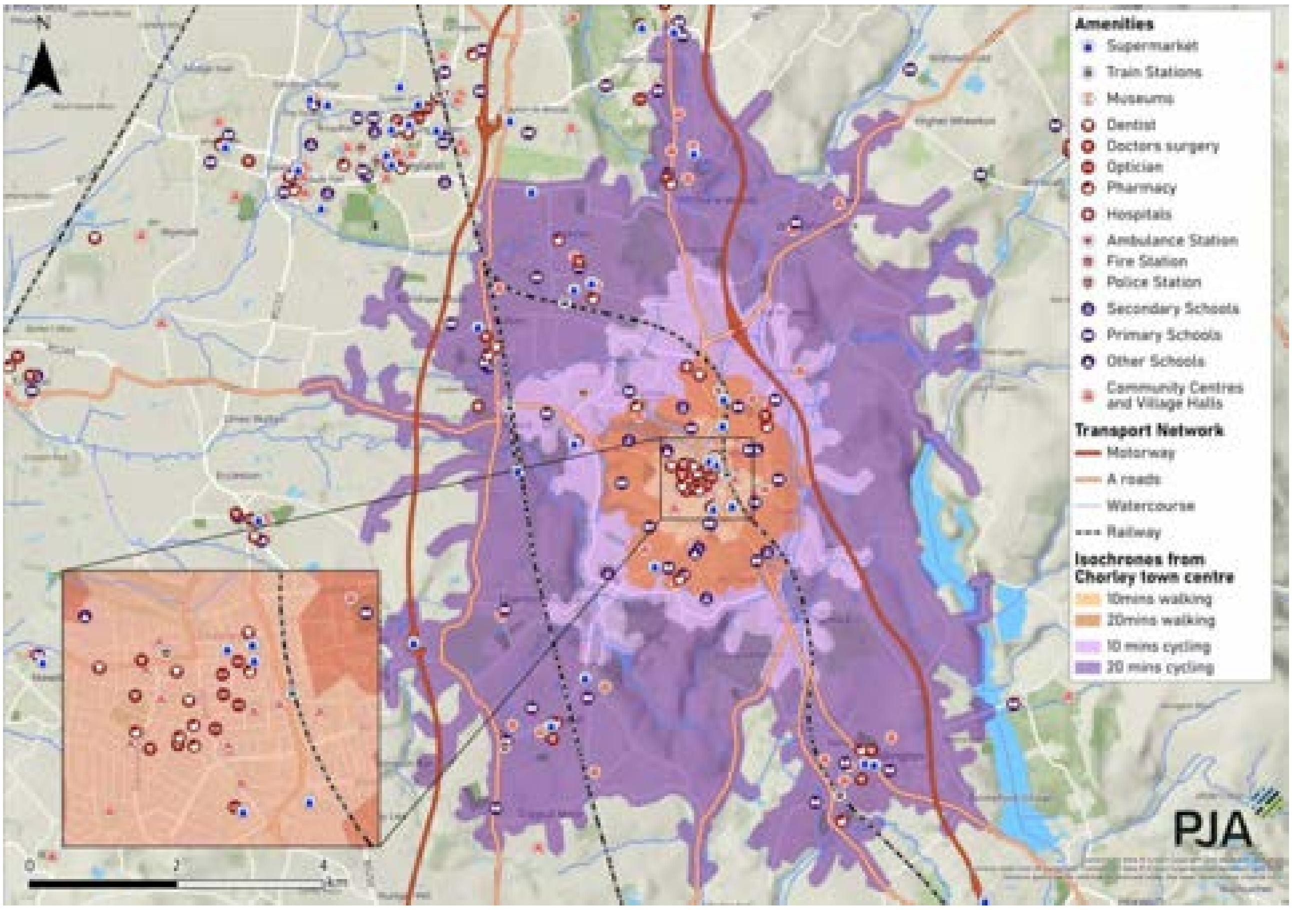


Figure 4.22: Chorley Amenities and Walking & Cycling Isochrones

Source: Central Lancashire Local Cycling & Walking Infrastructure Plan (June 2023)

Summary

- Walking levels in Lancashire are slightly below the national average and have remained stable over the last 5 years.
- Current walking levels are insufficient to reduce private car usage, improve air quality, and address public health issues.
- More extensive efforts are needed to encourage walking across Central Lancashire.
- Severance issues, such as physical barriers, hinder pedestrian and cyclist movement.
- Key severance issues include a lack of crossings at rivers, roads, and railway lines.

4.5 Road Safety

STATS19 accident data, encompassing the years 2016 to 2022, has been used to identify key areas in the road network with a history of significant accidents.

Figure 4-23, Figure 4-24 and Figure 4-25 shows fatal and serious accidents between January 2017 to July 2021 in Chorley, South Ribble and Preston respectively. The maps indicate a relatively high number of accidents in all three districts. A heat map of accidents shown in Figure 4-26 show a significant number of accidents within Central Preston, and other urban areas including Chorley and Lostock Hall, as well as main junctions including M6 J9, A6 Lockstock Lane roundabout, Bamber Bridge Interchange, and M55 J1.

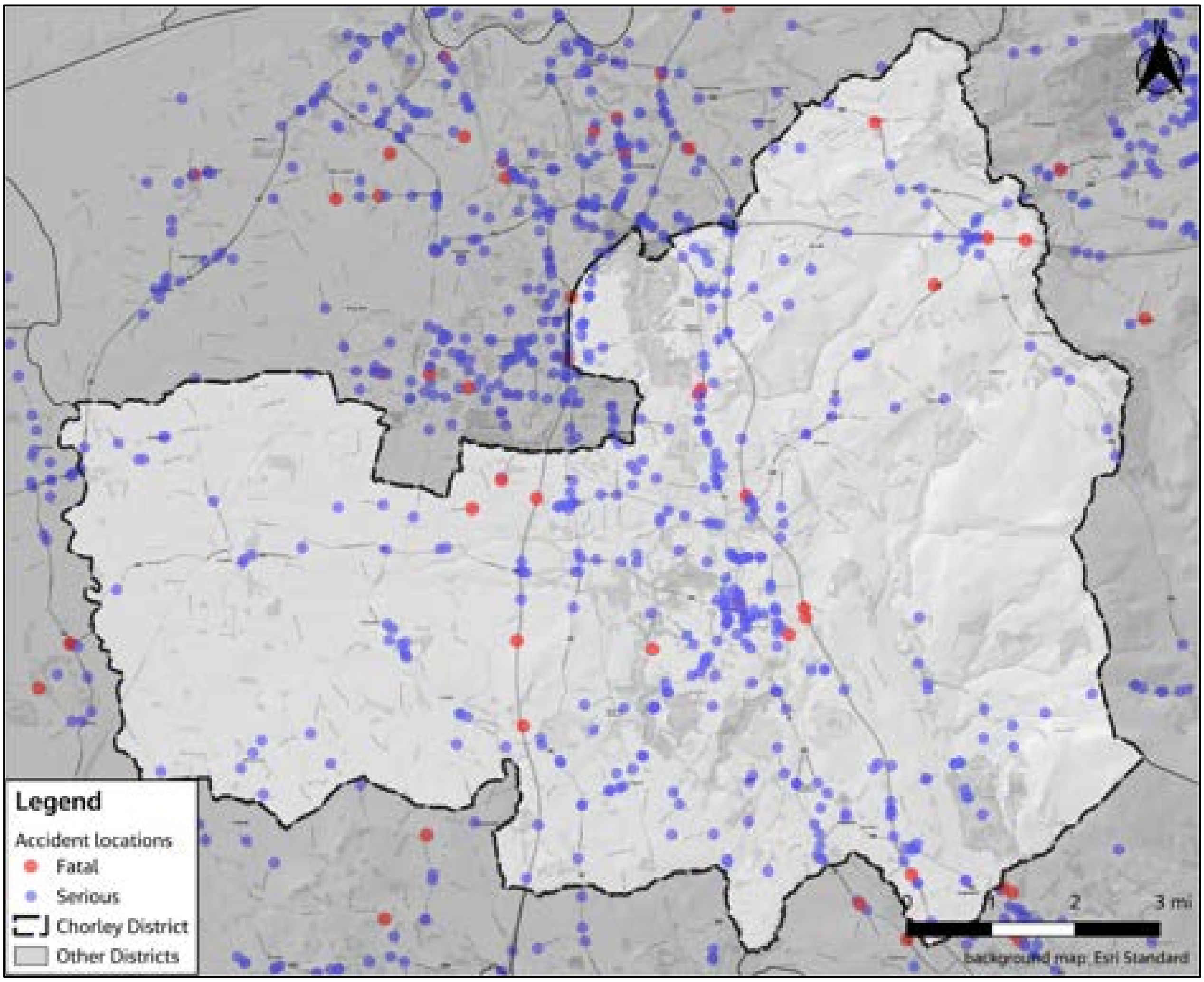


Figure 4-23: Accident map for Chorley

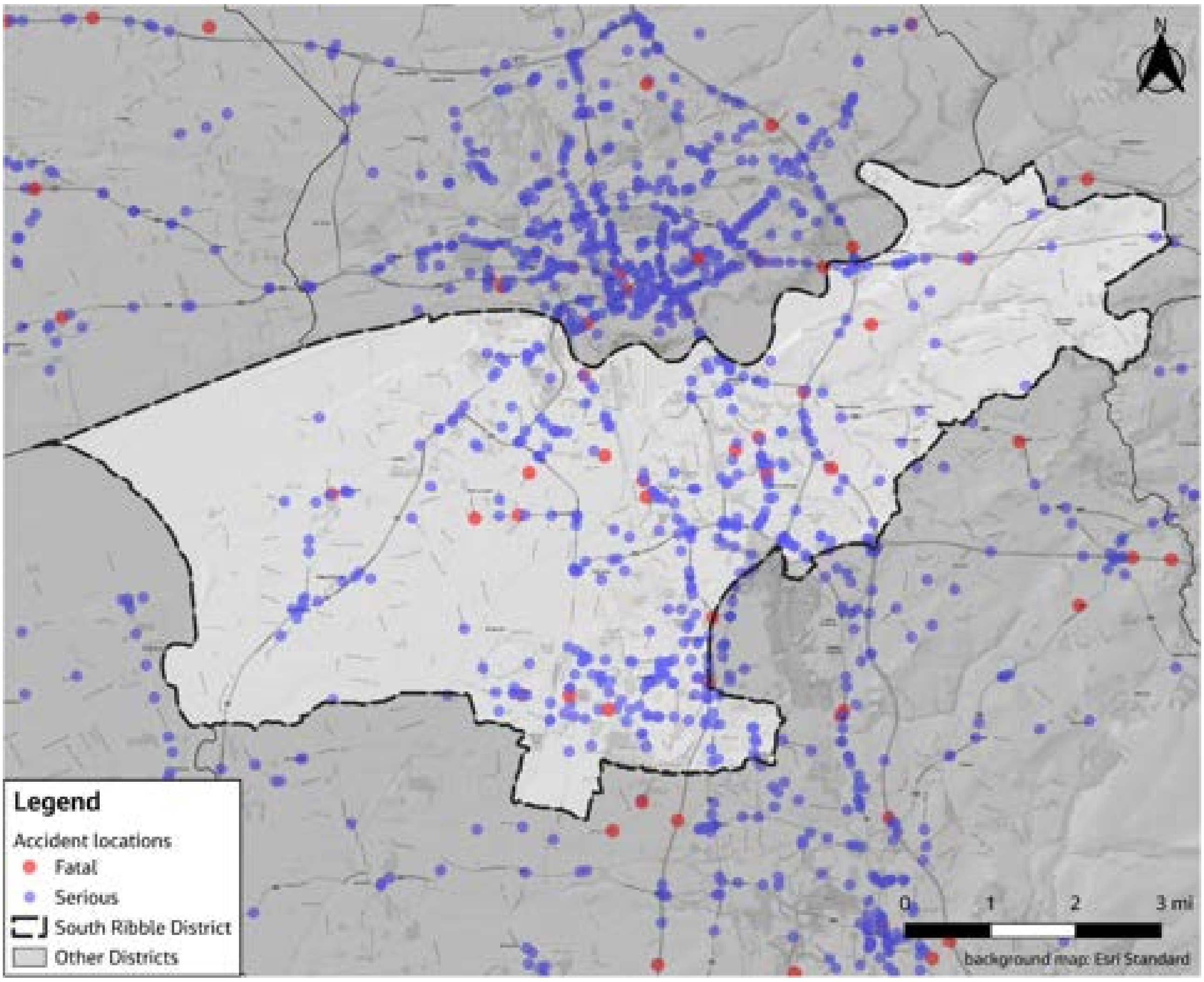


Figure 4-24: Accident map for South Ribble

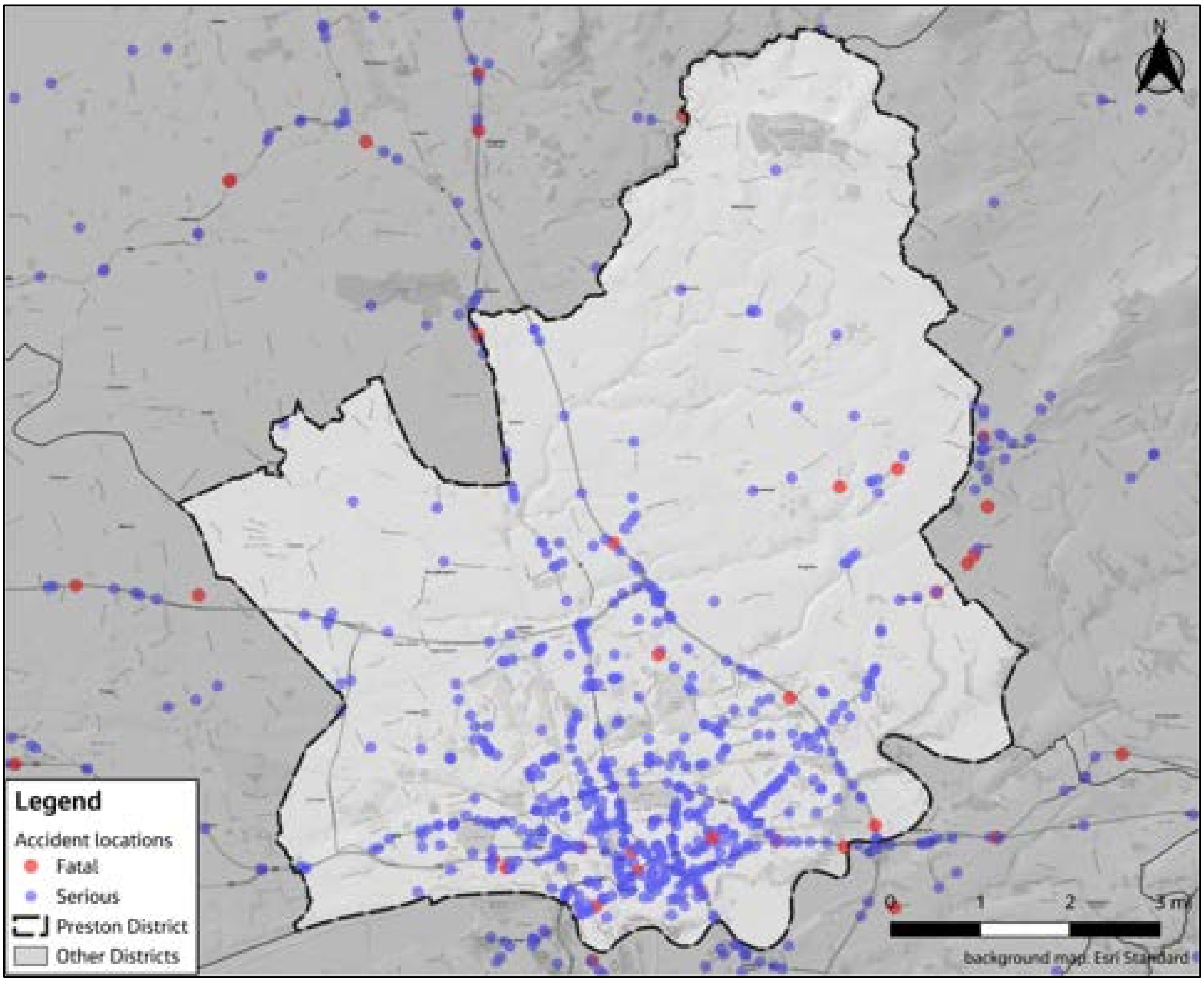


Figure 4-25: Accident map for Preston

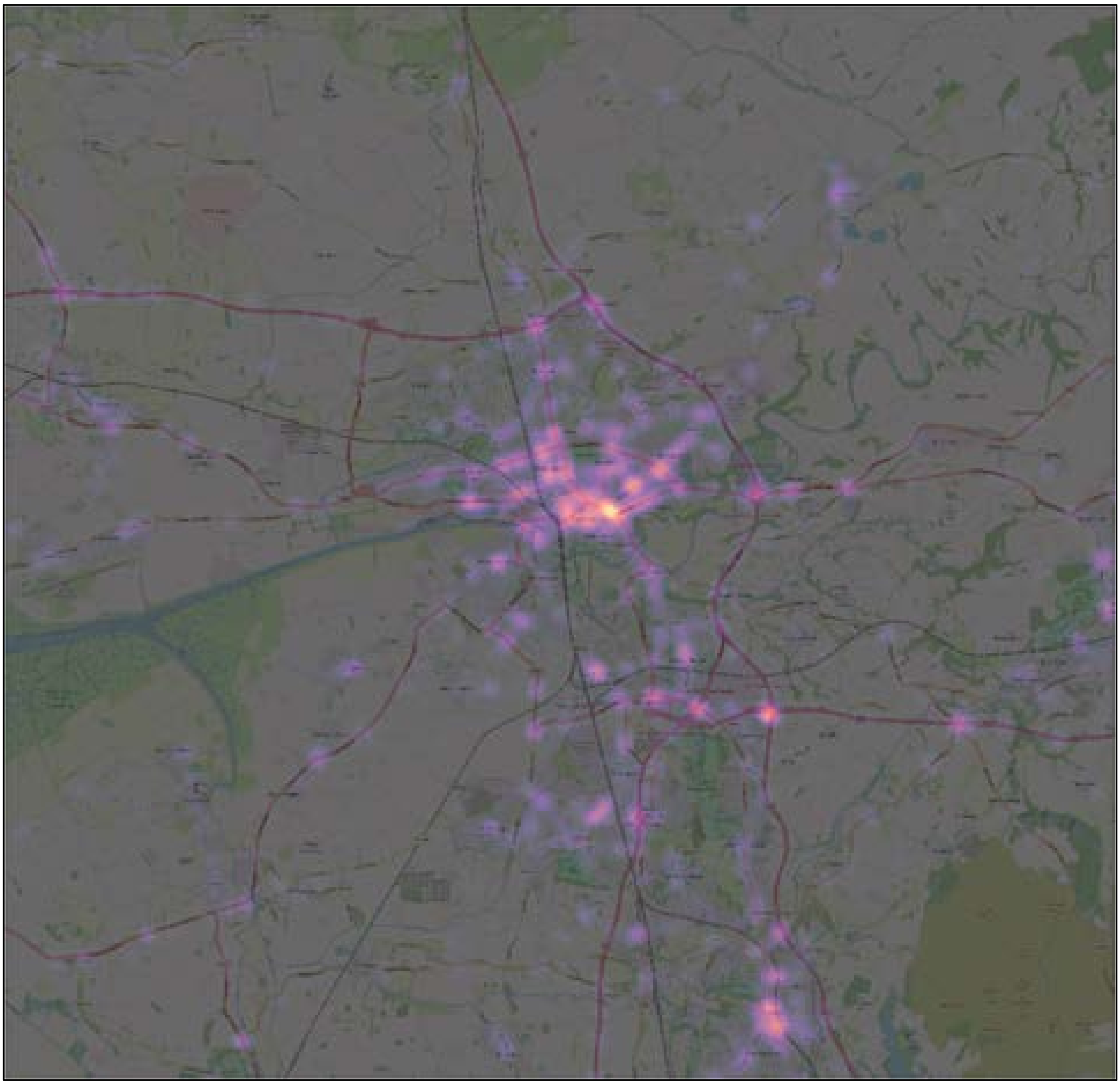


Figure 4-26: Accident heat map for Central Lancashire

4.6 Air Quality

Transport Emissions

Transport is responsible for the largest proportion of UK greenhouse gas emissions. In 2021 transport was responsible for 26% of total UK greenhouse gas emissions, with road transport responsible for 91% of transport emissions. Within this passenger cars produce 52% of road transport emissions[28].

These national trends are reflected in Lancashire where transport is the biggest source of emissions. In 2021, Lancashire transport was responsible for a larger proportion of CO_2 emissions, producing approximately 33% of all emissions in the county[29].

Air Pollution

Figure 3-6 also shows the Air Quality Management Areas (AQMAs) for Central Lancashire sourced from the Department for Environment Food & Rural Affairs (DEFRA) interactive map. There are five AQMAs in Preston and five in South Ribble. Further details can be found below. As improvements to sustainable travel can have positive impacts on air quality, it is important to understand where air quality is currently being managed.

South Ribble

- AQMA No.1 (South Ribble Borough Council) – Stretch of road between the junction of Priory lane/Cop lane and the A59 Liverpool Road, Penwortham. From Kingsway to the north of Priory Lane; Queensway to Kingsway along the A59 Liverpool Road.
- AQMA No.2 (South Ribble Borough Council) - An area encompassing the A6/A675 Victoria Road in Walton-le-Dale between the Bridge Inn/Ribble Crescent to the north and the Yew Tree Inn to the south.
- AQMA 3 Lostock Hall (South Ribble Borough Council) – unction of Leyland Lane, Watkin Lane and Brownedge Road, Lostock Hall
- AQMA 4 - Bamber Bridge (South Ribble Borough Council) – Station Road, Bamber Bridge.
- AQMA Order 5 Leyland (South Ribble Borough Council) - Stretch of road comprising Golden Hill Lane from the junction with Leyland Lane to the Junction with Chapel Brow, Churchill Way and Turpin Green Lane from the Churchill Way Roundabout to the railway bridge, including all properties fronting onto Turpin Green Lane and Golden Hill Lane.

1.1.

[28] Department for Transport: Transport and environment statistics: 2023

[29] Lancashire County Council: Lancashire Insight: Carbon dioxide emissions, 2023

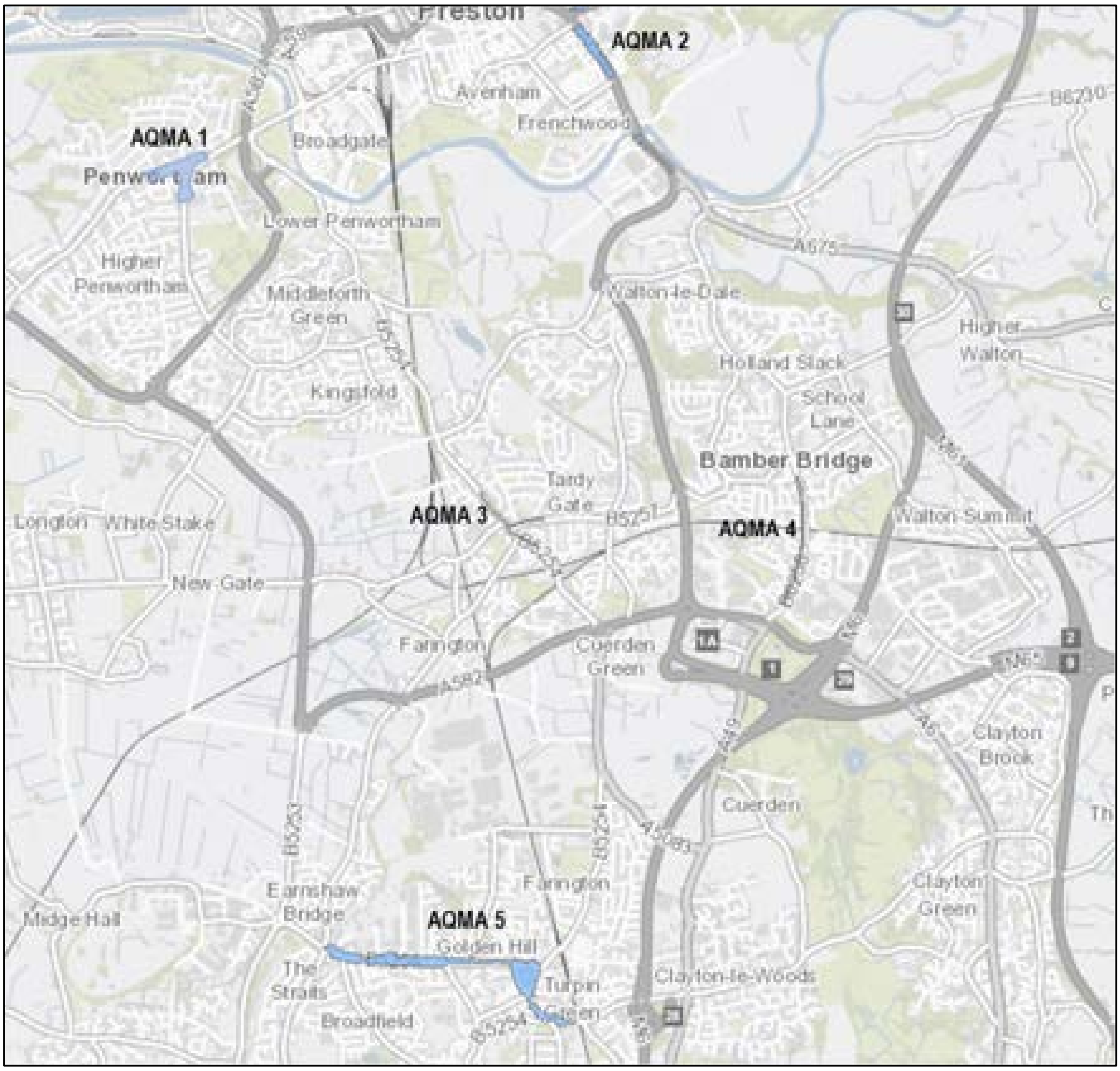


Figure 4-27: AQMA in South Ribble

Preston

- AQMA No. 1 (Preston Borough Council) - An area encompassing a number of properties between Church Street and Percy Street adjacent to the junctions of these roads and the A6/A59 Ringway.
- AQMA No.2 (Preston Borough Council) – An area encompassing a number of properties in the vicinity of the junction of the A5085 Blackpool Road and Plungington Road.
- AQMA No. 3 (Preston Borough Council) – Incorporating part of Garstang Road, Broughton, Preston
- AQMA No. 4 (Preston Borough Council) - Part of New Hall, Preston
- AQMA No. 5 (Preston Borough Council) - London Road, Preston

Figure 4-28: AQMA in Preston

4.7 Health

Obesity

It is recognised that obesity is caused by a complex range of factors and is not directly related to transport. However, walking and cycling is one factor that can help to tackle obesity. It is therefore important that the LTCP recognises the challenges surrounding obesity in the county and encourages these modes.

Obesity is a serious issue in England costing wider society £27 billion and the NHS an estimated £6.2 billion on related ill health in 2014/15. It is a complex problem with multiple causes and significant implications for health and beyond. It is recognised as a major determinant of premature mortality and avoidable ill health.

Figure 4-29 shows that in Lancashire an estimated 66% of people aged 18 or over are classified as overweight or obese (2022/23), slightly than the average for England (64%)[30]. The percentage of adults

1.1.

[30] Public Health England Profiles

classified as overweight or obese has remained similar in Lancashire since 2015, although has reduced slightly in the last four years (67% in 2019/20).

Analysis of the percentage of adults classified as overweight or obese shows that all three districts within Central Lancashire have slightly higher percentages than England, but only South Ribble (66.4%) has a higher percentage than Lancashire overall.

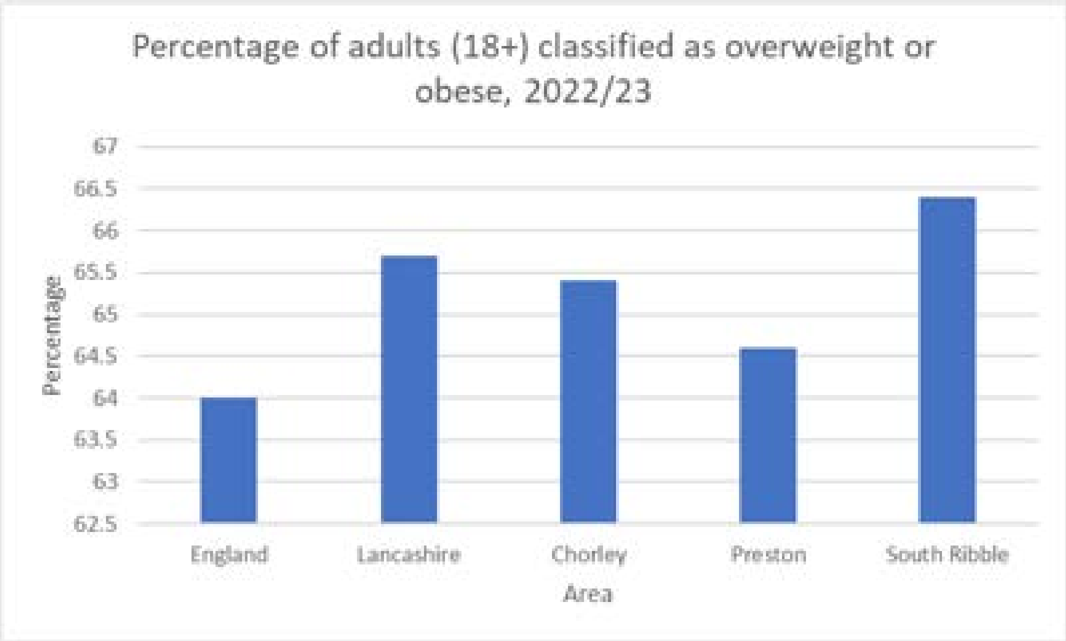


Figure 4-29: Percentage of adults (18+) classified as overweight or obese, 2022/2023

The majority of children in Lancashire are a healthy weight and the prevalence of childhood obesity has remained stable in Lancashire since 2007, especially for reception children, however there has been a slight increase in Year 6 children being overweight. In 2022/23 23% of reception children and 37% of Year 6 children were classified as overweight or obese[31]. This suggests that overweight and obesity prevalence increases over the course of Primary School.

Physical inactivity

The percentage of adults in Lancashire meeting physical activity recommendations (65.8%) is lower than the national average (67.1%)[32]. This means that almost 1 out of 3 adults are still not meeting the recommendations. There are variations across Central Lancashire, with Preston having the lowest percentage (61.4%) and Chorley having the highest percentage (71.3%) of physically active adults.

1.1.

[31] Public Health England Profiles

[32] Public Health England Profiles

The number of children and young people meeting physical activity recommendations is also lower than the national average. In Lancashire 44% of children meet the 60 minute per day recommendation compared to 47% nationally[33]. There is a notable higher percentage of children and young people meeting physical activity recommendations within Chorley (59.7%), compared to Preston (42%) and South Ribble (44.9%).

Summary

Adult obesity is higher the national average and is over 65%, and adult and children physical activity is lower than the national average. Encouraging walking and cycling is one way the new strategic transport plan can help address this.

4.8 Population

Population growth

Lancashire has a population of 1,253,154 according to the latest Office for National Statistics mid-year estimates[34]. The population with the three districts that make up Central Lancashire are fairly even as shown in the table below, with South Ribble containing the smallest population at 112,166 and Preston containing the largest population at 151, 582.

Table 4-3: 2022 Population with Central Lancashire

Area	2022 Population
Chorley	118,624
Preston	151,582
South Ribble	112,166

The population has been increasing in Lancashire since 2011. This population growth has been reflected in all of Lancashire's districts. Since 2001, Lancashire's population has increased by 4%, with all the districts within Central Lancashire experiencing population growth of since 2011. Chorley has seen the largest population growth since 2011 with an increase of 10%, and South Ribble has seen the smallest population growth of 3%.

With plans for a further 25,400 new homes across the three districts by 2041, there is going to be increased pressure on the existing transport network. Given the scale of growth, more effective solutions are therefore needed to transform transport in Lancashire.

Demographics

Lancashire's population has a relatively equal gender distribution with 616,252 males and 636,901 females[35]. This is also reflected at a district level within Chorley (59,153 males and 59,471 females), Preston

1.1.

[33] Sport England, Active Lives Children and Young people Survey 2022/23

[34] Office for National Statistics: Mid-year Population Estimates

[35] Office for National Statistics: Mid-year Population Estimates

(75,998 males and 75,584 females) and South Ribble (54,874 males and 57,292 females). There is also a relatively equal age distribution in the county as seen on the age structure diagram overleaf.

Those aged 50-54 make up the largest age group in Central Lancashire with 23,596 residents (7.1% of the population). The 55-59 age group makes up the second largest age group with 23,075 residents. The narrower bottom to age structure diagram highlights that there is an older population with long life expectancy, low death rates and low birth rates.

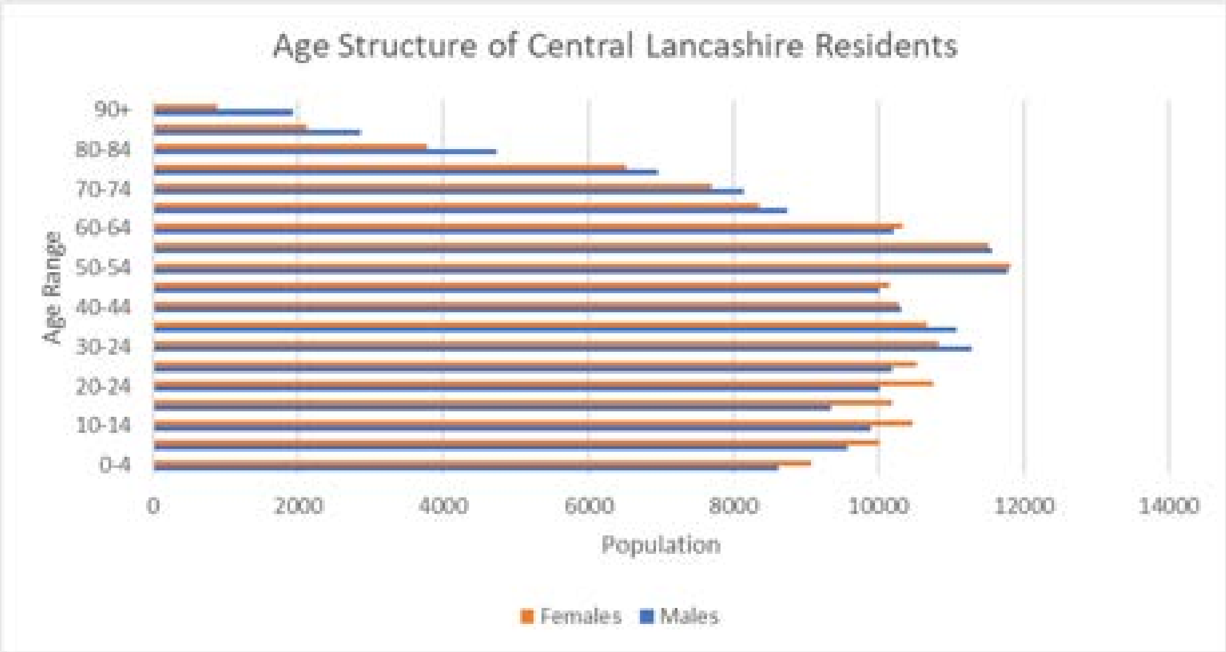


Table 4-4 shows the different demographics in the Districts within Central Lancashire in 2021. Preston is a particularly diverse and multi-cultural city, however there is a range of ethnicities in all districts. We therefore need to ensure all groups needs are considered at every stage of the LTCP development.

Table 4-4: Population in Central Lancashire by Ethnic Group (percentage)[36]

Area	White British	Other White	Mixed/Multiple Ethnic Groups	Asian / Asian British	Black/African/Caribbean/Black British	Other Ethnic Groups
Chorley	93	3	2	2	1	0
Preston	66	7	3	20	2	2
South Ribble	93	3	2	2	1	0

1.1.

[36] https://www.ethnicity-facts-figures.service.gov.uk/uk-population-by-ethnicity/national-and-regional-populations/population-of-england-and-wales/latest/

Life Expectancy

Life expectancy in Lancashire is lower than the national average for both men and women. The average life expectancy at birth for men is 77.83 compared to the national average of 78.85 but has increased by 0.9 years since 2009[37]. For women the life expectancy at birth is 81.77 which is lower than the national average of 82.82 and has increased by 0.7 years since 2009.

However, there are clear inequalities in life expectancy across Lancashire with people in more deprived areas having significantly lower life expectancy compared with the less deprived. Data for the combined years 2020 to 2022 shows that for males there was a gap of almost 10 years between the most and least deprived areas. For females the gap was just under 7 years[38].

There are similar inequalities shown across Central Lancashire. Data for the combined years 2020 to 2022 shows that for males there was a gap of almost 4 years between Preston (75.71) and South Ribble (79.99). For females the gap was just under 3 years[39].

Although the life expectancy of some areas within Central Lancashire are above the national average there is still significant work to do in terms of health inequalities. Transport can play a significant role in helping to tackle these inequalities.

Deprivation

According to the Indices of Multiple Deprivation (IMD) Lancashire is the 74th least deprived of the 151 upper tier local authorities in England. The ranking of Central Lancashire's districts shows that, since the last release in 2015, Chorley has become relatively more deprived and Preston and South Ribble have become relatively less deprived.

Summary

Since 2011, Lancashire's population has been growing across all districts. With plans for 25,400 new homes by 2041, there is increased pressure on the transport network, necessitating more effective solutions.

Different age groups have varying transport needs. Older populations may require more accessible options, while younger populations might benefit from active travel routes like cycling and walking paths. The strategic plan must consider these demographic differences to propose future transport alternatives.

Income levels and employment rates also influence transport needs. Higher-income areas might see more private car usage, while lower-income areas may rely more on public transport. Urban areas typically need robust public transport systems to reduce congestion and pollution, whereas rural areas might require better connectivity to urban centers. Areas with higher rates of health issues or disabilities need accessible and reliable transport options that can also promote health improvements through active travel provisions.

1.1.

[37] Office for National Statistics: Health state life expectancy, all ages, UK

[38] Public Health England: Health inequalities dashboard

[39] Office for National Statistics: Health state life expectancy, all ages, UK

5. Transport Assessment

5.1 Introduction

This section of the report describes the modelling carried out to analyse the cumulative impact of the preferred set of development sites to be carried forward into the Local Plan submission draft.

Lancashire County Council maintains the Central Lancashire Traffic Model (CLTM), a local strategic model that has undergone numerous updates to support business case studies and local studies in Central Lancashire. In 2024, the base model was updated to support the Local Plan, following discussions with the Central Lancashire Local Plan Technical Working Group. This update includes additional traffic surveys to ensure comprehensive coverage of the Local Plan Study Area and accounts for current traffic levels, which have changed since the onset of Covid-19.

Base Year Update Report included in Appendix A summarises the base year models development and demonstrate its suitability for the assessment. The report details the model's base year calibration and validation as well as its subsequent use for future year demand forecasting. The contents of this report have been determined by the standards and guidance provided by the Department for Transport (DfT) within Transport Analysis Guidance (TAG).

The overall purpose of the traffic modelling work presented in this report is to assess the impact of the emerging Local Plan site allocations on both the local and strategic road networks, and to articulate a long-term transport investment strategy within the Lancashire Central Area. The modelling work is intended to provide a cumulative assessment of the traffic impacts associated with the Local Plan site allocations, rather than providing detailed modelling analyses of individual sites.

The traffic forecasting undertaken in relation to the emerging Local Plan has been developed using the updated Central Lancashire Traffic Model (CLTM) 2024 base year traffic model. The forecast scenarios, are all developed from the base year model and account for proposed changes in traffic demand and supply in the modelled area. Using the variable demand model (VDM) functionality of the CLTM model, the Do Minimum (or Baseline) forecast scenarios account for changes in demand resulting from variation in travel costs. The Local Plan forecast scenarios also include the additional travel demand associated with the proposed Local Plan allocation sites.

Traffic modelling has been carried out using both a do-minimum highway network, with fully committed schemes only and the demand for travel has been calculated using the preferred set of allocated housing and employment sites provided by CLLP in August 2024, alongside historic information regarding sites recorded as built, under construction or with live planning permissions between 2019 and 2024.

The Local Plan sites that have been modelled represent a 'maximum growth scenario' for the network in which all development comes forward by the end of the plan period. This is modelled under conditions that can be described as "business as usual", with only committed highway improvements.

5.2 Model Specifications

5.2.0. Software Packages

The updated model uses the SATURN version 11.4.07H (released in August 2018). The bus and rail assignment model uses EMME version 4.6.1.

The variable demand model is set up in EMME version 4.6.1.

5.2.1. Modelled Hours

The modelled hours in the model are:

- AM peak hour (08:00 – 09:00)
- PM peak hour (17:00 – 18:00)
- Average hour in the interpeak/IP (10:00 – 16:00)

5.2.2. User Classes

The CLTM model segregates trips by vehicle type and trip purpose. Different levels of segregation are used at different points of the model building process, as summarised in Table 5-1.

Table 5-1: Purpose/User Class/Vehicle Class Correspondence

Trip Purpose ID	Purpose	User Class (UC)	Vehicle Class (VC)	PCU Factor
1	Home Based Work (HBW)	UC1	VC1	1.0
2	Home Based Employer's Business (HBEB)	UC2		
3	Non-Home Based Employer's Business (NHBEB)			
4	Home Based Education (HBED)	UC3		
5	Home Based Shopping (HBS)			
6	Home Based Other (HBO)			
7	Non-Home Based Other (NHBO)			
8	LGV	UC4	VC2	1.0
9	HGV	UC5	VC3	2.0

These trip purpose and user class splits are consistent with the guidance contained in TAG Unit M3.1 and allow differing vehicle operating costs and values of time to be applied.

5.2.3. Base Year

The updated model has been developed with a base year of 2024 with observed data based on data collection undertaken during 2023 and 2024, during the neutral month.

The bus operator and bus occupancy data are from October 2019 and the rail Mobile network data (MND data) was collected over a continuous period of 1 month for March 2019.

5.3 Summary of Key Model Components

Table 5-2 provides the summary of key model components used in the updated 2019 CLTM.

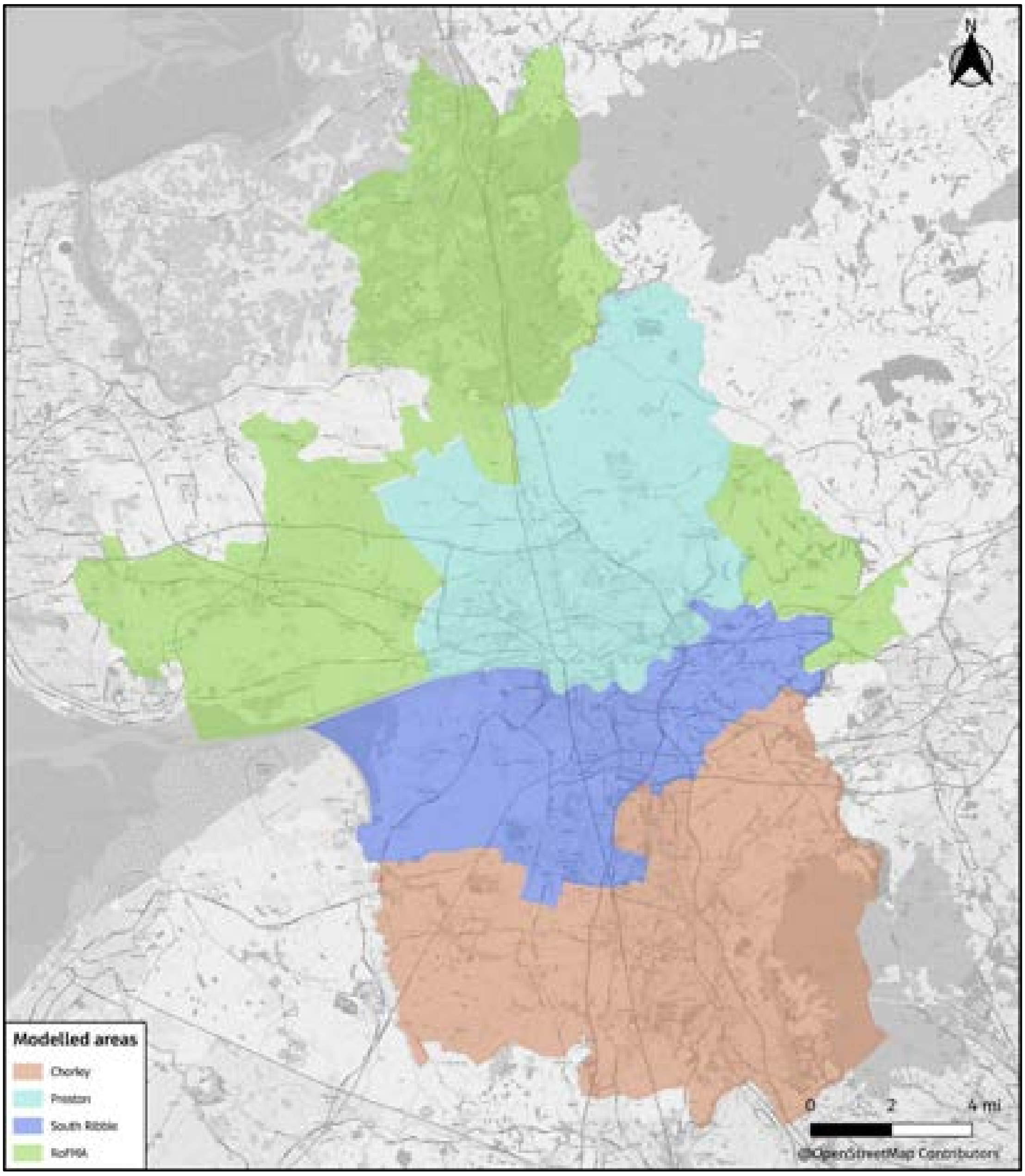
Table 5-2: Key Model Components

Characteristic	Model Approach
Model Type	Multi-modal assignment and variable demand model
Software Packages	Highway Assignment – SATURN version 11.4.07H Bus Assignment – EMME 4.6.1 Rail Assignement – EMME 4.6.1 Variable Demand Model – EMME 4.6.1
Base Year	2024
Future Years	2031 and 2041
Time Periods	AM peak hour (08:00-09:00) Interpeak (average hour 10:00-16:00) PM peak hour (17:00-18:00)
User Classes	Car, PT – Commute Car, PT – Business Car, PT – Other LGV HGV
Zone System	579 zones (including 5 spare zones)
Assignment Methodology	Highway Assignment – SATURN Wardrop Equilibrium. Public Transport Assignment – Frequency based transit assignment, based on Optimal Strategies.
Capacity Restraint Mechanism	Highway Assignment – Capacity Index function on links, defined capacity at junctions, fixed speed buffer network Bus Assignment – None Rail Assignment – None
Variable Demand Model	P-A based VDM using EMME

5.4 Modelled Area and Network

The primary use of the updated model is to help support the development of the Local Plan covering the three local authority districts which are: Chorley, Preston and South Ribble. Figure 5.1 show the boundaries of these three Local Authorities that form Central Lancashire and the extent of the fully modelled area and the rest of the area. The geographical scope of the model network and specifically the detailed/simulation area cover these areas of impacts of those schemes.

Figure 5.1: Central Lancashire Local Authorities



The modelled area makes use of a three-stage structure with levels of detail of network coding reducing away from the centre of the study area. The breakdown of the modelled area is outlined below:

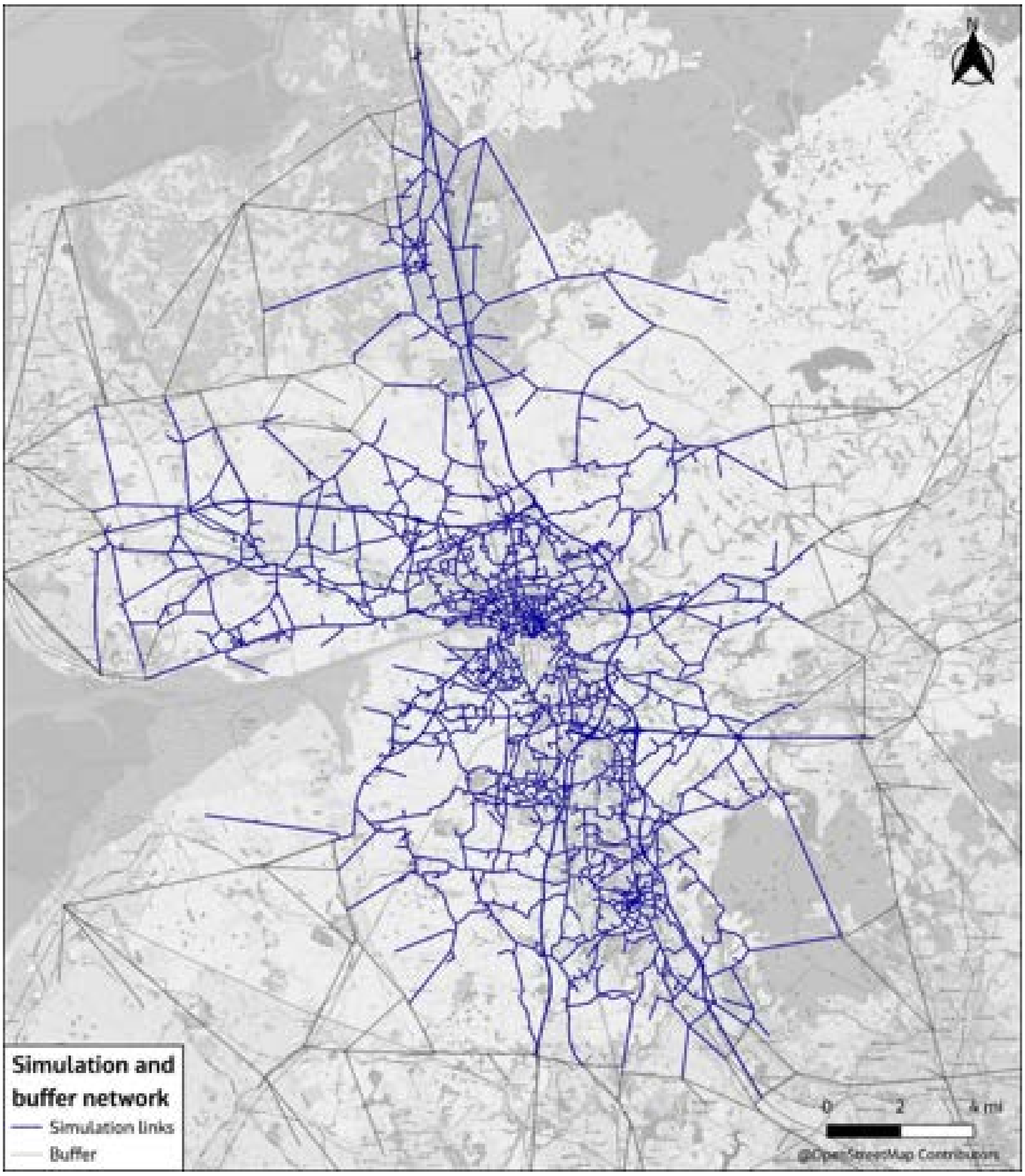
Fully modelled area:

- Area of detailed modelling (AoDM) – highest detail

- Rest of fully modelled area (ROFMA) – reduced network coverage but variable travel times enabled
- External Area – lowest network coverage and fixed speeds used

Figure 5.2 shows the simulation and buffer network coded in the SATURN model.

Figure 5.2: CLTM Modelled Network



Outside of the detailed modelled area, typically Motorways, A and B Roads have been modelled, to reflect the more spatially aggregated nature of the zoning system. As these areas are further away from the study area, it is only necessary to have enough detail to ensure that the trips from these areas entering the study area are captured at the appropriate locations. Figure 5.3 shows the entire CLTM model network, covering trip distances, costs and public transport services across the whole of Britain, including the external modelled area.

Figure 5.3: CLTM Full Network

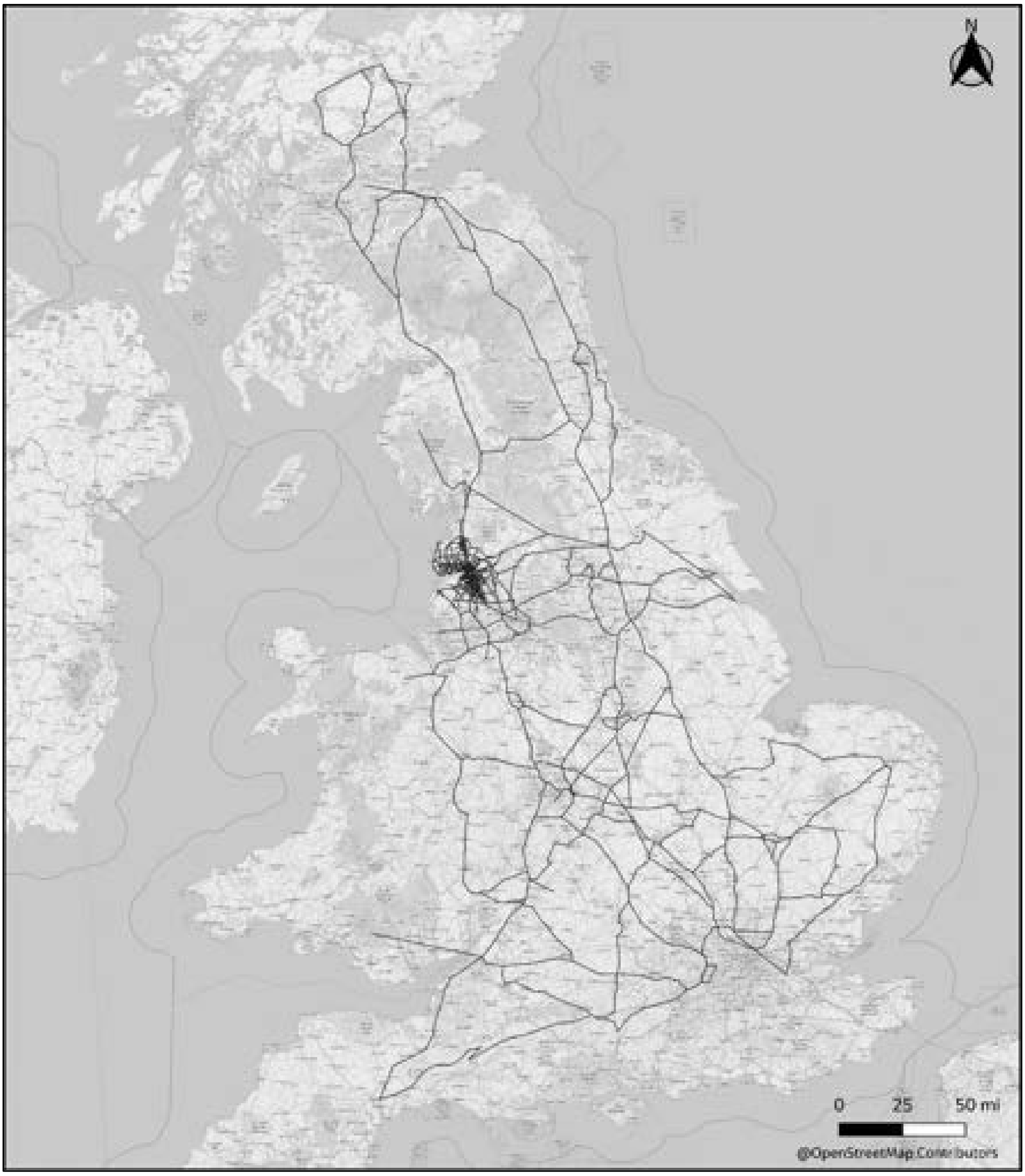
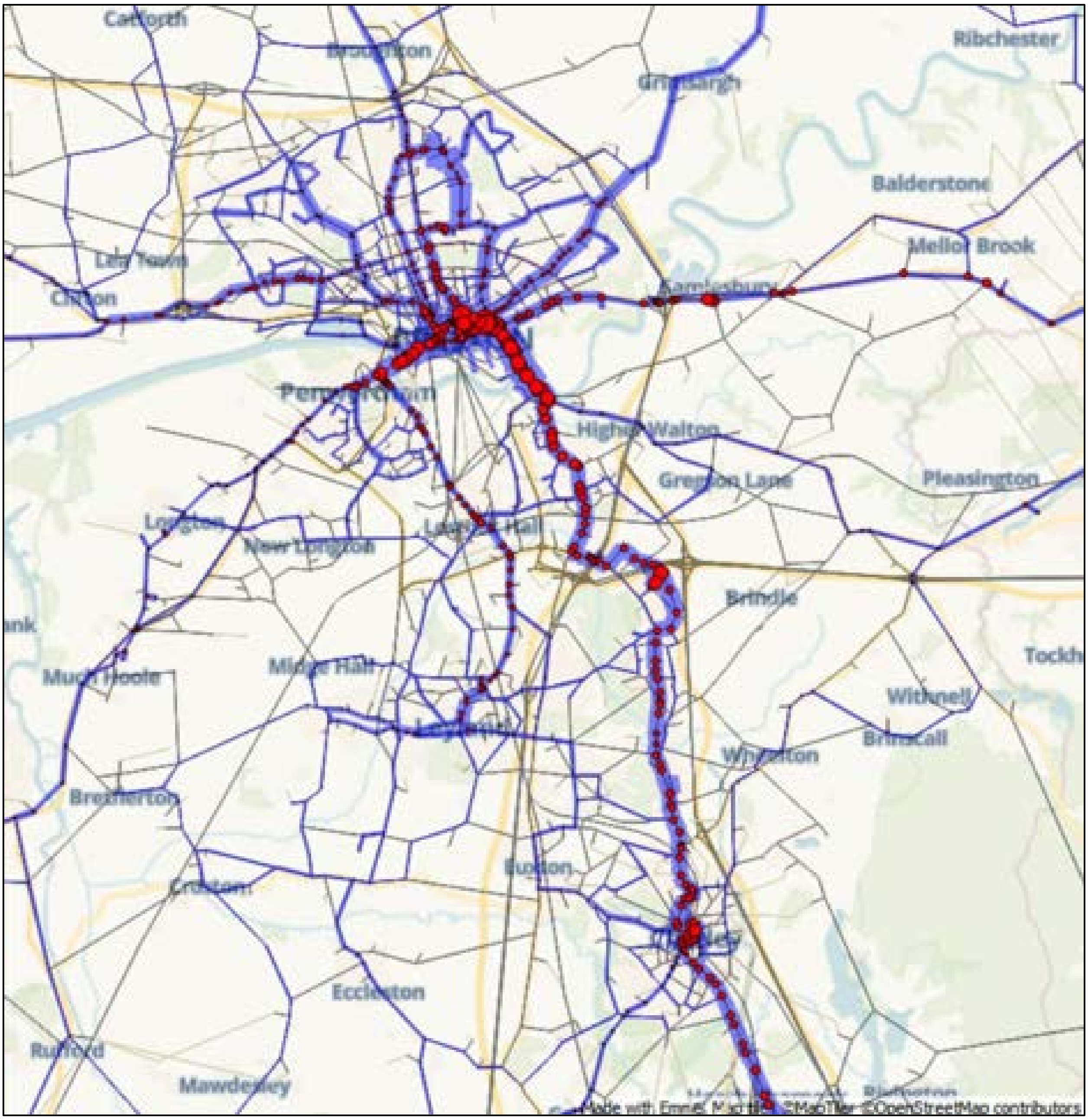


Figure 5.4 and Figure 5.5 presents the bus services and rail lines coded in CLTM with the thickness of lines in representing the number of bus or rail services on that line. Bus stops or rail stations are represented by red points.

Figure 5.4: CLTM Bus Services



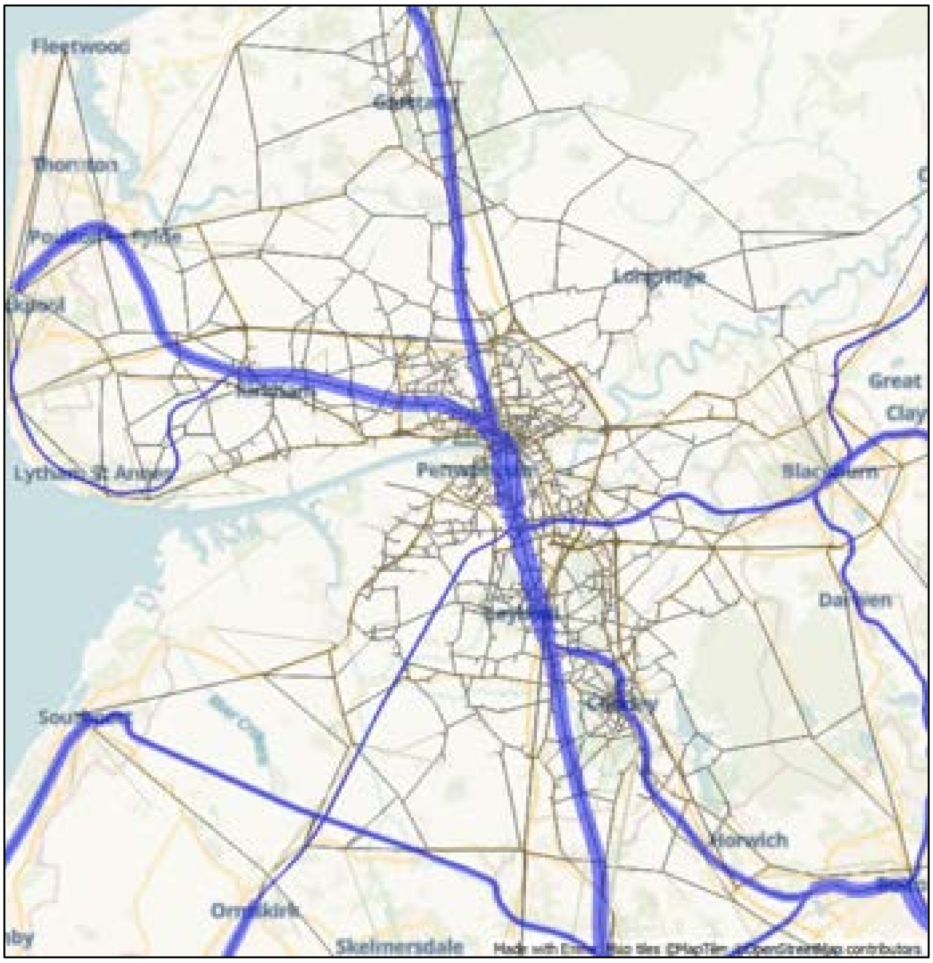


Figure 5.5: CLTM Rail Lines

5.5 Calibration and Validation Results

For full details on the base year model development exercise, please refer to the Base Year Update Report (Appendix A), which details the work done to calibrate and validate the CLTM model against observed data.

Data were checked for compliance with age and duration criteria and for consistency by removing outliers that arise from unusual events.

Matrix Estimation (ME) was applied to refine the prior matrix using the count data collected. Validation criteria and acceptability guidelines presented in TAG Unit M3.1, Section 3.2 were used to assess the highway base model performance.

The results of this assessment are fully documented in the LMVR and a summary is provided in Table 5.3.

Table 5.3: Model Performance Standards

Model Aspect	**Criterion**	**Acceptability Guidelines**	**Actual Model Performance**
Highway Calibration /Validation 2024	Screenline Flows within 5% of observed Screenline Flows with GEH of less than 4	All or nearly all screenlines	Calibration: ▪ For AM Peak, 93% screenlines pass the TAG criteria and all screenline pass the GEH criteria. ▪ For IP Peak, 93% screenlines pass the TAG criteria and all screenline pass the GEH criteria. ▪ For PM Peak, 86% screenlines pass the TAG criteria and all screenline pass the GEH criteria. Validation: ▪ For AM Peak, 86% screenlines pass the TAG criteria and all screenline pass the GEH criteria. ▪ For IP Peak, 93% screenlines pass the TAG criteria and all screenline pass the GEH criteria. ▪ For PM Peak, 93% screenlines pass the TAG criteria and all screenline pass the GEH criteria
	Link Calibration - Individual flows within 100 veh/hr of counts for flows less than 700 veh/hr	> 85% of cases	For all time periods, the link total and car flows pass the flow difference and GEH criteria.
	Individual flows within 15% of counts for flows from 700 veh/hr to 2,700 veh/hr	> 85% of cases	

	Individual flows within 400 veh/hr of counts for flows more than 2,700 veh/hr	> 85% of cases	
	GEH < 5 for individual flows	> 85% of cases	
	Journey Times within 15% (or one minute if higher)	> 85% of Routes	Criteria met for 90% of journey time routes in the AM, 88% in the IP and 96% in the PM time period.
VDM Realism Testing - 2024	Fuel Cost Elasticity	-0.35 to -0.15	▪ All peak average elasticities between -0.24 and -0.33
	Car Journey Time Elasticity	No stronger than -0.75	▪ All elasticities weaker than -0.75 except for IP and PM peak for Other.
	PT Main Mode Fare Elasticity	-0.9 to -0.2	▪ All peak and mode elasticities between -0.9 and -0.2
	Bus Fare Elasticity	-0.9 to -0.35	▪ Bus response within the target range.
Bus Network -2019	Journey Times within 15% (or one minute if higher)	> 85% of Routes	▪ AM Peak – 88% ▪ Inter-peak – 85% ▪ PM Peak – 85%
Bus Prior Matrix Calibration -2019	Link Flows within 25% of the counts, except where observed hourly flows are particularly low (less than 150 passengers per hour).	> 85% of Links	▪ AM Peak – 61% ▪ Interpeak – 71% ▪ PM Peak – 75% Links GEH > 5: ▪ AM Peak – 46% ▪ Interpeak – 71% ▪ PM Peak – 57%
	City Centre Cordon within 15% of the counts.		Interpeak and PM Peak Inbound to Preston are within 15% of observed, with AM Peak (-21%) failing to meet the criteria. No period Outbound is within 15% of observed with AM Peak (-29%), Interpeak (-17%) and

			PM Peak (-41%) failing to meet the criteria.
	Sector Boardings within 25% of the counts, except where observed hourly flows are particularly low (less than 150 passengers per hour).	> 85% of Sectors	▪ AM Peak – 77% ▪ Interpeak – 92% ▪ PM Peak – 92% Sector GEH > 5: ▪ AM Peak – 65% ▪ Interpeak – 58% ▪ PM Peak – 77%
Bus Matrix Estimation - 2019	Matrix Zonal Cell Values	Slope within 0.98 and 1.02 Intercept near zero R2 in excess of 0.95	Slope between 0.88 and 0.96, Intercepts near zero, and R^2 between 0.91 and 0.93.
	Matrix Zone Trip Ends	Slope within 0.99 and 1.01 Intercept near zero R2 in excess of 0.98	Slope between 0.92 and 0.99, Intercepts near zero, and R^2 between 0.97 and 0.99.
	Trip Length Distribution	Means within 5% Standard deviations within 5%	Means within 8%. Standard deviation within 10%
	Sector-to-Sector Difference GEH < 5	All or nearly all sectors	99% of all sector-to-sector movements have a GEH of less than 5 in all time periods.
Bus Final Matrix Calibration -2019	Link Flows within 25% of the counts, except where observed hourly flows are particularly low (less than 150 passengers per hour).	> 85% of Links	▪ AM Peak – 79% ▪ Interpeak – 93% ▪ PM Peak – 82% Links GEH > 5: ▪ AM Peak – 71% ▪ Interpeak – 93% ▪ PM Peak – 75%
	City Centre Cordon within 15% of the counts.	All or nearly all cordons	AM Peak, Interpeak and PM Peak Inbound to Preston are all within 15% of observed. AM Peak and Interpeak Outbound are within 15% of observed with PM Peak (-25%) failing to meet the criteria.
	Sector Boardings within 25% of the counts,	> 85% of Sectors	Individua Sector:

	except where observed hourly flows are particularly low (less than 150 passengers per hour).		▪ AM Peak – 76% ▪ Interpeak – 76% ▪ PM Peak – 95%
Rail -2019	Station entry / exits 25% of the counts, except where observed hourly flows are particularly low (less than 150 passengers per hour).	> 85% of Stations	Stations > 150 Observations - 93% All Links GEH > 5 – 89%

5.6 Forecast Scenarios

The updated 2024 base year model has been utilised to develop future year models, to assess the impact of the forecast scenario demand and transport infrastructure options. The future year models are developed for two forecast year of 2031 and 2041 when the local plan will be fully delivered. Following forecast demand scenarios have been considered, namely:

- Reference Case without Local Plan (RC): This scenario includes forecast demand from all committed developments within the three districts, encompassing those under construction or with extant permissions. The rest of the study area is adjusted by TEMPro background growth, and the highway network includes all committed schemes as summarized in Section 5.8);
- Local Plan Scenario (LPS): This scenario specifically models demand generated by new local plan development sites in addition to all developments included in the Reference Case. The rest of the areas are adjusted by TEMPro, with no changes to the highway network compared to the Reference Case scenario.

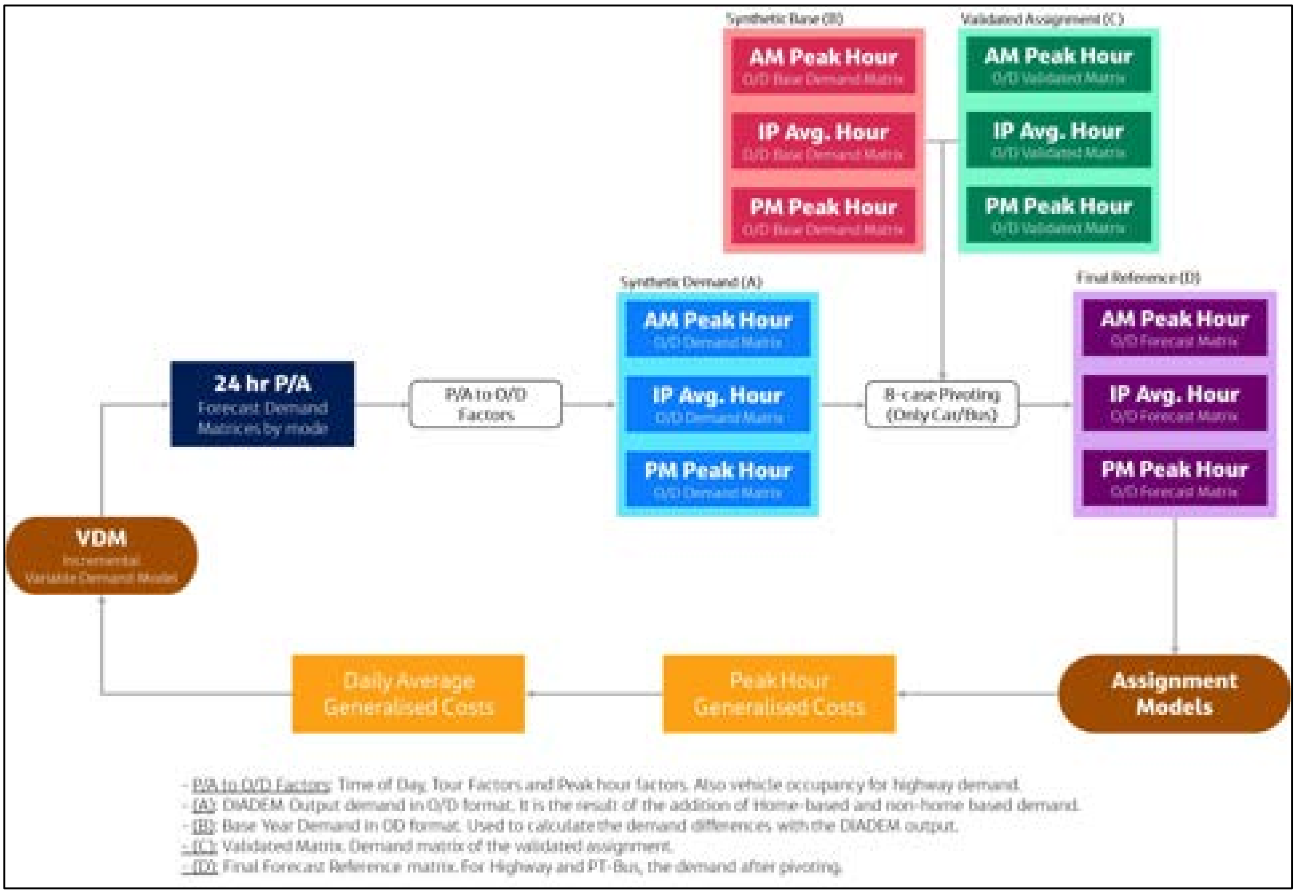
This report details the approach adopted to produce these two scenarios above and summarises the analysis of their respective traffic impacts on the future year network. Details of the mitigation scenarios will reported separately in Stage 2 reporting.

5.7 Variable Demand Approach

In order to consider behavioural changes resulting from variation in travel costs, full Variable Demand Model (VDM) functionality has been employed in the Do Minimum forecasts in accordance with the DfT's Transport Appraisal Guidance (TAG) Unit M2.

The demand model operates at a 24-hour Production/Attraction level utilising an incremental logit model that responds to changes in daily generalised costs. Such costs are obtained from highway and public transport assignment models and then converted to the daily weighted average costs taking account of the time period and direction of journey prior to the demand modelling. As shown in Figure 5.6, new assignment OD matrices are calculated using the 24-hour demand that was obtained in the previous step, and new costs are extracted. This process is repeated iteratively until convergence is reached i.e. when the difference in demand and cost between successive iterations are sufficiently small.

Figure 5.6 Relationship between Demand Model and Assignment Models

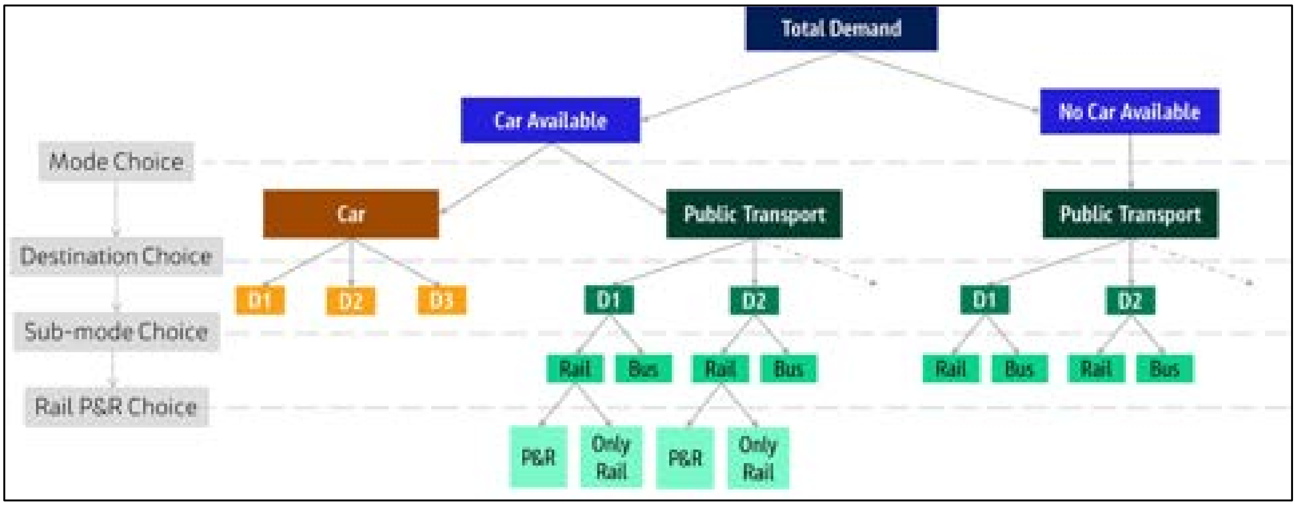


The demand model has been implemented in EMME following Appendix D of TAG Unit M2.1. This process involved adjusting the model parameters, in accordance with the values outlined in TAG Unit M2 until plausible results were produced from the realism testing.

The upgraded CLTM is built to recreate the travel behaviour in terms of mode choice and trip distribution in the study area. The trip distribution response considers the attractiveness of alternative destinations whereas the mode choice response considers demand switching between car and public transport. Since mode choice depends on whether a traveller has a car available for the journey, the model also distinguishes between households that have a car available and those that do not. Under the public transport choice model there is also a sub-mode choice between rail and bus. Additionally, for the car-available rail trips, there is a sub-mode choice for the rail Park-and-Ride and rail only.

A schematic of the structure of the mode choice model and the hierarchy of responses is presented in Figure 5.7.

Figure 5.7 Mode Choice Structure



The following journey purpose segmentation is used in the CLTM demand model:

- Home-Based Work (HBW)
- Home-Based Employer's Business (HBEB)
- Home-Based Other (HBO)
- Non-Home-Based Employer's Business (NHBEB)
- Non-Home-Based Other (NHBO)

These journey purposes are used across car, public transport car available, and public transport no car available modes. Public transport is further segmented into Bus and Rail (including rail P&R). In line with TAG guidance, Home-Based Work purpose trips are doubly constrained within the variable demand model, while the other purpose trips are singly (Production) constrained.

Additional details on the VDM is included in the Base Year Update Report (Appendix A).

5.8 Forecast Supply

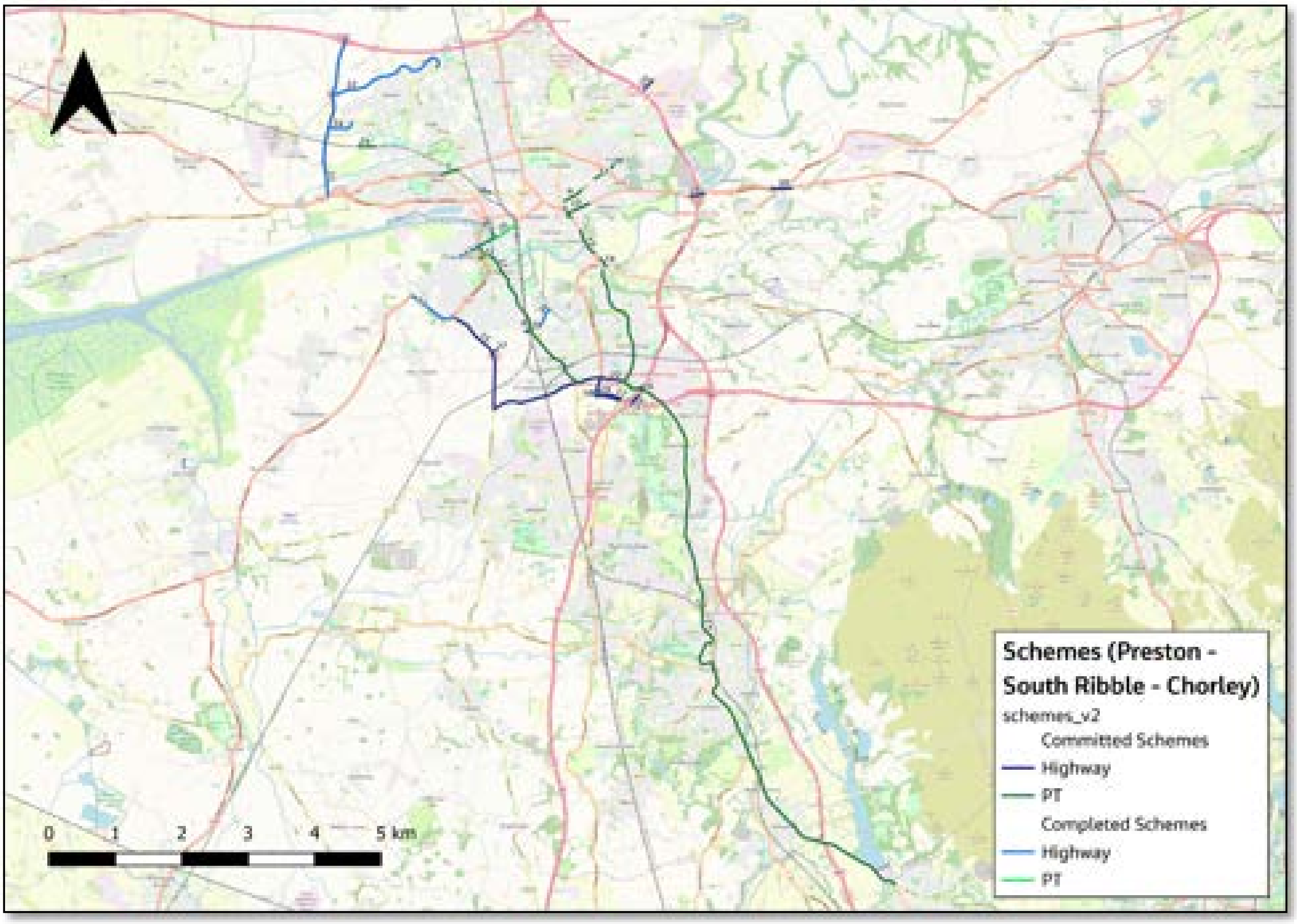
As part of the forecasting process, networks representing the supply and cost of transport in future years are required as a basis to assess the impact of the proposed Local Plan developments. Future year transport supply and costs relate to changes in the transport networks, such as new transport infrastructure or changes in tolls or fares. A highway network has been produced for the Reference and Local Plan scenario and this network represents the unmitigated Local Plan scenario.

Planned committed schemes shown in Table 5-4 and Figure 5.8 are coded in the network, based on information provided by LCC, NH and local plan developers.

Table 5-4: Committed Schemes

Reference number	Description	Type	Stage
1	Northbound bus lane on Preston Road	PT	Committed
2	A6 SB bus lane from Harwood Rbt to Euxton Rbt	PT	Committed
3	Bus Gate and/or Traffic signals at Park Road/Preston Road	PT	Committed
4	Parking and waiting restrictions	PT	Committed
5	A6/ Service 125 corridor bus stop review and bus priority	PT	Committed
6	A59 New Hall Lane and junction of New Hall Lane/ Stanley Street/ London Road, Preston	PT	Committed
7	Bus Service Improvement Plan Blackpool Road	PT	Committed
8	Bus Service Improvement Plan Fylde Rd/Turketh Brow	PT	Committed
9	Bus Service Improvement Plan Ribbleton Lane	PT	Committed
10	Bus Service Improvement Plan New Hall Lane	PT	Committed
11	Bus Service Improvement Plan Ribbleton Lane	PT	Committed
12	Bus Service Improvement Plan Ribbleton Lane	PT	Committed
13	Bus Service Improvement Plan London Road	PT	Committed
14	Bus Service Improvement Plan Victoria Road	PT	Committed
15	A582 improvements and Tech pack	Highway	Committed
16	Lancashire Central Improvements	Highway	Committed
17	Lancashire Central Improvements	Highway	Committed
18	Lancashire Central Improvements	Highway	Committed
19	Lancashire Central Improvements	Highway	Committed
20	Lancashire Central Improvements	Highway	Committed
21	B5254 Improvements	PT	Committed
22	Penwortham Triangle Signals	PT	Committed
23	Fishergate Hill Active Travel Components	PT	Committed
24	Cottam Parkway Station	PT	Committed
25	Roman Farm mitigation scheme at M6 J31a	Highway	Committed
26	Samlesbury LDO mitigation schemes	Highway	Committed
27	Pickerings Farm access to A582	Highway	Committed
28	Pickerings Farm access to Leyland Road	Highway	Committed
29	The southern part of M6 J29	Highway	Committed
30	Samlesbury LDO mitigation schemes	Highway	Committed

Figure 5.8 Proposed Local Transport Schemes



The following approach was adopted for coding the highway/public transport network for the unmitigated scenario:

- The coding assumptions (Speed Flow Curves, link capacities etc.) is consistent with the Central Lancashire Traffic Model coding manual used to develop the base model network;
- Numbering for new nodes is consistent with the base model, i.e., based on the local authority in which the node is located;
- Wider signal timings are consistent with the base model, i.e., they have not been optimized to accommodate forecast changes as this scenario looks for capturing the worst-case scenario. This will be done in the next Stage as part of the Do Something mitigation options; and
- The coding assumptions (link type, stop type, naming conventions for new stops and services, etc.) are consistent with the coding in the base model.

Bus and rail network in the forecast Year is the same as in the base year network. During each iteration of the VDM, actual bus travel times on link get updated based on SATURN highway model link travel times: if highway travel time is higher than bus timetable travel time on particular link, it is used instead. This ensures that buses are getting delays proportional to traffic levels present in SATURN model. On links where bus interventions are planned, such as bus lanes or bus priority intelligent signals, it is assumed that on these links bus services would operate without delays that come from SATURN models. The only change to the bus route is a minor adjustment, rerouting the service from Hartington Rd to Strand Rd (Preston) to accommodate the bus interventions proposed as part of the A582 SRWD scheme.

5.9 Forecast Generalised Cost

5.9.0. Highway Model

Highway trip costs consist of time, distance and toll charges. These costs are combined, into a common unit, and known as 'generalised costs', which form the basis of route choices within highway assignment models. Non-time costs are converted into generalised minutes with the use of assumed Values of Time and (VOT) and Vehicle Operating Costs (VOC), which vary by journey purpose and also by forecast year to represent changes in fuel costs and income.

The values of time (VOT) used in the present year model were taken from the latest available TAG data book (May 2024, v1.23) at the time of model development. The values are provided in Table 5-5.

Calculations were undertaken using perceived values of time and distance (i.e. with VAT for non-business and without VAT for business trips), and as per guidance and processes advised by both TAG and Highways England TPG, using Highways England's VOT/VOC calculation worksheet.

In line with TAG unit M3.1, the HGV VOT were doubled to better take into account the driver's and employer's VOT.

The value of time is projected to increase in future years (Figure 5.9), while vehicle operating costs are expected to decrease (Figure 5.10).

Table 5-5. Generalised Cost Parameters for Model Years, in 2010 prices

Time period	User class		Value of time [p/min]			Vehicle operating cost [p/km]		
			2024	2031	2041	2024	2031	2041
AM	UC1	Commute	20.89	23.04	26.83	6.47	5.02	4.05
	UC2	Business	31.15	34.36	40.00	13.00	10.45	8.82
	UC3	Other	14.41	15.90	18.51	6.47	5.02	4.05
	UC4	LGV	22.58	24.90	28.99	13.72	12.13	10.30
	UC5	HGV	44.97	49.60	57.75	36.88	32.77	30.14
IP	UC1	Commute	21.23	23.42	27.26	6.31	4.93	3.98
	UC2	Business	31.92	35.21	40.99	12.67	10.18	8.57
	UC3	Other	15.35	16.94	19.72	6.31	4.93	3.98

	UC4	LGV	22.58	24.90	28.99	13.69	12.10	10.27
	UC5	HGV	44.97	49.60	57.75	36.36	32.30	29.70
PM	UC1	Commute	20.96	23.12	26.92	6.40	4.98	4.02
	UC2	Business	31.60	34.86	40.58	12.86	10.33	8.71
	UC3	Other	15.09	16.65	19.38	6.40	4.98	4.02
	UC4	LGV	22.58	24.90	28.99	13.74	12.15	10.31
	UC5	HGV	44.97	49.60	57.75	36.56	32.48	29.88

Figure 5.9 Value of time, AM time period

Figure 5.10 Vehicle Operating cost, AM time period

5.9.1. Public Transport Models

Within the public transport models the generalised costs (GCs) are calculated in terms of generalised minutes using the PT model time and distance skims as described below.

$$PTGeneralisedCost_{minutes} = W1 * Walktime + W2 * WaitTime + W3 * Invehicle\,Time + BoadingPenalty$$

Each component can be given its own weight or coefficient in order to convert them to common units and to ensure that the relative importance of each component for passengers is reflected. The components are:

- In-vehicle time.
- Wait time (time spent waiting for services).
- Walk time (time spent walking on-street, PT and zone access and egress).
- Boarding penalty (penalty associate with inconvenience of interchanging.

The parameter weightings used in the bus and rail assignment model are specified in Table 5-6.

Table 5-6: Waiting Time Weights and Boarding Penalty Factors

Mode	Walk time weight (W1)	Waiting time weight (W2)	Boarding time penalty
Bus	2.0	2.0	5.0
Rail	1.5	2.0	10.0

The boarding penalty is consistent with the base model, which was defined at a node level and set to 5 for bus and 10 for rail during the calibration process to better represent the inconvenience of transfer and to minimise an excessive/unnecessary number of transfers in places with a high transit frequency such as major roads or transit corridors.

The values of time (VOT) used in the present year model were taken from the latest available TAG data book (May 2024, v1.23) at the time of model development. The values are provided in Table 5-6.

Table 5-7: Value of Time for Public Transport Modes, in 2010 prices

Scenario	Rail			Bus		
Year	Business	Commute	Other	Business	Commute	Other
2024	54.09	18.45	8.42	18.58	18.45	8.42
2031	60.83	20.75	9.47	20.9	20.75	9.47
2041	70.92	24.19	11.04	24.37	24.19	11.04

5.9.2. Public Transport Fare

For the Public Transport assignment, and following guidance from TAG Unit M3.2, Public Transport fares were not included as part of the assignment as they are not thought to sufficiently affect route choice in the CLTM.

Matrices of fares were included in the Variable Demand Model and added to the generalised cost as they will be an important influence on mode choice for some trips. The following sections outline the process for deriving the rail and bus fares

Public transport fares are assumed to rise in line with the retail price index over the forecast period and as such were treated as being constant in real terms. As per TAG unitA5-3 Rail Appraisal, demand and revenue forecasts should be based on current fares policy (usually a nominal increase of RPI+X%). Nominal fare increases should be converted to real terms using the GDP deflator. TAG Data Book Table A5.3.1 provides the relevant GDP deflator and RPI series.

Calculation of fare increase factor assumes growth from base year scenario, which is derived GDP deflator and Real Price Index (RPI). As per TAG, for Rail RPI+X% (1%) is used to forecast fare growth. Fare factor for Forecast Year (FY) can be calculated using formula:

$$FareGrowthFactor_{FY} = \frac{\prod_{i=2010}^{FY} 1 + \frac{GDP\_deflator\_growth_i}{100}}{\prod_{i=2010}^{FY} 1 + \frac{RPI\_growth_i + X}{100}} \%$$

Calculated factors are presented in Figure 4-11.

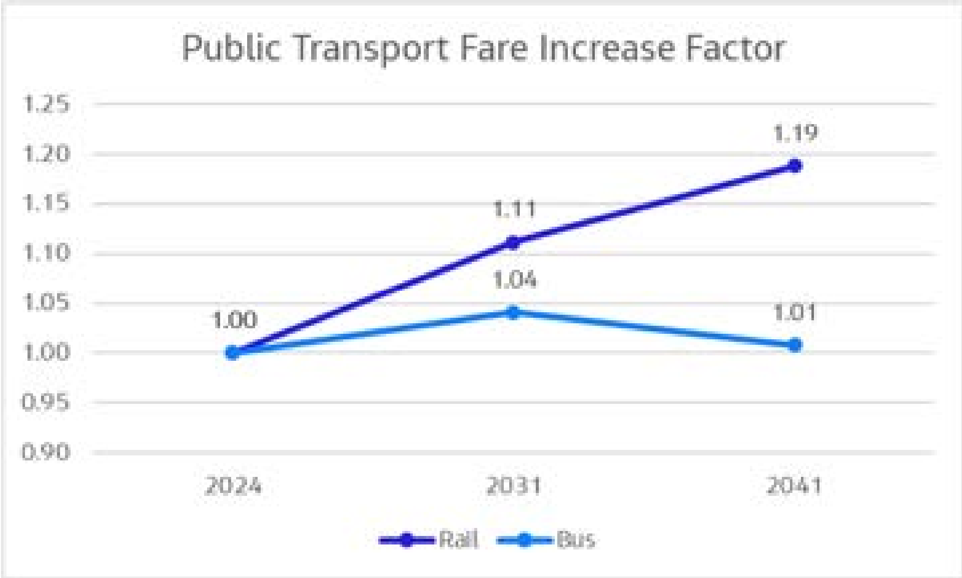


Figure 5.11 Public Transport Fare Increase Factor

5.10 Uncertainty Log

TAG Unit M-4 recommends the production of an Uncertainty Log (UL) to summarise the local planning assumptions in relation to the nature, timing, size and other details of the future developments. The uncertainty log used for the Local Plan was developed in 2024. It contains the above information in relation to both housing and employment development sites within the three districts.

The development growth which makes up part of the plan, but delivered between 2019 and 2024, is already included within the base model. Updated information provided by CLLP as of August 2024 includes developments that are built, in construction and with planning permission between 2019-2024.

An updated list of Local Plan sites has been made available following the Employment Land Study undertaken on behalf of CLLP. The sites used make up the total employment growth between 2024 and 2041. Where job numbers were not available, an estimated value has been calculated using job density assumptions that were derived from the Housing and Communities Agency's 'Employment Density Guide' (Third Edition, 2015) and set out in Table 5-8.

Each development was allocated either an existing model zone or a new zone, based on its size, location and proposed access points. Larger developments were allocated anew zone to provide more realistic trip loading patterns.

Table 5-8. Table of Employment Densities

Use Class	Sub-Category	Sub-Sector	Density (sqm)	Notes
B1a Offices	General Office	Corporate	13	NIA
		Professional Services	12	NIA
		Public Sector	12	NIA
		TMT	11	NIA
		Finance & Insurance	10	NIA
	Call Centres		8	NIA
B1b	R&D Space		40-60	NIA lower densities will be achieved in units with higher provision of shared or communal spaces
B1c	Light Industrial		47	NIA
B2	Industrial & Manufacturing		36	GIA
B8	Storage & Distribution	National Distribution Centre	95	GEA
		Regional Distribution Centre	77	GEA
		'Final Mile' Distribution Centre	70	GEA
Mixed B Class	Small Business Workspace	Incubator	30-60	B1a, B1b – the density will relate to balance between spaces, as the share of B1a increases so too will employment densities.
		Maker Spaces	15-40	B1c, B2, B8 - Difference between 'planned space' density and utilisation due to membership model
		Studio	20-40	B1c, B8
		Co-Working	10-15	B1a - Difference between 'planned space' density and utilisation due to membership model
		Managed Workspace	12-47	B1a, b, c
B8 / Sui Generis	Data Centres	Wholesale	200-950	
		Wholesale Dark Site	440-1,400	
		Co-location Facility	180-540	
A1	Retail	High Street	15-20	NIA
		Foodstore	15-20	NIA
		Retail Warehouse	90	NIA
A2	Finance & Professional Services		16	NIA
A3	Restaurants & Cafes		15-20	NIA
C1	Hotels	Limited Service / Budget	1 per 5 beds	FTE per bed
		Mid-scale	1 per 3 beds	FTE per bed
		Upscale	1 per 2 beds	FTE per bed
		Luxury	1 per 1 bed	FTE per bed
D2	Fitness Centres	Budget	100	GIA
		Mid Market	65	GIA – both types tend to generate between 40-50 jobs per gym
		Family		
	Cinema		200	GIA
	Visitor & Cultural Attractions		30-300	The diversity of the cultural attraction sector means a very wide range exists
	Amusement & Entertainment Centres		70	Potential range of 20-100sqm

Housing and employment development sites planned within the three districts is shown in Figure 5.12. The housing and jobs for the local plan summarised in Table 5-9 and Table 5-10 .

The log of residential and employment sites (including the employment portion of mixed use sites) modelled can be found in Appendix B.

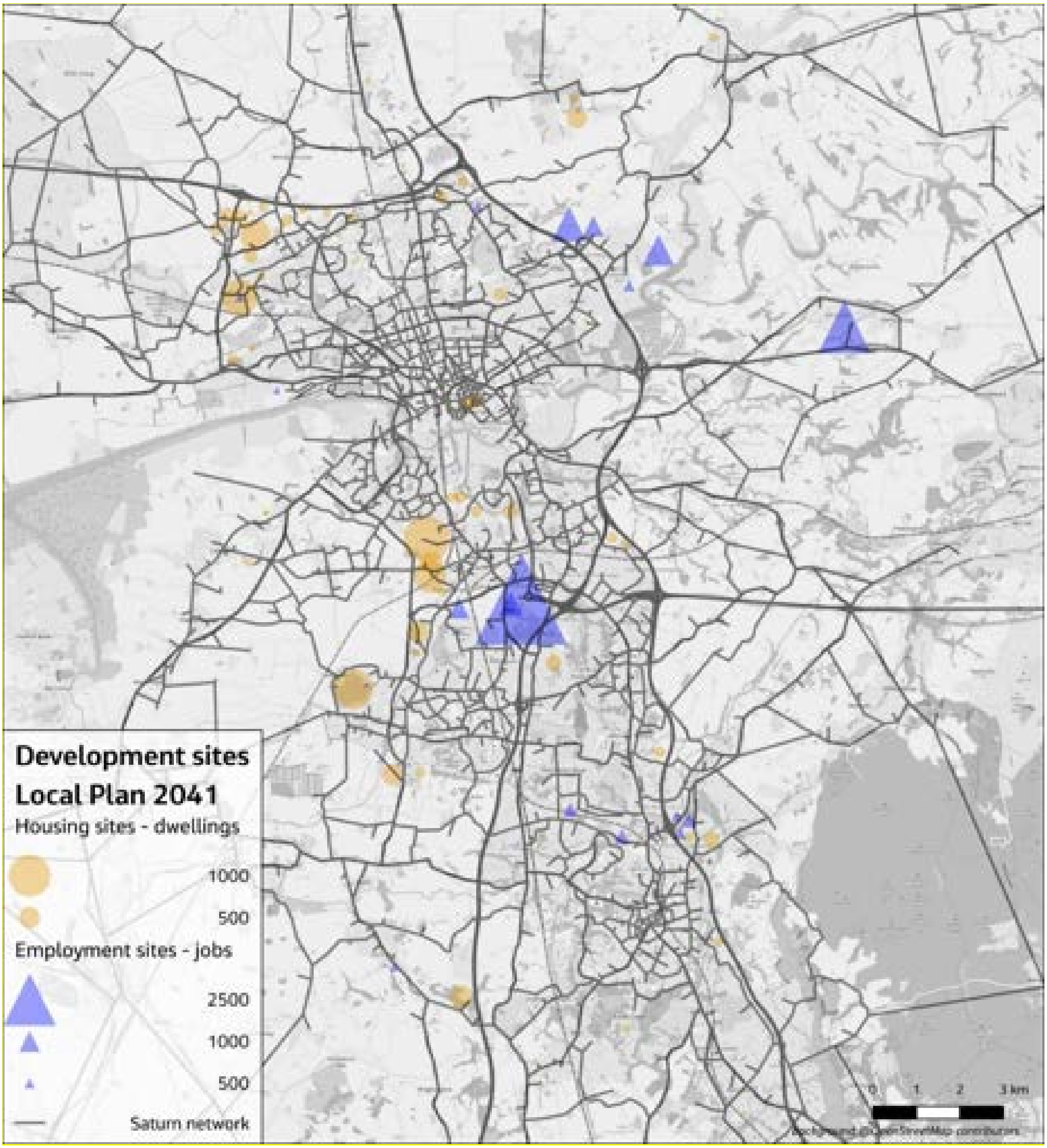
Table 5-9. Number of Proposed Dwellings

Year	Scenario	Local		
		Chorley	Preston	South Ribble
2031	Reference	1,711	3,049	1,806
	Local Plan	3,507	3,281	2,624
2041	Reference	2,074	5,098	4,854
	Local Plan	5,043	11,600	8,774

Table 5-10. Number of Proposed Jobs

Year	Scenario	Chorley	Preston	South Ribble
2031	Reference	3,042	2,195	1,075
	Local Plan	4,658	3,029	2,163
2041	Reference	3,070	4,155	8,710
	Local Plan	4,686	7,624	9,798

Figure 5.12 Development Sites, Local Plan 2041



5.11 Local Plan Growth Cap

In model forecasting, the overall cap on growth of housing and employment (which subsequently informs the growth in modelled traffic) is usually provided by the DfT through the National Trip End Model (NTEM) dataset and extracted using the DfT TEMPro software. This dataset provides growth rates for any given year, based on housing growth, increases in job numbers and demographic changes at a District/Borough level and is a recognised source of data for the purposes of producing forecast transport models of this nature. In essence, any known committed developments, plus adopted Local Plan developments are included in neighbouring authorities. The growth is then compared to NTEM, within these areas and any additional growth then added on top, such that the growth matches that included within NTEM. This is a standard way of capping growth when forecasting.

The 2024 to 2031 and 2041 growth figures from NTEM 8.0, equivalent to the Local Plan period modelled, are shown in Figure 5.13 through Figure 5.18.

Figure 5.13 Modelled growth in residential sites 2024-2041 – Chorley

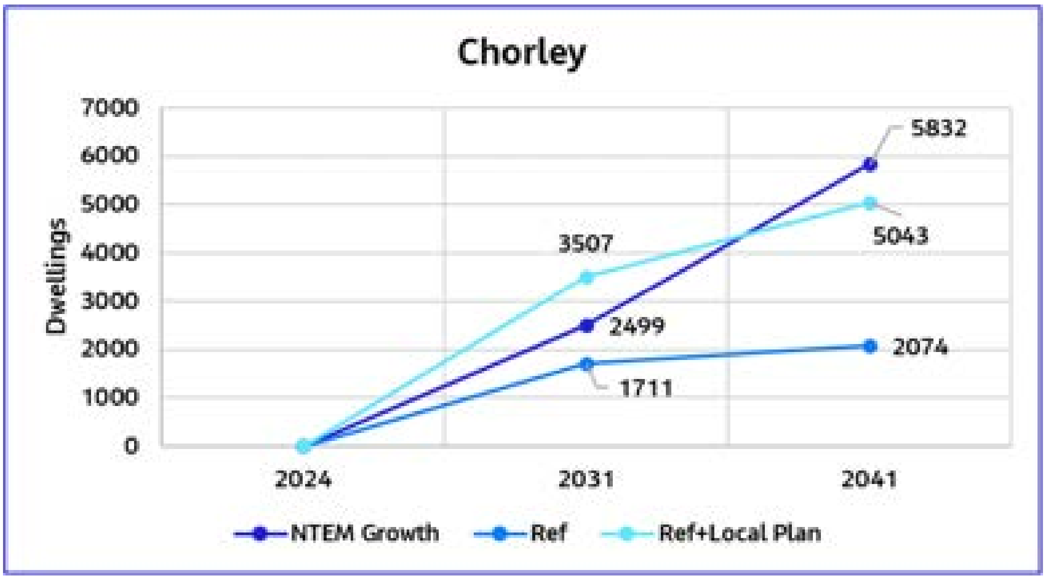


Figure 5.14 Modelled growth in residential sites 2024-2041 – Preston

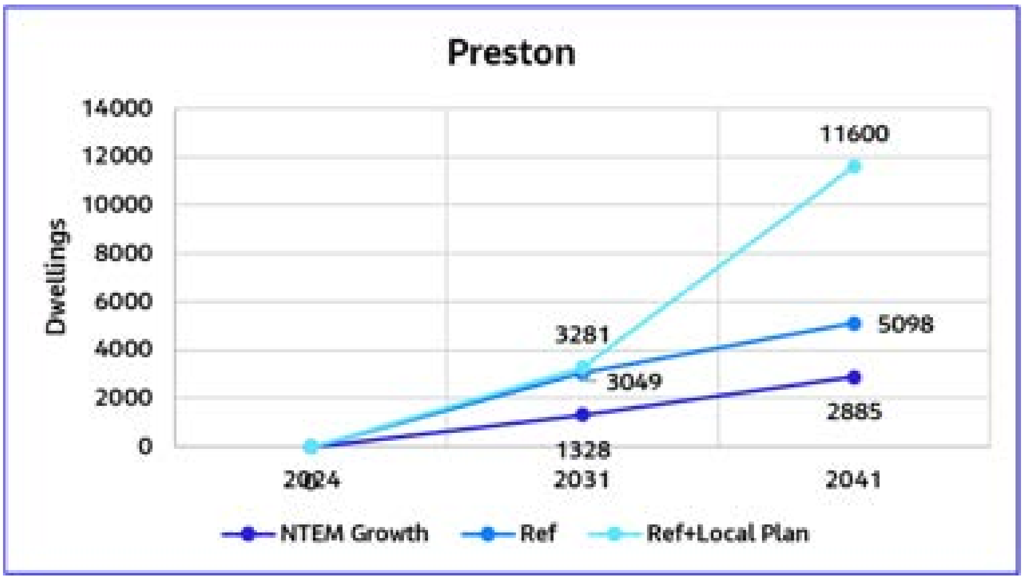


Figure 5.15 Modelled growth in residential sites 2024-2041 – South Ribble

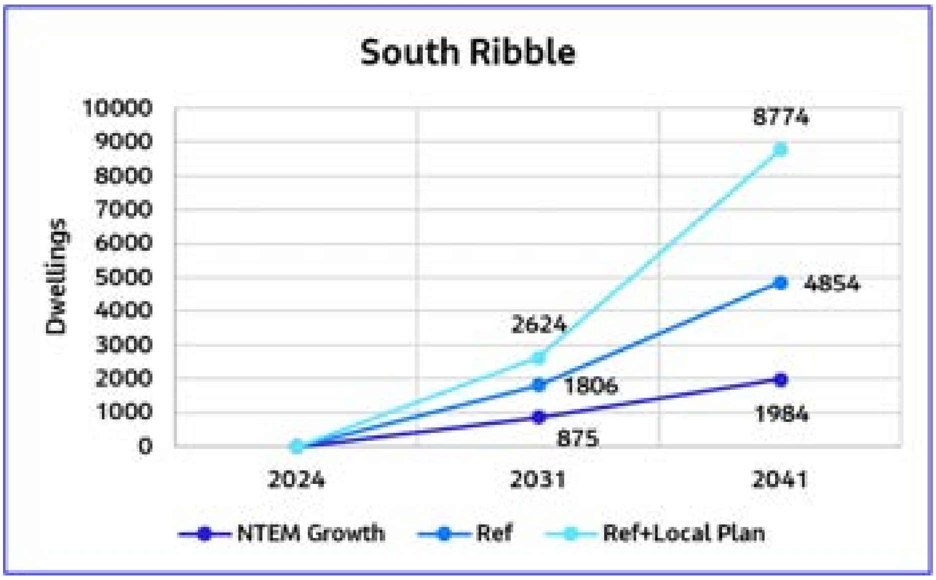


Figure 5.16 Modelled growth in employment 2024-2041 – Chorley

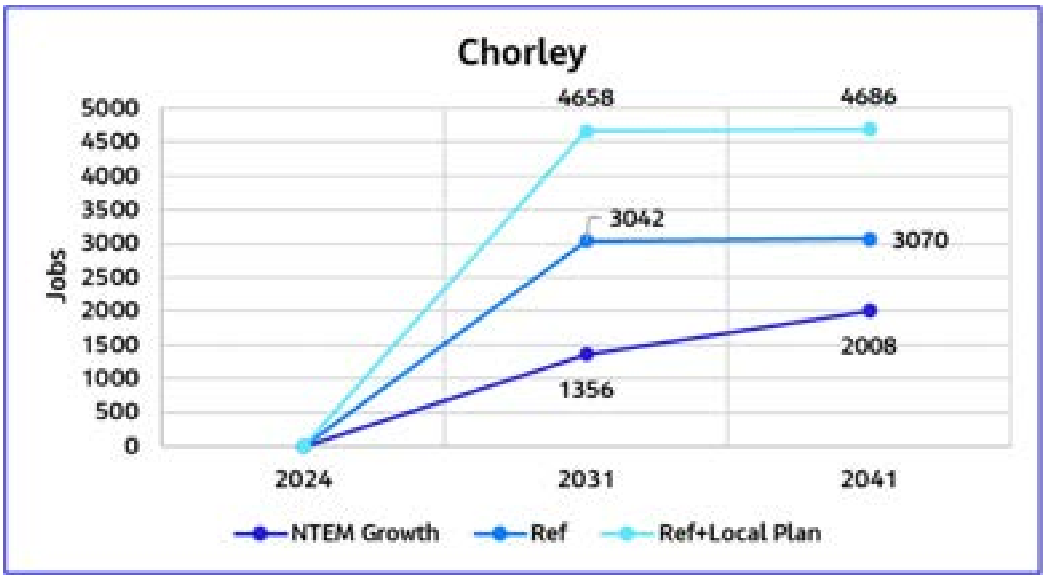


Figure 5.17 Modelled growth in employment 2024-2041 – Preston

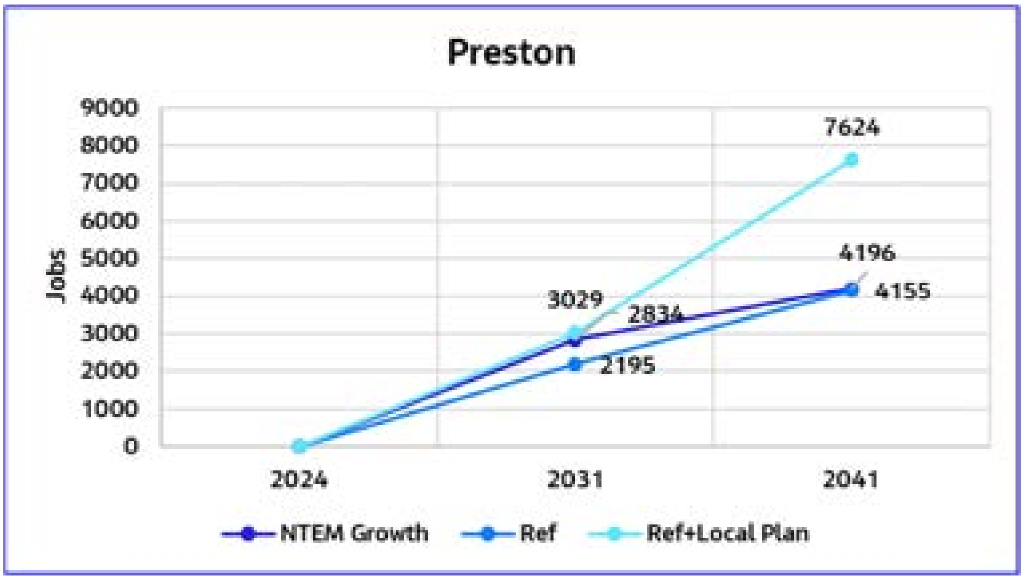


Figure 5.18 Modelled growth in employment 2024-2041 – South Ribble

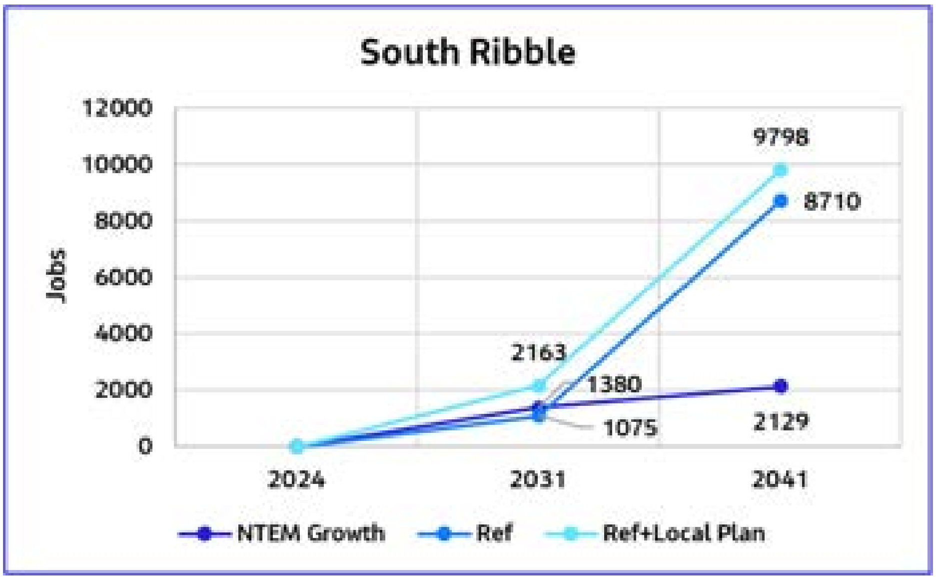


Table 5-11 and Table 5-12, presents the comparison of Local Plan growth with the NTEM growth. With an exception of Chorley housing, the NTEM figures are significantly lower than the Local Plan target for housing and jobs (2024-2041) which if applied would give a reduction in the modelled quantum of growth across the three districts and would not fully represent the delivery of the Local Plan. The Local Plan assumes that all development sites will be built out by the end of the plan period which could be viewed as optimistic, whereas NTEM could be seen as a more realistic forecast.

Considering the difference, it was agreed with TSWG that for the purpose of Local Plan testing, it is inappropriate to use the NTEM forecast for growth in households/jobs as a cap, as it would mean that areas of the model without specific development sites would compensate by seeing a large reduction in growth which is not expected. Therefore, a cap has been set that matches the total households/jobs for the Local Plan in cases where it exceeds the NTEM growth. Where NTEM projections exceed the local plan growth, factors have been applied to ensure overall trip growth across the county matches NTEM assumptions for trip growth.

Table 5-11. NTEM Forecast Growth in Housing

Year	Scenario	NTEM Growth			Growth for Scenario			Scenario - NTEM		
		Chorley	Preston	South Ribble	Chorley	Preston	South Ribble	Chorley	Preston	South Ribble
2031	Reference	2499	1328	875	1711	3049	1806	-788	1721	931
	Local Plan				3507	3281	2624	1008	1953	1749
2041	Reference	5832	2885	1984	2074	5098	4854	-3758	2213	2870
	Local Plan				5043	11600	8774	-789	8715	6790

Table 5-12. NTEM Forecast Growth in Employment

Year	Scenario	NTEM Growth			Growth for Scenario			Scenario - NTEM		
		Chorley	Preston	South Ribble	Chorley	Preston	South Ribble	Chorley	Preston	South Ribble
2031	Reference	1356	2834	1380	3042	2195	1075	1686	-639	-305
	Local Plan				4658	3029	2163	3302	194	783
2041	Reference	2008	4196	2129	3070	4155	8710	1062	-41	6581
	Local Plan				4686	7624	9798	2678	3428	7669

5.12 Growth outside the Central Lancashire Area

For areas outside Central Lancashire Area, future demand growth has been based on national forecasts. Given the close interaction with the neighbouring districts, more detailed site specifics have been modelled. The overall housing and employment growth (24 Hr PA) applied for rest of the area is shown in Table 5-13.

Table 5-13. NTEM growth in Rest of the Area

Mode	Area	Year	Production					Attraction				
			HBW	HBEB	NHBEB	HBO	NHBO	HBW	HBEB	NHBEB	HBO	NHBO
Car (Driver and Passenger)	GB	2031	1.034	1.041	1.038	1.032	1.033	1.034	1.041	1.038	1.032	1.033
		2041	1.056	1.072	1.066	1.067	1.064	1.056	1.072	1.066	1.067	1.064
	Greater Manchester	2031	1.044	1.051	1.039	1.040	1.035	1.036	1.041	1.039	1.036	1.036
		2041	1.078	1.094	1.069	1.088	1.072	1.061	1.075	1.070	1.079	1.072
	Lancashire	2031	1.037	1.044	1.039	1.027	1.029	1.036	1.043	1.039	1.027	1.029
		2041	1.060	1.078	1.068	1.058	1.057	1.060	1.078	1.068	1.057	1.057
	Merseyside	2031	1.042	1.050	1.043	1.034	1.036	1.040	1.047	1.043	1.034	1.035
		2041	1.074	1.091	1.077	1.075	1.072	1.069	1.085	1.077	1.075	1.072
	NW	2031	1.037	1.043	1.040	1.032	1.033	1.037	1.043	1.040	1.032	1.033

		2041	1.061	1.076	1.069	1.069	1.065	1.061	1.076	1.069	1.069	1.065
Bus	GB	2031	0.985	0.976	0.995	0.980	0.993	0.985	0.976	0.995	0.980	0.993
		2041	0.938	0.921	0.966	0.953	0.978	0.938	0.921	0.966	0.953	0.978
	Greater Manchester	2031	0.991	0.988	0.993	0.984	0.993	0.987	0.982	0.994	0.984	0.994
		2041	0.949	0.941	0.962	0.963	0.979	0.942	0.931	0.964	0.962	0.982
	Lancashire	2031	0.968	0.950	0.981	0.963	0.978	0.967	0.949	0.980	0.962	0.978
		2041	0.900	0.862	0.936	0.919	0.951	0.900	0.862	0.935	0.917	0.950
	Merseyside	2031	0.978	0.969	0.986	0.970	0.985	0.979	0.969	0.986	0.973	0.985
		2041	0.930	0.910	0.948	0.938	0.965	0.930	0.909	0.950	0.944	0.966
	NW	2031	0.981	0.971	0.989	0.975	0.987	0.981	0.971	0.989	0.975	0.987
		2041	0.931	0.909	0.954	0.946	0.969	0.931	0.909	0.954	0.946	0.969

Additionally, factors for non-responsive variable demand segments are presented below in Table 5-14.

Table 5-14. NTEM growth for non-responsive demand segments

Mode	Area	Year	Origin			Destination		
			HBW	HBEB / NHBEB	HBO / NHBO	HBW	HBEB / NHBEB	HBO / NHBO
Car (Driver and Passenger)	GB	2031	1.034	1.039	1.032	1.034	1.039	1.032
		2041	1.056	1.069	1.067	1.056	1.069	1.067
	Greater Manchester	2031	1.040	1.043	1.037	1.040	1.043	1.038
		2041	1.071	1.078	1.081	1.070	1.078	1.082
	Lancashire	2031	1.036	1.041	1.028	1.036	1.041	1.028
		2041	1.060	1.073	1.057	1.060	1.073	1.057
	Merseyside	2031	1.041	1.046	1.035	1.041	1.046	1.035
		2041	1.072	1.082	1.075	1.072	1.082	1.075
	NW	2031	1.036	1.041	1.032	1.036	1.041	1.032
		2041	1.061	1.072	1.068	1.061	1.072	1.068
Bus	GB	2031	0.984	0.982	0.981	0.984	0.982	0.981
		2041	0.938	0.936	0.955	0.938	0.936	0.955
	Greater Manchester	2031	0.989	0.987	0.985	0.989	0.988	0.985
		2041	0.946	0.945	0.963	0.945	0.946	0.964
	Lancashire	2031	0.967	0.960	0.964	0.967	0.960	0.963
		2041	0.901	0.889	0.920	0.901	0.888	0.920
	Merseyside	2031	0.978	0.974	0.973	0.978	0.974	0.973
		2041	0.930	0.924	0.942	0.930	0.924	0.942
	NW	2031	0.981	0.977	0.976	0.981	0.977	0.976
		2041	0.931	0.925	0.948	0.931	0.925	0.948

5.13 Trip Generation

Trip end totals for each proposed development were estimated using person trip rates (rates per dwelling and rates per job/GFA) derived from TRICS. The 12-hour OD person trip rates from TRICS were extracted for each defined land use category. Since the demand model uses a 24-hour PA format, the 12-hour OD trip rates were converted to 24-hour OD trip rates using NTEM factors. These 24-hour OD trip rates were then converted to 24-hour PA trip rates using factors derived from NTEM.

The trip rates were then split into various demand segments using the purpose split derived from NTEM for each year and district. This process enabled the calculation of 24-hour Production/Attraction (PA) and Origin/Destination (OD) trips by period for each development based on the quantum of development. Finally the trip rates are factored using the NTEM trend to reflect the forecast year trip rates.

A technical note outlining the methodology used to derive trip rate values for identified future year housing and employment sites within Central Lancashire is included in Appendix C.

Table 5-15 and Table 5-16 provides the 12-hour production and attraction trip rates for housing and employment land uses.

Table 5-15 12 Hr Person Housing Trip Rates

Location	Local Authority	Year	TRICS base year trip rate		Future trip rate - TRICS trend		Future trip rate - NTEM trend	
			Origin	Destination	Origin	Destination	Origin	Destination
Edge of Town	Chorley	2031	3.66	3.54	3.34	3.29	3.61	3.49
		2041	3.66	3.54	2.87	2.93	3.53	3.41
	Preston	2031	3.66	3.54	3.34	3.29	3.61	3.49
		2041	3.66	3.54	2.87	2.93	3.54	3.42
	South Ribble	2031	3.66	3.54	3.34	3.29	3.60	3.48
		2041	3.66	3.54	2.87	2.93	3.52	3.40
Edge of Town Centre	Chorley	2031	4.04	3.70	3.68	3.44	3.97	3.64
		2041	4.04	3.70	3.16	3.06	3.88	3.56
	Preston	2031	4.04	3.70	3.68	3.44	3.98	3.65
		2041	4.04	3.70	3.16	3.06	3.90	3.57
	South Ribble	2031	4.04	3.70	3.68	3.44	3.97	3.64
		2041	4.04	3.70	3.16	3.06	3.87	3.55
Suburban	Chorley	2031	4.02	3.81	3.66	3.54	3.96	3.75
		2041	4.02	3.81	3.15	3.15	3.87	3.67
	Preston	2031	4.02	3.81	3.66	3.54	3.97	3.76
		2041	4.02	3.81	3.15	3.15	3.88	3.68
	South Ribble	2031	4.02	3.81	3.66	3.54	3.95	3.75
		2041	4.02	3.81	3.15	3.15	3.86	3.66
Neighbourhood Centre	Chorley	2031	3.69	3.61	3.36	3.36	3.64	3.56
		2041	3.69	3.61	2.90	2.99	3.55	3.48
	Preston	2031	3.69	3.61	3.36	3.36	3.64	3.56
		2041	3.69	3.61	2.90	2.99	3.57	3.49
	South Ribble	2031	3.69	3.61	3.36	3.36	3.63	3.55
		2041	3.69	3.61	2.90	2.99	3.55	3.47

Table 5-16. 12 Hr Employment Trip Rates

Location	Type	TRICS base and future year trip rate		Future trip rate - NTEM trend					
				Chorley		Preston		South Ribble	
		Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination
Business Park	Edge of Town	1.795	1.596	1.773	1.576	1.767	1.570	1.776	1.579
	Suburban	1.300	1.348	1.284	1.331	1.279	1.327	1.286	1.334
Industrial Estate	Edge of Town	3.584	3.603	3.539	3.557	3.527	3.546	3.545	3.565
	Suburban	3.336	3.351	3.294	3.309	3.283	3.298	3.300	3.315
Industrial Unit	Edge of Town	1.201	1.196	1.185	1.181	1.182	1.177	1.188	1.183
Office	Edge of Town Centre	1.356	1.353	1.339	1.336	1.335	1.332	1.341	1.339
	Edge of Town	0.662	0.653	0.654	0.645	0.652	0.643	0.655	0.647
	Suburban	1.133	1.131	1.119	1.117	1.115	1.113	1.121	1.119
	Town Centre	0.618	0.615	0.610	0.607	0.608	0.605	0.611	0.609
Warehousing	Edge of Town	0.857	0.955	0.846	0.943	0.843	0.940	0.847	0.945
	Free Standing	0.482	0.448	0.476	0.442	0.474	0.441	0.477	0.443

The above trip rates were applied to the quantum of development for each proposed Local Plan site in order to calculate the total trips arriving and departing the allocation sites in each peak hour. Housing trip rates were applied to the number of dwellings, while the employment trip rates relate to number of jobs, which – when not available – was estimated based on Gross Floor Area (GFA) by employment land use class, while the proposed Local Plan allocations only identify total employment site areas.

In instances, where the GFA splits by employment class were not supplied, site areas were converted to GFA on the assumption that total floor area equates to 20-30% of total site area, which was estimated based on nearby similar land use. In cases where more detailed information on specific land use proportions was not available, it was assumed that floor area would be equally split between B1, B2 and B8 classes. The assumptions were consulted with the district council to ensure they were logical.

GV trips were also estimated using the TRICS trip rates and are shown in Table 5-17. These were filtered by location type, LGV/ HGV, type of land use, peak hour (start time for AM and PM peak and average of IP), only England excluding London, and SE.

Table 5-17. TRICS GV Hourly trip rates

Type	Location	Type	AM		IP		PM	
			Origin	Destination	Origin	Destination	Origin	Destination
LGV	Business Park	Edge of Town	0.001	0.012	0.010	0.009	0.007	0.000
		Suburban	0.012	0.012	0.009	0.007	0.004	0.000
	Industrial Estate	Edge of Town	0.070	0.069	0.054	0.057	0.032	0.022
		Suburban	0.149	0.238	0.143	0.136	0.017	0.018
	Industrial Unit	Edge of Town	0.019	0.067	0.045	0.037	0.000	0.000
	Office	Edge of Town Centre	0.000	0.000	0.004	0.004	0.000	0.000
		Edge of Town	0.000	0.003	0.004	0.003	0.000	0.000
		Suburban	0.000	0.000	0.008	0.008	0.000	0.000
		Town Centre	0.000	0.002	0.003	0.002	0.000	0.000
	Warehousing	Edge of Town	0.004	0.002	0.007	0.008	0.007	0.015
		Free Standing	0.008	0.020	0.007	0.006	0.004	0.000
HGV	Business Park	Edge of Town	0.000	0.002	0.004	0.004	0.000	0.000
	Industrial Estate		0.007	0.009	0.013	0.013	0.005	0.002
		Suburban	0.065	0.080	0.019	0.020	0.009	0.000
	Industrial Unit	Edge of Town	0.000	0.000	0.010	0.009	0.000	0.000
	Office	Edge of Town Centre	0.000	0.000	0.000	0.000	0.000	0.000
		Town Centre	0.000	0.000	0.000	0.000	0.000	0.000
	Warehousing	Edge of Town	0.050	0.027	0.038	0.043	0.016	0.036
		Free Standing	0.023	0.028	0.021	0.013	0.011	0.018

5.14 Trip Distribution

An in-house distribution package has been used for trip distribution. It is based on a gravity model that takes the size of developments and the cost of travel between zones into account to distribute the trips from developments. The model is a tri-proportional gravity model, which ensures an adequate match of the trip length distribution of the forecast matrices and the validated Base Year model.

This is a departure from the usual methodology used in the Transport Assessment, where distribution from an adjacent modelling zone with similar land use is used. Use of a gravity model also results in trip distribution between the new zones. With parental zone distribution, there is no trip to or from green field developments and therefore using this method results in no trip between new development zones.

5.15 Forecast Demand – Car

Demand matrices for the proposed local plan developments are produced using TRICS trip rates and a gravity model. Once the trip rates are obtained, total trip ends by trip purpose and forecast years are calculated using the size of the development zones (i.e., total houses and total jobs). For this purpose, the size of housing developments is extracted directly from the Uncertainty Log produced in collaboration with LCC. On the other hand, the number of jobs for each employment site are extracted from the supporting planning application documents (e.g., TA); alternatively, the number of jobs are calculated using the gross Floor Area (GFA) and the corresponding job density as per the Employment Density Guide by the Homes and Communities Agency.

Finally, trip ends by trip purpose are distributed using a tri-proportional gravity model which ensures that the development matrices match the trip length distribution of the validated base year demand.

Outside the Central Lancashire Area, areas are not represented in detail in the model to apply specific development growth and have used the NTEM 8.0 dataset to apply an appropriate factored growth in demand.

Developed scenarios for 2031 and 2041 show increases from the Base Year scenario (Figure 5.19). From all trip purposes, highest increases are predicted for Home-based purposes. This is due to high number of dwellings assumed in the Local Plan and Reference scenarios, and the fact only housing and employment sites of B1 (now E(g)), B2 and B8 uses are modelled.

The matrix totals is summarised in Appendix M.

Figure 5.19 24h Car Trip Matrix Totals

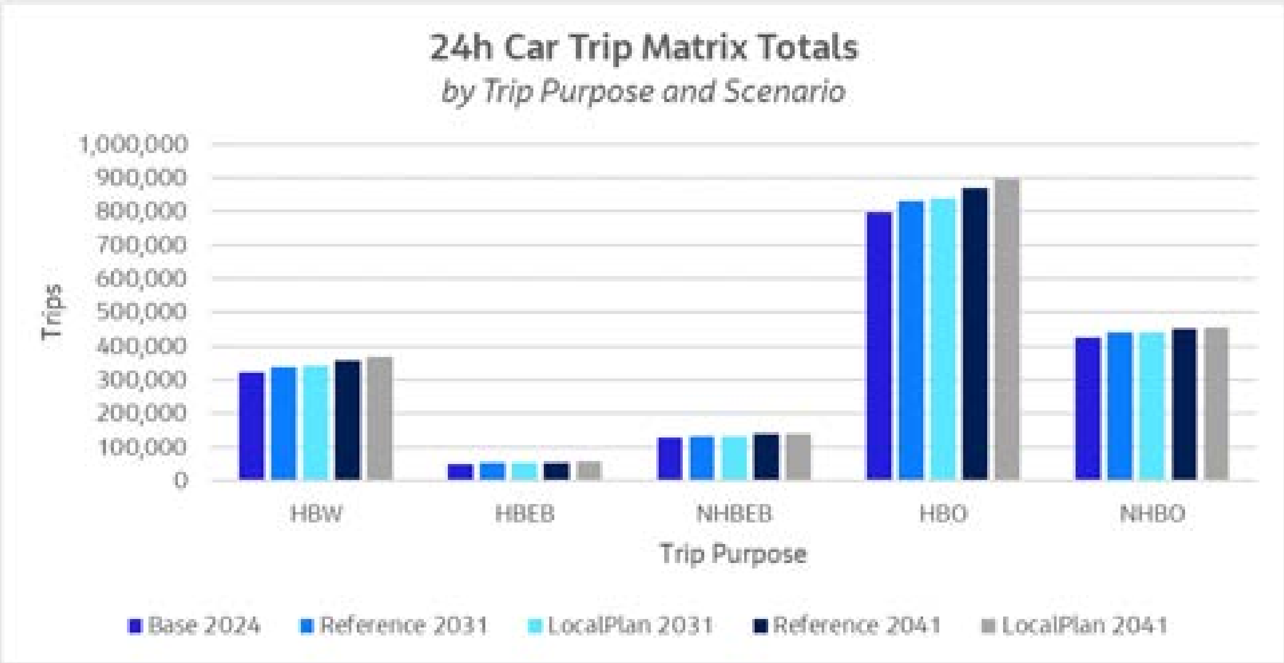


Figure 5.20 through Figure 5.25 show the development trips production and attraction by the three Local Authority. These trip ends values reflect information provided in the Uncertainty Log, TRICS trip rate and location, and local mode split from NTEM.

Figure 5.20 24h Car Development Trips Production – Preston

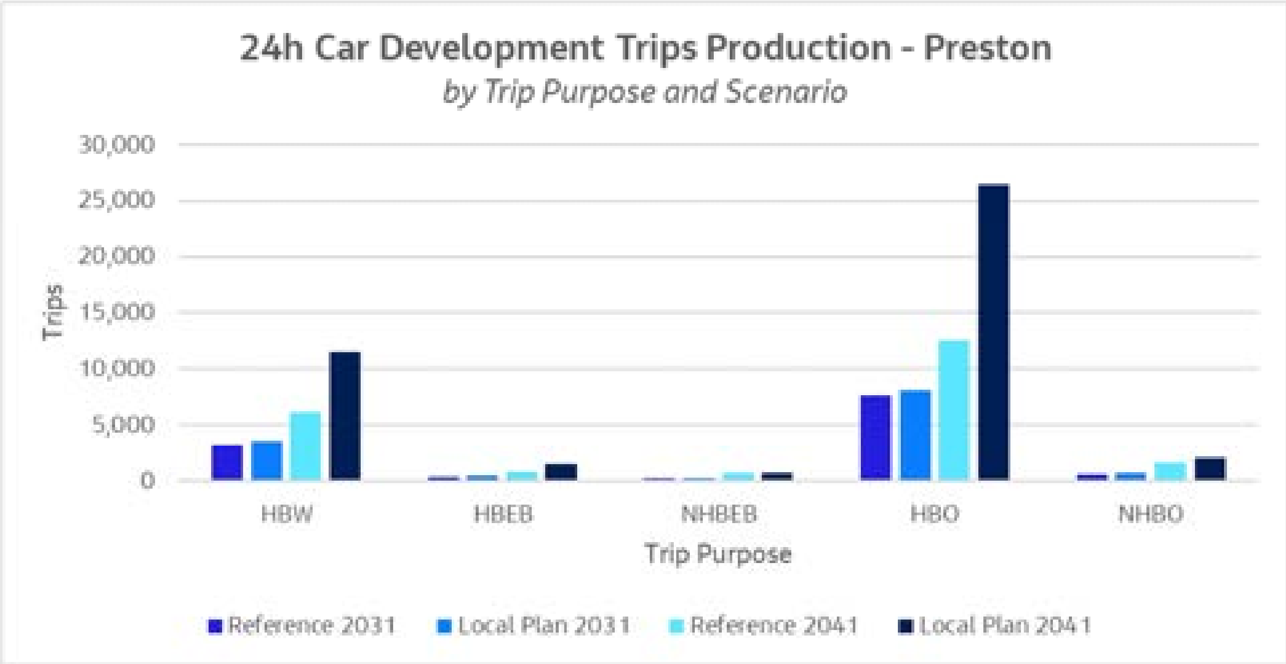


Figure 5.21 24h Car Development Trips Attraction – Preston

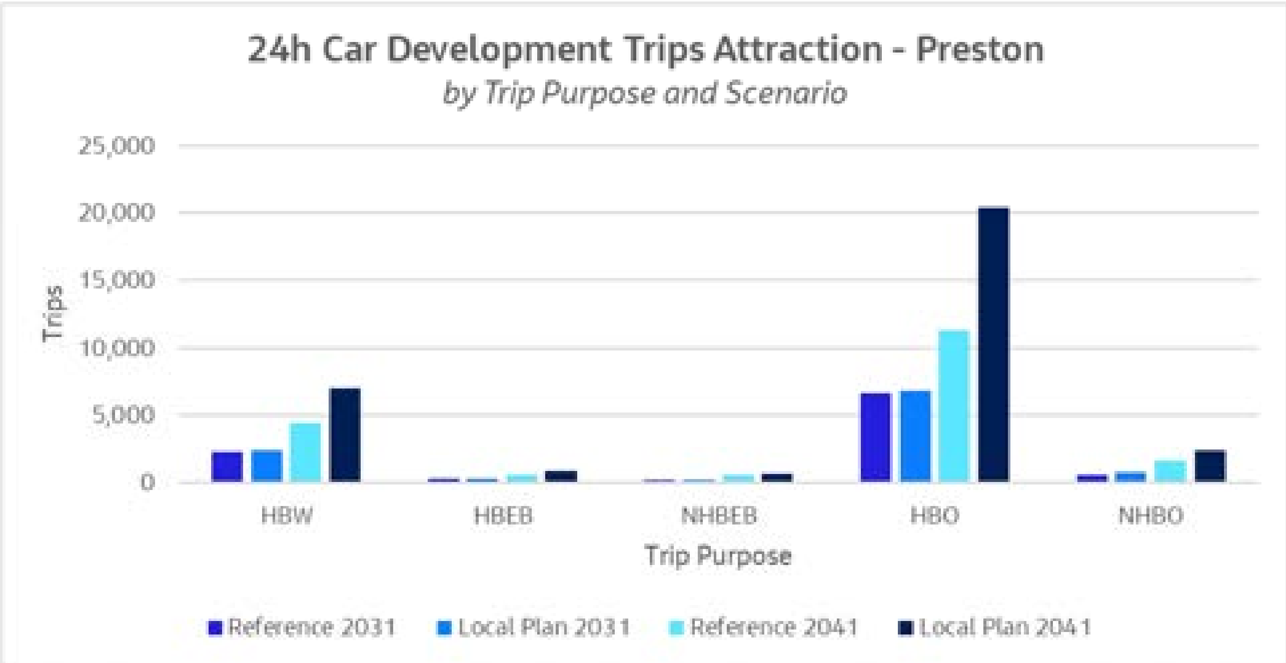


Figure 5.22 24h Car Development Trips Production – South Ribble

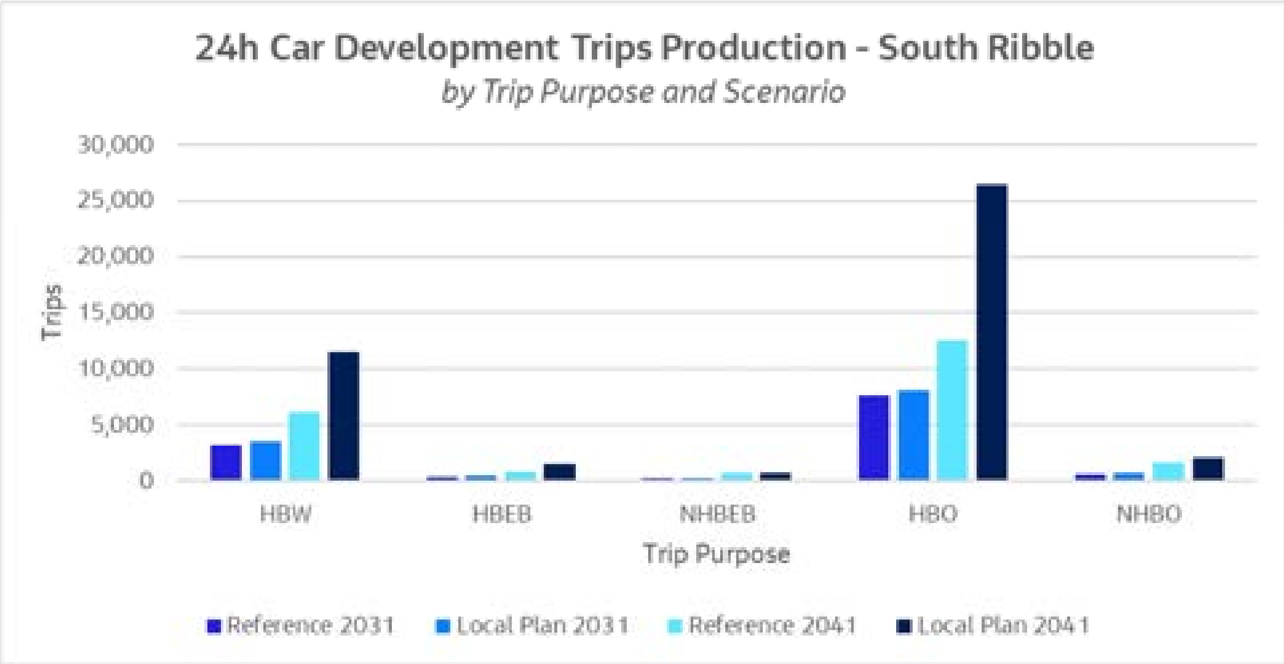


Figure 5.23 24h Car Development Trips Attraction – South Ribble

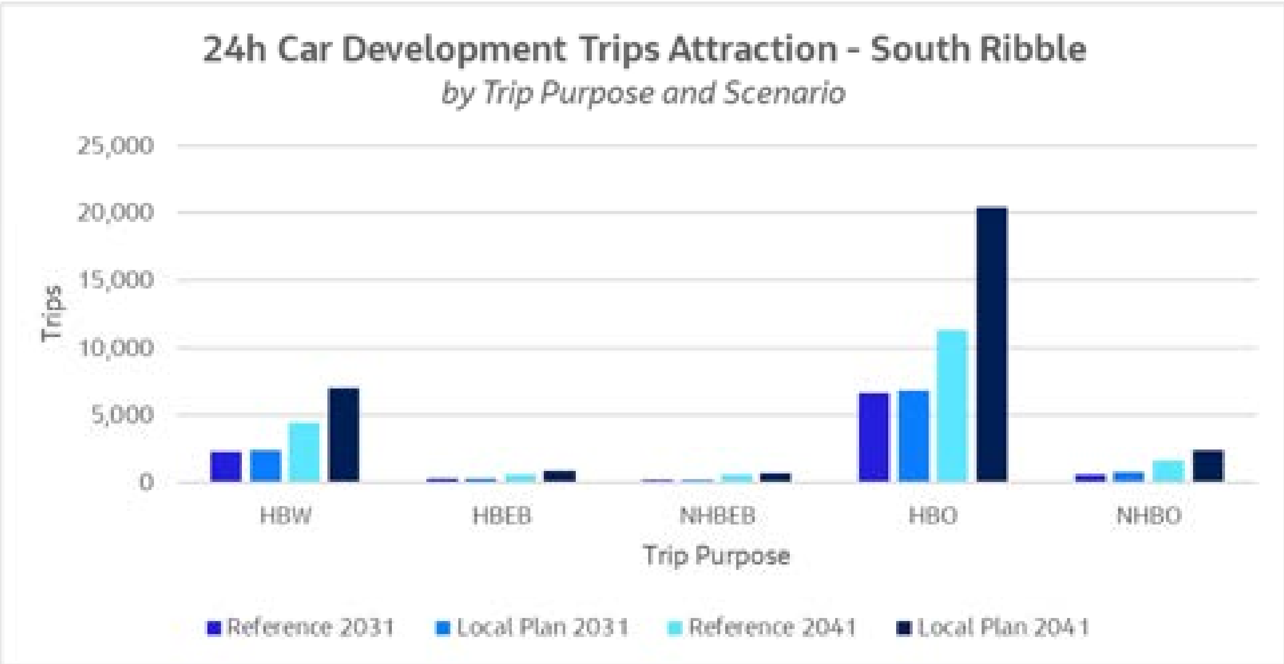


Figure 5.24 24h Car Development Trips Production – Chorley

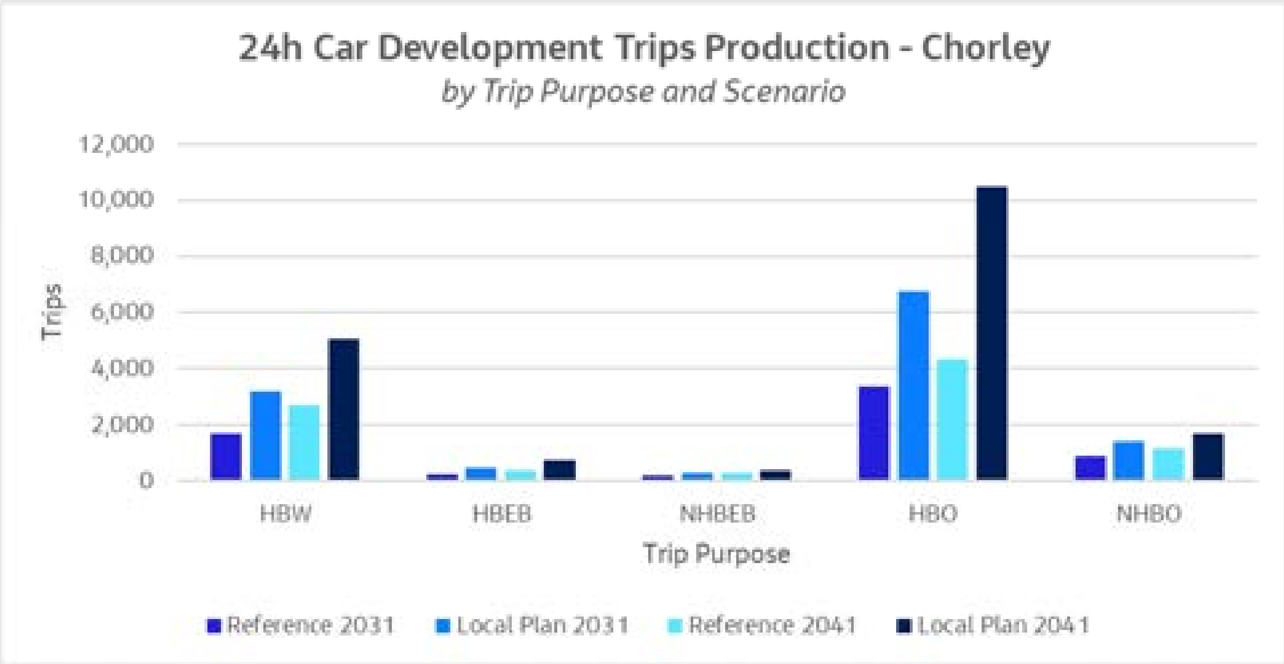
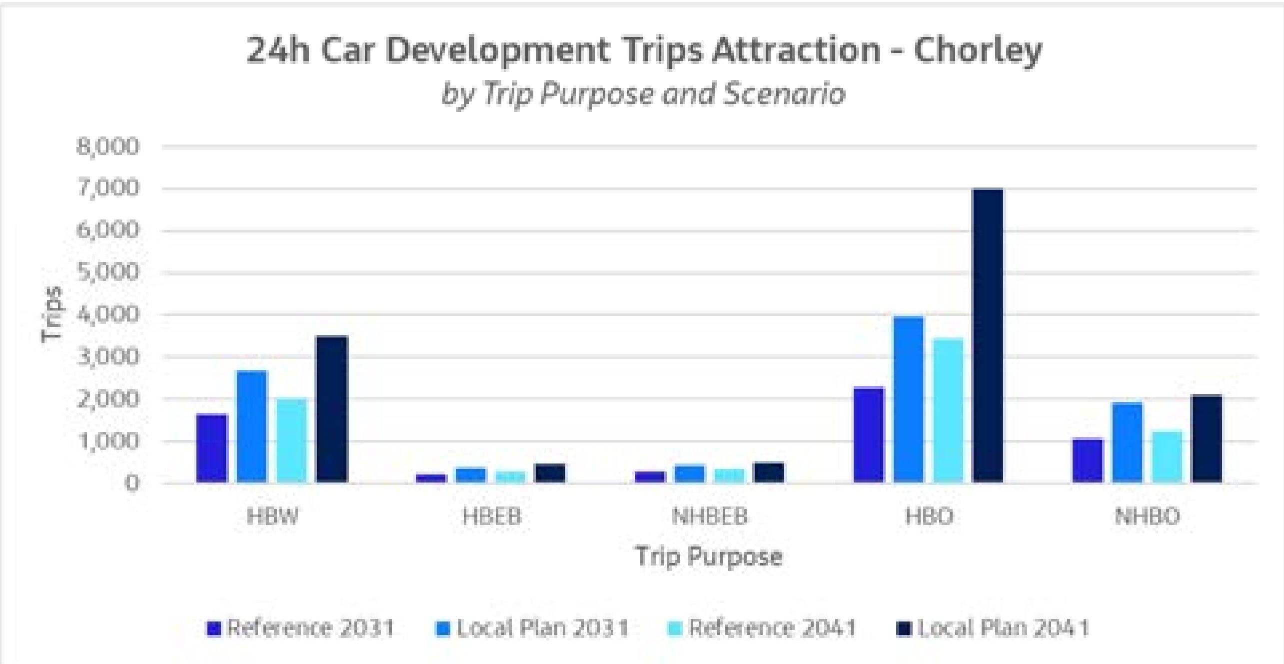


Figure 5.25 24h Car Development Trips Attraction – Chorley



5.16 Forecast Demand – Bus

24-hour PA bus growth factors for each of the forecast year is estimated using growth forecast by the National Trip End Model. This data was extracted using TEMPro version 8.0 and the demand matrices were factored from the base year 2024. Table 5-18 shows the NTEM bus growth for the three districts across the two future years. By comparison the TEMPRo factors predicts a decline in bus growth. This is due to the assumptions within TEMPRO on changes in car ownership and PT trip making rates, based on national average forecasts.

The proportion of travel by bus was estimated using NTEM mode splits, applying the proportions originating from the MSOA where the development is located. Similar to car demand matrices, the base year bus demand matrix was factored to the background growth trip ends for the area outside the Central Lancashire area to create a background growth trip matrix, using the doubly constrained furness process in SATURN. Subsequently, the development matrix was combined with the background growth matrix, resulting in a final Core reference forecast bus matrix.

Table 5-18. Bus background growth factors

Area	Year	Production					Attraction				
		HBW	HBEB	NHBEB	HBO	NHBO	HBW	HBEB	NHBEB	HBO	NHBO
Chorley	2031	0.996	0.977	1.000	0.988	0.983	0.968	0.958	0.968	0.965	0.976
	2041	0.968	0.932	0.964	0.983	0.959	0.902	0.875	0.935	0.922	0.945
Preston	2031	0.976	0.961	0.981	0.962	0.976	0.968	0.952	0.982	0.961	0.977
	2041	0.918	0.883	0.940	0.906	0.945	0.903	0.865	0.936	0.916	0.948
South Ribble	2031	0.960	0.943	0.983	0.966	0.977	0.964	0.948	0.975	0.961	0.977
	2041	0.896	0.862	0.949	0.924	0.952	0.899	0.862	0.925	0.914	0.950

Development bus trip matrix totals using factors applied and with developments are presented in Figure 5.26. The increased demand in future scenario is due to the additional bus trip from the new developments. Bus matrix comparison by district is shown in Figure 5.27 through Figure 5.32.

Figure 5.26 24h Bus Trip Matrix Totals

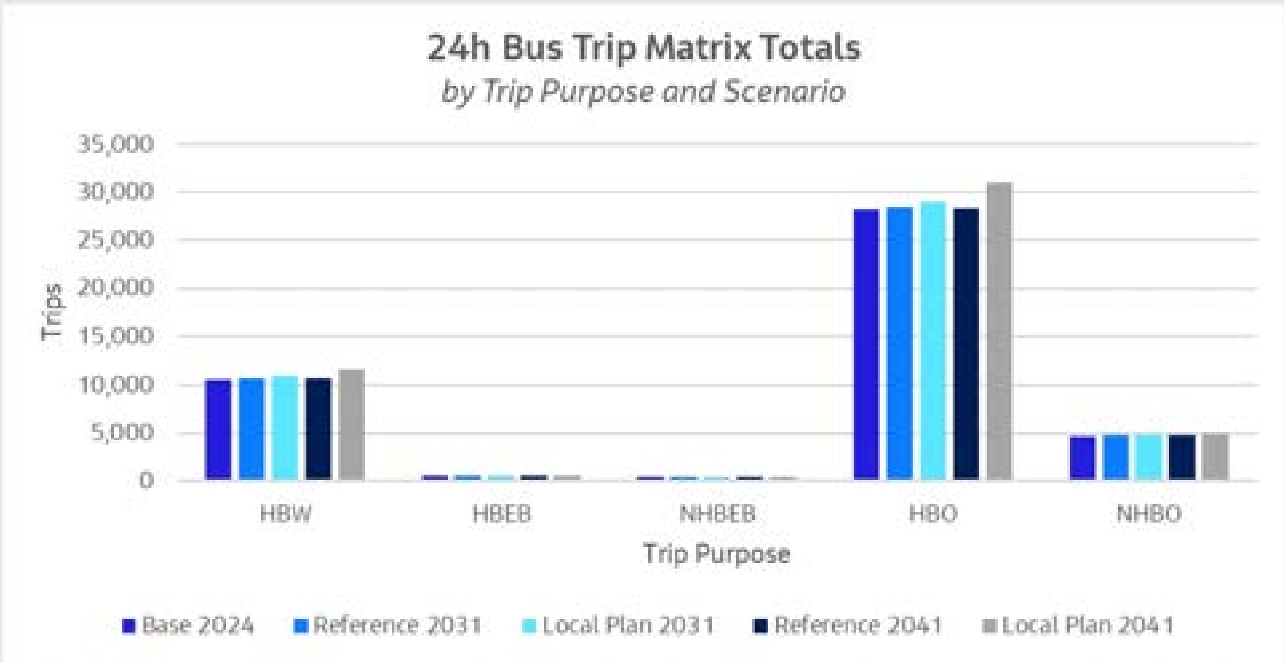


Figure 5.27 24h Bus Development Trips Production – Preston

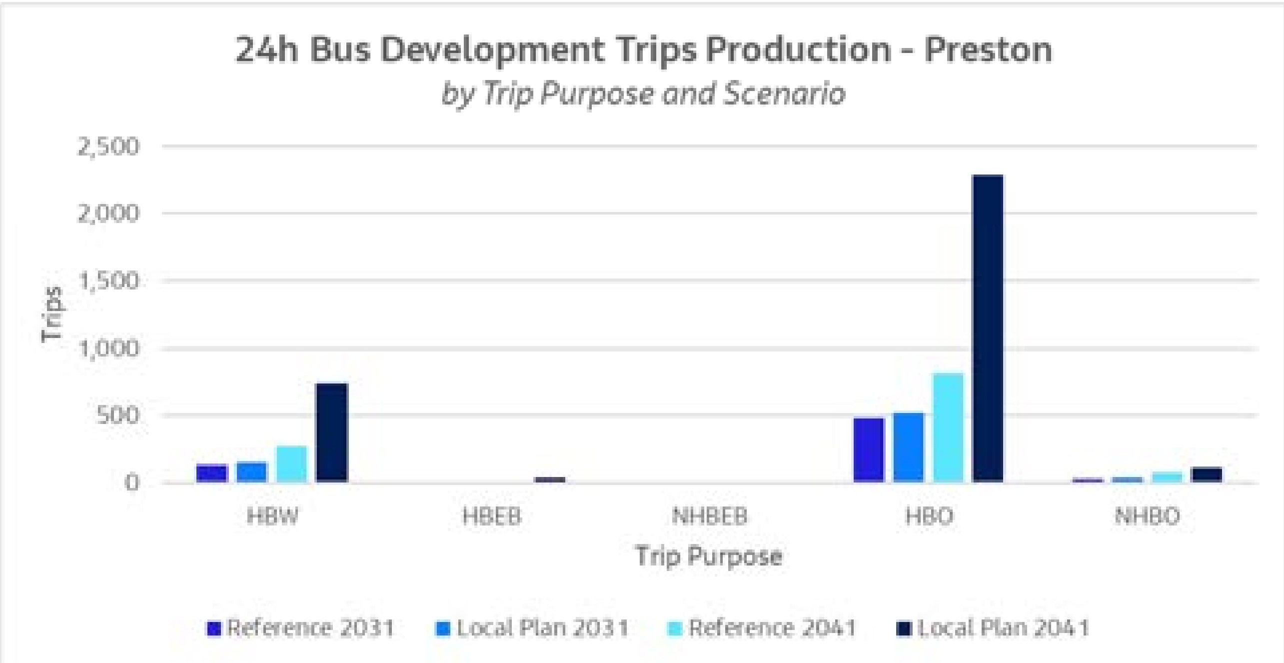


Figure 5.28 24h Bus Development Trips Attraction – Preston

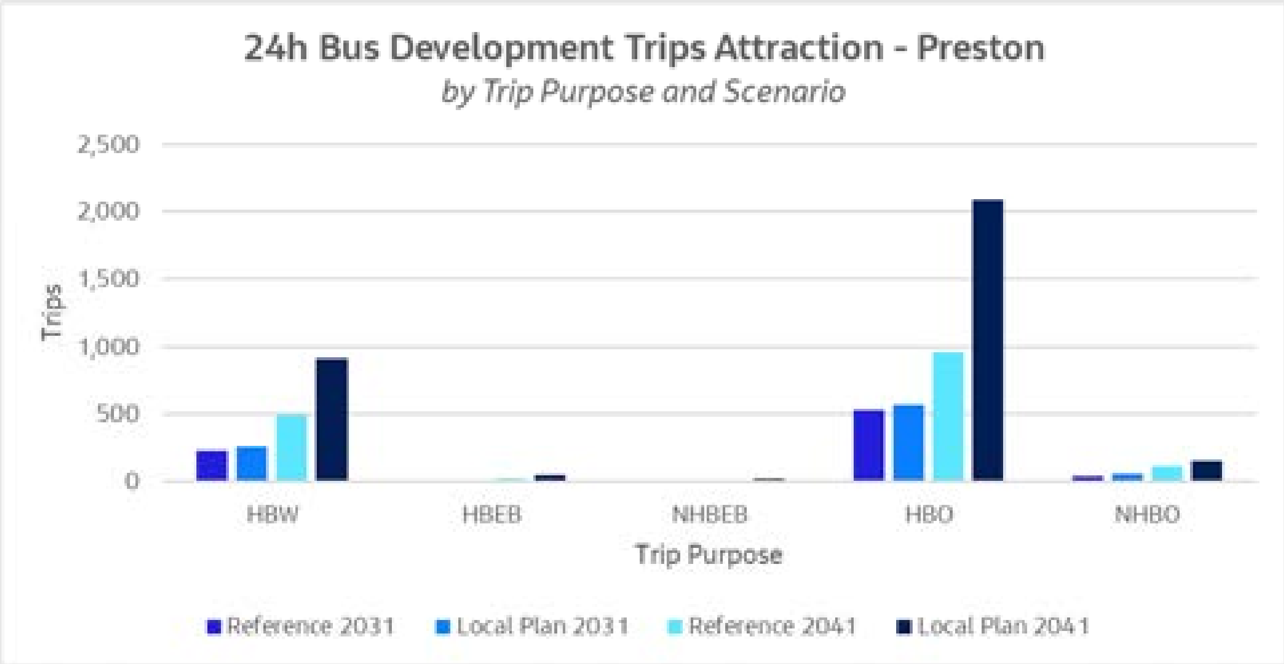


Figure 5.29 24h Bus Development Trips Production – South Ribble

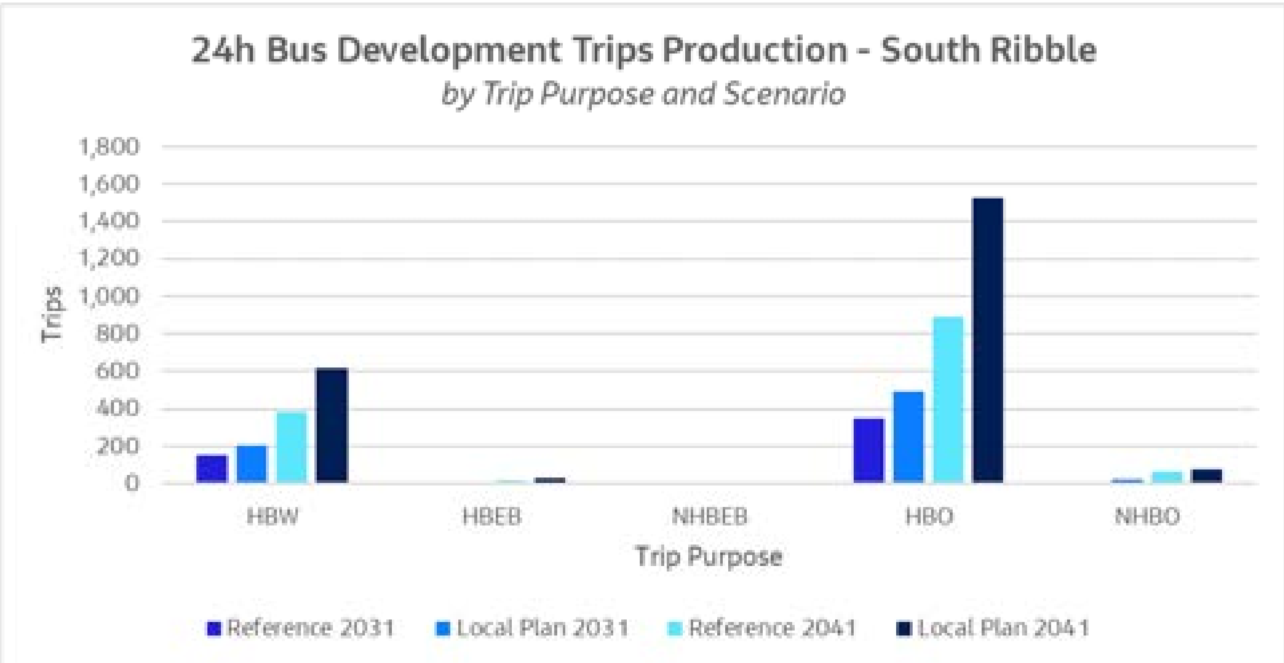


Figure 5.30 24h Bus Development Trips Attraction – South Ribble

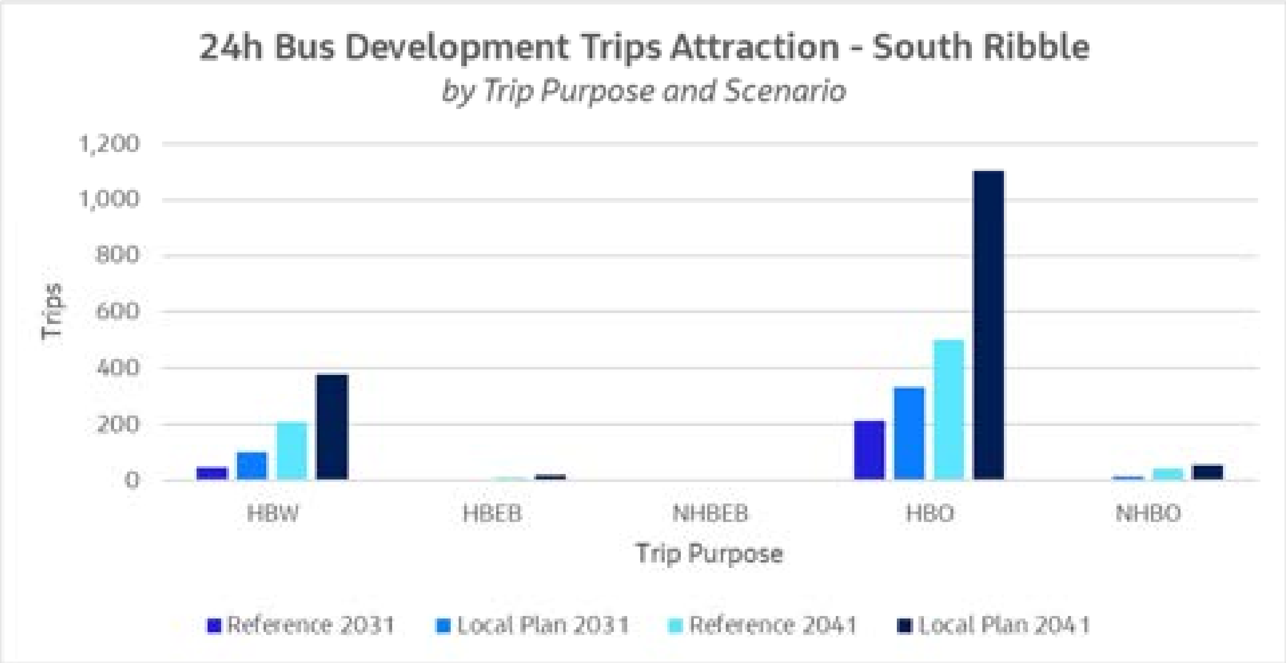


Figure 5.31 24h Bus Development Trips Production – Chorley

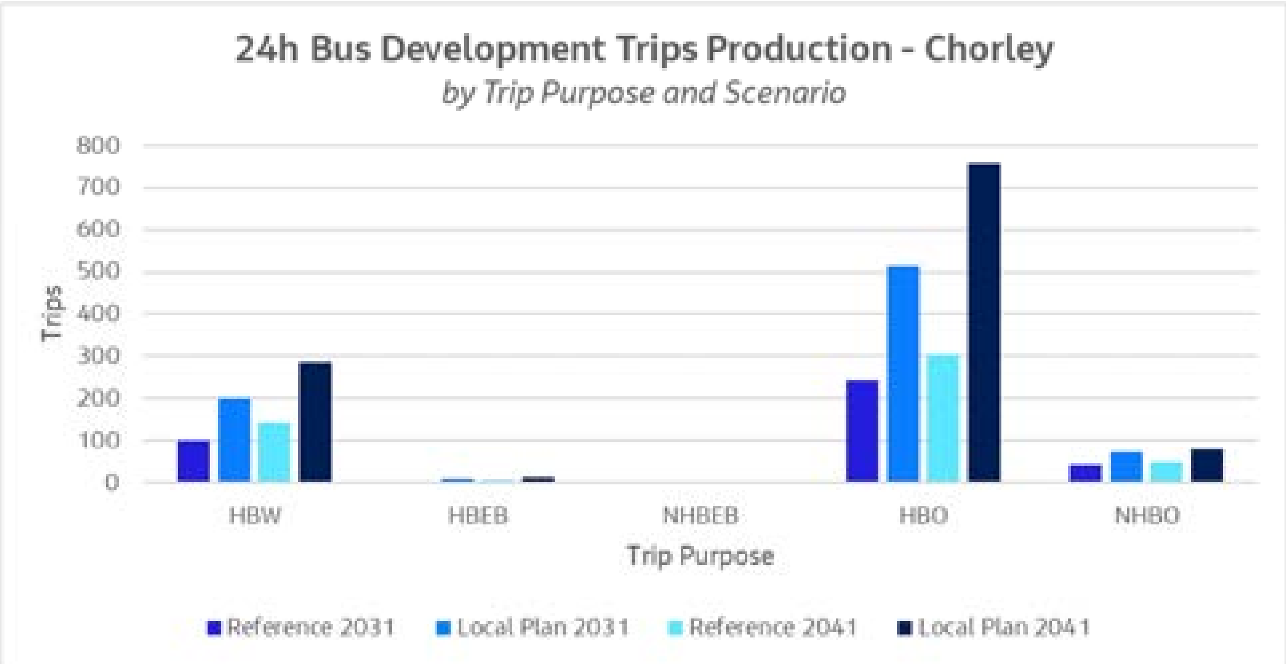
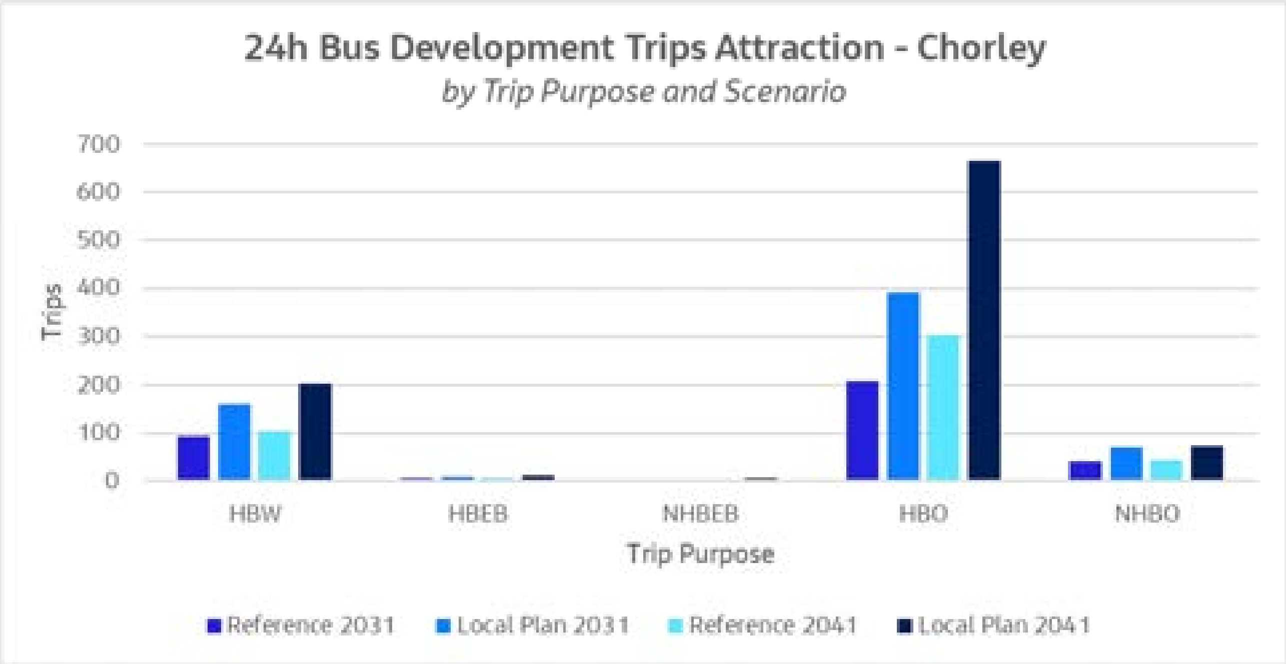


Figure 5.32 24h Bus Development Trips Attraction – Chorley



5.17 Forecast Demand – Rail

Rail background growth was calculated using the Demand Driver Generator (DDG) and EDGE forecast, both provided by DfT. The DDG is a dataset that includes forecasted variables like employment and GDP per capita, which influence rail demand growth. It is used for forecasting exogenous rail demand. The EDGE model, on the other hand, utilises the DDG files to predict rail demand growth in accordance with the Transport Analysis Guidance (TAG) demand elasticity parameters, which are based on the Rail Demand Forecasting Estimation (RDFE) study.

DfT supplied EDGE forecasts that offer rail demand growth rates on a geographical basis, consolidated to the MOIRA style zone structure. These were aligned with the station-to-station flows for which patronage forecasts are needed. EDGE growth was accessible for flows between major stations within regions. Each model zone was linked to the closest major station for the application of rail growth, adhering to Local Authority District boundaries where feasible.

Development demand was estimated similarly as for bus, that is using TRICS factors and NTEM modal split for each zone. In cases where there were no rail demand for zone, distribution was taken from nearby donor zones, taking into account walking distance to nearby railway station. Similar to car demand matrices, the base year bus demand matrix was factored to the background growth trip ends for the area outside the Central Lancashire area to create a background growth trip matrix, using the doubly constrained furness process. Subsequently, the development matrix was combined with the background growth matrix, resulting in a final Core reference forecast rail matrix.

Growth factors were calculated from the base year 2024 to each of the forecast years. The growth factors by major station area is shown in Table 5-19 and Table 5-20 . The 24 hr rail demand growth for the future years from base is shown in Figure 5.33.

The projected growth based on final background matrix for forecast year 2031 production is to be in range of 10-28%, within Study Area, depending on trip purpose and location. For 2041 projected growth is 26-34%, and 24-30% within Study Area. Attraction growth follows similar pattern for all model areas, due to applied forecasting methodology.

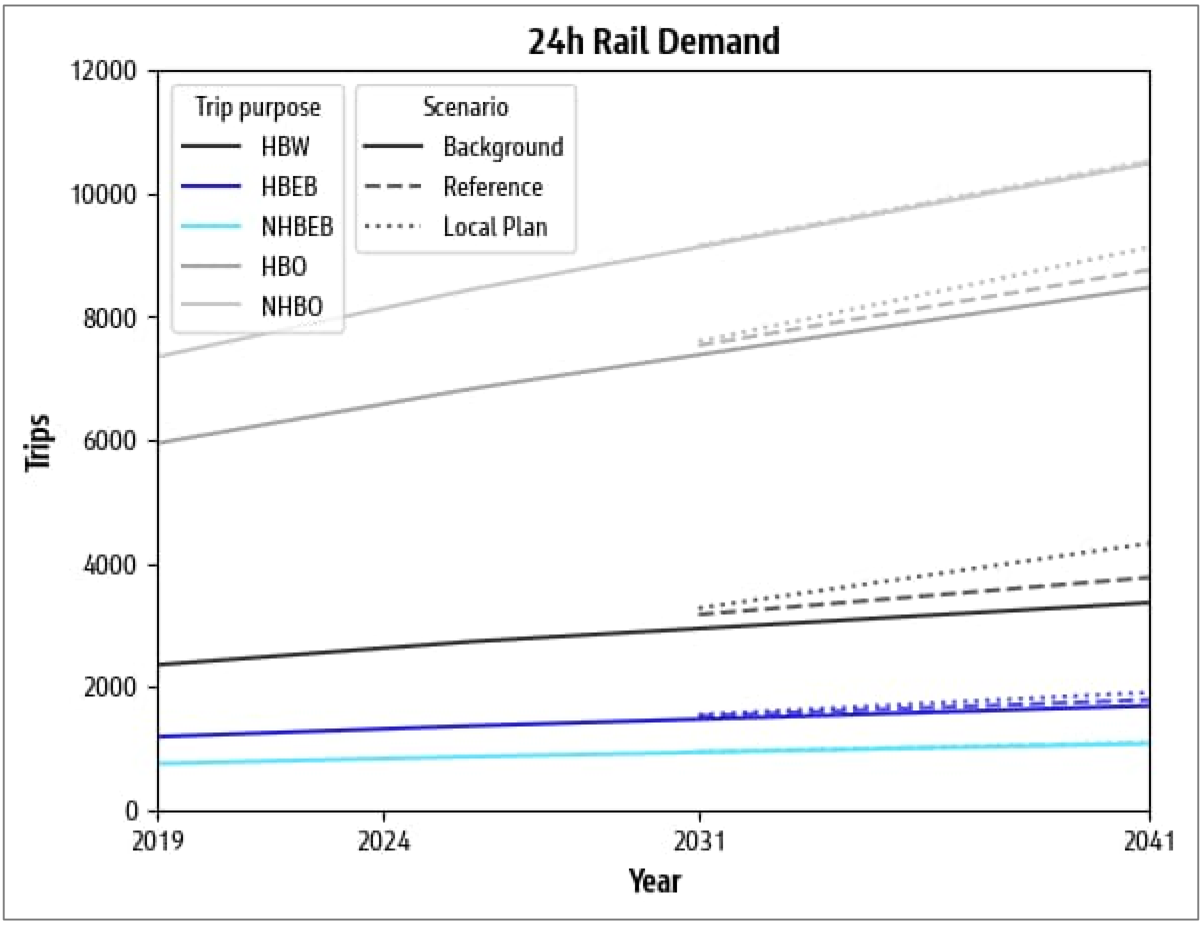
Table 5-19. Rail Background Growth from 2024 - Production

Year	Trip Purpose	Chorley	GB	Greater Manchester	Lancashire	Merseyside	Preston	South Ribble
2031	HBW	1.127	1.122	1.081	1.110	1.131	1.136	1.140
	HBEB	1.128	1.120	1.098	1.114	1.129	1.137	1.141
	NHBEB	1.124	1.111	1.109	1.118	1.130	1.137	1.140
	HBO	1.127	1.120	1.100	1.113	1.129	1.137	1.141
	NHBO	1.124	1.111	1.109	1.119	1.130	1.137	1.140
2041	HBW	1.300	1.271	1.199	1.256	1.303	1.322	1.336
	HBEB	1.300	1.287	1.239	1.267	1.300	1.326	1.337
	NHBEB	1.291	1.270	1.263	1.275	1.301	1.325	1.337
	HBO	1.299	1.286	1.243	1.267	1.300	1.326	1.337
	NHBO	1.291	1.270	1.261	1.277	1.301	1.325	1.337

Table 5-20. Rail Background Growth from 2024 - Attraction

Year	Trip Purpose	Chorley	GB	Greater Manchester	Lancashire	Merseyside	Preston	South Ribble
2031	HBW	1.123	1.104	1.106	1.124	1.127	1.140	1.136
	HBEB	1.122	1.105	1.105	1.121	1.127	1.138	1.137
	NHBEB	1.125	1.113	1.111	1.120	1.130	1.137	1.141
	HBO	1.123	1.107	1.107	1.122	1.128	1.138	1.138
	NHBO	1.125	1.112	1.110	1.119	1.128	1.135	1.139
2041	HBW	1.284	1.252	1.250	1.281	1.289	1.323	1.321
	HBEB	1.287	1.255	1.251	1.281	1.297	1.327	1.330
	NHBEB	1.294	1.272	1.263	1.279	1.303	1.327	1.340
	HBO	1.290	1.260	1.255	1.283	1.300	1.329	1.334
	NHBO	1.292	1.270	1.261	1.277	1.301	1.323	1.337

Figure 5.33 24h Rail Demand by Trip Purpose and Scenario



5.18 Forecast Demand - Freight

LGV and HGV growth factors were derived from the 2022 National Road Traffic Projections (NRTP22). The NRTP 22 presents DfT's latest projections of traffic demand, congestion and emissions in England and Wales produced using the National Transport Model (NTM) and includes the growth forecasts.

Forecast growth was calculated between the base year (2024) and each forecast and calculated separately for LGV and HGV. The growth factors are calculated for all road categories in North West using NRTP22. These growth factors were applied to the 2024 base year matrices.

This approach is consistent with TAG Unit M4 guidance on forecasting changes in freight traffic which recommends applying a single growth factor for the whole matrix based on NRTP22 forecast growth. The factors are presented in Table 5-21 below.

Table 5-21. Goods Vehicle Growth from 2024 according to NRTP22

GV type	2031	2041
LGV	1.0352	1.0800
HGV	1.0313	1.1672

Site-specific GV trip generators in the future year models, were estimated using the trip rates estimated from TRICS. GV trip rates is summarised in Table 5-17.

It is to be noted that the VDM does not predict changes in demand for external-to-external trips and goods trips, these must be input from external estimates. However, the model does determine routing for the vehicle trips and consider their influence on congestion.

5.19 Convergence Statistics

5.19.0. SATURN Convergence

Convergence is the measurement of the stability of the traffic model, whereby the spread (or "distribution") of trips does not vary significantly between iterations and so the model is said to be in "equilibrium". A converged model is therefore stable and produces results that are consistent and robust.

Achieving convergence in the future year forecasts is just as critical as the base year and is particularly important for economic appraisal purposes.

The acceptability values for convergence (TAG Unit M3.1) are less than 0.1% for %GAP and four consecutive iterations where the percentage of links with flow changes less than <1% is greater than 98%.

Central Lancashire Transport Model is well converging model. All scenarios reached convergence criteria. Table 5-22 provides the convergence stats for the Reference and Local Plan Scenario and it shows that the forecast models converge to an acceptable level.

Table 5-22. SATURN Convergence Statistics

Scenario	Year	Peak	Last 4 Iteration	GAP	Links converged	Turns converged
AM	Reference	2031	33	0.0016%	99.2%	99.5%
			34	0.0010%	98.3%	99.6%
			35	0.0025%	99.2%	99.6%
			36	0.0015%	98.6%	99.5%
	Local Plan		31	0.0022%	99.2%	99.6%
			32	0.0012%	98.1%	99.6%
			33	0.0022%	99.4%	99.7%
			34	0.0010%	98.0%	99.6%
	Reference	2041	31	0.0020%	98.8%	99.4%
			32	0.0045%	99.0%	99.3%
			33	0.0027%	98.5%	99.4%
			34	0.0036%	99.2%	99.5%
	Local Plan		41	0.0040%	98.8%	99.2%
			42	0.0018%	98.1%	99.3%
			43	0.0019%	99.0%	99.4%
			44	0.0023%	98.8%	99.3%
IP	Reference	2031	16	0.0005%	98.7%	99.8%
			17	0.0008%	98.8%	99.9%
			18	0.0005%	98.4%	99.9%
			19	0.0004%	99.1%	99.9%
	Local Plan		17	0.0010%	98.3%	99.8%
			18	0.0013%	98.6%	99.8%
			19	0.0009%	98.8%	99.8%
			20	0.0007%	99.1%	99.9%
	Reference	2041	17	0.0006%	98.4%	99.8%
			18	0.0006%	99.1%	99.9%
			19	0.0009%	98.7%	99.8%
			20	0.0004%	98.8%	99.9%
	Local Plan		14	0.0018%	98.3%	99.7%
			15	0.0013%	98.3%	99.7%

Scenario	Year	Peak	Last 4 Iteration	GAP	Links converged	Turns converged
			16	0.0011%	98.7%	99.8%
			17	0.0014%	98.5%	99.8%
PM	Reference	2031	33	0.0024%	98.4%	99.6%
			34	0.0031%	98.4%	99.6%
			35	0.0023%	98.1%	99.5%
			36	0.0029%	98.4%	99.6%
	Local Plan		32	0.0040%	98.5%	99.6%
			33	0.0018%	98.0%	99.5%
			34	0.0026%	99.0%	99.6%
			35	0.0014%	98.4%	99.5%
	Reference	2041	27	0.0028%	98.1%	99.5%
			28	0.0040%	98.1%	99.4%
			29	0.0030%	98.3%	99.3%
			30	0.0028%	98.3%	99.5%
	Local Plan		73	0.0037%	98.3%	99.4%
			74	0.0035%	98.2%	99.4%
			75	0.0023%	98.3%	99.5%
			76	0.0043%	98.8%	99.5%

5.19.1. VDM Convergence

In assessing the outputs of the model runs, the main parameter of importance is the 'relative gap', which is the measure of convergence between demand and supply. Current TAG guidance recommends a relative gap of at least 0.2%. All future year runs converged at 0.07%, with all runs reaching convergence within 6 iterations, which suggests the demand - supply convergence of the variable demand traffic model is acceptable. It has therefore been shown that the traffic model is stable and has converged to an acceptable standard.

Table 5-23 it has therefore been shown that the traffic model is stable and has converged to an acceptable standard.

Table 5-23. VDM Convergence Statistics

Scenario	Year	Iteration	All Modes	Car	Bus	Rail
Local Plan	2031	1	0.096%	0.103%	0.077%	0.042%
		1	0.120%	0.135%	0.078%	0.037%
		2	0.045%	0.047%	0.046%	0.021%
		2	0.057%	0.062%	0.045%	0.019%
	2041	1	0.478%	0.507%	0.444%	0.267%
		1	0.590%	0.639%	0.446%	0.345%
		2	0.185%	0.198%	0.162%	0.101%
		2	0.227%	0.247%	0.164%	0.132%
		3	0.084%	0.089%	0.080%	0.044%
		3	0.105%	0.114%	0.079%	0.060%
		4	0.043%	0.046%	0.042%	0.021%
		4	0.057%	0.062%	0.042%	0.029%
Reference	2031	1	0.084%	0.088%	0.090%	0.031%
		1	0.108%	0.116%	0.091%	0.037%
		2	0.046%	0.048%	0.052%	0.016%
		2	0.063%	0.068%	0.052%	0.021%
	2041	1	0.249%	0.269%	0.204%	0.121%
		1	0.301%	0.333%	0.204%	0.122%
		2	0.111%	0.120%	0.093%	0.051%
		2	0.136%	0.151%	0.093%	0.052%
		3	0.052%	0.054%	0.054%	0.025%
		3	0.065%	0.070%	0.054%	0.026%

5.20 Limitations of Strategic Modelling

CLTM is a strategic model with highway model built in SATURN and, as such, does have limitations in terms of investigating localised transport issues. There has been number of changes to the model network coding and zoning system to improve its accuracy in this regard. In the case of certain allocations, multiple iterations of strategic modelling were undertaken to improve the accuracy of outputs since these problems only became apparent upon detailed scrutiny of the outputs of the modelling exercise.

Notwithstanding this effort, there will be certain instances where the accuracy of the model may not provide sufficient certainty for the purposes of the locality assessments. Examples of this would include:

- Complex route choice permutations across a dense congested local network
- Complex variable network effects where traffic queuing / congestion at one location causes problems at another location
- Detailed traffic behaviours such as the way traffic moves through large roundabouts in a congested situation
- Large allocations with multiple connections to the existing transport network which have, by necessity, been simplified

In such cases, this report makes clear that a definitive finding may not be possible due to these imitations. The level of certainty is made clear and, where applicable, recommendations for further, more detailed modelling work are made. These recommendations might include more detailed modelling of specific defined parts of the local transport network and potentially using traffic simulation tools to provide a greater level of certainty regarding these findings.

SATURN provides a detailed representation of road networks, including junctions, links, and signal timings, which helps in understanding the flow of traffic across urban areas. It also allows cost and time effective for the testing of various traffic management scenarios, such as changes in road layouts, signal timings, and the introduction of new infrastructure, helping planners to evaluate potential impacts before implementation. However, in certain areas on the network, the model is known to under-represent congestion on the ground due to following reasons:

- Simplified Traffic Signal Timings: SATURN often assumes fixed cycle times for traffic signals, which may not accurately reflect the dynamic nature of real-world traffic signal operations.
- Cyclic Flow Profiles: The model uses cyclic flow profiles to simulate traffic flow, which can oversimplify the variations in traffic patterns, especially during peak hours.
- Capacity Constraints: SATURN's capacity constraints are based on predefined speed-flow curves, which might not capture the nuanced variations in junction capacities under different traffic conditions.
- Lack of Real-Time Data Integration: The model typically relies on historical data and does not integrate real-time traffic data, which can lead to discrepancies between modelled and actual traffic conditions.
- Queue lengths – In some instances, the queue/delays at junctions are properly captured, however delay in the subsequent downstream/upstream may not reflect the observed. This could be due to how the link is modelled such as the length of the link or presence of a dummy node, which could limit the transfer the delay to subsequent sections. While SATURN has the capability to consider the impact of queues on upstream and downstream traffic through blocking back option and reduce the flow of traffic downstream, this is not included in the CLTM model due to extensive data requirement for such a scale of model and to avoid overcomplication of the model set up for forecasting purpose.
- Different peak hours for different locations - CLTM models are developed for the peak AM and PM peak periods and average of IP period. While the peak hour were identified using set of traffic counts

covering the full study area and covering various type of roads, it is likely that different junctions can have different peak often varying within 15 mins. This level of detail can not be captured in the Strategic modelling and therefore can produce different result than the observed for some junctions. While this is addressed to some extent by validating the base model with traffic counts and journey times, some exceptions can be expected.

Despite the limitations set out in the preceding paragraph, the assessment are considered sufficiently robust to inform the preparation of the viability assessments and publication of Local Plan. It is recognised that further detailed work may be required to identify detailed transport mitigation in the next stage.

5.21 Fixed Demand Assignments

For each of the forecast years, a fixed assignment was carried out as a network 'stress' test to ensure that:

- The assignments were responding as expected to the schemes being included;
- To review the reassignment impacts prior to application of VDM; and
- To highlight any coding issues or wider network issues that hadn't previously been identified.

Each forecast network was assigned to its respective forecast year demand and model outputs were reviewed and any coding errors corrected. The model assignments relating to this exercise can be found in Appendix D.

Network checks were undertaken to ensure that designated parking bays are not counted as additional lanes leading to additional capacity and skewing the v/c results.

The results shows expected assignment of demand in areas where new infrastructure is present with corresponding changes in flows and delays in surrounding areas.

5.22 Impacts of Variable Demand Modelling

The 2024 validated base year highway and demand models are used as the basis for the model forecasts. Changes in travel demand, journey times and costs are forecast from the base year to produce future year forecasts using the processes described in .

The VDM model allows for the following behavioural choices for car users only:

- Mode choice (public transport versus highway)
- Destination choice

As a pivot-point incremental variable demand model, the model estimates change in future year trip patterns in response to changes in composite costs relative to the base year assignment. The demand model pivots off the base year costs to calculate all future year forecasts.

5.22.0. Matrix Analysis

Following the completion of the VDM runs, the matrix totals between the pre and post VDM runs were compared to understand the impacts of variable demand responses.

The impact of the VDM, in terms of changes in highway, bus and rail demand patterns, is presented in more detail within Appendix E but, in summary, the overall volume of demand remains similar between the pre-VDM and post-VDM scenarios.

Table 5-24 show the change between the pre and post VDM model runs for car by year, user class and time period.

Table 5-25 and Table 5-30 summarises the bus and rail demand pre and post VDM runs respectively.

The forecasts indicate that there is a decrease in car demand for the business and commute trip purpose, while other trip purpose increases as a result of the VDM response. The forecasts also indicate that there is a decrease in overall rail demand as a result of VDM responses. This indicates that there is a mode shift from rail to highway/bus between the fixed and post-VDM demand and is likely to be a result of the inclusion of several significant highway improvement schemes in the forecast models. With no future rail improvements apart from the Cottam Parkway, generally rail share decreases in future years. The rise in public transport fares and the relative decrease in car operating costs due to fuel efficiency and an increase in the share of electric vehicles contribute to a moderate increase in bus share and a reduction in rail share.

Table 5-24, Table 5-26and Table 5-28 summarises the car matrix totals pre and post vdm for the three peaks. Table 5-25, Table 5-27 and Table 5-29 summarises the pt matrix totals pre and post vdm for the three peaks.

Table 5-24. Car Prior vs Post VDM Matrix Totals, AM Peak, Local Plan 2041

Area	Business			Commute			Other		
	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change
Chorley	1,194	1,192	-0.14%	8,162	8,158	-0.05%	7,766	7,813	0.61%
Preston	1,678	1,669	-0.50%	11,242	11,233	-0.08%	12,525	12,564	0.31%
South Ribble	1,389	1,368	-1.52%	9,531	9,476	-0.59%	9,147	9,161	0.15%
Full Model	30,344	30,295	-0.16%	178,574	178,504	-0.04%	196,656	196,948	0.15%

Table 5-25. PT Prior vs Post VDM Matrix Totals, AM Peak, Local Plan 2041

Area	Bus			Rail		
	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change
Chorley	1,775	1,782	0.44%	325	208	-35.92%
Preston	3,579	3,677	2.75%	775	703	-9.30%
South Ribble	1,856	1,875	1.01%	205	178	-13.06%
Full Model	9,514	9,738	2.35%	3,568	2,905	-18.58%

Table 5-26. Car Prior vs Post VDM Matrix Totals, IP Peak, Local Plan 2041

Area	Business			Commute			Other		
	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change
Chorley	991	994	0.21%	1,997	2,002	0.28%	9,110	9,176	0.72%
Preston	2,082	2,088	0.28%	3,506	3,499	-0.21%	14,757	14,800	0.29%
South Ribble	1,361	1,367	0.41%	2,752	2,771	0.70%	9,149	9,231	0.90%
Full Model	25,207	25,225	0.07%	42,094	42,132	0.09%	217,896	218,299	0.18%

Table 5-27. PT Prior vs Post VDM Matrix Totals, IP Peak, Local Plan 2041

Area	Bus			Rail		
	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change
Chorley	1,256	1,226	-2.40%	182	142	-22.06%
Preston	3,219	3,235	0.48%	677	606	-10.45%
South Ribble	1,352	1,331	-1.52%	129	107	-17.05%
Full Model	7,504	7,454	-0.67%	2,785	2,316	-16.84%

Table 5-28. Car Prior vs Post VDM Matrix Totals, PM Peak, Local Plan 2041

Area	Business			Commute			Other		
	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change
Chorley	1,104	1,105	0.12%	6,108	6,107	-0.01%	9,536	9,578	0.44%
Preston	2,162	2,123	-1.78%	11,471	11,369	-0.89%	15,863	15,836	-0.17%
South Ribble	1,476	1,474	-0.19%	8,068	8,049	-0.24%	10,142	10,193	0.50%
Full Model	30,352	30,321	-0.10%	154,662	154,664	0.00%	208,793	208,991	0.09%

Table 5-29. PT Prior vs Post VDM Matrix Totals, PM Peak, Local Plan 2041

Area	Bus			Rail		
	Pre VDM	Post VDM	Change	Pre VDM	Post VDM	Change
Chorley	741	751	1.37%	233	190	-18.38%
Preston	2,762	2,912	5.46%	838	737	-11.97%
South Ribble	860	883	2.71%	137	114	-16.53%
Full Model	5,551	5,785	4.22%	3,638	3,007	-17.34%

Table 5-30 summarises the comparison of mode shares post-VDM by purpose for the Local Plan scenario with base and Reference case scenario. Overall, across all modes, there is a slight increase in car and rail shares in the future year scenarios compared to the base year, while bus share is observed to decrease over the future years, consistent with the NTEM growth predictions.

Table 5-30. Mode Shares by Year Scenario, AM peak

Mode	Base	Reference		Local Plan	
	2024	2031	2041	2031	2041
Car	88.2%	88.6%	88.8%	88.5%	88.1%
Rail	1.1%	1.3%	1.4%	1.3%	1.5%
Bus	10.7%	10.2%	9.8%	10.2%	10.3%

Table 5-31 summarises the mode split for the three district for base and future year scenario. Across all three districts, the car and rail share across the future year increases due to the general increase in mode specific growth and development specific trips. Bus growth is lower than the base consistent with the NTEM predictions.

Table 5-31. Mode shares by Local Authority, Year and Scenario, AM peak

Local Authority	Mode	Base	Reference		Local Plan	
		2024	2031	2041	2031	2041
Chorley	Car	89.7%	90.1%	90.2%	89.8%	89.6%
	Rail	0.8%	0.9%	1.0%	1.0%	1.1%
	Bus	9.4%	9.0%	8.7%	9.3%	9.3%
Preston	Car	85.1%	85.6%	85.9%	85.6%	85.3%
	Rail	1.7%	2.0%	2.2%	2.0%	2.4%
	Bus	13.2%	12.4%	11.9%	12.4%	12.3%
South Ribble	Car	91.1%	91.3%	91.2%	91.3%	90.7%
	Rail	0.5%	0.6%	0.7%	0.6%	0.8%
	Bus	8.4%	8.1%	8.1%	8.2%	8.5%

5.23 Modelling Results

5.23.0. Overview

This section provides a summary of the results of the future year scenarios. For each scenario a set of data and key performance indicators (KPIs) have been produced, which enable easy and direct comparisons. They will also outline which junctions require mitigation as a result of the additional traffic the Local Plan development sites produce. The highway modelling outputs include:

- Plots showing flow changes within the network, comparing Local Plan scenario with the Reference scenario and base year
- Plots and tables showing junctions which are shown to be over capacity and where the newly generated traffic from the Local Plan sites is shown to have a detrimental impact.

The junction capacity analysis has formed the main basis for identification of the impact of the Local Plan and to inform potential mitigation requirements at this stage of the study.

Plots showing delay difference within the network, comparing Local Plan scenario with the Reference scenario and base year is included in Appendix J.

5.23.1. Traffic Flow Changes

Model flows from the future years have been compared with the base year to demonstrate how traffic flows are expected to change in future year due to the network and land use changes. Figure 5.34 through Figure 5.41 below presents the flow difference respectively between the 2041 Local Plan scenario and base for AM and PM peak. Flow difference plot for reference scenario and base year is included in Appendix F. Green indicates an increase and blue indicates a decrease in the plots presented.

In all three districts, there is generally an increase in traffic on the network due to the increased land use i.e., population and employment. A network wide traffic flow increase is observed attributed to traffic generated by new developments as well as wider population (NTEM) and employment growth. Traffic decreases are noted where rerouting has occurred due to committed schemes like the A582 improvements, which include de-prioritising cars along B5254 with the addition of bus gates at the Penwortham Triangle. Similarly, a decrease in traffic is observed along Liverpool Road near Fishergate Hill due to the new bus lane. The figures highlighted in green clearly show a general increase in traffic on most routes, with the Strategic Road Network experiencing the largest absolute increase, as expected.

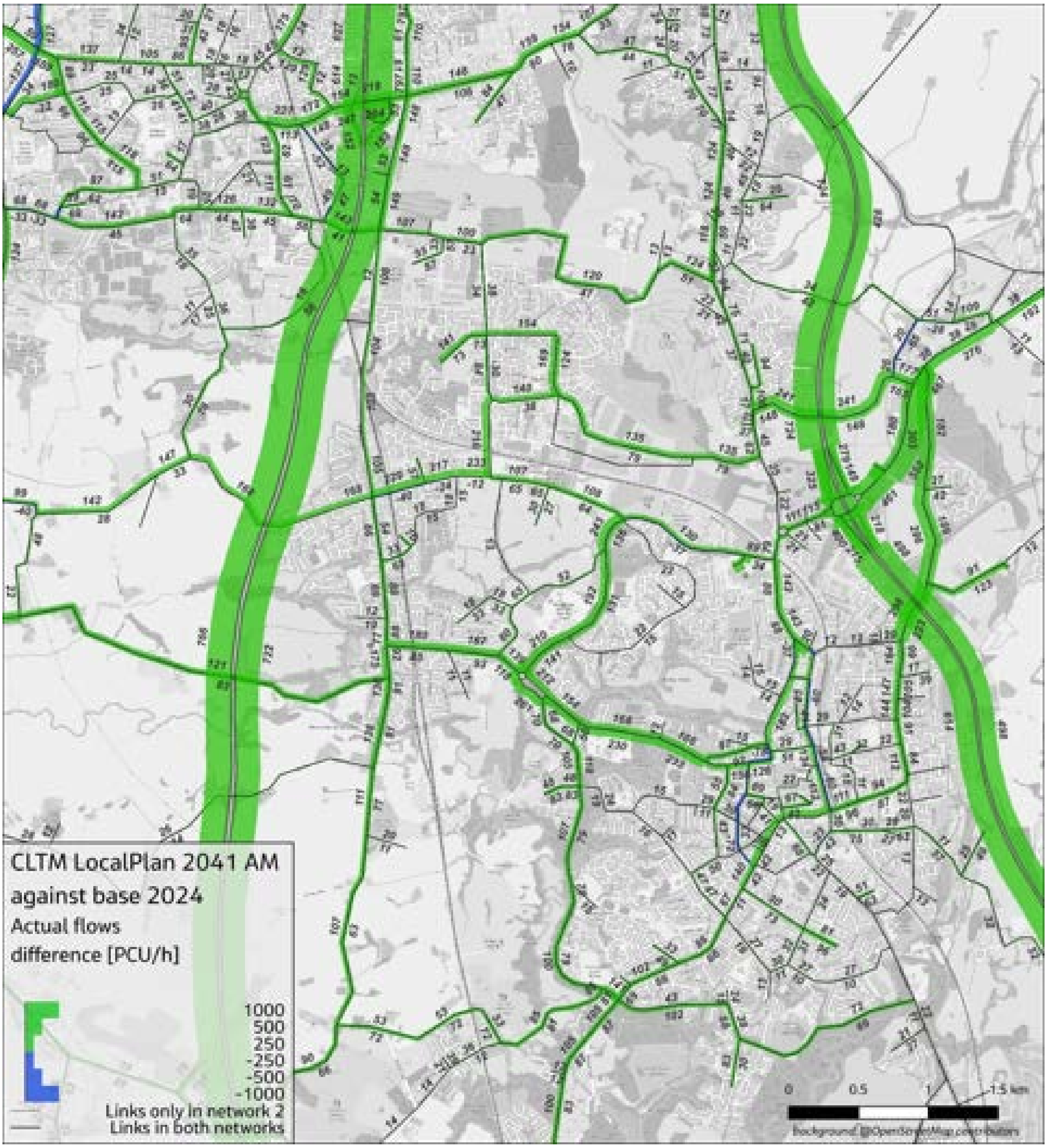


Figure 5.34 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Base Year - Chorley

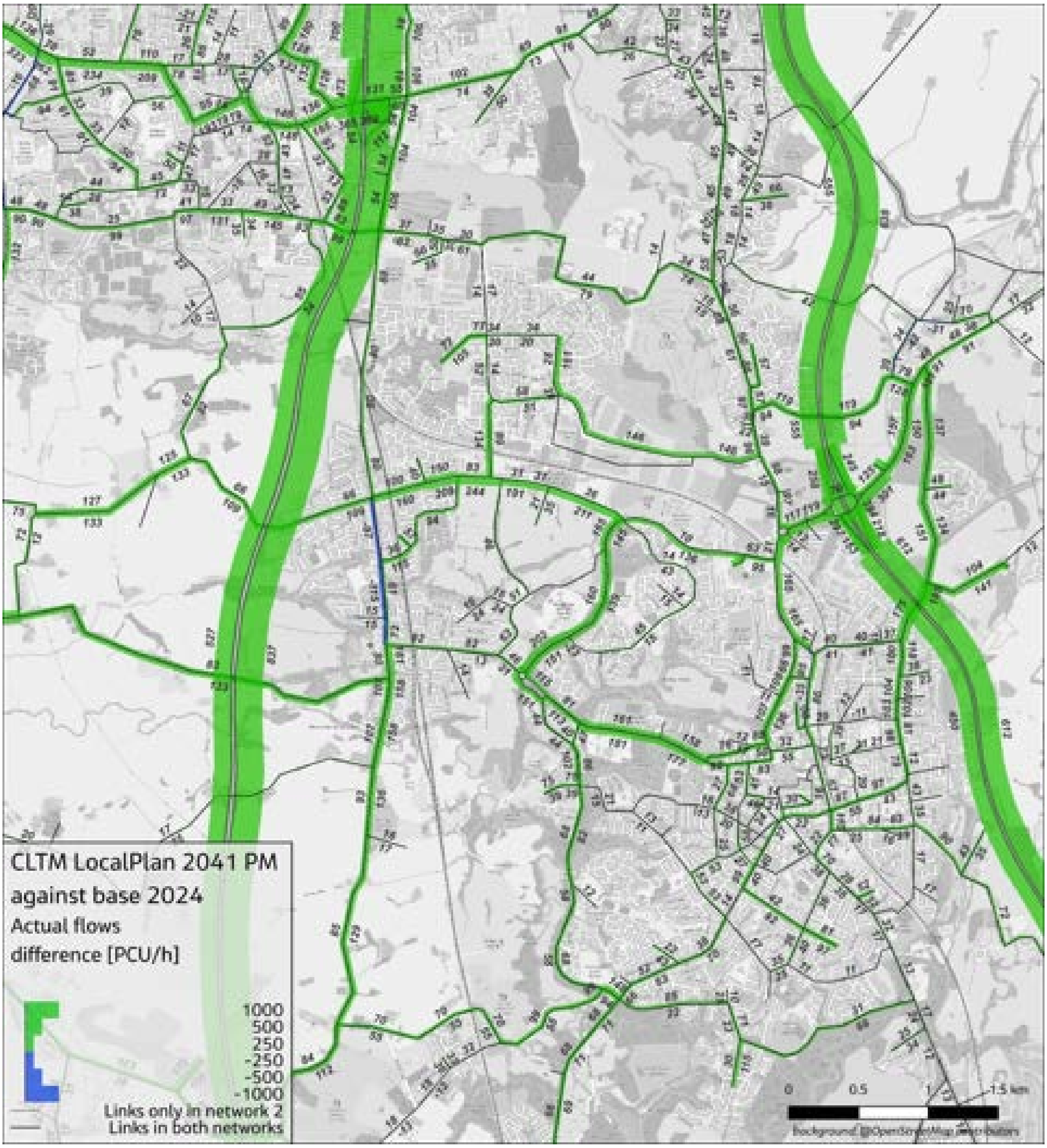


Figure 5.35 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Base Year - Chorley

Figure 5.36 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Base Year – Preston East

Figure 5.37 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Base Year - Preston East

Figure 5.38 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Base Year – Northwest Preston

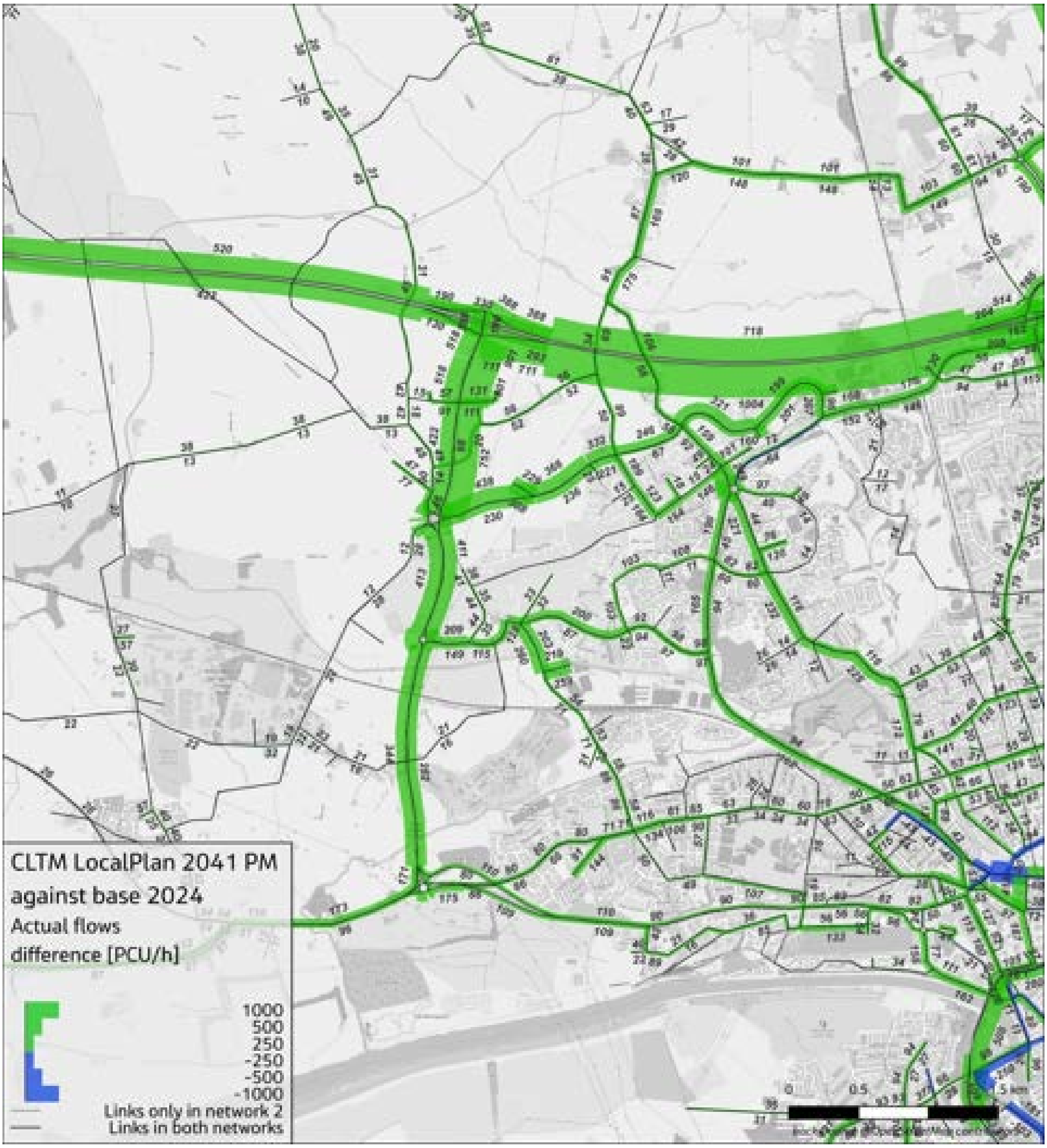


Figure 5.39 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Base Year - Northwest Preston

Figure 5.40 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Base Year – South Ribble

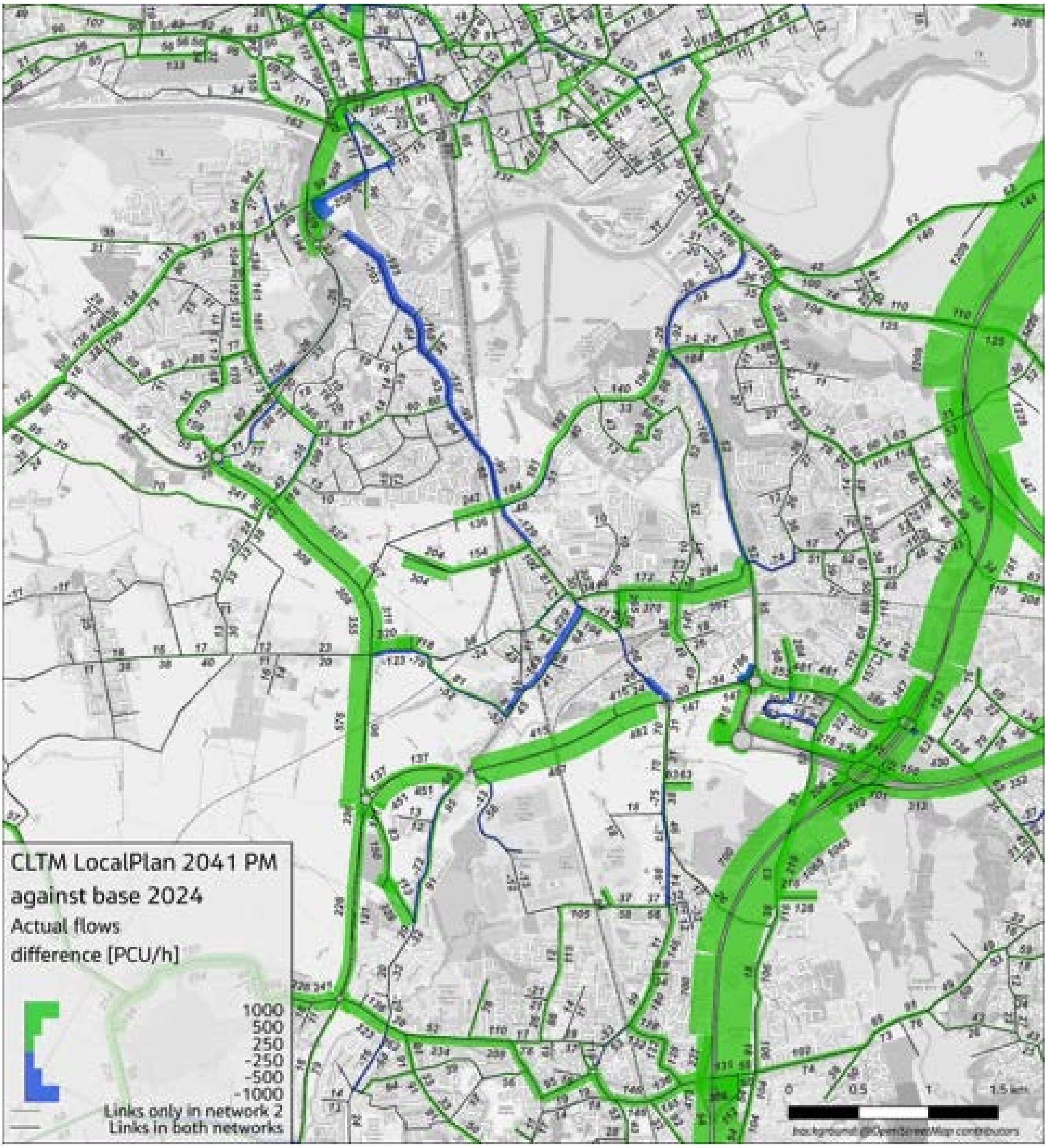


Figure 5.41 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Base Year – South Ribble

Flow Difference plot between Reference and Local Plan scenario for 2041 AM and PM peak is shown in Figure 5.42 through Figure 5.49. Flow difference plots for IP and 2031 is included in Appendix G.

The flow difference plots shows that in general there is an overall increase in traffic in the Local Plan scenario with the additional developments included. The are instances where reduction in traffic is noted due to assignment re-routing.

Figure 5.42 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Reference Case – Chorley

Figure 5.43 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Reference Case – Chorley

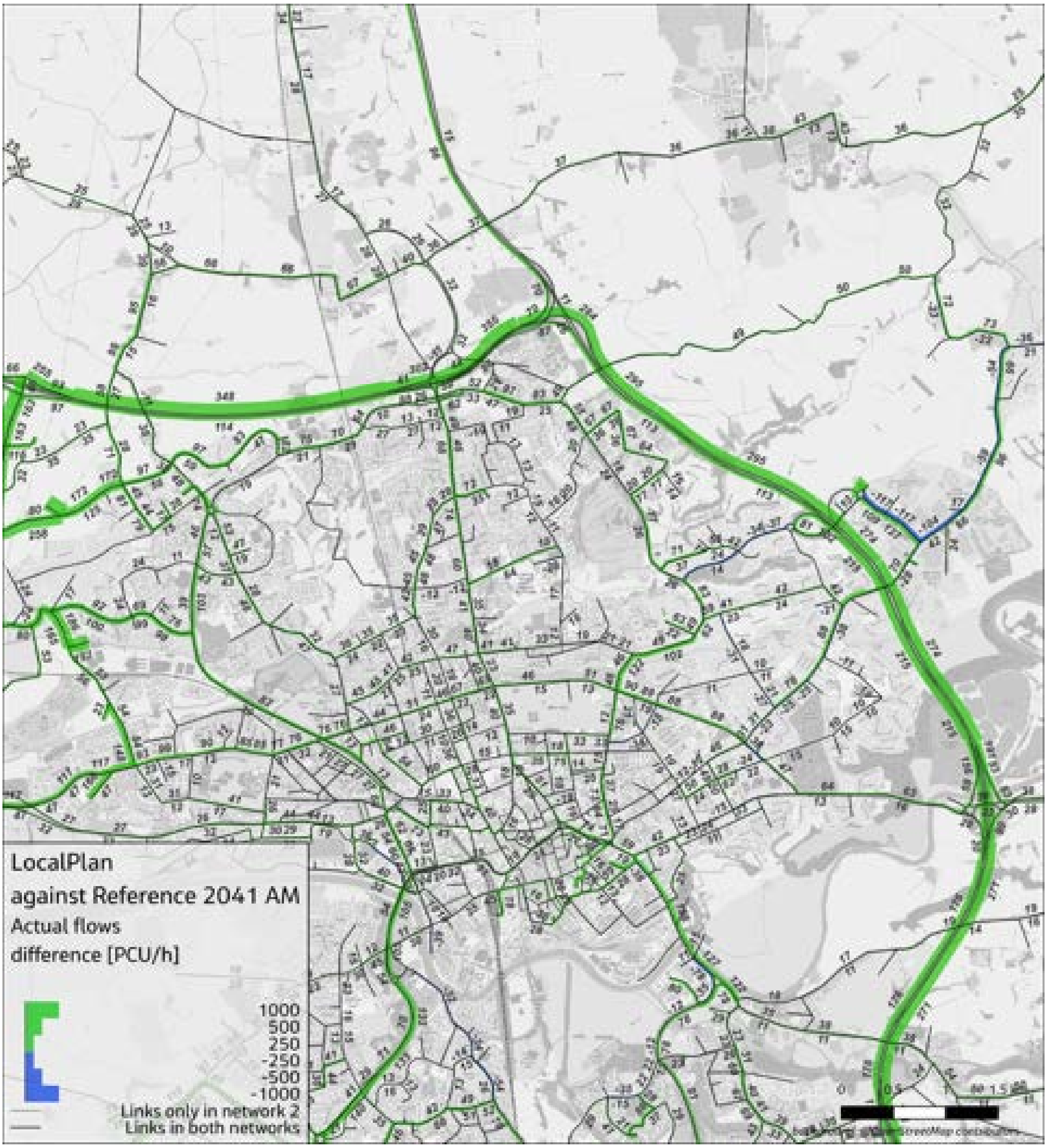


Figure 5.44 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Reference Case – Preston East

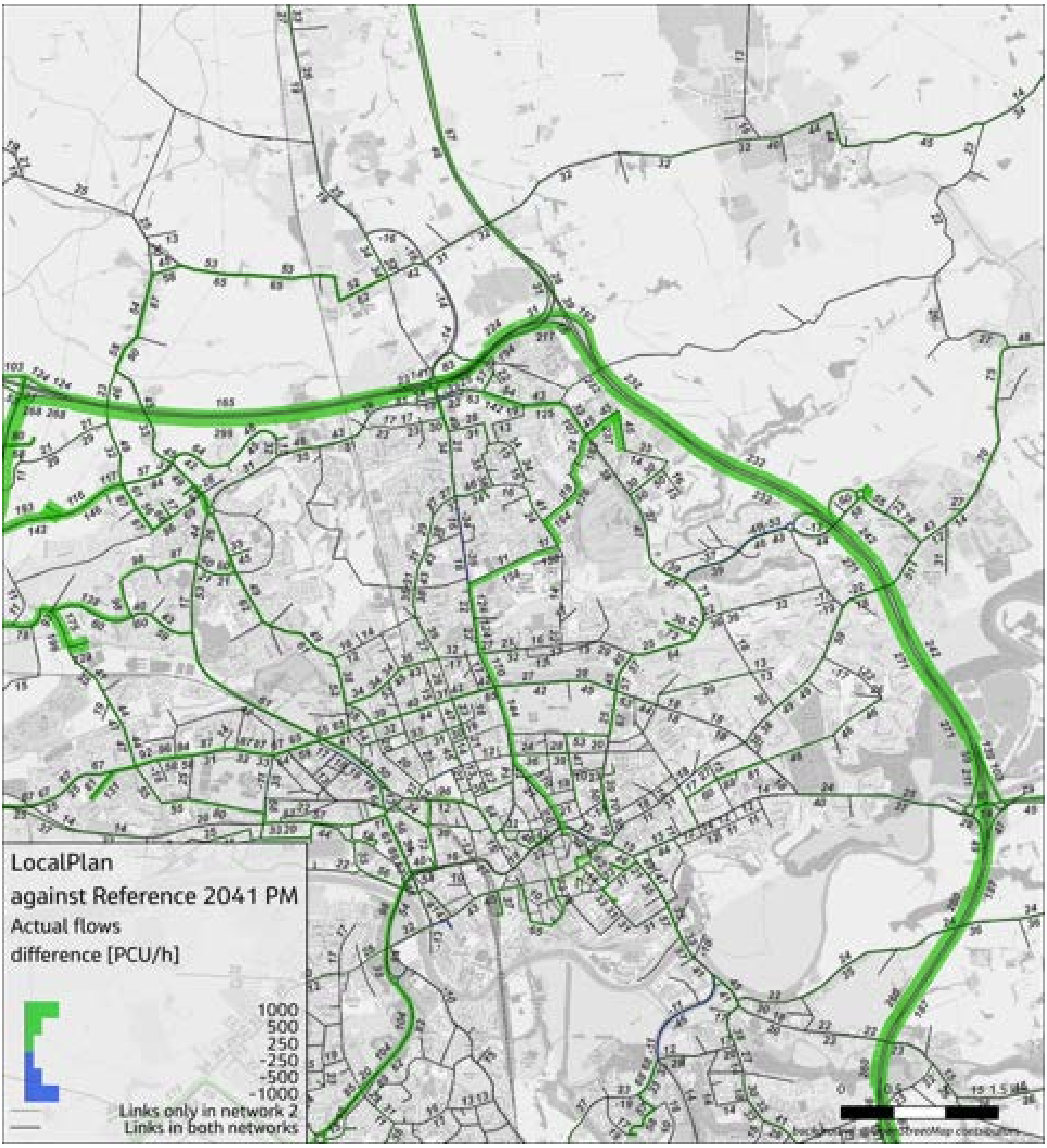


Figure 5.45 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Reference Case – Preston East

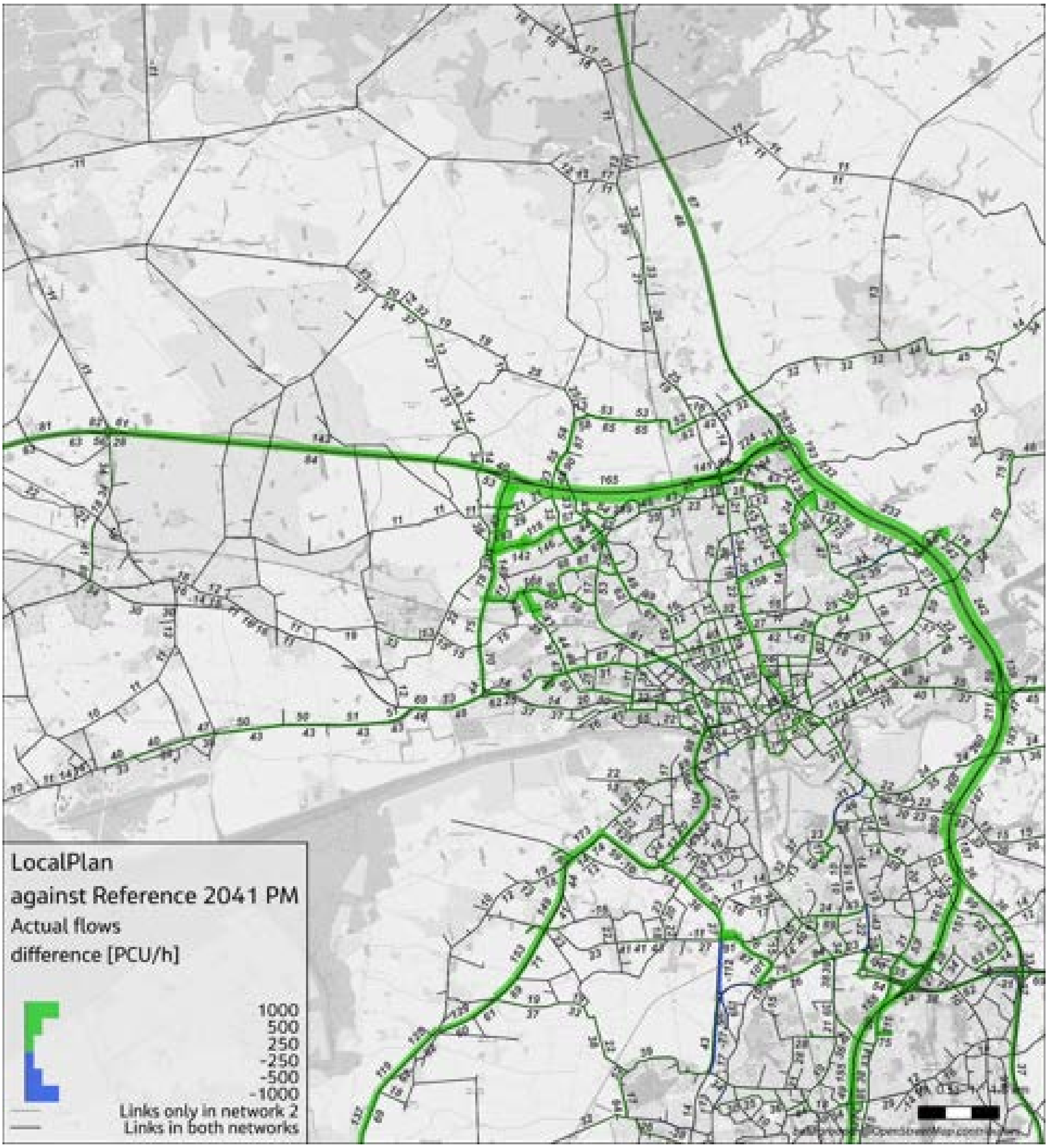


Figure 5.46 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Reference Case – Preston Northwest

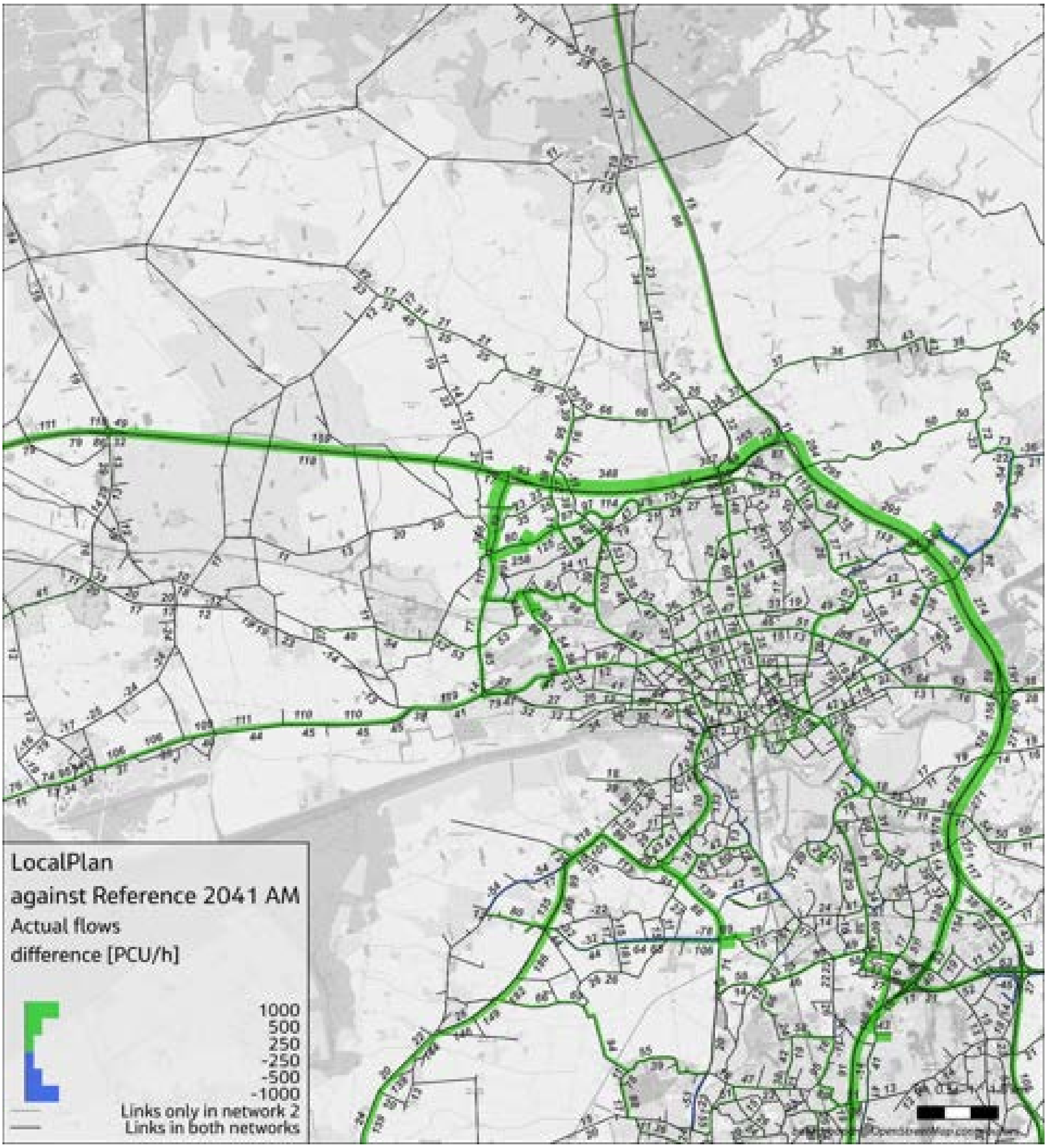


Figure 5.47 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Reference Case – Preston Northwest

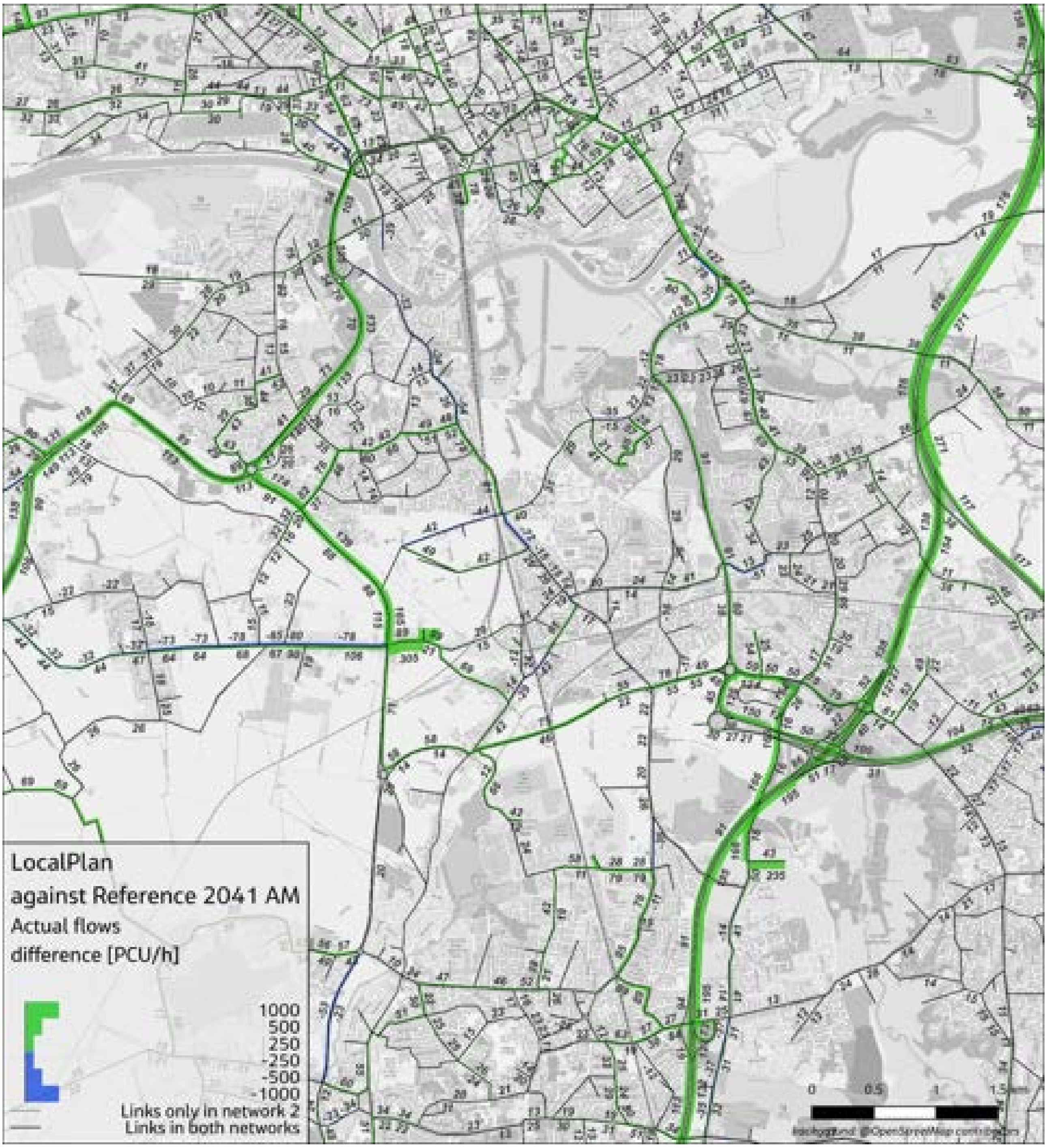


Figure 5.48 Flow Difference Plot – 2041 AM Local Plan Scenario Vs Reference Case – South Ribble

Figure 5.49 Flow Difference Plot – 2041 PM Local Plan Scenario Vs Reference Case – South Ribble

5.23.2. Volume to Capacity

In order to identify the areas in the model with significant congestion, the output from the modelling has been examined in terms of the ratio of volume over capacity (V/C). This compares the modelled traffic flow over an hour to the modelled capacity for an hour. The junctions with at least one arm showing a V/C ratio of greater than 85% (which is generally accepted as the point where congestion begins).

The modelled outputs have been displayed graphically in order to show the junction hotspot locations where the ratio of traffic volume to capacity is above 85% and therefore indicative of a lack of capacity for additional traffic. The subsequent analysis of these points on the model network, alongside local knowledge gave rise to the specific locations described below which show worsened congestion as a result of the CLLP Local Plan growth.

The figures give a summary of congestion (highest V/C%) in a different colour bands representing degree of congestions as defined below:

- Exceeding capacity threshold (>85%), shown in red;
- Approaching capacity threshold (60-85%), shown in yellow; and
- Below 60% capacity, shown in green.

In order to strengthen this analysis of capacity constraints, this report cross-references the data from the Saturn traffic model with data from Google maps, which models typical traffic data at particular times of day. In the first instance the base model v/c plots for key junctions and corridors were compared to the Google speeds for the respective peak to ensure the model was capturing the congestion points realistically.

The Google data can be used to identify gaps in the Saturn data and provides an indication of the extent to which congestion spreads across the network. While it is true that Google traffic maps are good for benchmarking, it is to be noted that the model v/c and google speeds are not directly comparable metrics. It is unclear what thresholds are used for defining the different Google speeds bands. It is assumed that the highly congested speed (red) indicates a v/c greater than 85%, yellow band corresponds to moderate congestion and corresponds to v/c between 60% to 85% and green speed bands corresponds to no congestion or free flow speed.

Network checks were conducted to ensure that designated parking bays are not counted as additional lanes, which could otherwise lead to increased capacity and skewed v/c results.

The Google traffic data comparisons with base model V/C for base AM and PM peak period is shown in Appendix H.

The below section discusses in detail the network issues within each of the three district by utilising the model outputs discussed above for the AM and PM peak for base, reference and local plan scenario for year 2041. Zoomed plots focussing on key areas for each district for all peaks and years is included in Appendix I. The junction capacity analysis has formed the main basis for identification of the impact of the Local Plan and to inform potential mitigation requirements at this stage of the study . This section covers the key local roads, Strategic Road Network (SRN) within the three districts are discussed separately in the next section.

Chorley

Chorley, the southernmost of the three authorities, is particularly sought after for its rural commuter locations. Chorley has strong links to Preston to the north and Greater Manchester, making it a prime strategic location between the two.

Chorley boasts a well-developed transport infrastructure that supports both local and regional connectivity. It is served by major roads such as the A6, A49, and A581, which provide important links to nearby towns and cities. The area is also served by First TransPennine Express and Northern Rail, offering connections between Manchester Piccadilly, Preston, and beyond, including services to Blackpool, Barrow-in-Furness, and Windermere. Most bus services are operated by Stagecoach Merseyside & South Lancashire, with additional services by Go North West and Blackburn Bus Company, centered around the Chorley Interchange.

The Local Plan allocations in Chorley district are expected to generate a significant number of trips, adding substantially to the existing land supply. By 2041, the district is projected to include approximately:

- 5,000 housing units
- 4,600 jobs

Significant developments proposed in Chorley include:

- Botany Bay near M61 J8, with approximately 1,300 jobs and 100 dwellings
- Little Knowley, with 380 dwellings
- Land East of M61, with approximately 450 jobs

Table 5-32 and Table 5-33 provide the V/C outputs at junctions for the AM and PM peaks respectively for junctions which exhibit high V/C within Chorley District. The results are provided for the Base Year, Reference Case and the Local Plan scenario.

In most locations, where the V/C ratio is observed to be higher than 85% in the base year, future developments are likely to exacerbate these conditions.

These developments will increase demand at the A6 Preston Rd / A674 Millennium Way and M61 J8 junctions. The A6 Preston Rd / A674 Millennium Way junction experiences congestion at the Hartwood Roundabout and nearby road segments, primarily due to traffic accessing the Chorley Hospital and trips to/from the M6. Although mitigations are proposed for the Hartwood Roundabout as part of the Botany Bay development, the model assumes the existing network remains unchanged.

At M61 J8, most interchange arms are within the acceptable V/C of 85% during peak times, though some links are approaching capacity and could potentially cause congestion. In AM peak, the northbound on slip shows V/C greater than 85%. Similarly in PM peak, the northbound off slip and southbound on slip shows V/C greater than 85%. Local knowledge indicates that roads around this interchange are already gridlocked with traffic from the Hartwood Roundabout backing up onto the M61 at peak times. While the traffic model shows severe delays on the A6 at the Hartwood Roundabout, it does not show high congestion on the M61 for base and future years. A junction model or microsimulation model may be needed to understand the level of mitigation required. Proposed network improvements for the Hartwood Roundabout as part of the Botany Bay development are not included in the future year model as the final designs are not yet confirmed.

Congestion is also observed along Euxton Lane at the A6/Euxton junction in both base and future years, especially during the PM peak, mainly due to traffic accessing the nearby Chorley hospital. Local Plan allocations, including Strawberry Fields with 750 jobs, Southern Commercial with 700 jobs, and additional housing developments with 500 dwellings on either side of Euxton Lane, contribute to additional delays in this corridor.

The A6 approaching the A6/Buckshaw Avenue junction shows delays in both AM and PM peaks across all scenarios. Similarly, the Central Ave sections at the signalized junctions with Dawson Ln and Euston Ln show congestion in the base year, expected to worsen in future years. Optimising traffic signals is expected to reduce these delays.

The A6 Bolton Rd / A5106 Wigan Ln junction experiences some congestion on certain approaches. However, as this is a rural area, traffic flows are not significant enough to cause major delays. Optimizing traffic signals is expected to alleviate these delays.

Figure 5.50 and Figure 5.51presents the base V/C for AM and PM peak. Figure 5.52 through Figure 5.55 presents the future year V/C plots for the Reference and Local Plan scenarios during AM and PM peaks. The highest V/C value at each junction is provided.

There are some instances where the modelling is highlighting high V/C on some movements at signalised junctions, however, some arms are shown to have spare capacity, as such it is anticipated that optimisation of signal timings may be sufficient to relieve capacity restraint at a significant proportion of junctions. Regardless they have been included in the list of junctions summarised below.

Table 5-32. Junction V/C – Chorley – AM Peak

Junction	Direction	Arm Name	2024	2031		2041	
			Base	Reference	Local Plan	Reference	Local Plan
A6 Preston Rd / A674 Millenium Way	Inbound	South East	106%	106%	106%	105%	105%
		South	101%	101%	101%	101%	101%
		North	104%	103%	104%	103%	103%
		North East	47%	47%	48%	47%	49%
M61 J8		South West	51%	53%	53%	54%	53%
	Offslip NB	South	74%	77%	77%	78%	78%
	Offslip SB	North	13%	14%	14%	15%	15%
	Onslip NB		101%	98%	99%	97%	98%
	Onslip SB	South	85%	96%	96%	97%	97%
	Inbound	North East	54%	58%	59%	63%	64%
A6 Preston Rd / B5252 Euxton Lane		West	64%	64%	64%	66%	68%
		North	97%	99%	99%	99%	100%
		South	36%	38%	39%	51%	49%
A6 Preston Rd / Buckshaw Avenue		West	63%	66%	67%	68%	68%
		South	96%	96%	96%	96%	96%
		North	61%	69%	70%	71%	74%
Central Ave / B5248 Dawson Ln		South	17%	27%	28%	35%	35%
		West	60%	62%	63%	64%	64%
		East	26%	29%	30%	31%	33%
A6 Bolton Rd / A5106 Wigan Ln		South West	61%	66%	67%	68%	70%
		South	48%	55%	56%	62%	63%
		North	42%	47%	47%	51%	52%

Table 5-33. Junction V/C – Chorley – PM Peak

Junction	Direction	Arm Name	2024	2031		2041	
			Base	Reference	Local Plan	Reference	Local Plan
A6 Preston Rd / A674 Millenium Way	Inbound	South East	111%	110%	110%	110%	110%
		South	93%	93%	93%	94%	94%
		North	101%	102%	102%	102%	102%
		North East	46%	52%	52%	52%	52%
M61 J8		South West	50%	53%	54%	56%	57%
	Offslip NB	South	91%	93%	93%	92%	93%
	Offslip SB	North	9%	10%	10%	11%	11%
	Onslip NB		77%	80%	81%	85%	85%
	Onslip SB	South	87%	86%	87%	86%	86%
	Inbound	North East	88%	91%	92%	92%	92%
A6 Preston Rd / B5252 Euxton Lane		West	72%	79%	80%	83%	84%
		North	89%	91%	91%	92%	92%
		South	34%	47%	48%	46%	46%
A6 Preston Rd / Buckshaw Avenue		West	59%	69%	71%	69%	71%
		South	89%	90%	90%	89%	90%
		North	91%	95%	94%	95%	95%
Central Ave / B5248 Dawson Ln		South	14%	19%	21%	23%	25%
		West	55%	58%	59%	59%	59%
		East	34%	36%	37%	39%	40%
A6 Bolton Rd / A5106 Wigan Ln		South West	54%	63%	64%	70%	70%
		South	44%	51%	53%	55%	56%
		North	39%	45%	47%	49%	51%

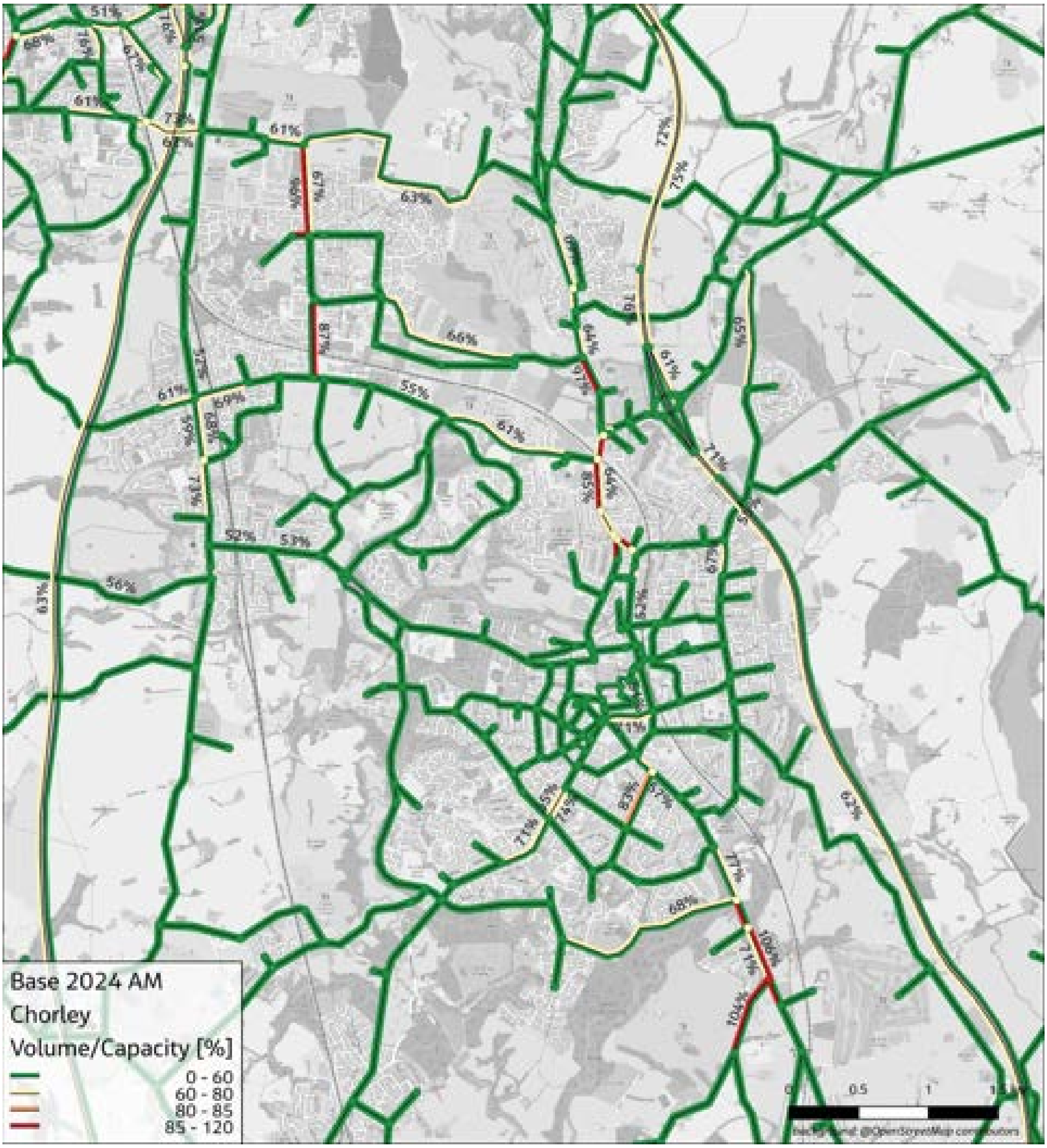


Figure 5.50 V/C Plot – Base AM – Chorley

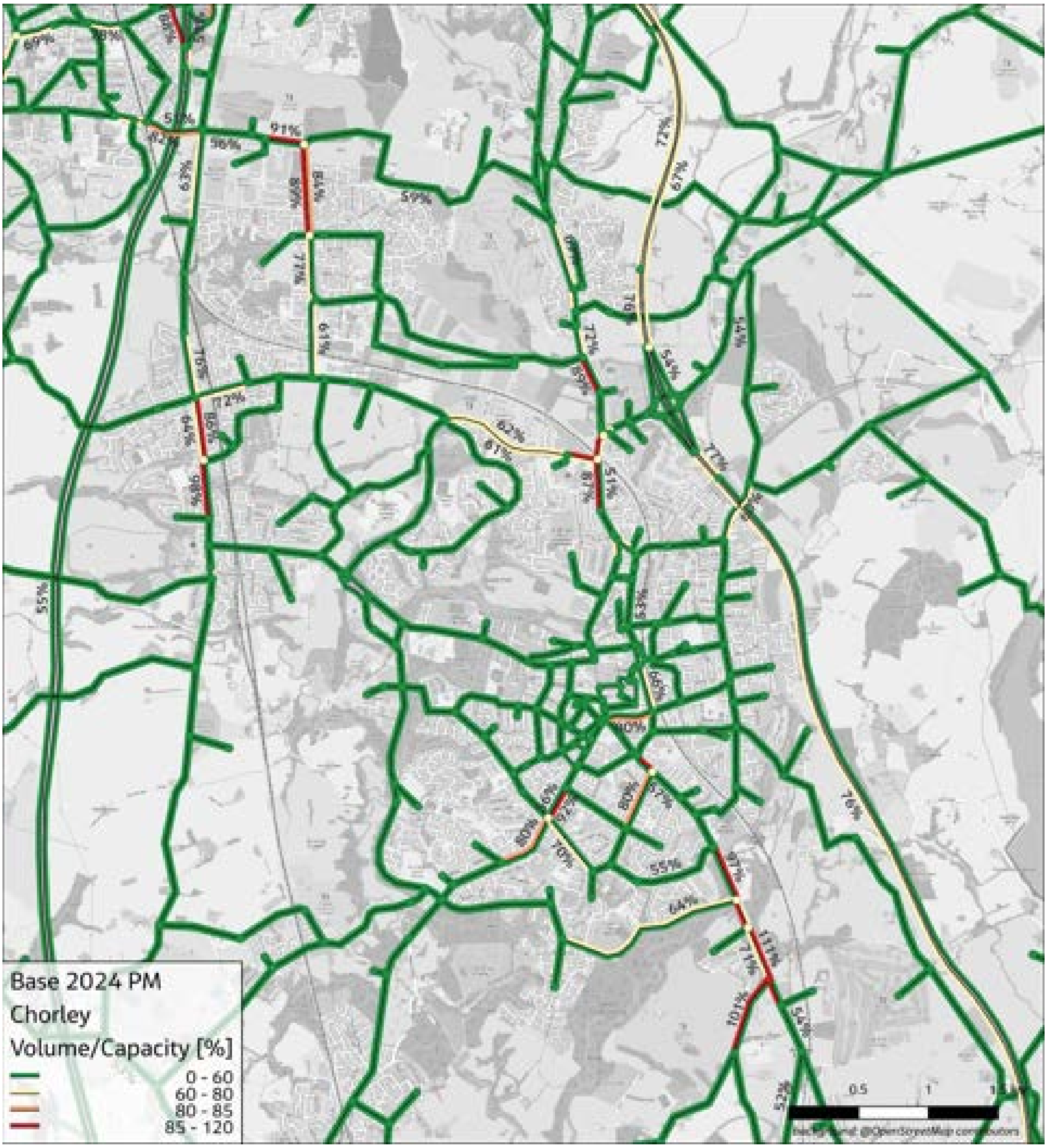


Figure 5.51 V/C Plot – Base PM – Chorley

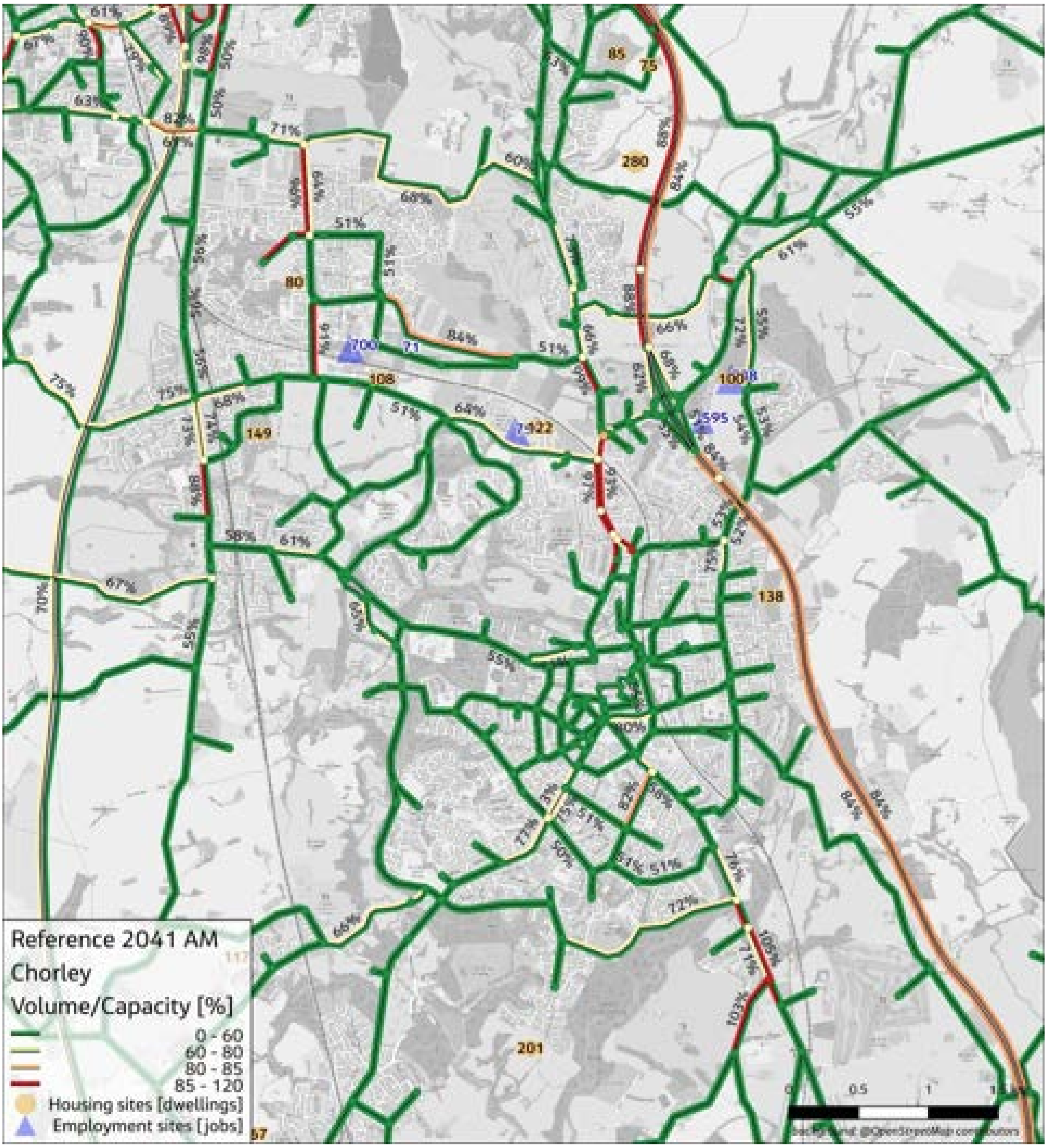


Figure 5.52 V/C – 2041 AM Reference Scenario – Chorley

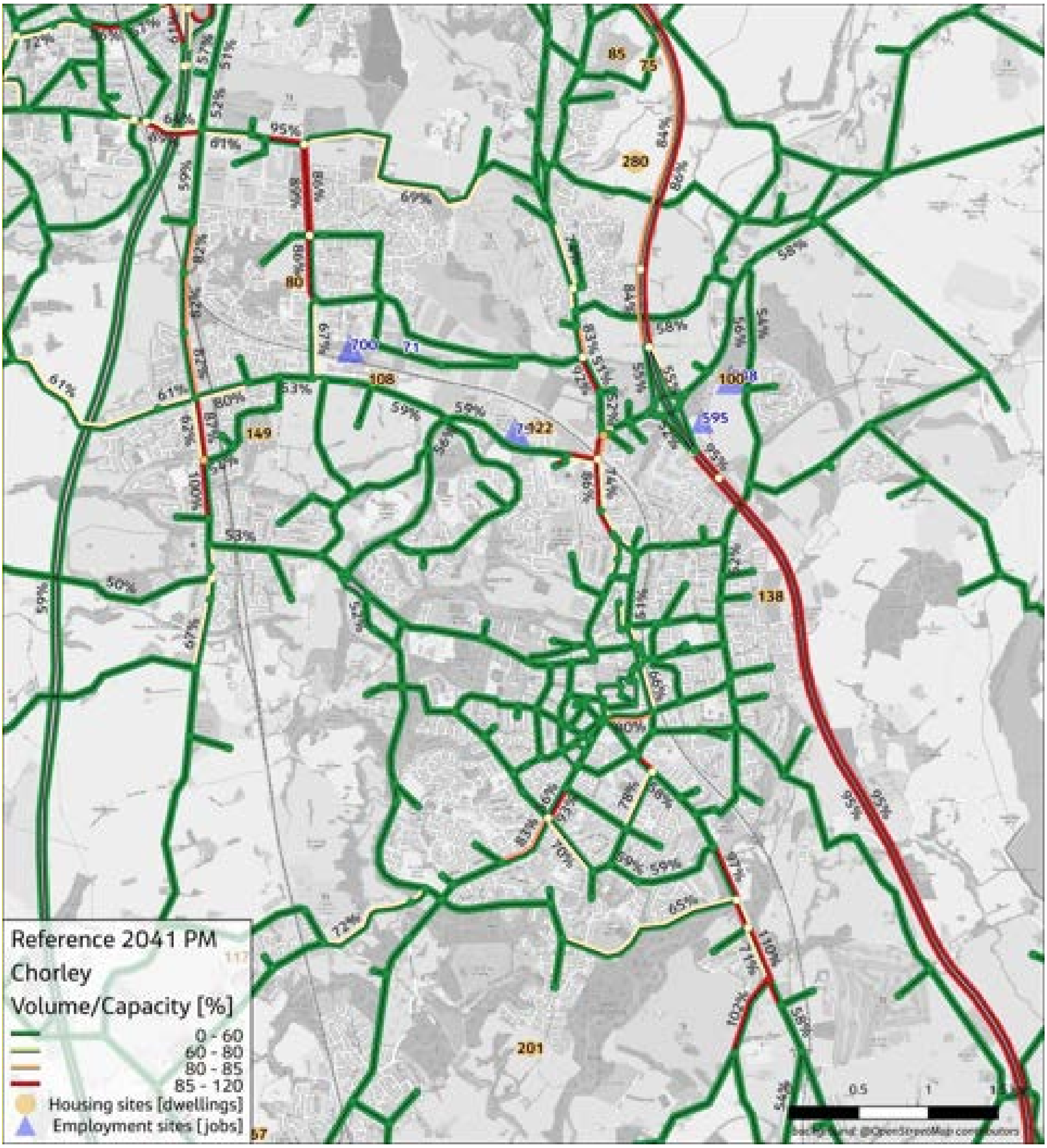


Figure 5.53 V/C Plot – 2041 PM Reference Scenario – Chorley

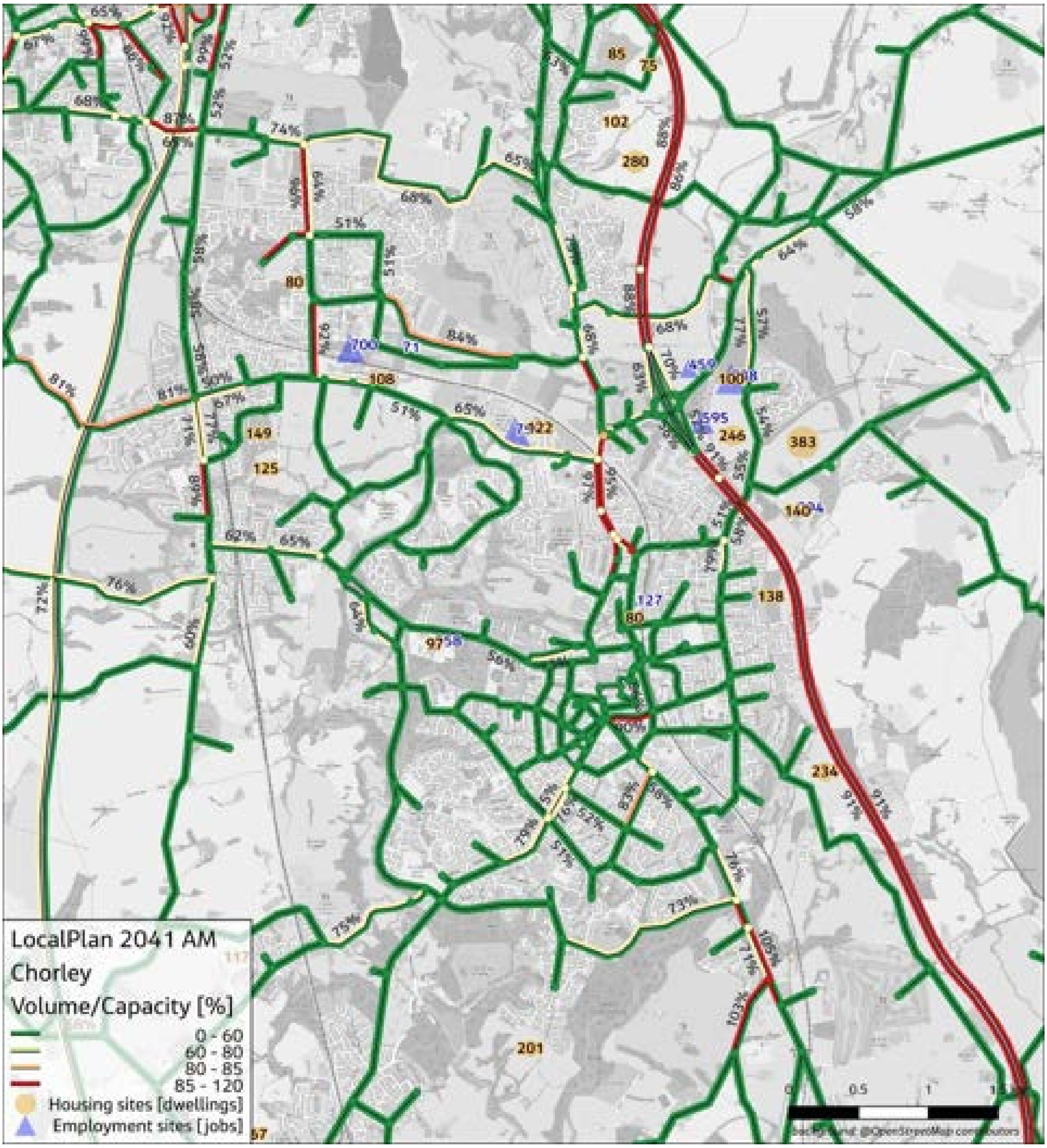


Figure 5.54 V/C Plot – 2041 AM Local Plan Scenario – Chorley

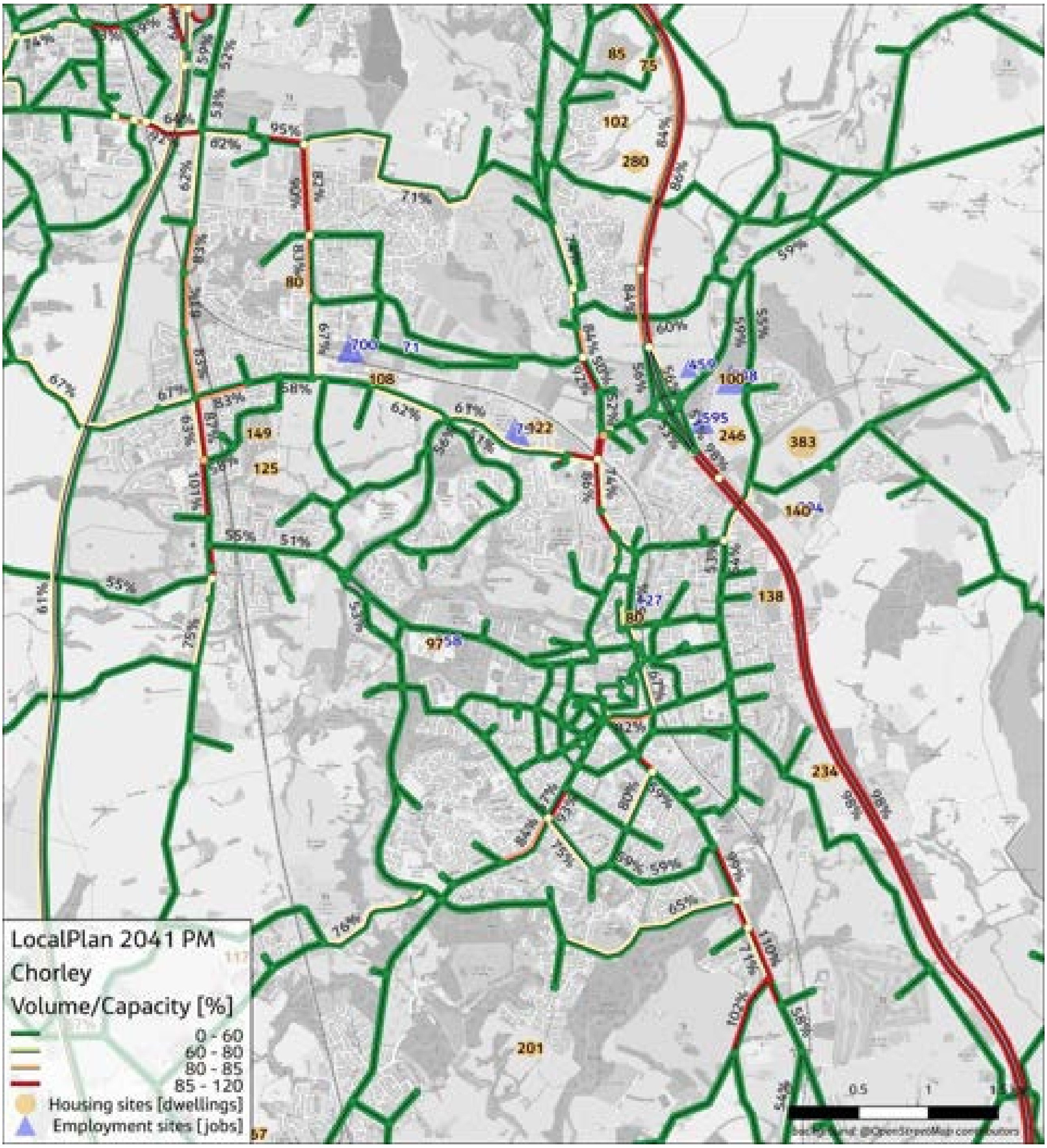


Figure 5.55 V/C Plot – 2041 PM Local Plan Scenario – Chorley

Preston

Preston is well-connected by major roads, including the M6, M55, and A6, facilitating travel to and from the city. Preston railway station, a major hub on the West Coast Main Line, offers direct services to London, Glasgow, and other key destinations, making it the third busiest station in the North West. Other stations in the area include Salwick, Bamber Bridge, and Lostock Hall. The city is also served by an extensive bus network, with services provided by companies like Stagecoach and Preston Bus, connecting various parts of the city and surrounding areas.

Preston has seen significant highway improvements, including the A6 Congestion Relief at Broughton, Preston Western Distributor Road (PWD), M55 J1 improvements, M6 J32 improvements, and Fishergate Hill improvements.

The Local Plan allocations in Preston district are expected to generate a substantial number of trips, significantly increasing the existing land supply. By 2041, the district is projected to include approximately:

- 11,600 housing units
- 7,600 jobs

The largest Local Plan allocation in Preston is located in North West Preston and Land West of Cottam and East of Preston Western Distributor. To accommodate this demand, Preston has already built the Preston Western Distributor scheme, which includes Edith Rigby Way, the longest and most significant road in the project, linking the A583 Blackpool Road and Riversway with the new junction J2 on the M55. The scheme also includes two smaller link roads: William Young Way and Avice Pimblett Way, connecting new and existing housing areas of North West Preston and Cottam. Additionally, a new Park and Ride Station at Cottam is proposed to support the delivery of new homes in north-west Preston and provide rail services to areas such as Cottam, Ingol, and Lea. The plans also include a free-to-use car park with around 250 spaces, including electric vehicle charging points.

The Local Plan also proposes housing developments at Land North of Eastway and Durton Lane with approximately 550 dwellings, and an additional 180 dwellings near Garstang Road. These developments will add traffic to the already congested M55 J1 and A6 corridor.

In the City Centre, future housing developments will add approximately 1,100 dwellings, increasing traffic on routes such as Church St./Fishergate Hill, Manchester Rd, and Avenham Ln/Queen St.

Table 5-34 and Table 5-35 summarize the key junctions in Preston where the volume-to-capacity (V/C) ratio is greater than 60% for AM and PM peaks, respectively. The analysis indicates several pinch points in Preston, suggesting current congestion will worsen in future years with or without the Local Plan sites. Roads such as the A583, Ringway/A59, Strand Rd, and A6 have several junctions showing high V/C ratios for all peaks and scenarios. M55 J1 has a V/C greater than 85% for the westbound slip roads approaching the signalized roundabout, with delays caused by weaving flows between vehicles approaching the A6 and those heading to the M55. The newly opened PWD and M55 J2 are expected to operate within acceptable V/C for most sections, though some arms of M55 J2 may reach or exceed capacity in certain scenarios.

There are some instances where the modelling is highlighting high V/C on some movements at signalised junctions, however, some arms are shown to have spare capacity, as such it is deemed that optimisation of signal timings may be sufficient to relieve capacity restraint at a significant proportion of junctions.

Figure 5.56 through Figure 5.59 present the base V/C for AM and PM peaks. Figure 5.60 through Figure 5.67 show the future year V/C plots for the Reference and Local Plan scenarios during AM and PM peaks. The highest V/C value at each junction is provided.

Table 5-34. Junction V/C – Preston – AM Peak

Junction	Direction	Arm Name	2024	2031		2041	
			Base	Reference	Local Plan	Reference	Local Plan
A5085 Blackpool Rd / A6 Garstang Rd	Inbound	East	68%	69%	69%	72%	73%
	Inbound	North	35%	34%	33%	36%	37%
	Inbound	South	37%	40%	40%	41%	42%
	Inbound	West	50%	61%	60%	65%	70%
A5085 Blackpool Rd / B6241	Inbound	East	64%	66%	66%	70%	70%
	Inbound	North	49%	50%	51%	53%	57%
	Inbound	South	35%	36%	36%	36%	38%
	Inbound	West	59%	67%	68%	76%	82%
A5085 Blackpool Rd / B6243	Inbound	North East	103%	103%	103%	103%	103%
	Inbound	North West	46%	49%	52%	62%	82%
	Inbound	South East	76%	80%	82%	89%	94%
	Inbound	South West	72%	76%	76%	82%	90%
A582 PWD / B5468 Avice Pimblett Way	Inbound	East	74%	80%	81%	81%	92%
	Inbound	North	36%	43%	43%	48%	53%
	Inbound	South	33%	37%	38%	41%	44%
A583 Blackpool Rd / A582 PWD	Inbound	East	54%	55%	56%	57%	61%
	Inbound	North	43%	48%	49%	52%	55%
	Inbound	Offslip EB	35%	41%	39%	46%	48%
	Inbound	Offslip NB	23%	25%	25%	27%	28%
A583 Fylde Rd / Aqueduct St.	Inbound	East	79%	57%	57%	56%	58%
	Inbound	North	100%	96%	96%	96%	98%
	Inbound	West	97%	96%	96%	96%	98%
A583 Riversway / Pedders Road	Inbound	East	74%	88%	88%	91%	89%
	Inbound	North	76%	74%	76%	76%	85%
	Inbound	South	25%	42%	42%	40%	37%
	Inbound	West	89%	95%	94%	98%	100%
A583 Riversway / Port Way	Inbound	East	79%	72%	73%	73%	76%
	Inbound	South	75%	88%	89%	90%	94%
	Inbound	West	100%	65%	65%	68%	74%
A59 London Road / New Hall Lane	Inbound	North East	43%	47%	47%	57%	53%
	Inbound	North West	64%	67%	68%	75%	79%
	Inbound	South East	75%	75%	74%	76%	82%
A59 Ring Way / A6 North Road	Inbound	East	100%	100%	100%	101%	101%
	Inbound	North	43%	42%	40%	49%	51%
	Inbound	South	0%	0%	0%	0%	0%
	Inbound	West	57%	57%	58%	64%	66%
	Offslip EB	North	34%	35%	36%	39%	44%
	Offslip NB	West	10%	23%	23%	24%	24%
A59 Ring Way / Bow Lane	Inbound	East	45%	44%	44%	47%	51%
	Inbound	South	64%	68%	68%	72%	76%
	Inbound	West	101%	104%	104%	105%	106%
A59 Ring Way / Church Street / Ribbleton Lane	Inbound	West	72%	76%	76%	82%	90%
	Inbound	East	86%	86%	85%	86%	88%
	Inbound	North	63%	62%	62%	65%	69%
	Inbound	Offslip EB	23%	26%	26%	28%	26%
	Inbound	Offslip NB	25%	24%	25%	26%	27%
	Inbound	South West	51%	55%	53%	67%	72%
A59 Ring Way / Corporation Street	Inbound	North	8%	11%	11%	12%	13%
	Inbound	North East	90%	91%	92%	94%	98%
	Inbound	South West	77%	79%	80%	82%	82%
A6 Garstang Rd / Sharoe Green Ln	Inbound	East	58%	63%	64%	71%	86%
	Inbound	North	59%	69%	70%	73%	77%
	Inbound	South	40%	46%	47%	50%	55%
	Inbound	West	87%	87%	87%	88%	90%
A6 Garstang Rd / St Vincents Rd	Inbound	East	62%	63%	63%	65%	65%
	Inbound	North	37%	44%	43%	54%	61%
	Inbound	South	33%	36%	36%	40%	43%
B5254 Strand Rd / A59 Guild Way Junction North	Inbound	East	0%	0%	0%	0%	0%
	Inbound	North	65%	74%	74%	74%	77%
	Inbound	South	90%	95%	95%	96%	96%
	Inbound	West	60%	70%	70%	72%	76%
B5254 Strand Rd / A59 Guild Way Junction South	Inbound	North	88%	58%	59%	57%	60%
	Inbound	South	47%	64%	63%	65%	66%
B5254 Strand Rd / Fishergate Hill	Inbound	East	80%	78%	77%	82%	81%
	Inbound	North	62%	24%	22%	36%	27%
	Inbound	South	68%	82%	79%	86%	86%
	Inbound	West	110%	105%	106%	108%	112%
B5254 Strand Rd / Port Way	Inbound	East	68%	47%	47%	52%	57%
	Inbound	North	15%	5%	4%	8%	5%
	Inbound	South	72%	67%	66%	67%	66%
	Inbound	West	43%	55%	57%	58%	67%
B6241 / A583 Watery Ln	Inbound	East	81%	95%	95%	95%	95%
	Inbound	North West	101%	93%	93%	93%	94%
	Inbound	South West	37%	54%	54%	55%	56%
B6241/ Tulketh Brow	Inbound	North	41%	40%	41%	41%	45%
	Inbound	North West	78%	74%	74%	73%	75%
	Inbound	South East	45%	46%	46%	50%	54%

Table 5-35. Junction V/C – Preston – PM Peak

Junction	Direction	Arm Name	2024	2031		2041	
			Base	Reference	Local Plan	Reference	Local Plan
A5085 Blackpool Rd / A6 Garstang Rd	Inbound	East	49%	56%	57%	59%	64%
	Inbound	North	33%	36%	36%	40%	53%
	Inbound	South	51%	53%	52%	53%	54%
	Inbound	West	45%	47%	47%	48%	50%
A5085 Blackpool Rd / B6241	Inbound	East	46%	52%	53%	56%	59%
	Inbound	North	83%	85%	85%	89%	93%
	Inbound	South	74%	76%	76%	77%	80%
	Inbound	West	63%	66%	66%	68%	69%
A5085 Blackpool Rd / B6243	Inbound	North East	99%	100%	100%	101%	102%
	Inbound	North West	68%	69%	69%	72%	75%
	Inbound	South East	78%	79%	79%	81%	83%
	Inbound	South West	69%	71%	70%	72%	72%
A582 PWD / B5468 Avice Pimblett Way	Inbound	East	41%	49%	50%	54%	72%
	Inbound	North	24%	29%	29%	32%	36%
	Inbound	South	36%	41%	41%	45%	47%
A583 Blackpool Rd / A582 PWD	Inbound	East	51%	53%	53%	55%	57%
	Inbound	North	46%	52%	54%	58%	65%
	Inbound	Offslip EB	20%	25%	24%	27%	28%
	Inbound	Offslip NB	37%	41%	42%	44%	47%
A583 Fylde Rd / Aqueduct St.	Inbound	East	77%	56%	56%	60%	65%
	Inbound	North	73%	79%	78%	80%	87%
	Inbound	West	104%	99%	99%	99%	99%
A583 Riversway / Pedders Road	Inbound	East	103%	103%	103%	103%	103%
	Inbound	North	99%	98%	101%	100%	102%
	Inbound	South	93%	94%	93%	95%	95%
	Inbound	West	89%	93%	94%	95%	98%
A583 Riversway / Port Way	Inbound	East	98%	101%	101%	102%	101%
	Inbound	South	97%	97%	97%	98%	99%
	Inbound	West	100%	92%	95%	91%	94%
A59 London Road / New Hall Lane	Inbound	North East	57%	57%	56%	65%	74%
	Inbound	North West	75%	78%	79%	79%	80%
	Inbound	South East	84%	82%	81%	83%	85%
A59 Ring Way / A6 North Road	Inbound	East	99%	99%	99%	100%	101%
	Inbound	North	34%	33%	33%	37%	60%
	Inbound	South	0%	0%	0%	0%	0%
	Inbound	West	60%	58%	59%	59%	59%
	Offslip EB	North	30%	32%	32%	33%	34%
	Offslip NB	West	6%	7%	7%	8%	7%
A59 Ring Way / Bow Lane	Inbound	East	65%	69%	68%	74%	77%
	Inbound	South	85%	101%	101%	103%	105%
	Inbound	West	101%	101%	101%	101%	101%
A59 Ring Way / Church Street / Ribbleton Lane	Inbound		75%	77%	77%	79%	82%
	Inbound	East	92%	91%	91%	92%	93%
	Inbound	North	47%	46%	46%	48%	55%
	Inbound	Offslip EB	52%	57%	57%	60%	60%
	Inbound	Offslip NB	18%	18%	17%	18%	17%
	Inbound	South West	68%	71%	71%	74%	78%
A59 Ring Way / Corporation Street	Inbound	North	25%	29%	27%	30%	29%
	Inbound	North East	94%	97%	97%	99%	100%
	Inbound	South West	94%	97%	97%	98%	100%
A6 Garstang Rd / Sharoe Green Ln	Inbound	East	100%	101%	100%	100%	102%
	Inbound	North	83%	91%	92%	94%	91%
	Inbound	South	74%	79%	77%	81%	80%
	Inbound	West	48%	52%	53%	55%	63%
A6 Garstang Rd / St Vincents Rd	Inbound	East	36%	40%	38%	39%	37%
	Inbound	North	42%	56%	52%	67%	92%
	Inbound	South	38%	39%	39%	40%	41%
B5254 Strand Rd / A59 Guild Way Junction North	Inbound	East	57%	61%	61%	63%	68%
	Inbound	North	85%	87%	87%	89%	92%
	Inbound	South	69%	75%	75%	76%	81%
	Inbound	West	60%	65%	65%	66%	71%
B5254 Strand Rd / A59 Guild Way Junction South	Inbound	North	95%	61%	61%	63%	65%
	Inbound	South	96%	96%	96%	98%	98%
B5254 Strand Rd / Fishergate Hill	Inbound	East	109%	111%	110%	114%	114%
	Inbound	North	94%	58%	60%	64%	68%
	Inbound	South	105%	113%	111%	115%	115%
	Inbound	West	113%	102%	102%	102%	102%
B5254 Strand Rd / Port Way	Inbound	East	84%	87%	87%	88%	91%
	Inbound	North	42%	55%	44%	63%	50%
	Inbound	South	53%	92%	93%	90%	92%
	Inbound	West	89%	94%	94%	95%	97%
B6241 / A583 Watery Ln	Inbound	East	85%	93%	94%	93%	94%
	Inbound	North West	69%	75%	75%	76%	81%
	Inbound	South West	50%	56%	56%	56%	56%
B6241/ Tulketh Brow	Inbound	North	40%	46%	44%	51%	49%
	Inbound	North West	50%	41%	41%	41%	47%
	Inbound	South East	35%	33%	33%	34%	36%

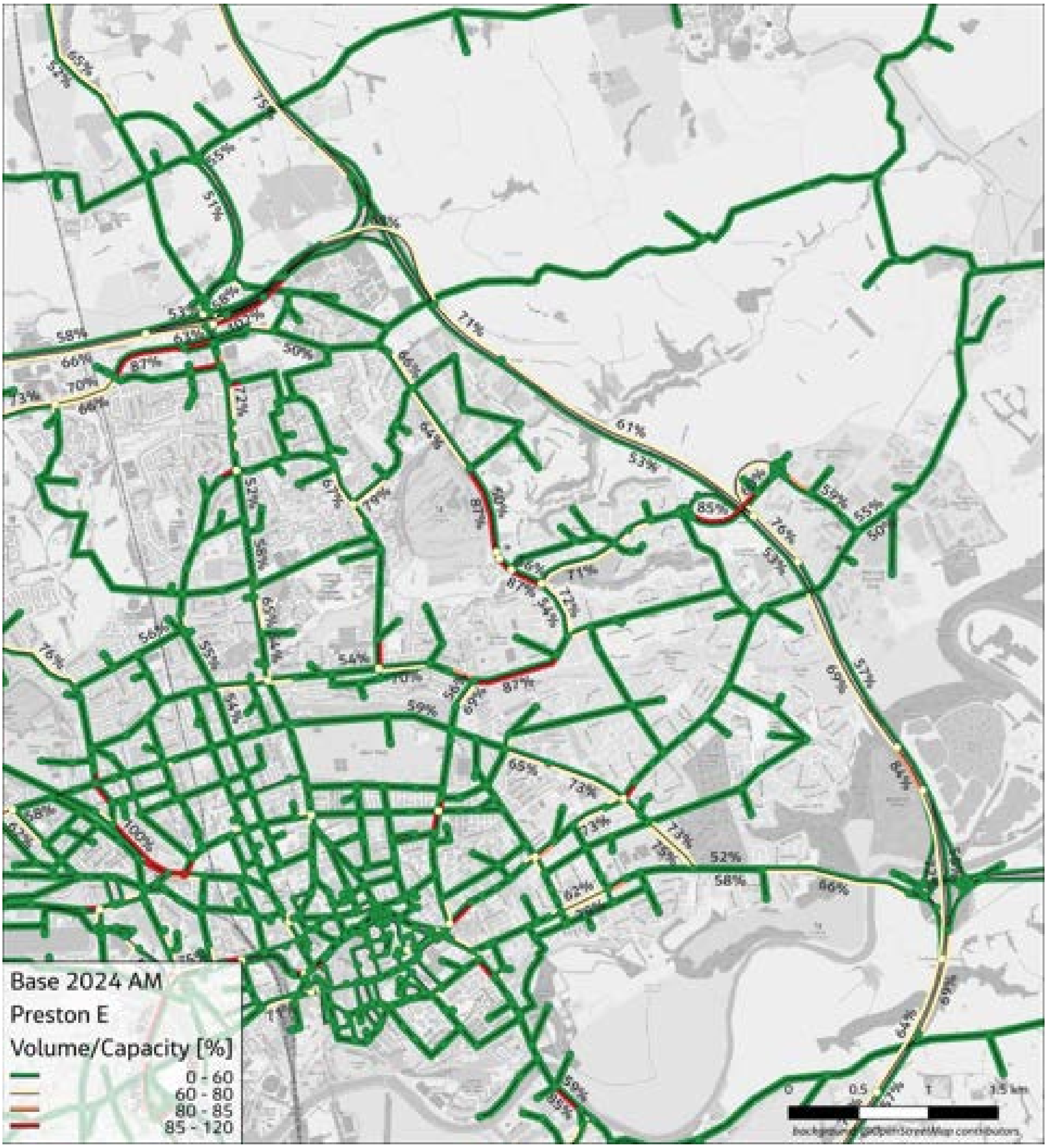


Figure 5.56 V/C Plot – Base AM – Preston East

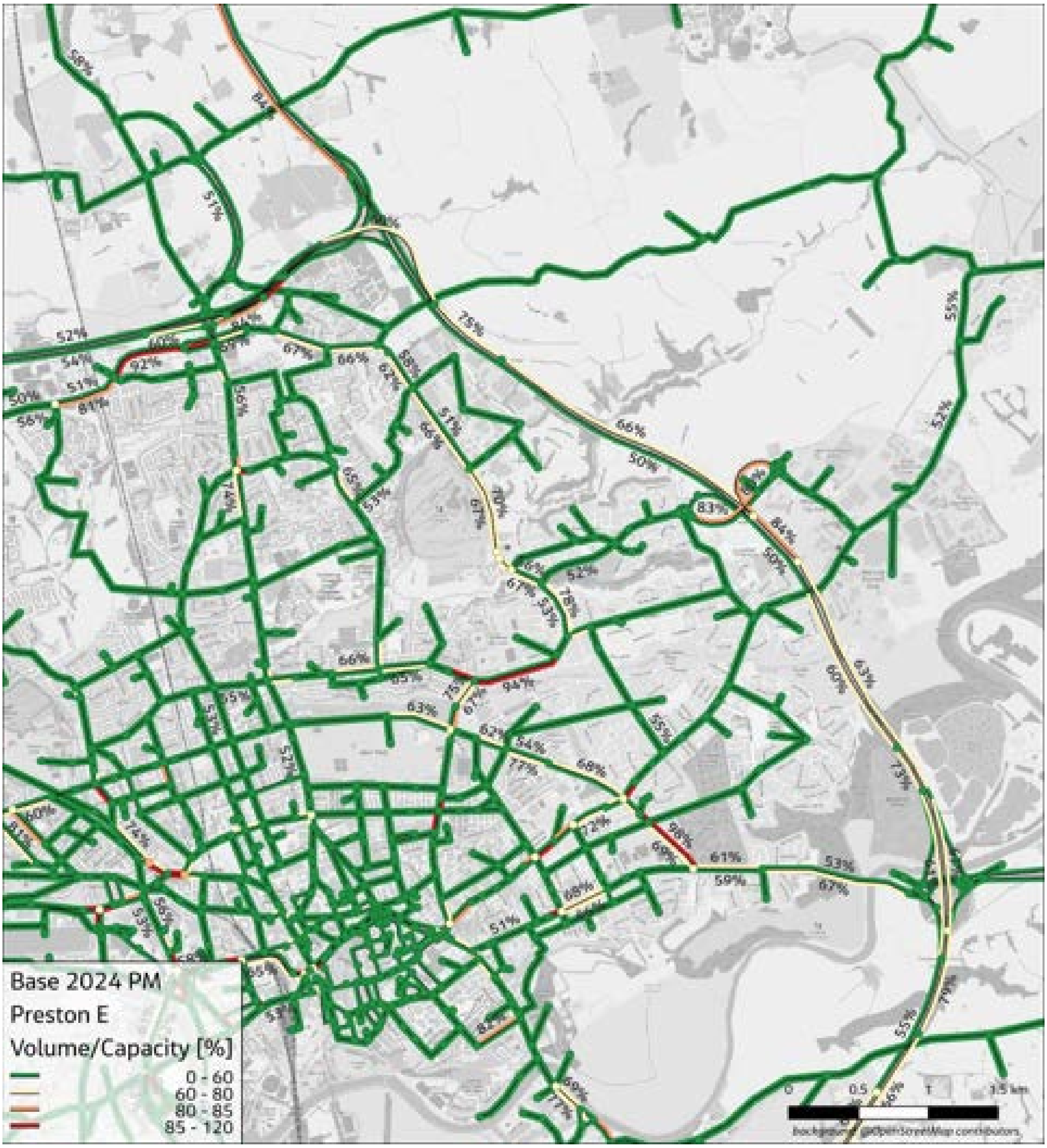


Figure 5.57 V/C Plot – Base PM – Preston East

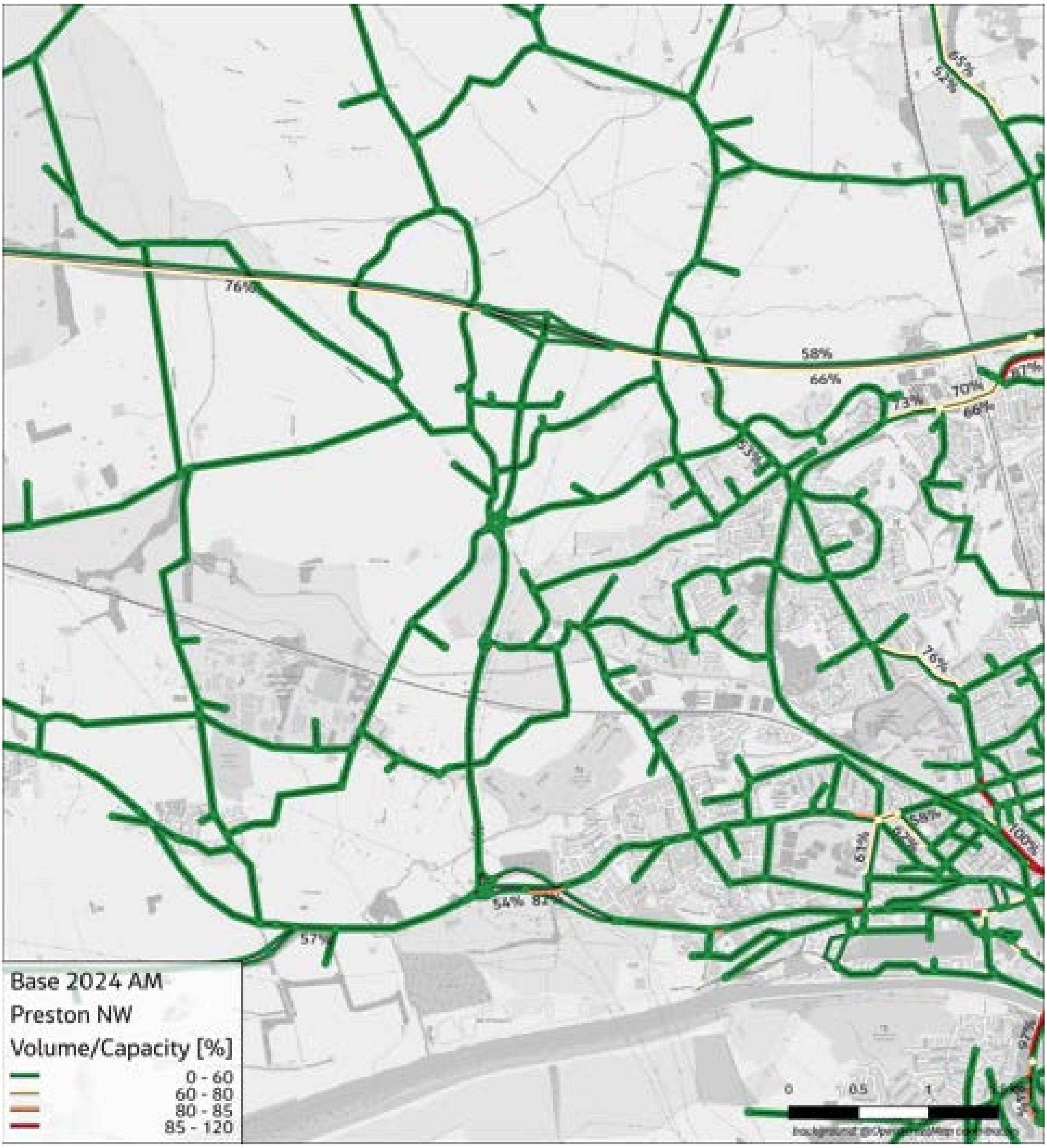


Figure 5.58 V/C Plot – Base AM – Preston Northwest

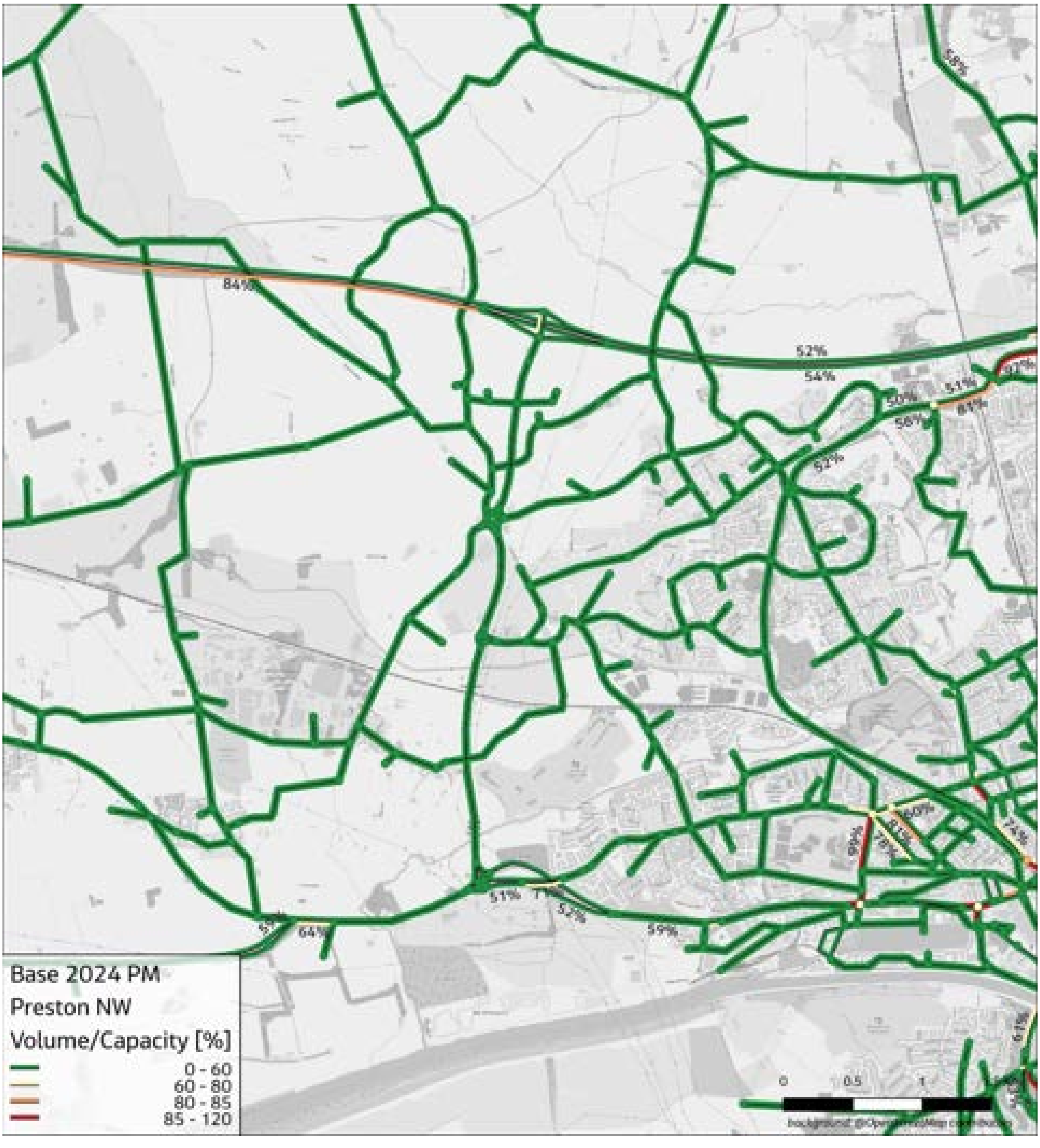


Figure 5.59 V/C Plot – Base PM – Preston Northwest

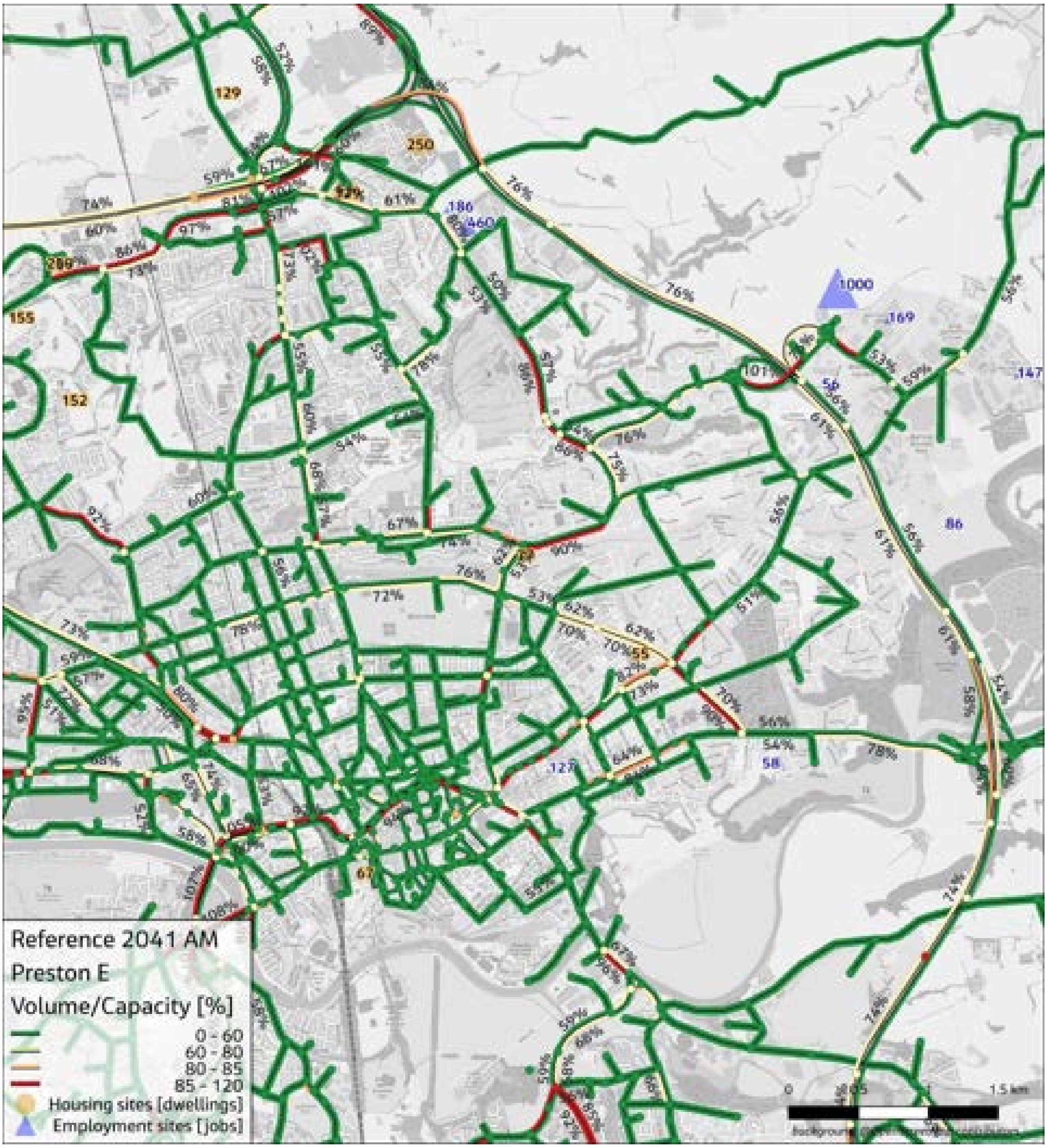


Figure 5.60 V/C – 2041 AM Reference Scenario – Preston East

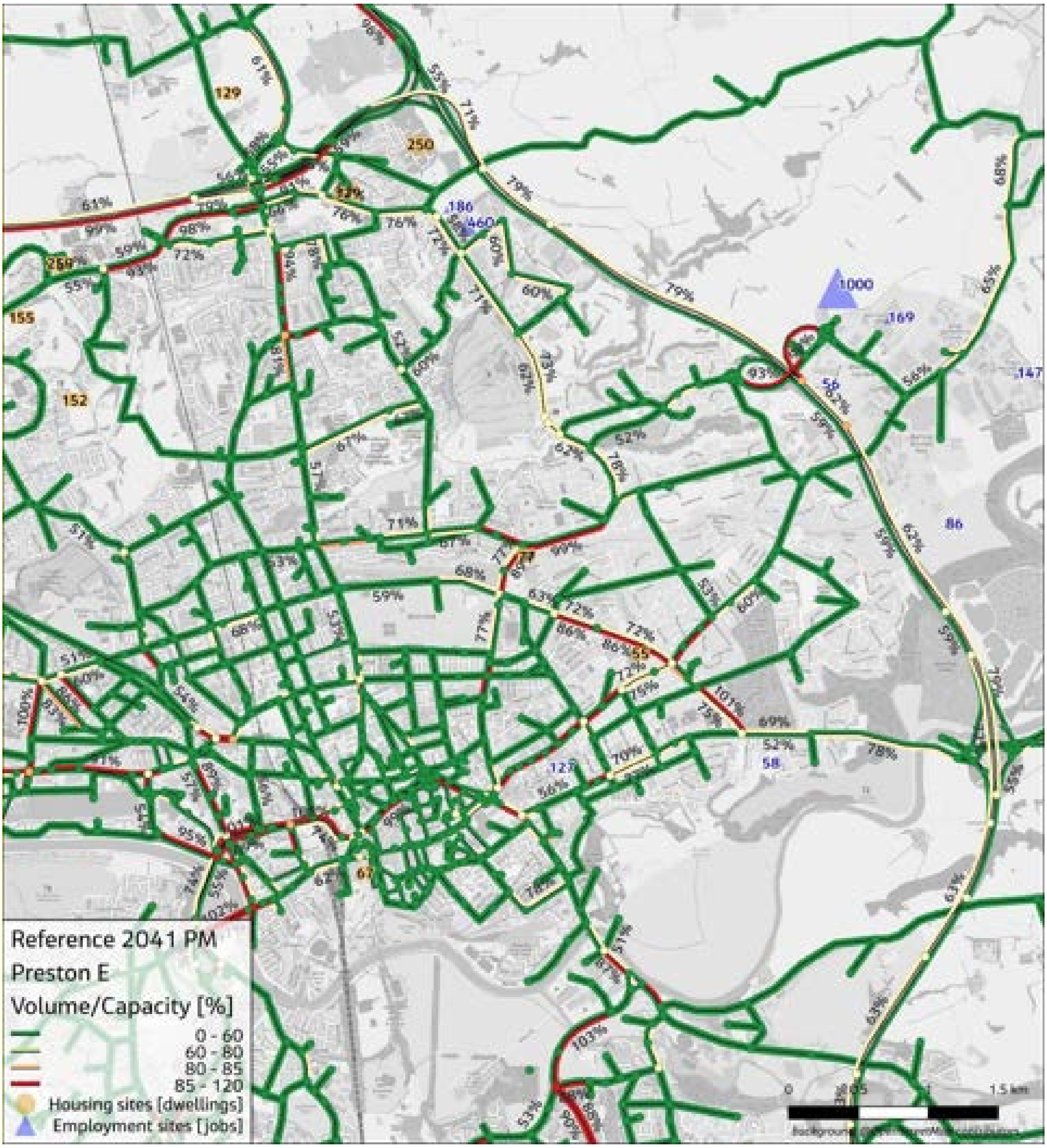


Figure 5.61 V/C Plot – 2041 PM Reference Scenario – Preston East

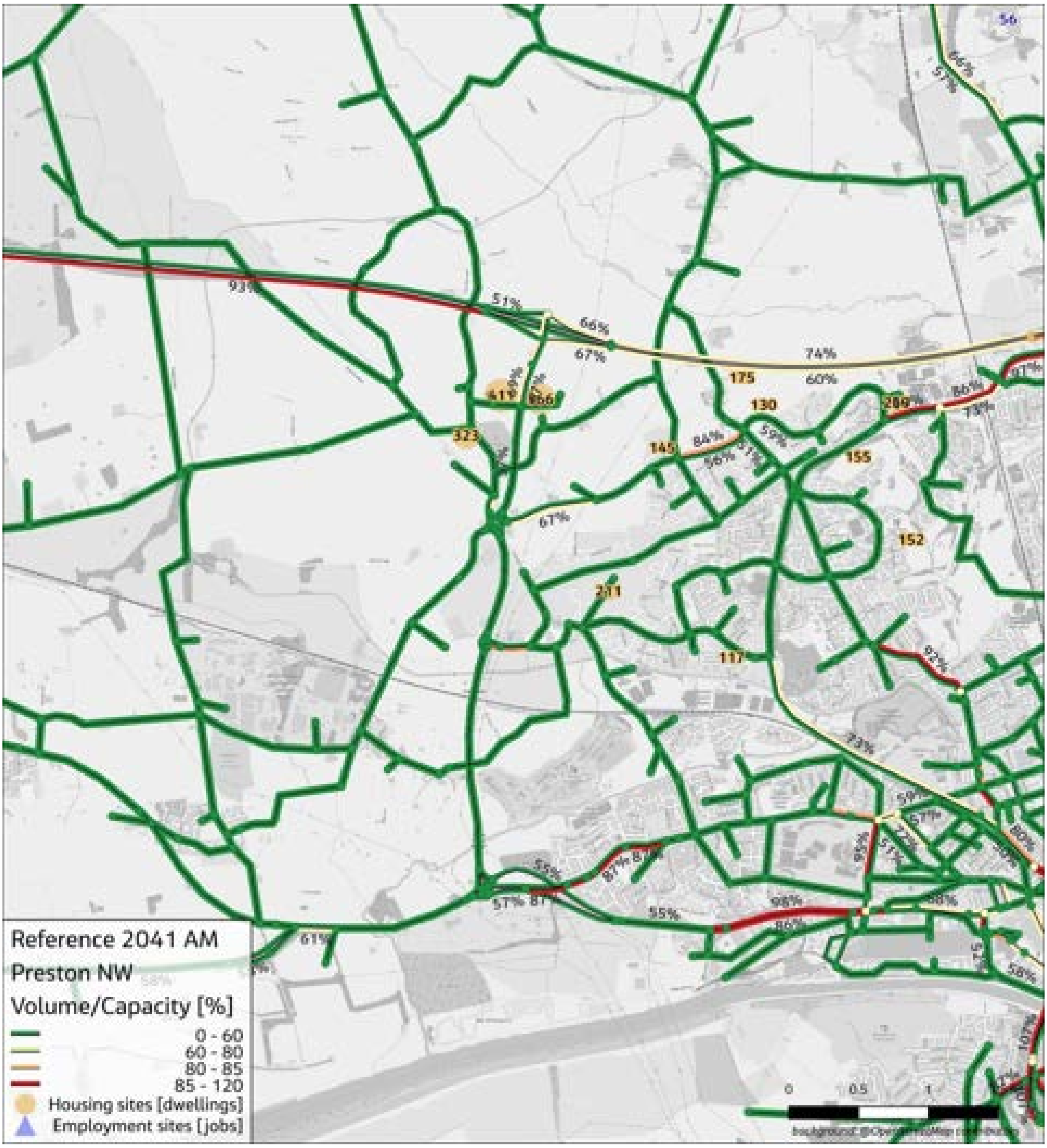


Figure 5.62 V/C – 2041 AM Reference Scenario – Preston Northwest

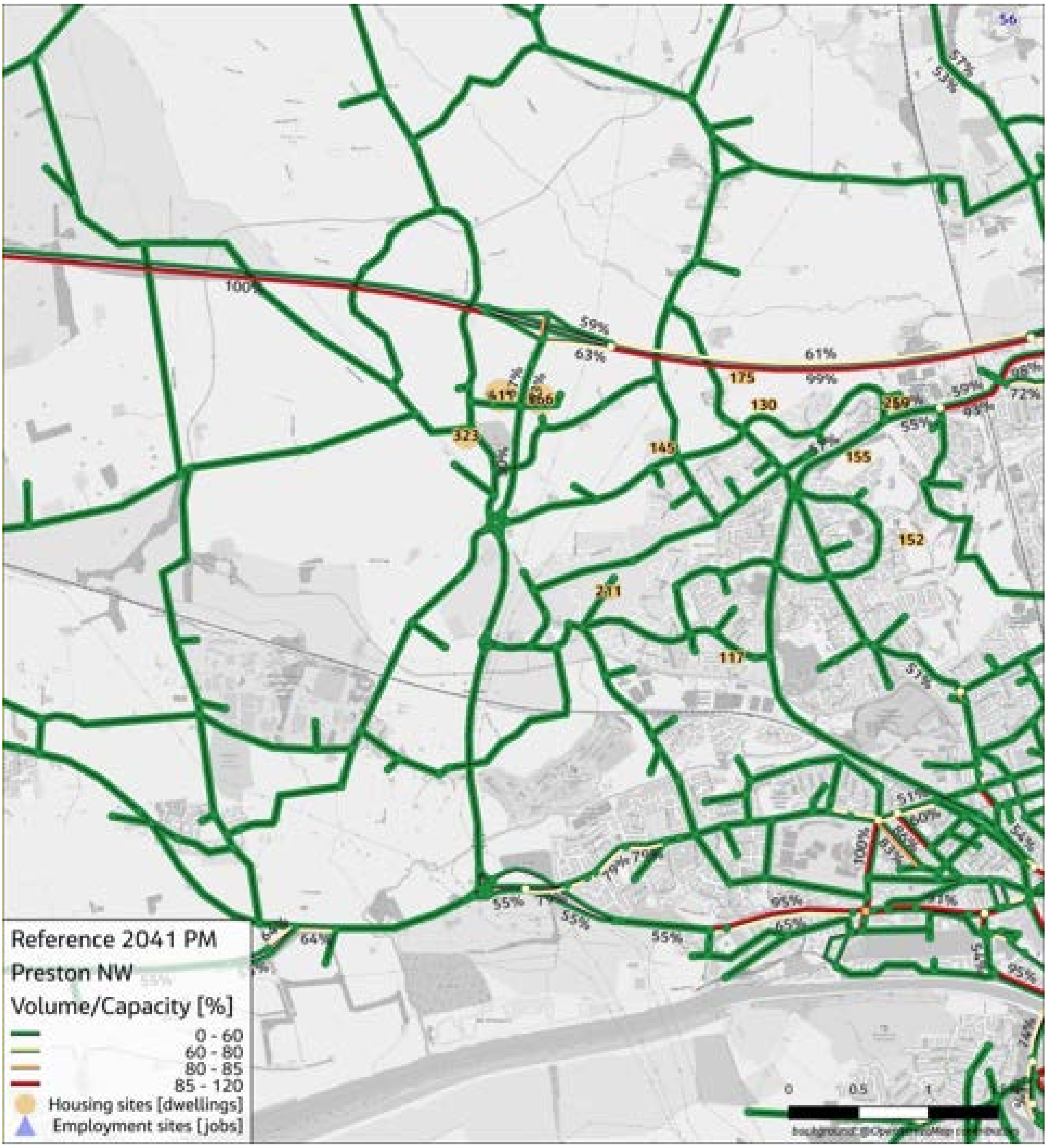


Figure 5.63 V/C Plot – 2041 PM Reference Scenario – Preston Northwest

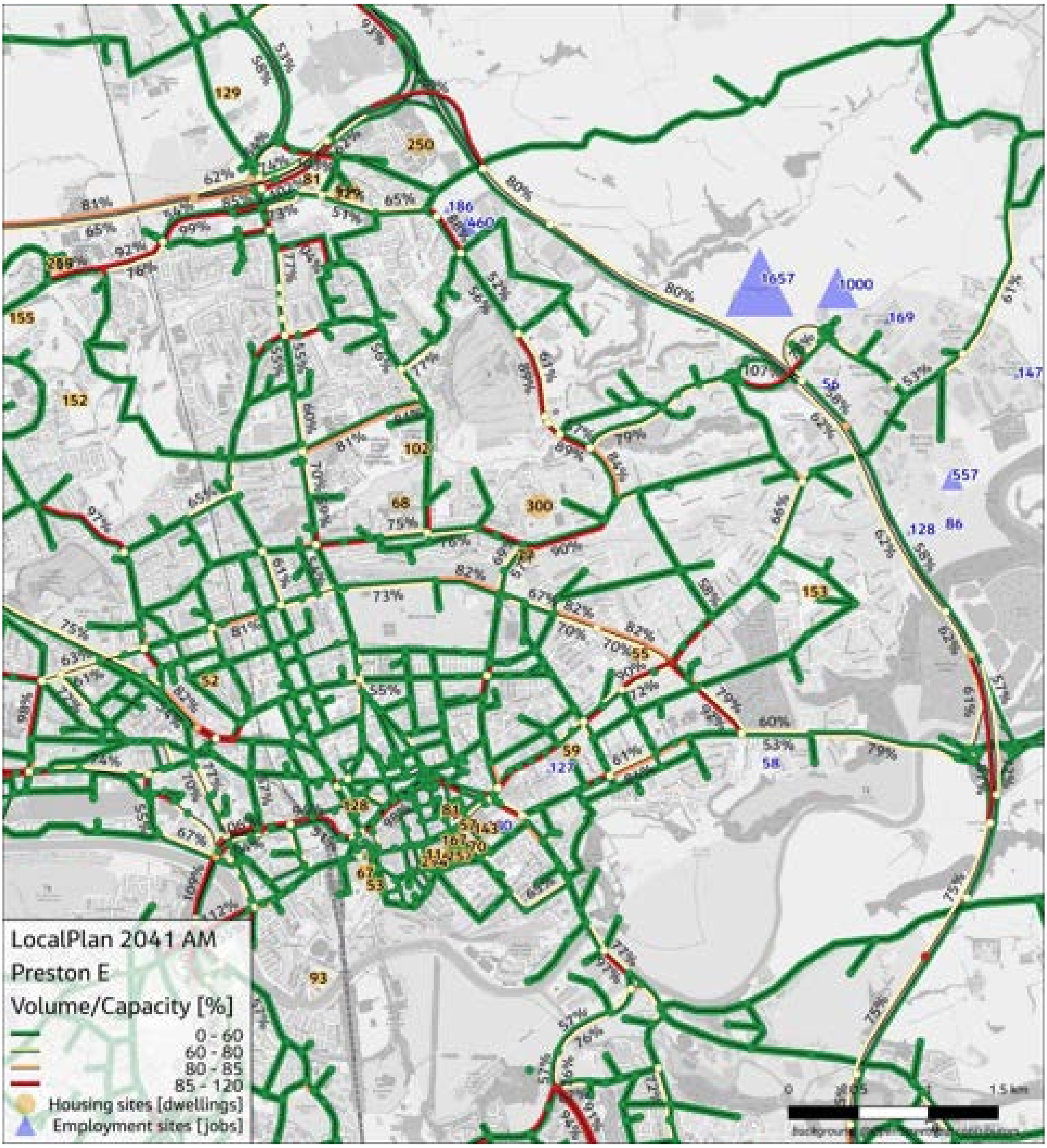


Figure 5.64 V/C Plot – 2041 AM Local Plan Scenario – Preston East

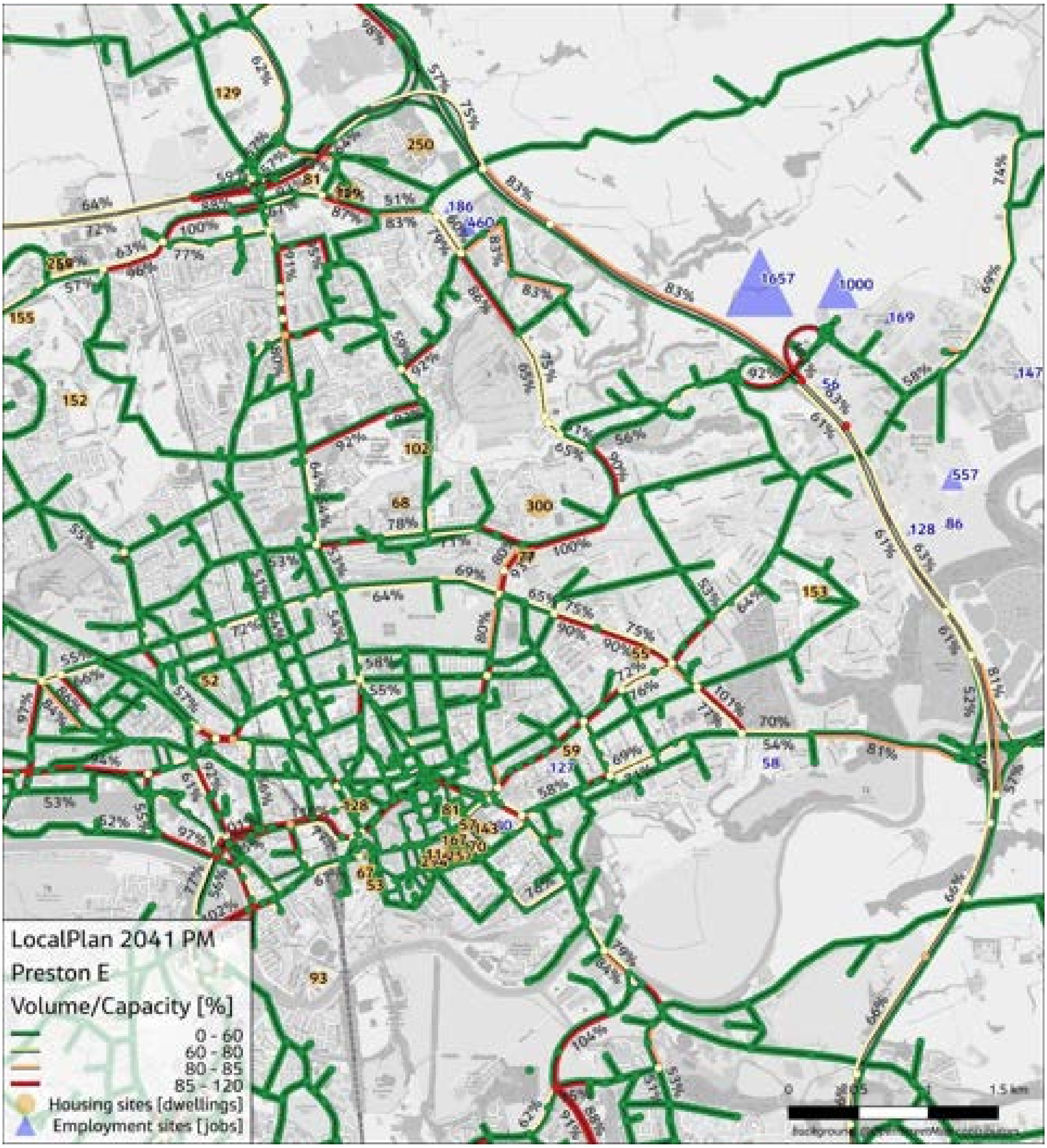


Figure 5.65 V/C Plot – 2041 PM Local Plan Scenario – Preston East

Figure 5.66 /C Plot – 2041 AM Local Plan Scenario – Preston Northwest

Figure 5.67 V/C Plot – 2041 PM Local Plan Scenario – Preston Northwest

South Ribble

Located south of Preston, South Ribble is home to many commuters who work in Preston. Major settlements in the district include Bamber Bridge, Lostock Hall, and Penwortham, which are near Preston's northern boundary and effectively form one urban area with the city. Leyland, the district's administrative center, is situated at the southern edge.

In South Ribble, several recent projects, such as the Penwortham By-pass and The Cawsey, have improved connectivity and reduced congestion. Since 2014, the Preston, South Ribble, and Lancashire City Deal has facilitated enhancements at key junctions along the A582, including Stanifield Lane, Tank Roundabout, Chain House Lane, Pope Lane, Broad Oak Roundabout, and Oaks Wood Roundabout, to meet increasing demand. Additional updates include widening Golden Way south of Cop Lane to create a dual carriageway to Broad Oak Roundabout and increasing southbound capacity between Broad Oak Roundabout and Pope Lane.

The Local Plan allocations in South Ribble are expected to generate a substantial number of trips, significantly increasing the existing land supply. By 2041, the district is projected to include approximately:

- 8,700 housing units
- 9,800 jobs

New proposals aim to enhance journeys on the A582 between Preston and the M65, providing better facilities for buses, walking, and cycling between Preston and Lostock Hall. These upgrades are intended to reduce congestion, improve journey times, support economic growth, improve access to existing employment sites, and facilitate the delivery of new homes. Enhancements to the A582 would also improve residential routes through Lostock Hall, Lower Penwortham, and Preston, making these areas more attractive and vibrant places to live, with better walking, cycling, and public transport options.

Table 5-36 and Table 5-37 summarize the key junctions in South Ribble where the volume-to-capacity (V/C) ratio is greater than 60% for AM and PM peaks, respectively.

Figure 5.68 and Figure 5.69 present the base V/C for AM and PM peaks. Figure 5.70 through Figure 5.73 show the future year V/C plots for the Reference and Local Plan scenarios during AM and PM peaks. The highest V/C value at each junction is provided.

The model outputs indicate that some A582 junctions, A6, and B5254 are currently operating at or above acceptable V/C levels and are expected to worsen with new residential developments at Pickerings Farm (1,100 dwellings) and additional housing developments with approximately 1,500 dwellings south of Coote Ln.

Housing developments in Penwortham, with approximately 1,400 dwellings east of B5254 and around Carrwood Rd/The Cawsey, will add further pressure on the B5254 and A6 corridors. Additionally, new employment development south of A582 in Lancashire Business Park, with approximately 1,000 jobs, will alleviate existing congestion at A582 junctions with Flensburgh Way, Croston Junction, and Stanifield Lane.

Another significant development in South Ribble is the Lancashire Central strategic employment development, located next to the M65 and M6, which will bring 5,600 jobs and 110 housing units. The planning permission for the Lancashire Central strategic employment site is contingent on network improvements in the vicinity of the development. These improvements are included in the A582 SRWD scheme and are part of the committed Do Minimum network.

Table 5-36. Junction V/C – South Ribble – AM Peak

Junction	Direction	Arm Name	2024	2031		2041	
			Base	Reference	Local Plan	Reference	Local Plan
A582 / A6 Roundabout	Inbound	East	40%	63%	66%	75%	85%
	Inbound	North	43%	46%	46%	51%	52%
	Inbound	Offslip NB	36%	34%	34%	37%	38%
	Inbound	Offslip WB	57%	60%	62%	64%	66%
	Inbound	South	31%	32%	32%	35%	35%
	Inbound	West	64%	50%	51%	58%	59%
A582 Bee Lane	Inbound	East	-	96%	96%	102%	101%
	Inbound	North	65%	71%	73%	77%	94%
	Inbound	South	101%	76%	77%	74%	81%
A582 Chain House Lane	Inbound	East	55%	53%	53%	56%	102%
	Inbound	North	65%	65%	67%	72%	82%
	Inbound	South	86%	81%	82%	87%	87%
	Inbound	West	45%	64%	66%	78%	101%
A582 Croston Junction	Inbound	East	77%	80%	82%	94%	98%
	Eastbound	Link Road	77%	81%	82%	82%	85%
	Westbound	Link Road	21%	98%	99%	99%	102%
	Inbound	North East	26%	98%	98%	98%	98%
	Inbound	South East	61%	93%	93%	95%	95%
	Inbound	South West	38%	38%	38%	39%	39%
	Inbound	West	64%	85%	85%	87%	88%
A582 Flensburg Way	Inbound	East	38%	38%	38%	39%	39%
	Inbound	North	62%	71%	73%	80%	84%
	Inbound	South	57%	69%	69%	77%	77%
	Inbound	South East	10%	33%	35%	56%	55%
	Inbound	West	0%	0%	0%	0%	0%
A582 Golden Way	Inbound	East	43%	46%	46%	48%	53%
	Inbound	North East	29%	29%	30%	31%	34%
	Inbound	North West	59%	53%	56%	62%	72%
	Inbound	South East	37%	40%	40%	43%	46%
	Inbound	West	58%	55%	57%	56%	61%
A582 Golden Way / Guild Way	Inbound	North	26%	38%	39%	39%	41%
	Inbound	North East	99%	56%	56%	57%	57%
	Inbound	Offslip	14%	-	-	-	-
	Inbound	South East	68%	65%	65%	68%	71%
A582 Pope Lane	Inbound	North East	98%	68%	70%	95%	99%
	Inbound	North West	83%	73%	75%	78%	90%
	Inbound	South East	101%	88%	88%	91%	98%
	Inbound	South West	61%	100%	100%	100%	100%
A582 Stanifield Lane	Inbound	East	55%	90%	92%	95%	99%
	Inbound	North	98%	99%	99%	103%	108%
	Inbound	South	30%	71%	77%	92%	95%
	Offslip WB	South	65%	49%	50%	61%	64%
	Inbound	West	-	18%	19%	21%	22%
A6 / Brownedge Rd Roundabout	Inbound	East	79%	94%	97%	102%	103%
	Inbound	North	61%	68%	71%	85%	91%
	Inbound	South	100%	101%	102%	102%	102%
	Inbound	West	98%	96%	98%	105%	109%
A6 / Carwood Rd Roundabout	Inbound	East	25%	36%	40%	56%	67%
	Inbound	North	49%	55%	55%	68%	76%
	Inbound	South	93%	91%	92%	92%	94%
	Inbound	West	103%	103%	104%	108%	113%
A6 / Wigan Rd Roundabout	Inbound	East	83%	84%	85%	84%	85%
	Inbound	North	71%	92%	92%	100%	101%
	Inbound	Offslip WB	12%	36%	43%	45%	59%
	Inbound	South	93%	97%	98%	99%	100%
	Inbound	West	94%	83%	86%	93%	99%
B5253 / Dunkirk Lane Roundabout	Inbound	East	100%	92%	95%	98%	103%
	Inbound	North	94%	99%	99%	101%	101%
	Inbound	South	93%	78%	76%	73%	72%
	Inbound	West	84%	88%	89%	89%	90%
B5253 / Slater Lane Signals	Inbound	East	63%	78%	79%	83%	84%
	Inbound	North	79%	76%	76%	75%	78%
	Inbound	South	102%	103%	103%	104%	104%
	Inbound	West	71%	61%	64%	72%	72%
B5254 Leyland Road / Bee Lane	Inbound	East	84%	91%	91%	91%	91%
	Inbound	North	66%	53%	54%	44%	45%
	Inbound	South	69%	74%	76%	86%	94%
	Inbound	West	6%	63%	64%	81%	68%
B5254 Leyland Road / Liverpool Road	Inbound	North East	41%	47%	48%	47%	55%
	Inbound	South East	46%	40%	39%	41%	43%
	Inbound	South West	101%	87%	88%	87%	88%
Golden Way / B5254 Leyland Road	Inbound	North West	21%	98%	98%	99%	100%
	Inbound	South East	76%	91%	90%	93%	93%
	Inbound	South West	11%	89%	89%	81%	76%
M6 / A6 J29 Motorway Onslips	Nortbound	M6 North	36%	40%	41%	47%	49%
M6 / A6 J29 Roundabout	Inbound	East	62%	31%	32%	37%	41%
	Inbound	M6 North	53%	46%	46%	57%	59%
	Southwestbound	Offslip SWB	32%	63%	63%	80%	83%
	Westbound	Offslip WB	46%	41%	41%	56%	59%
	Inbound	South West	-	15%	17%	22%	21%
	Inbound	West	12%	27%	28%	27%	27%
M65 / M6 J29 Motorway Onslips	Eastbound	M65 East	67%	69%	69%	69%	70%
	Southbound	M65 South	50%	54%	55%	57%	59%
	Westbound	M65 West	39%	39%	40%	70%	73%
M65 / M6 J29 Roundabout	Inbound	M6 East	9%	12%	13%	22%	24%
	Inbound	M6 West	55%	82%	84%	86%	91%
	Inbound	North East	52%	40%	44%	72%	78%
	Inbound	Offslip EB	8%	10%	11%	11%	11%
	Inbound	Offslip SWB	64%	70%	71%	73%	74%
	Inbound	Offslip WB	30%	20%	20%	28%	29%
	Inbound	South West	53%	56%	57%	69%	70%

Table 5-37. Junction V/C – South Ribble – PM Peak

Junction	Direction	Arm Name	2024	2031		2041	
			Base	Reference	Local Plan	Reference	Local Plan
A582 / A6 Roundabout	Inbound	East	62%	69%	69%	68%	70%
	Inbound	North	36%	42%	42%	42%	41%
	Inbound	Offslip NB	33%	30%	31%	24%	22%
	Inbound	Offslip WB	61%	57%	58%	67%	70%
	Inbound	South	43%	35%	35%	42%	43%
	Inbound	West	52%	56%	56%	59%	62%
A582 Bee Lane	Inbound	East	-	99%	99%	100%	100%
	Inbound	North	62%	73%	72%	81%	92%
	Inbound	South	76%	79%	81%	97%	92%
A582 Chain House Lane	Inbound	East	44%	51%	51%	56%	78%
	Inbound	North	62%	65%	64%	69%	73%
	Inbound	South	87%	92%	93%	95%	96%
	Inbound	West	40%	86%	88%	89%	100%
A582 Croston Junction	Inbound	East	66%	72%	72%	75%	74%
	Eastbound	Link Road	72%	84%	85%	92%	93%
	Westbound	Link Road	17%	70%	71%	80%	92%
	Inbound	North East	63%	92%	98%	94%	98%
	Inbound	South East	28%	76%	78%	89%	93%
	Inbound	South West	31%	43%	44%	45%	44%
	Inbound	West	75%	78%	79%	79%	77%
A582 Flensburg Way	Inbound	East	31%	43%	44%	45%	44%
	Inbound	North	59%	67%	67%	70%	64%
	Inbound	South	63%	71%	71%	73%	76%
	Inbound	South East	11%	46%	39%	57%	51%
	Inbound	West	0%	0%	0%	0%	0%
A582 Golden Way	Inbound	East	59%	41%	42%	40%	50%
	Inbound	North East	39%	35%	36%	37%	40%
	Inbound	North West	32%	45%	45%	53%	59%
	Inbound	South East	27%	32%	33%	34%	35%
	Inbound	West	27%	28%	29%	28%	35%
A582 Golden Way / Guild Way	Inbound	North	40%	53%	53%	55%	56%
	Inbound	North East	85%	64%	64%	64%	65%
	Inbound	Offslip	17%	-	-	-	-
	Inbound	South East	45%	41%	42%	43%	47%
A582 Pope Lane	Inbound	North East	68%	62%	62%	91%	96%
	Inbound	North West	63%	79%	79%	88%	101%
	Inbound	South East	76%	89%	91%	92%	94%
	Inbound	South West	84%	90%	91%	95%	101%
A582 Stanifield Lane	Inbound	East	81%	103%	103%	105%	106%
	Inbound	North	64%	88%	87%	91%	91%
	Inbound	South	52%	81%	84%	89%	92%
	Offslip WB	South	53%	44%	44%	46%	48%
	Inbound	West	-	20%	24%	31%	36%
A6 / Brownedge Rd Roundabout	Inbound	East	73%	90%	91%	96%	98%
	Inbound	North	84%	86%	87%	88%	88%
	Inbound	South	102%	103%	104%	105%	106%
	Inbound	West	39%	45%	45%	53%	55%
A6 / Carwood Rd Roundabout	Inbound	East	47%	78%	78%	88%	95%
	Inbound	North	101%	102%	103%	103%	104%
	Inbound	South	92%	87%	86%	90%	91%
	Inbound	West	43%	48%	47%	53%	62%
A6 / Wigan Rd Roundabout	Inbound	East	84%	89%	90%	91%	94%
	Inbound	North	68%	60%	59%	64%	78%
	Inbound	Offslip WB	18%	21%	22%	21%	23%
	Inbound	South	83%	90%	92%	92%	98%
	Inbound	West	104%	104%	105%	105%	105%
B5253 / Dunkirk Lane Roundabout	Inbound	East	78%	100%	100%	96%	93%
	Inbound	North	89%	92%	92%	93%	91%
	Inbound	South	101%	100%	100%	100%	102%
	Inbound	West	88%	89%	90%	91%	93%
B5253 / Slater Lane Signals	Inbound	East	80%	80%	81%	86%	88%
	Inbound	North	61%	51%	52%	53%	56%
	Inbound	South	63%	65%	68%	72%	84%
	Inbound	West	53%	68%	69%	69%	72%
B5254 Leyland Road / Bee Lane	Inbound	East	99%	94%	93%	83%	80%
	Inbound	North	91%	88%	87%	95%	101%
	Inbound	South	90%	79%	82%	88%	91%
	Inbound	West	5%	64%	65%	73%	86%
B5254 Leyland Road / Liverpool Road	Inbound	North East	42%	94%	93%	97%	98%
	Inbound	South East	94%	49%	48%	51%	50%
	Inbound	South West	65%	25%	25%	25%	29%
Golden Way / B5254 Leyland Road	Inbound	North West	29%	111%	109%	114%	114%
	Inbound	South East	57%	98%	98%	98%	98%
	Inbound	South West	19%	91%	91%	92%	90%
M6 / A6 J29 Motorway Onslips	Northbound	M6 North	30%	34%	34%	40%	41%
M6 / A6 J29 Roundabout	Inbound	East	54%	40%	40%	43%	45%
	Inbound	M6 North	58%	48%	48%	52%	54%
	Southwestbound	Offslip SWB	36%	35%	36%	49%	53%
	Westbound	Offslip WB	58%	40%	40%	42%	45%
	Inbound	South West	-	26%	27%	26%	26%
	Inbound	West	14%	18%	19%	21%	23%
M65 / M6 J29 Motorway Onslips	Eastbound	M65 East	51%	55%	56%	60%	60%
	Southbound	M65 South	49%	55%	55%	62%	63%
	Westbound	M65 West	35%	53%	53%	52%	57%
M65 / M6 J29 Roundabout	Inbound	M6 East	9%	14%	15%	16%	19%
	Inbound	M6 West	64%	61%	62%	89%	92%
	Inbound	North East	40%	49%	50%	62%	66%
	Inbound	Offslip EB	11%	12%	12%	12%	12%
	Inbound	Offslip SWB	54%	61%	61%	67%	67%
	Inbound	Offslip WB	21%	21%	21%	19%	21%
	Inbound	South West	39%	45%	47%	50%	54%

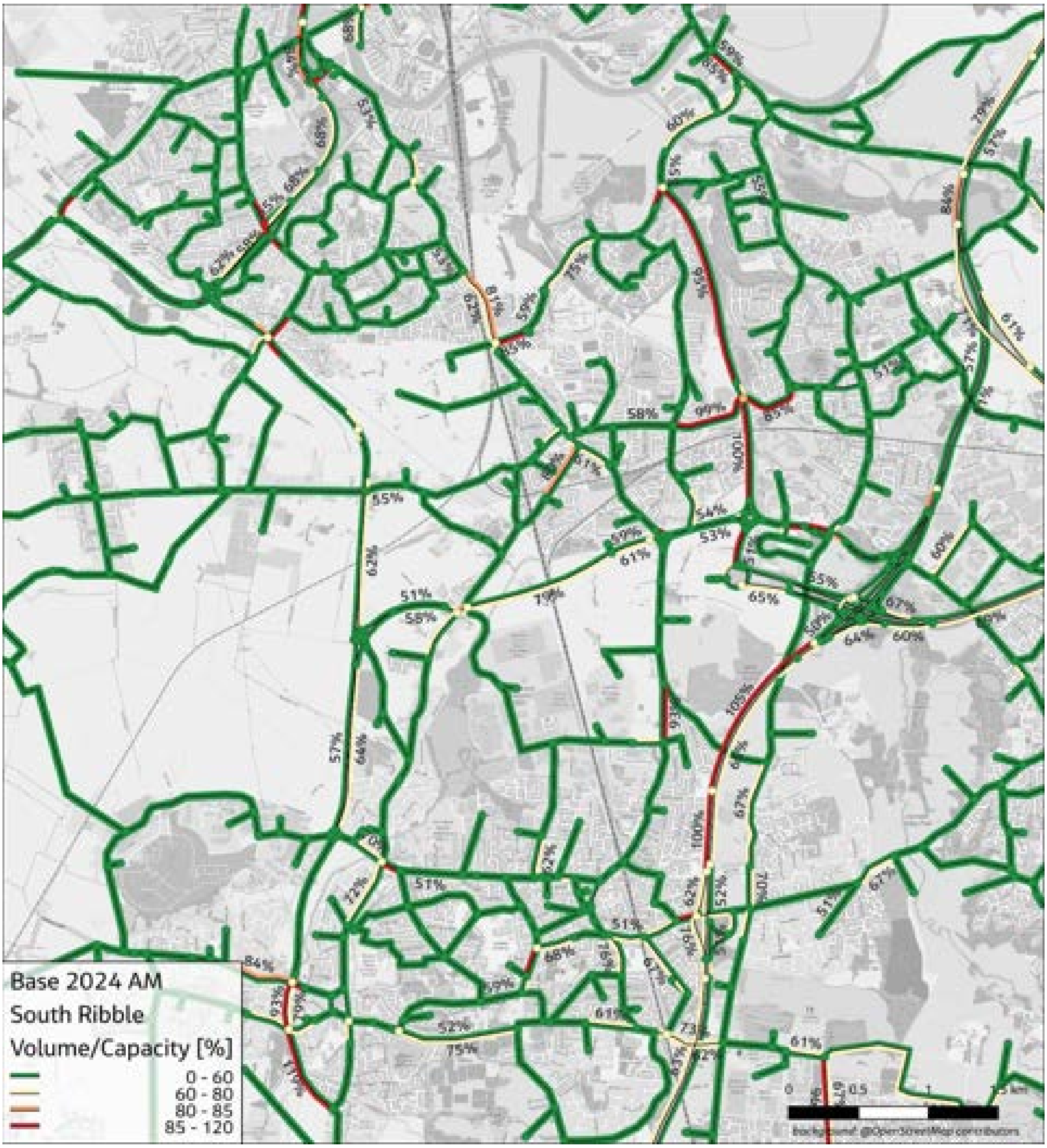


Figure 5.68 V/C Plot – Base AM – South Ribble

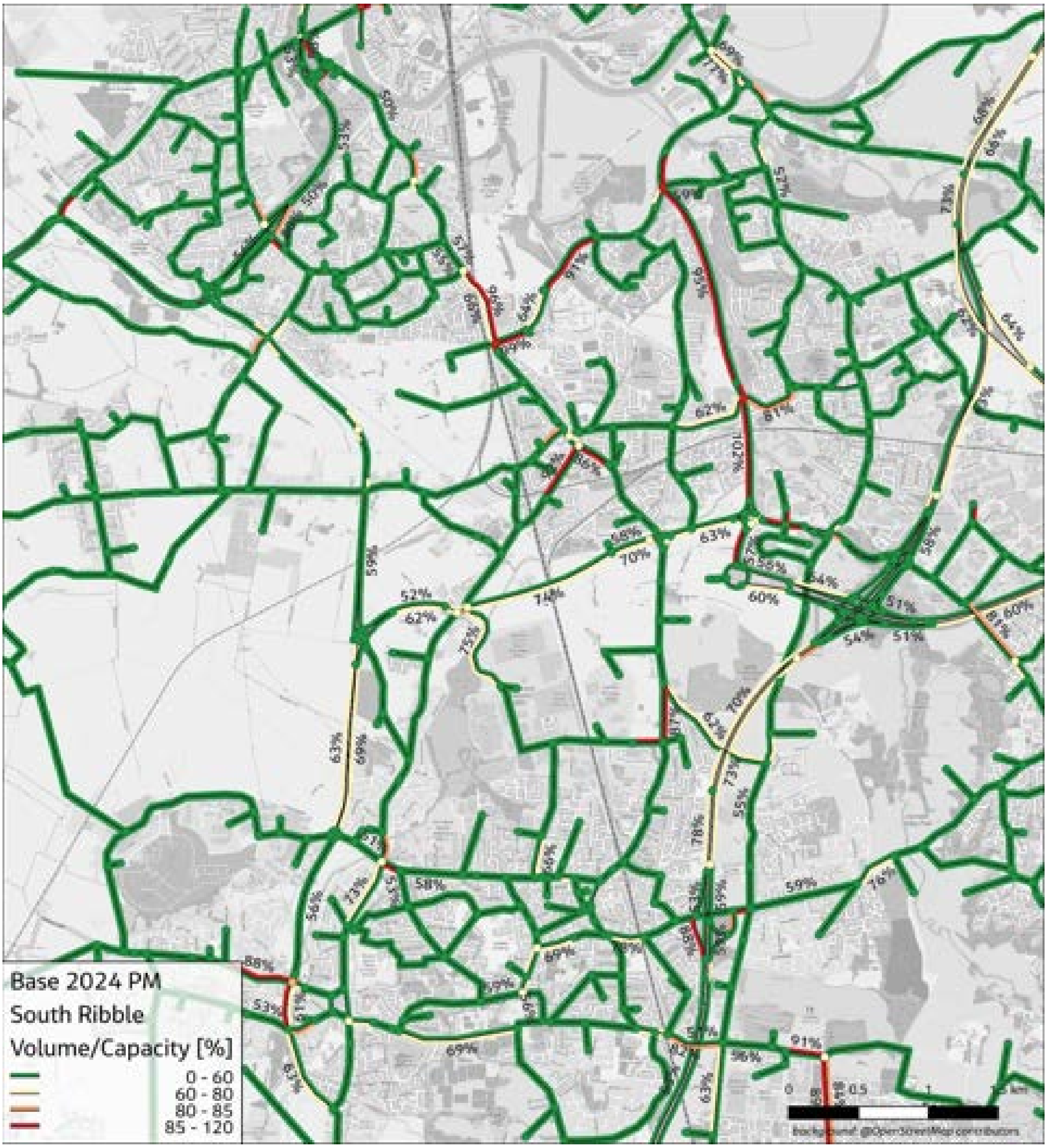


Figure 5.69 V/C Plot – Base PM – South Ribble

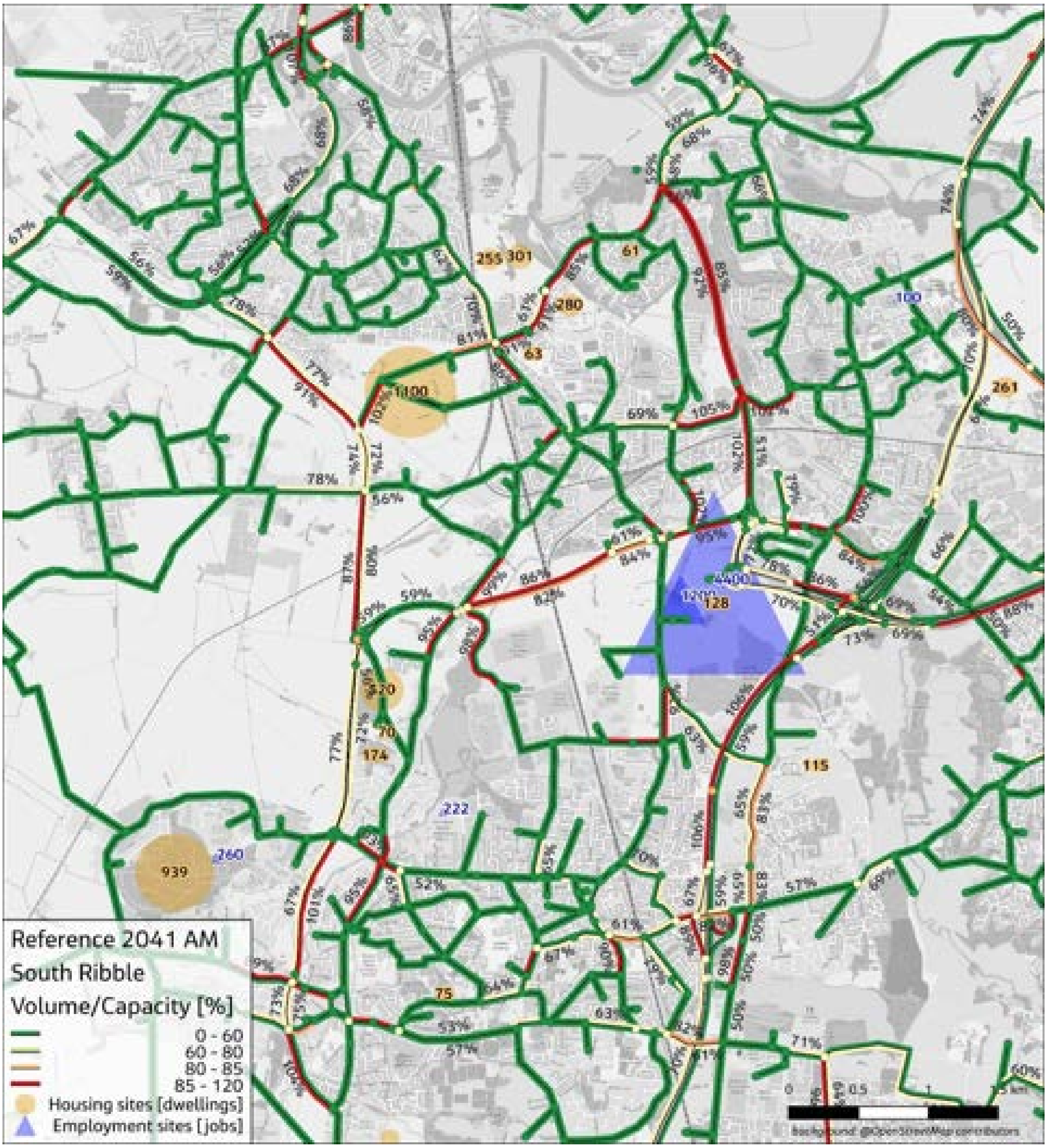


Figure 5.70 V/C – 2041 AM Reference Scenario – South Ribble

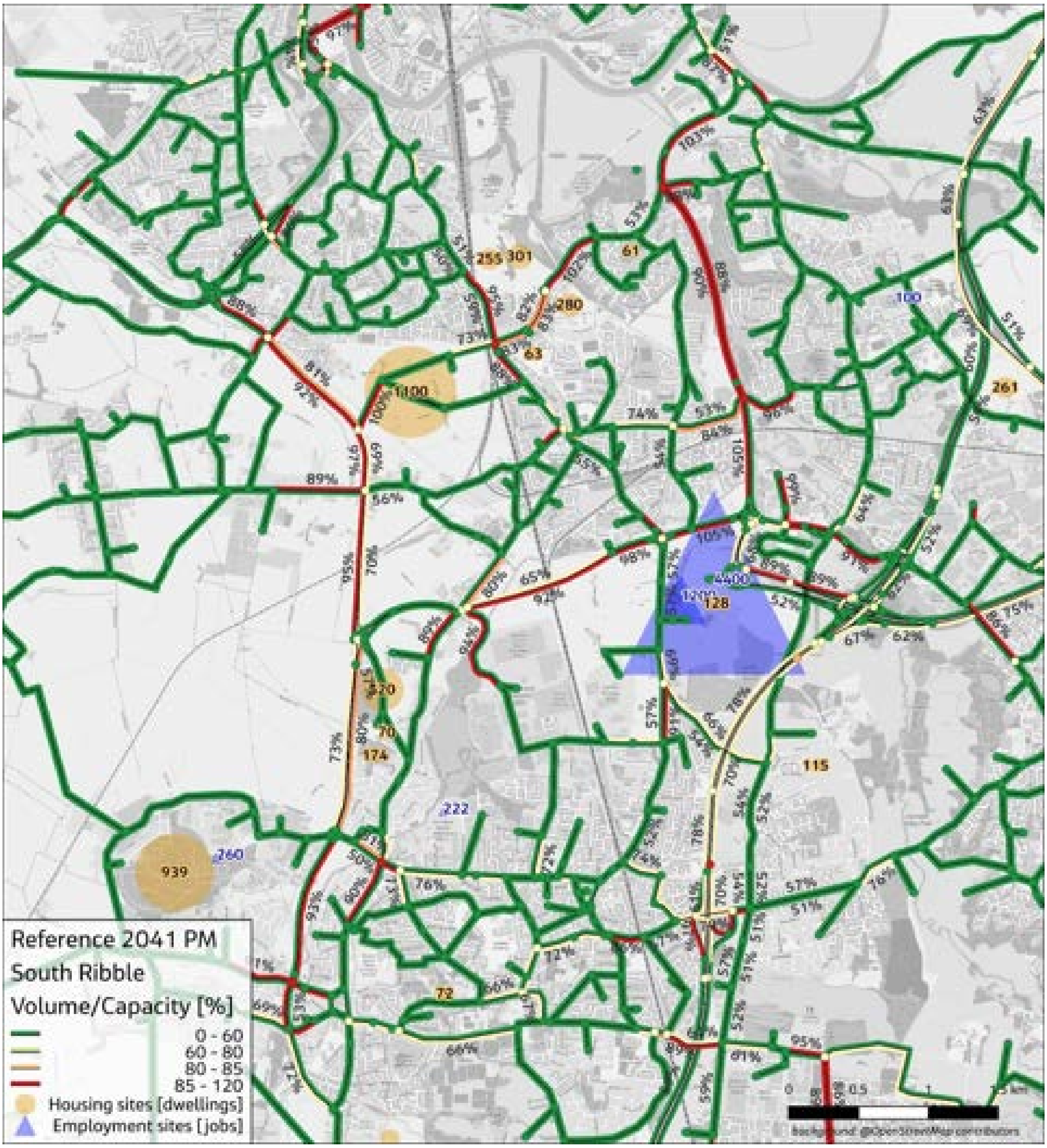


Figure 5.71 V/C Plot – 2041 PM Reference Scenario – South Ribble

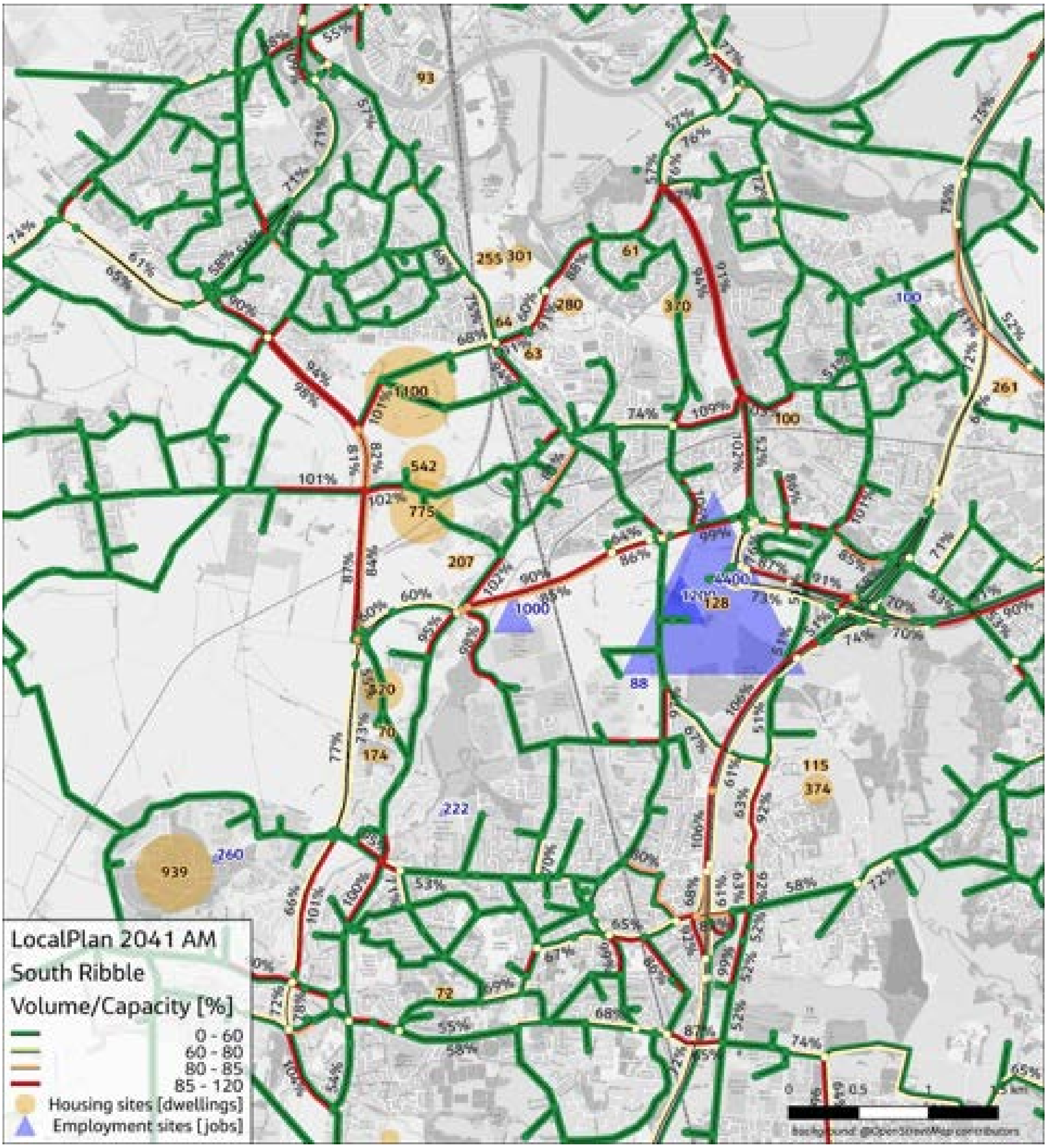


Figure 5.72 V/C Plot – 2041 AM Local Plan Scenario – South Ribble

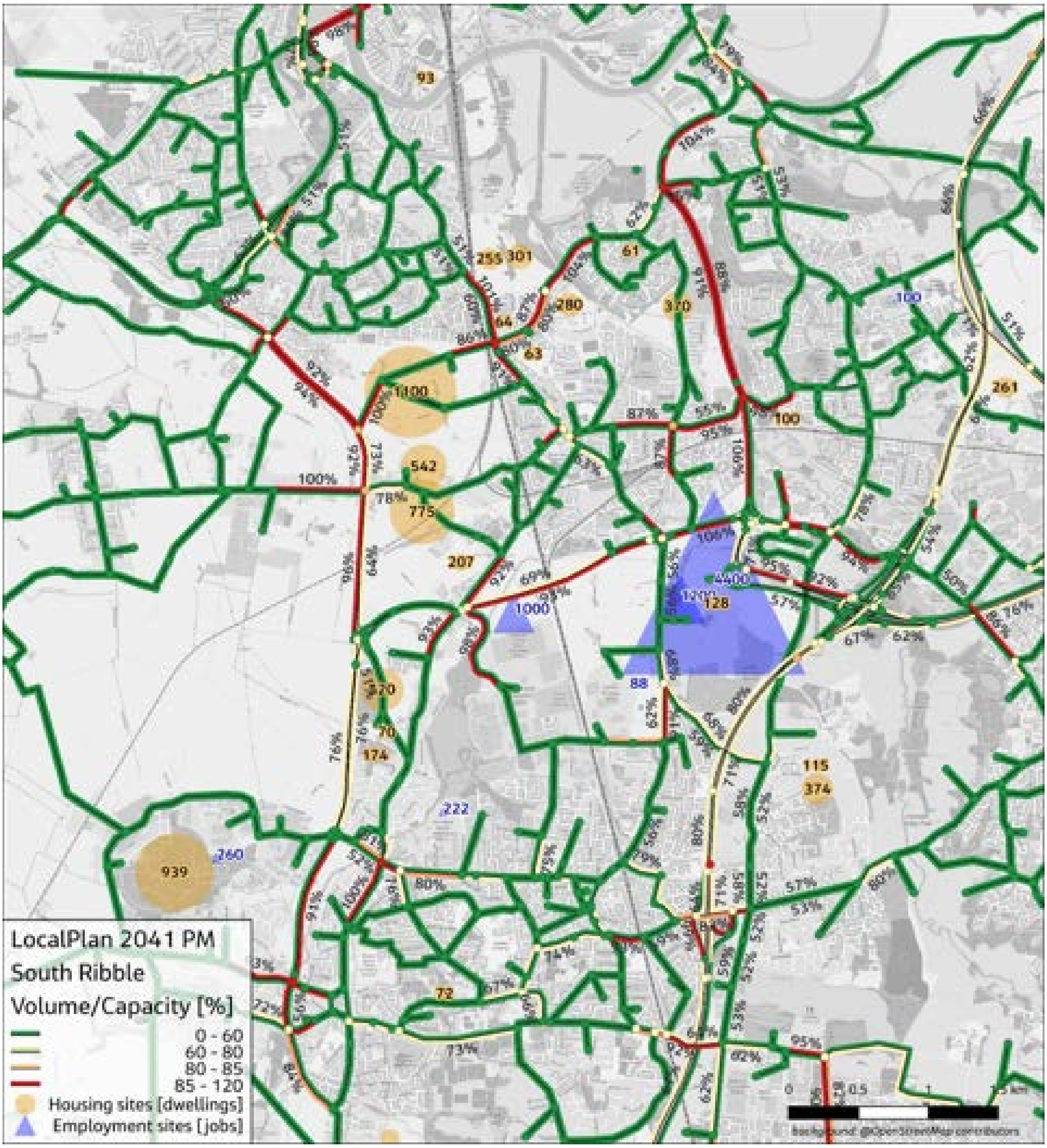


Figure 5.73 V/C Plot – 2041 PM Local Plan Scenario – South Ribble

5.24 Public Transport Modelling Outputs

This section summarises the bus and rail passenger flow comparisons for the three districts to gauge the increase in PT demand in the base and future scenarios. The committed PT schemes along with the background growth and PT demand from the proposed committed and Local Plan develop contribute to the increase in PT demand over the years. As mentioned in Section 5.22, the variable demand modelling reduces the rail demand due to increases in rail fare in future years, while the bus demand is seen to increase slightly from the Pre-VDM results.

Bus passenger flow comparisons for the Local Plan scenario with base year for AM and PM for 2041 is provided in Figure 5.74 through Figure 5.83. Remaining plots is included in Appendix K.

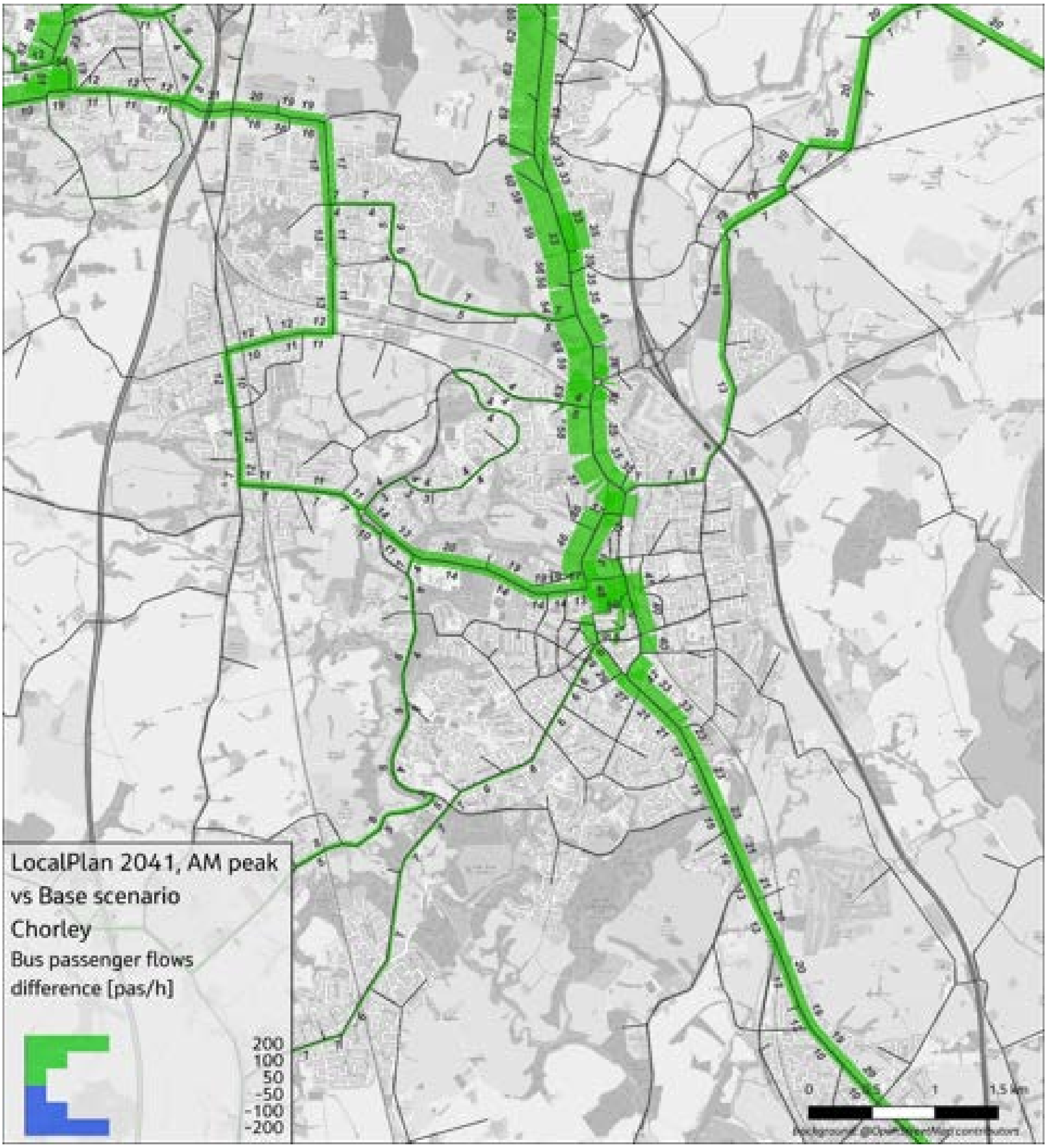


Figure 5.74 Bus Passenger Flow Comparisons – 2041 AM Local Plan Scenario with Base – Chorley

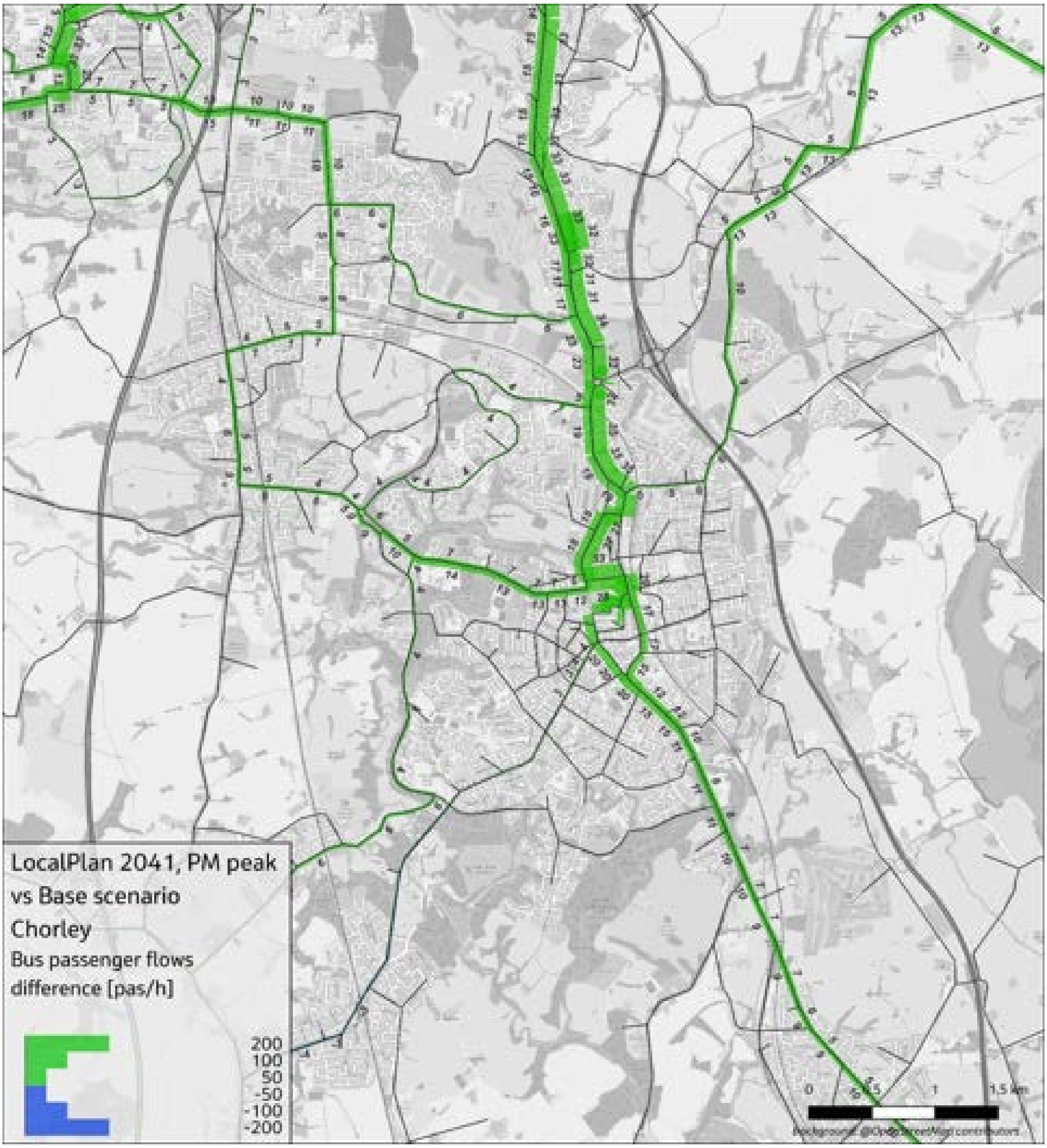


Figure 5.75 Bus Passenger Flow Comparisons – 2041 PM Local Plan Scenario with Base – Chorley

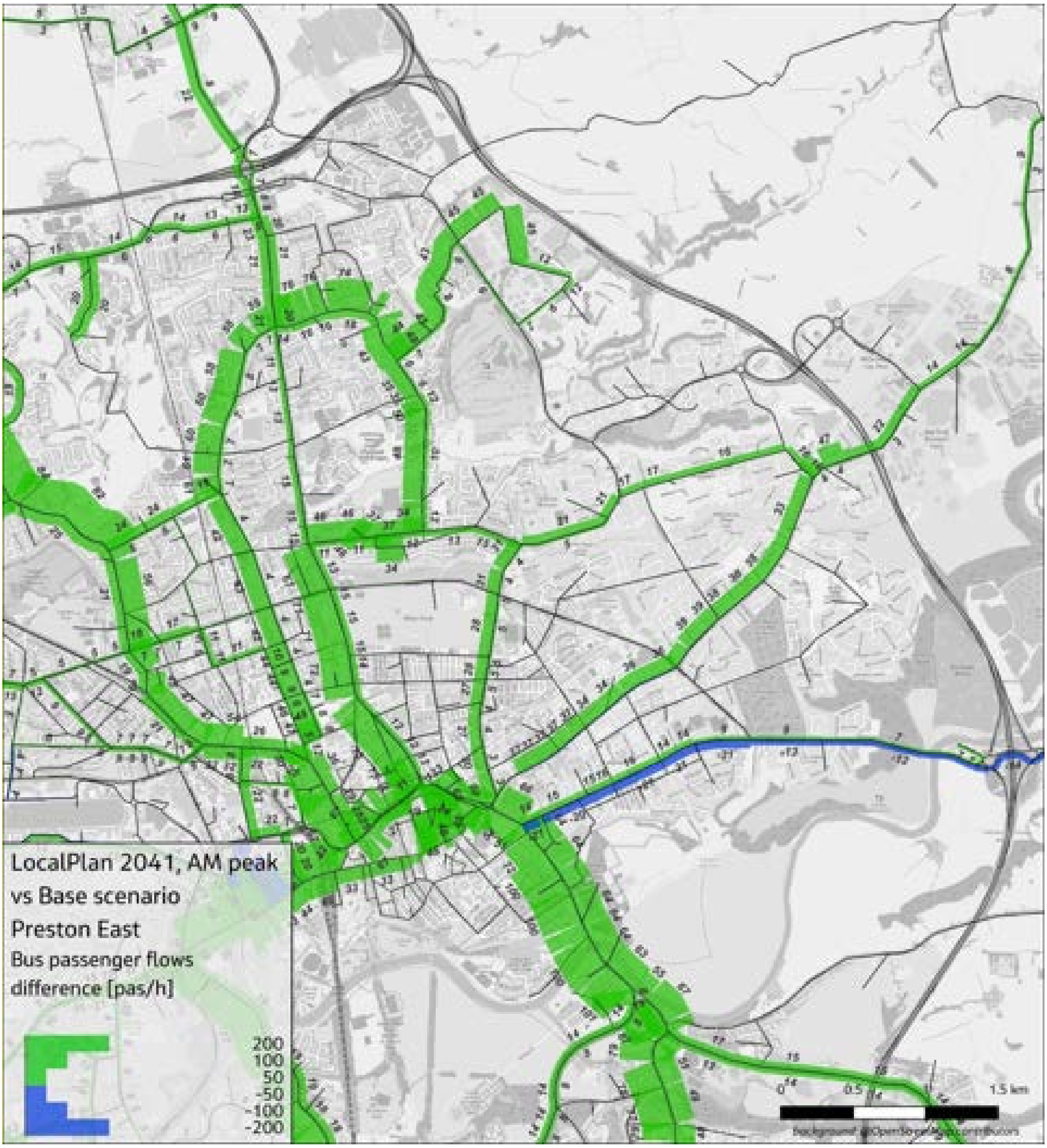


Figure 5.76 Bus Passenger Flow Comparisons – 2041 AM Local Plan Scenario with Base – Preston East

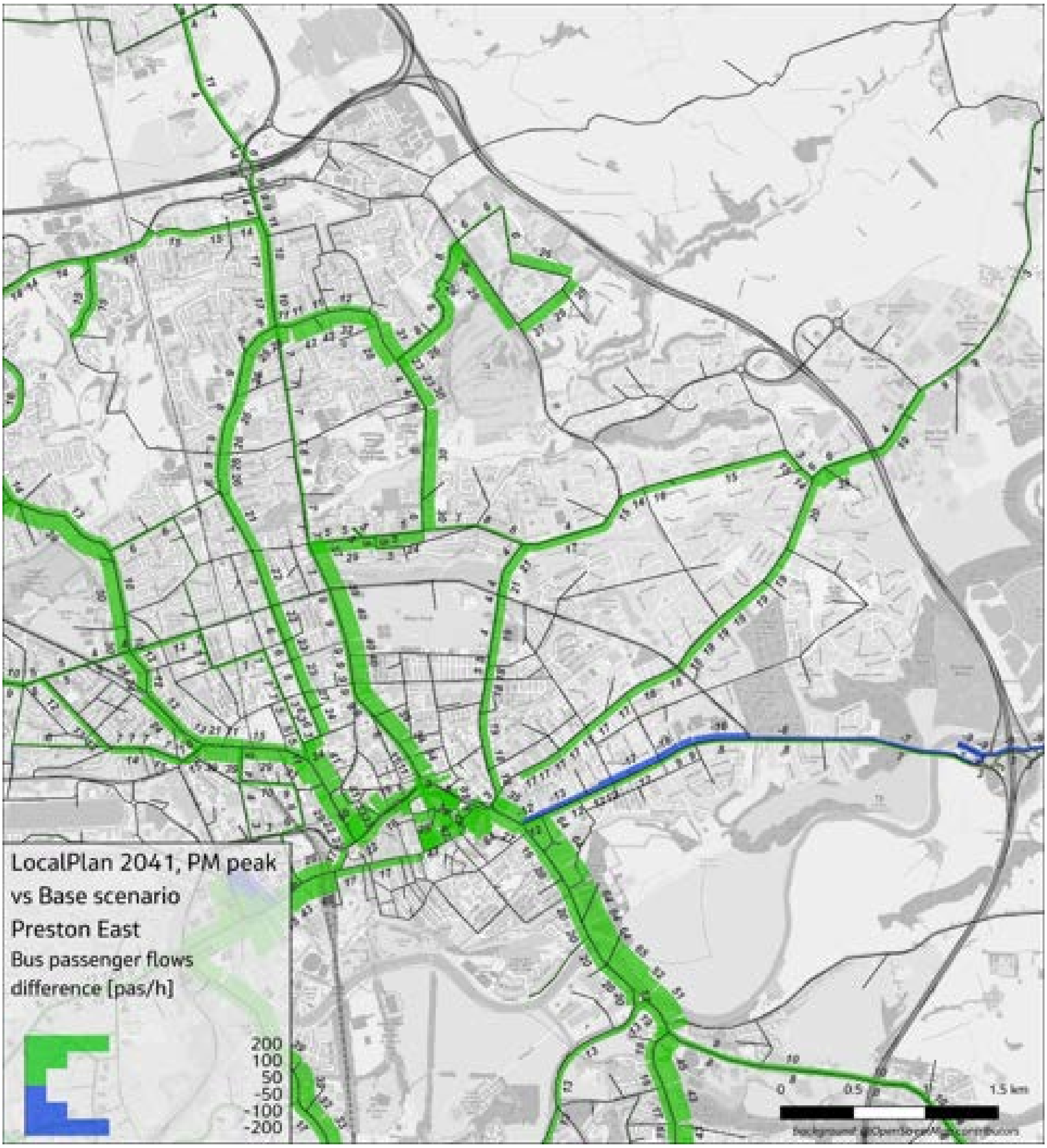


Figure 5.77 Bus Passenger Flow Comparisons – 2041 PM Local Plan Scenario with Base – Preston East

Figure 5.78 Bus Passenger Flow Comparisons – 2041 AM Local Plan Scenario with Base – Northwest Preston

Figure 5.79 Bus Passenger Flow Comparisons – 2041 PM Local Plan Scenario with Base – Northwest Preston

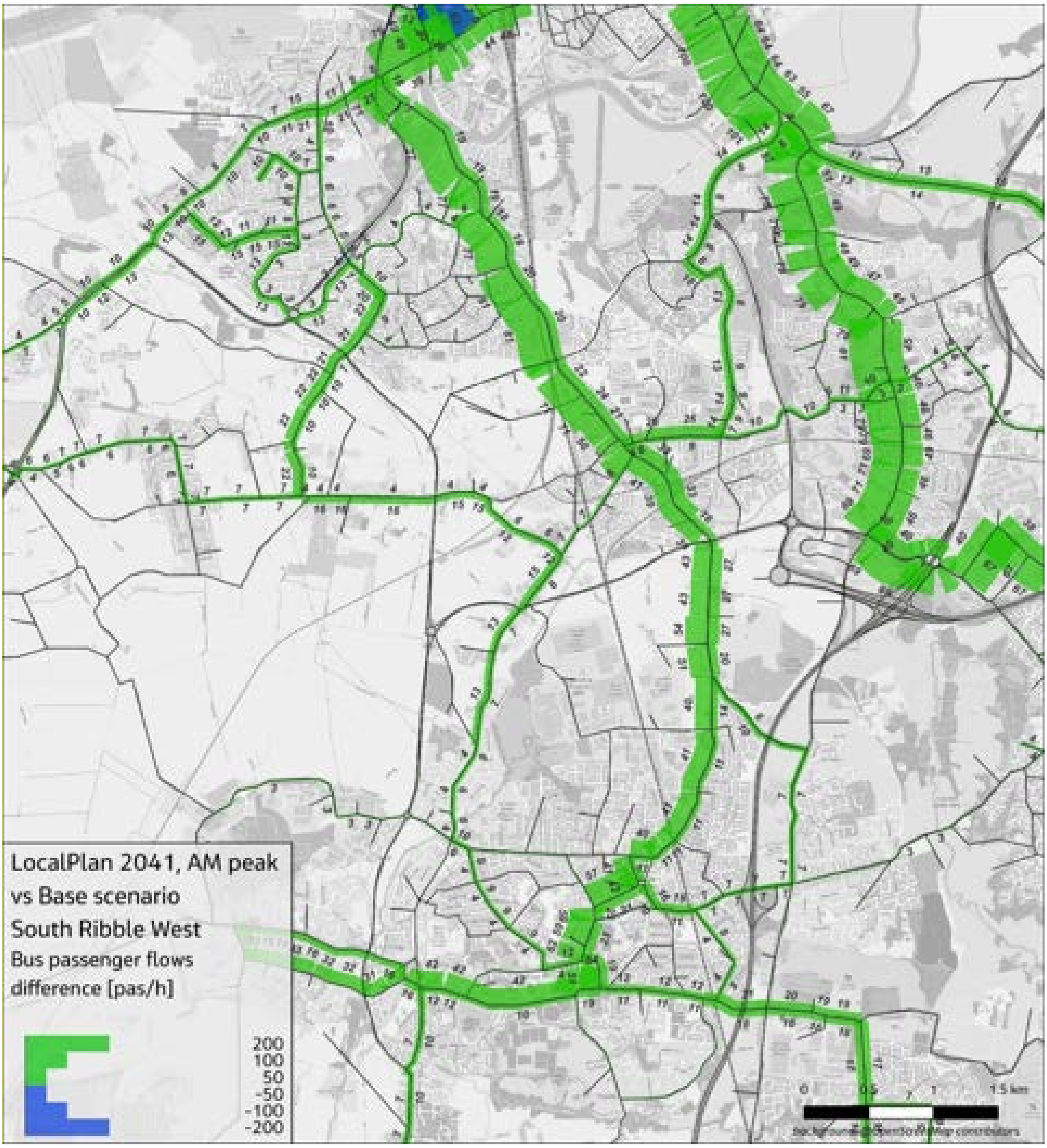


Figure 5.80 Bus Passenger Flow Comparisons – 2041 AM Local Plan Scenario with Base – South Ribble

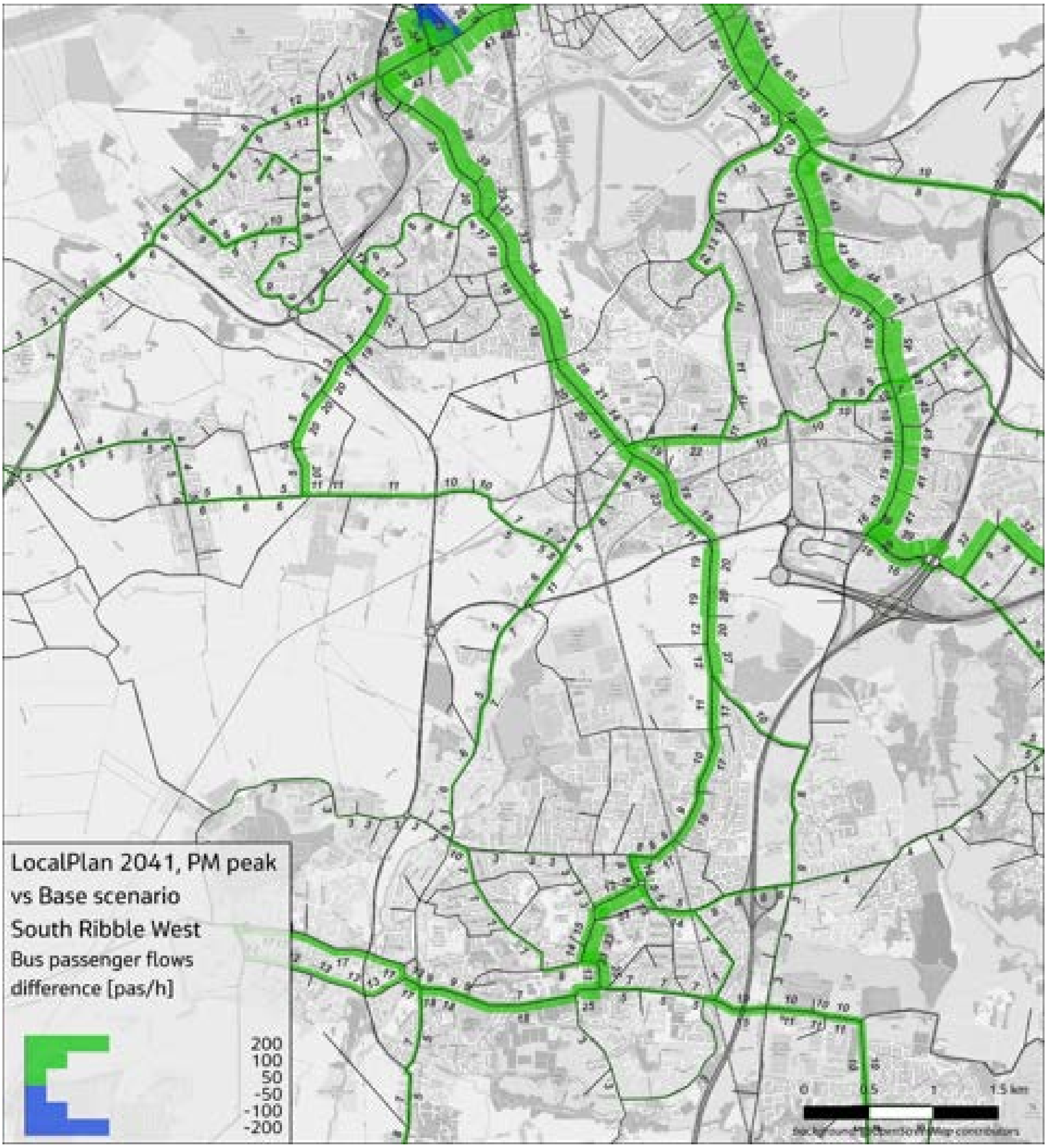


Figure 5.81 Bus Passenger Flow Comparisons – 2041 PM Local Plan Scenario with Base – South Ribble

Rail passenger flow comparisons for the Local Plan scenario with base year for AM and PM for 2041 is provided in Figure 5.84 and Figure 5.85 respectively. The flow comparisons indicates a general increase in demand across all corridors compared to the base year. Remaining plots is included in Appendix L.

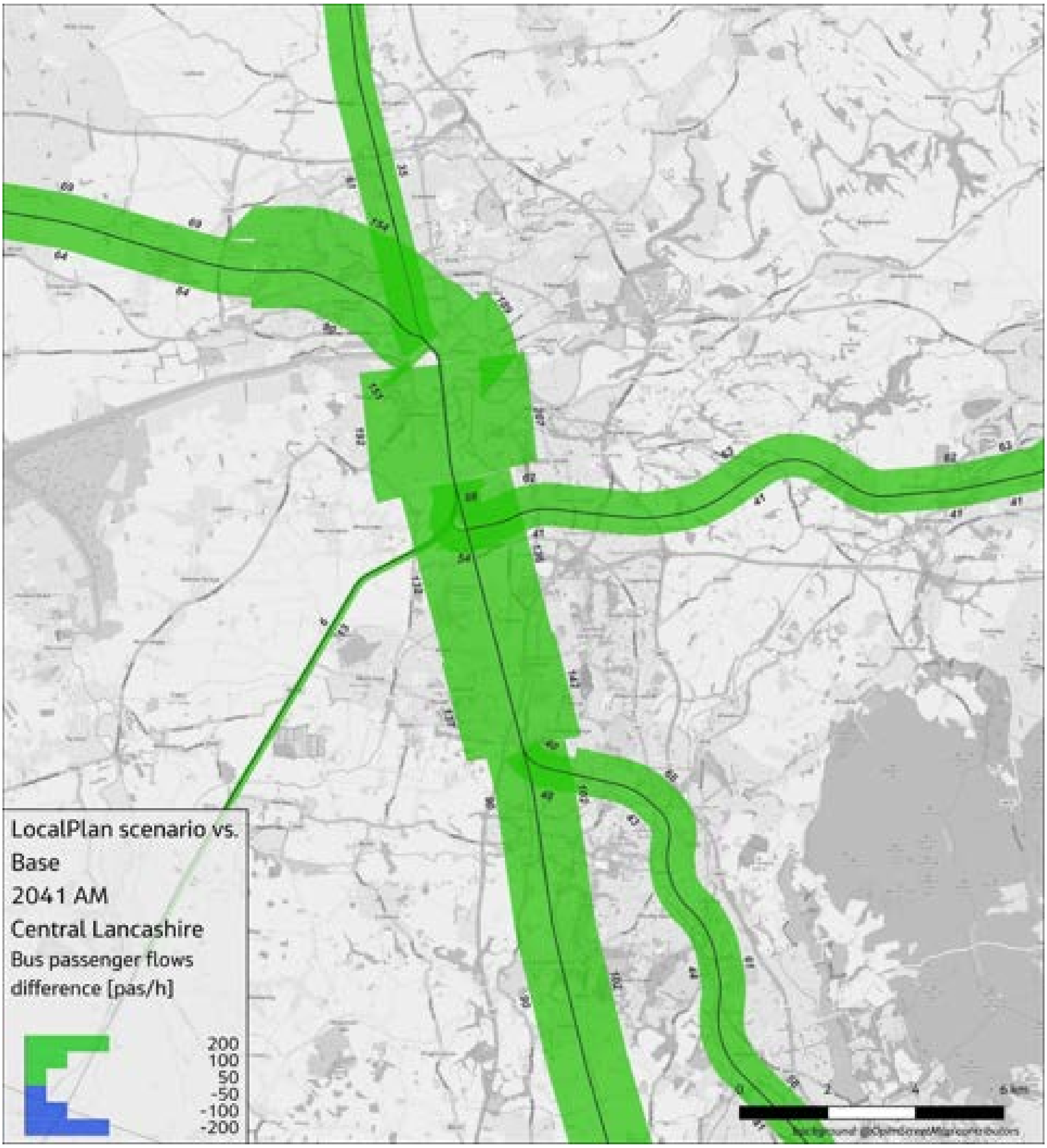


Figure 5.82 Rail Passenger Flow Comparisons – 2041 AM Local Plan Scenario with Base

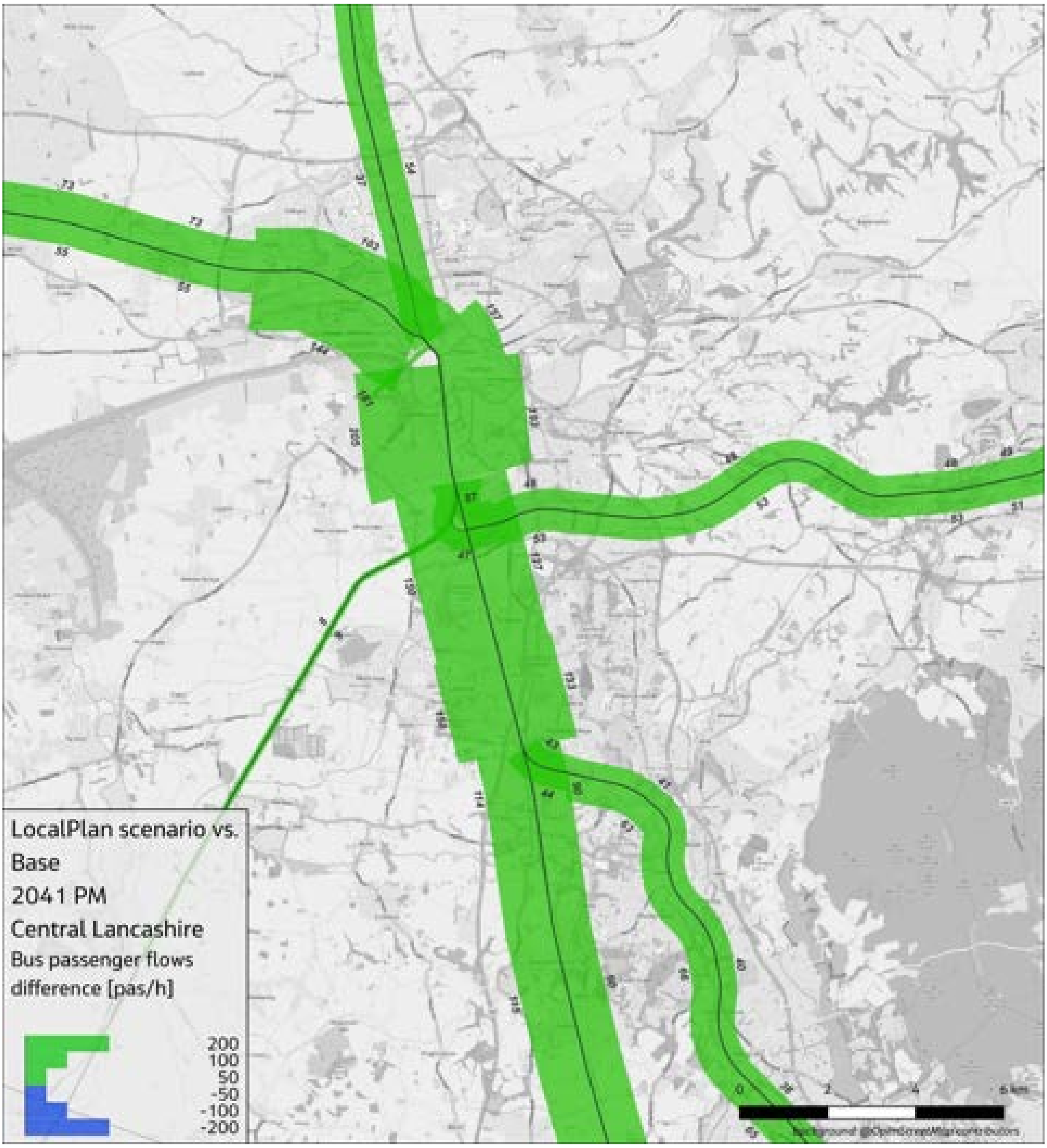


Figure 5.83 Rail Passenger Flow Comparisons – 2041 PM Local Plan Scenario with Base

5.25 Assessment of Strategic Road Network

This section presents a comparison of predicted congestion levels between the future year Local Plan update and 2024 base year, highlighting the points on the strategic road network and junctions in the Central Lancashire Area.

To identify the areas with significant congestion in the future years with the proposed local plan development, the output from the modelling has been examined in terms of the ratio of volume over capacity (V/C). This compares the modelled traffic flow over an hour to the theoretical maximum capacity for an hour.

There are some issues that would require further indication, where alternative more detailed analysis, outside of the SATURN modelling, would be appropriate, as the SATURN model may not accurately model certain merge arrangements and show V/C values which are potentially too high. However, the outputs from the SATURN model give a good comparison between scenarios. The modelling does indicate that there are a number of locations on the SRN which are well over capacity in the Reference Case, as a result of large increases in longer distance movements within background traffic growth. No DMRB merge-diverge assessment has been undertaken at this stage.

The junctions with at least one arm showing a V/C ratio of greater than 85%, which is generally accepted as the point where congestion begins, are identified. A comparison of congestion levels between 2024 base year and future year Local Plan Update is undertaken to establish whether the high V/C values already exist in the base year or the V/C values drastically increase in the forecast year due to higher traffic flow.

The subsequent analysis of these points on the model network, alongside local knowledge is done to identify the probable reasons for the congestion and estimate likely intervention to address the problem.

The modelled outputs have been displayed graphically in order to show the junction hotspot locations where the ratio of traffic volume to capacity (v/c) is above 85% and therefore indicative of a lack of capacity for additional traffic. In certain areas on the network, the model is known to under-represent congestion on the ground and the issue is addressed using other references such as Google and local knowledge.

It should be also noted that in instances where v/c is shown greater than 85% on the main motorway link does not necessarily indicate issues with the mainline capacity. It shows the worst turn v/c, and therefore is picking the worse v/c of the slip road rather than the mainline.

M6 Junction 28

Figure 5.84 and Figure 5.85 represents the V/C ratio on M6 Junction 29, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

In both AM and PM peak, a V/C value greater than 85% can be observed on the motorway exit slip roads as these approach the signalised junction with the Leyland Way/ B5256. The queue at these signalised junction is potentially creating queue back to impact the slip road and the mainline in both directions.

In order to mitigate this the junction would require improvement, including improved signing and lane designations and the potential for peak period signals to allow improved flow of traffic discharge from the motorway slip roads.

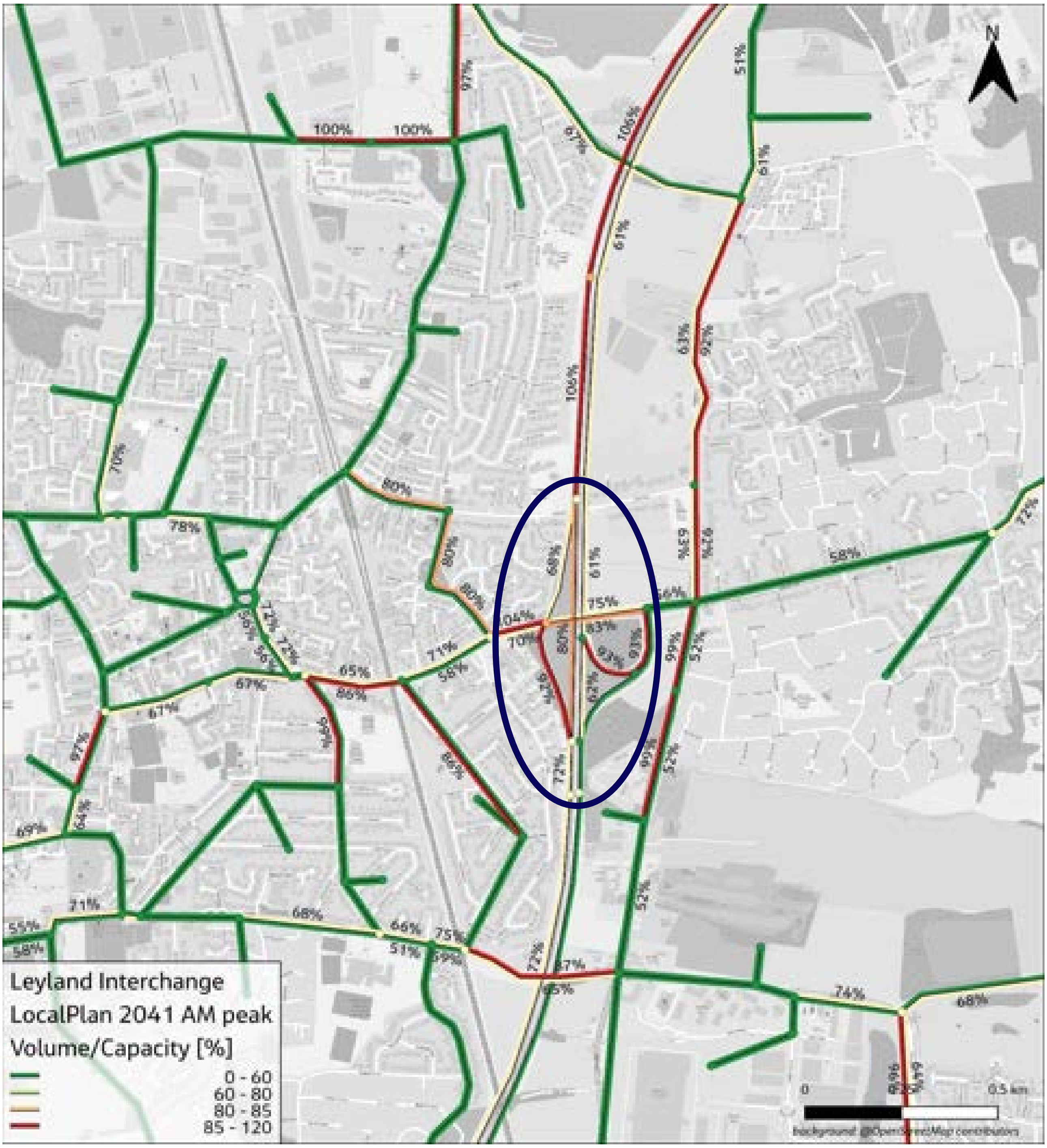


Figure 5.84 V/C Plot – 2041 AM Local Plan Scenario – M6 J28

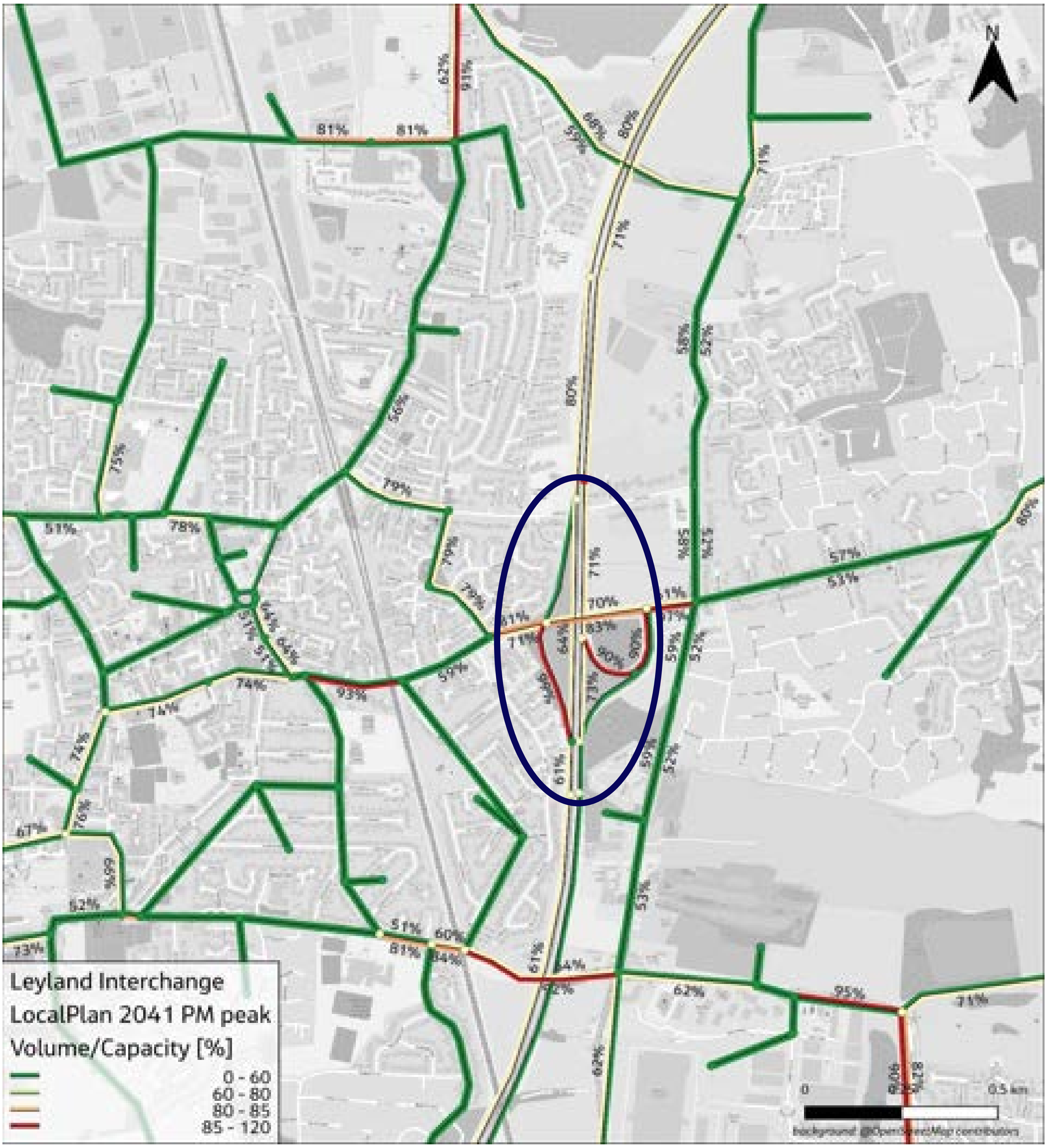


Figure 5.85 V/C Plot – 2041 PM Local Plan Scenario – M6 J28

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.86 and Figure 5.87.

It can be observed that the congestion levels in the base year are within the acceptable limits in the AM peak whereas the PM peak shows starting levels of congestion. Hence it can be inferred that the increase in V/C in the forecast year is primarily due to the increase in traffic flow in 2041.

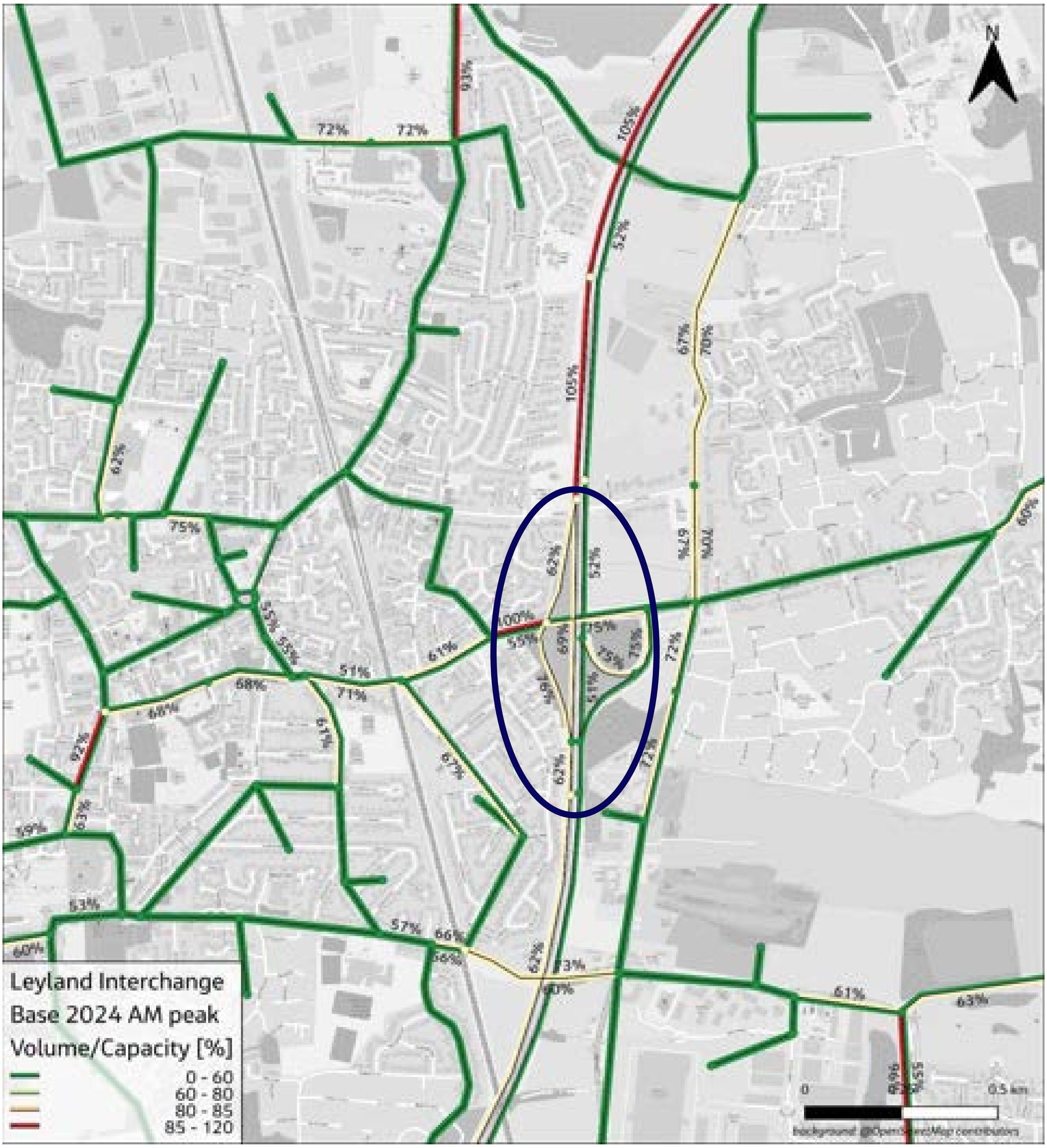


Figure 5.86 V/C Plot – Base Year AM – M6 J28

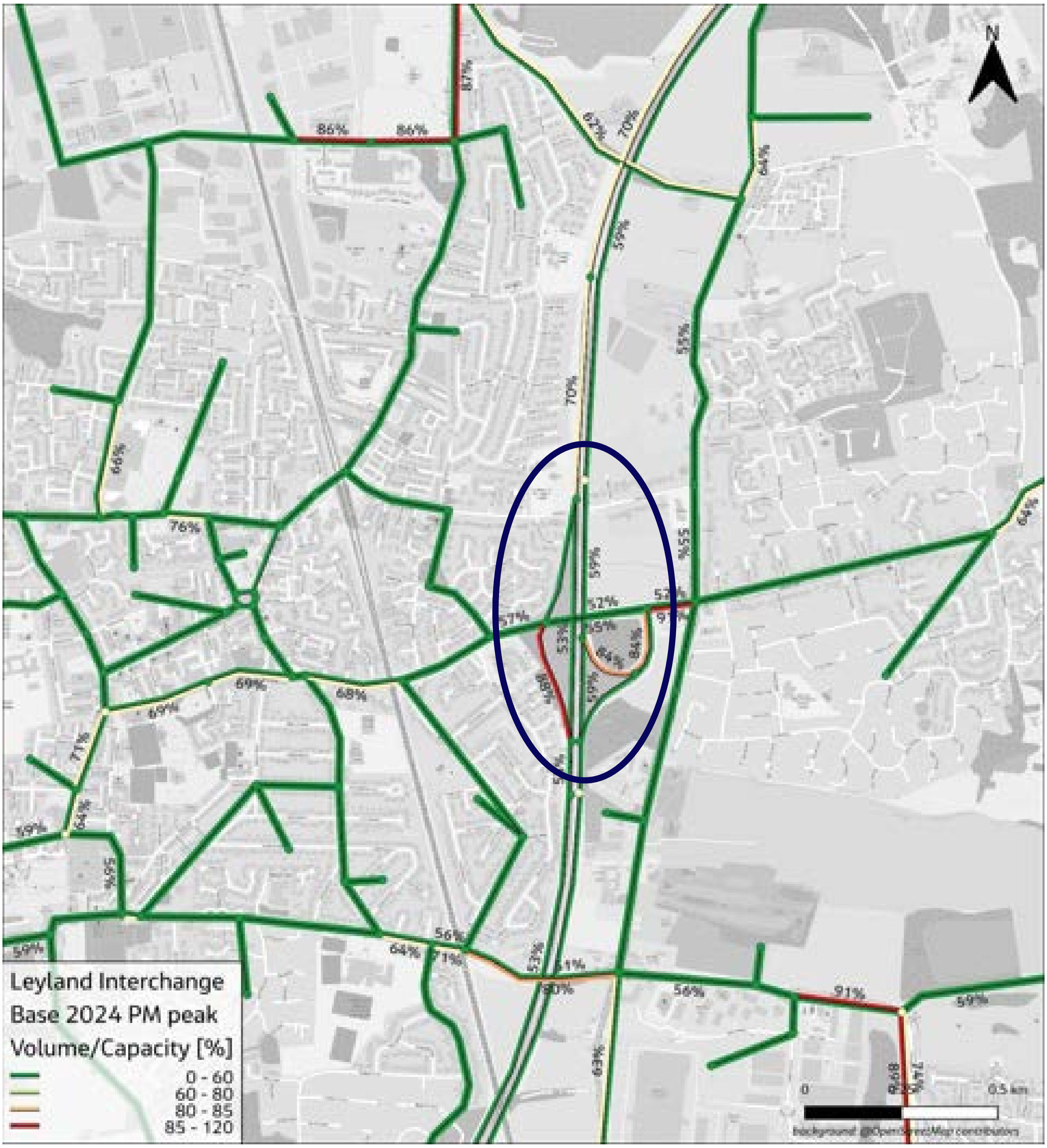


Figure 5.87 V/C Plot – Base Year PM– M6 J28

<u>M6 Junction 29 Bamber Bridge Interchange</u>

Figure 5.88 and Figure 5.89 represents the V/C ratio on M6 Junction 29, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

In both the AM and PM peaks, a V/C value greater than 91% can be observed at the merge point of the M65 eastbound on-slip with the M6. This is primarily due to increased traffic flows from the Lancashire Central strategic employment development and background growth. As this link approaches a signalised junction, higher delays are expected with increased demand.

In the AM peak, the northbound slip from the south J29 junction approaching the north junction reaches a V/C of 83%. Except for the northbound circulatory lane, all other circulatory arms remain within acceptable congestion levels.

It should be noted that the M6 J9 junctions include improvements as part of the A582 SRWD (South Ribble Western Distributor) and are included in the future network scenarios as part of the committed scheme.

To mitigate this, the junction would require improvements, including better signage, lane designations, and the potential for peak period signals to allow improved traffic flow onto the roundabout interchanges.

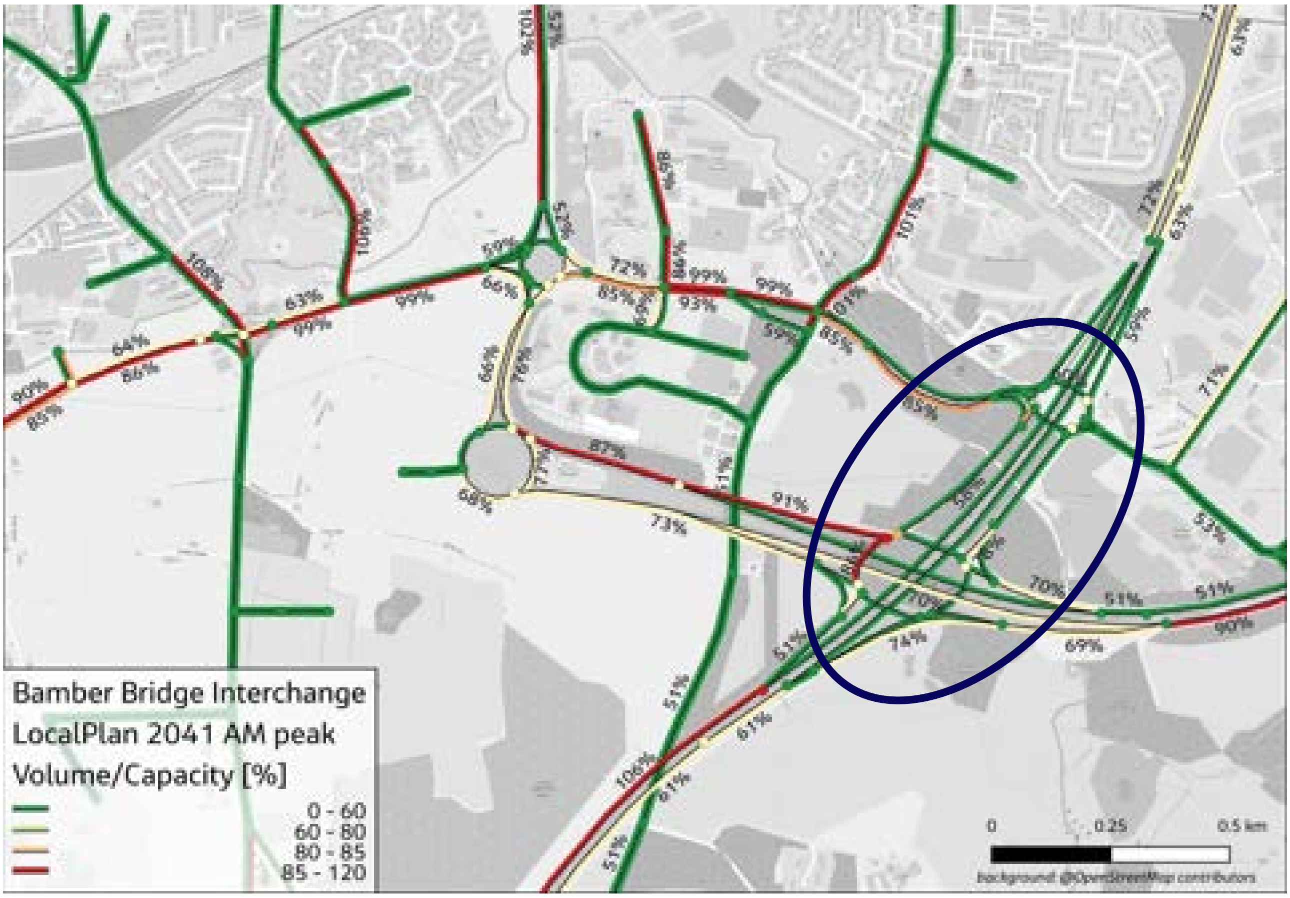


Figure 5.88 V/C Plot – 2041 AM Local Plan Scenario – M6 J29

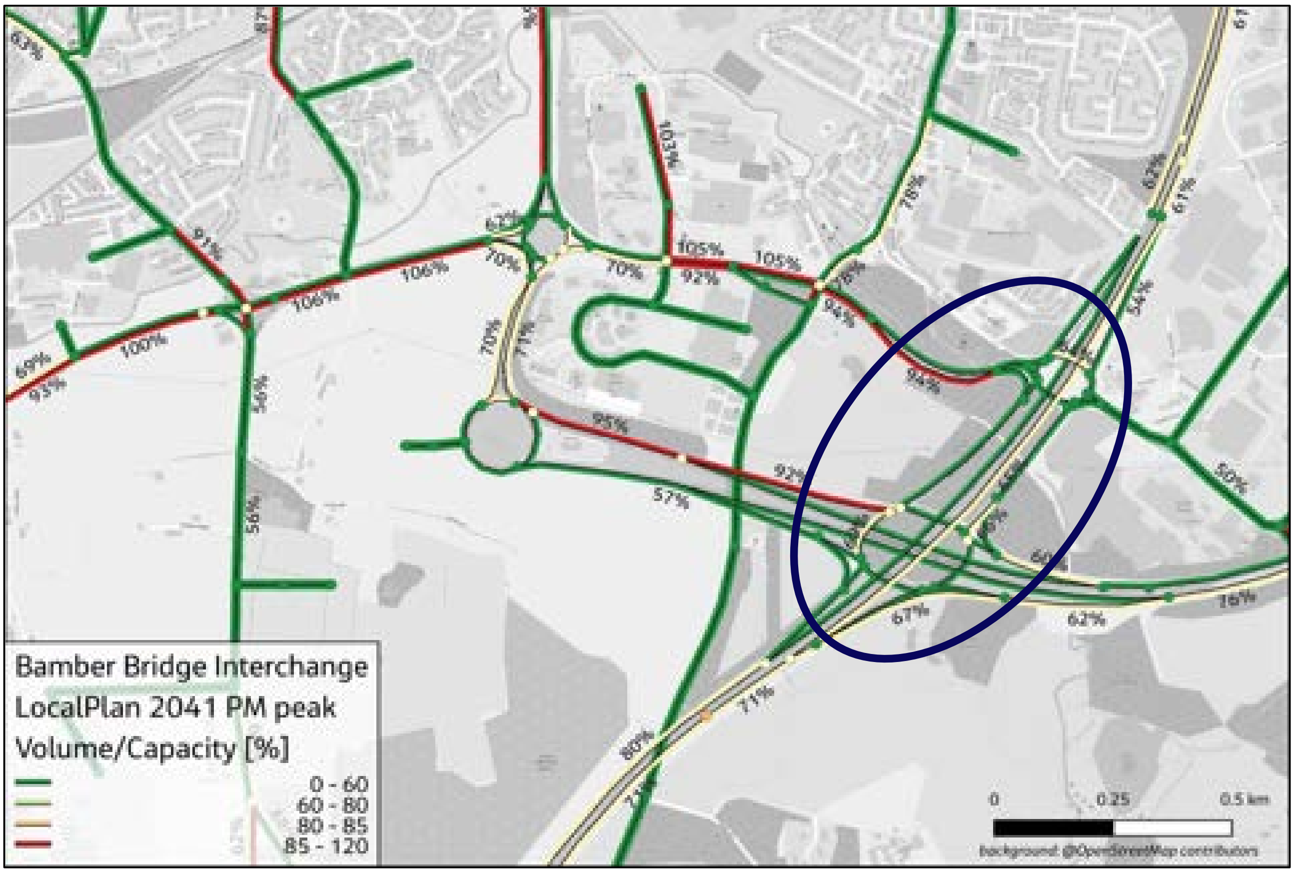


Figure 5.89 V/C Plot – 2041 PM Local Plan Scenario – M6 J29

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.90 and Figure 5.91.

It can be observed that the congestion levels in the base year are well within the acceptable limits in both AM and PM peak. Hence it can be inferred that the increase in V/C in the forecast year is primarily due to the increase in traffic flow in 2041.

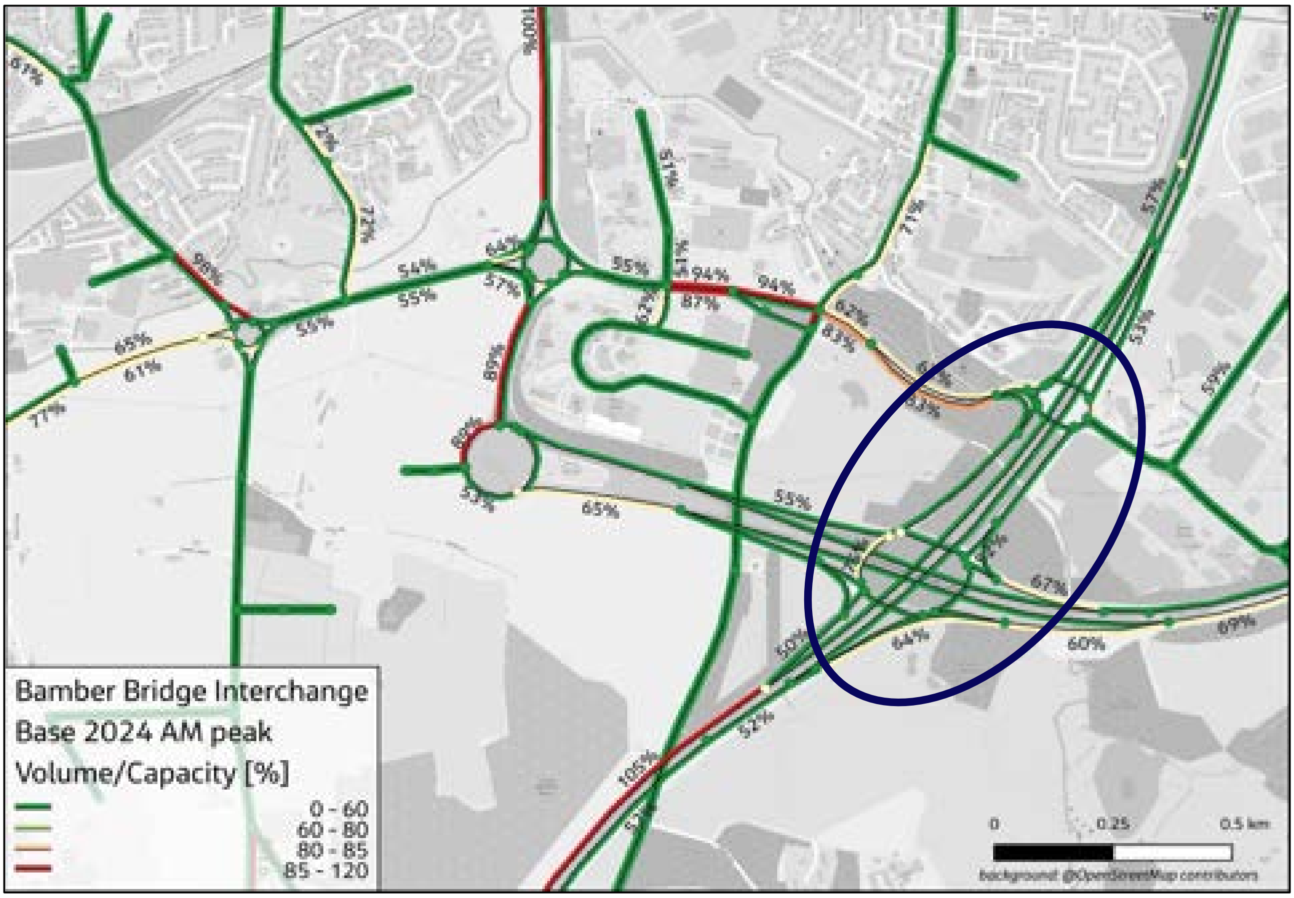


Figure 5.90 V/C Plot – Base Year AM – M6 J29

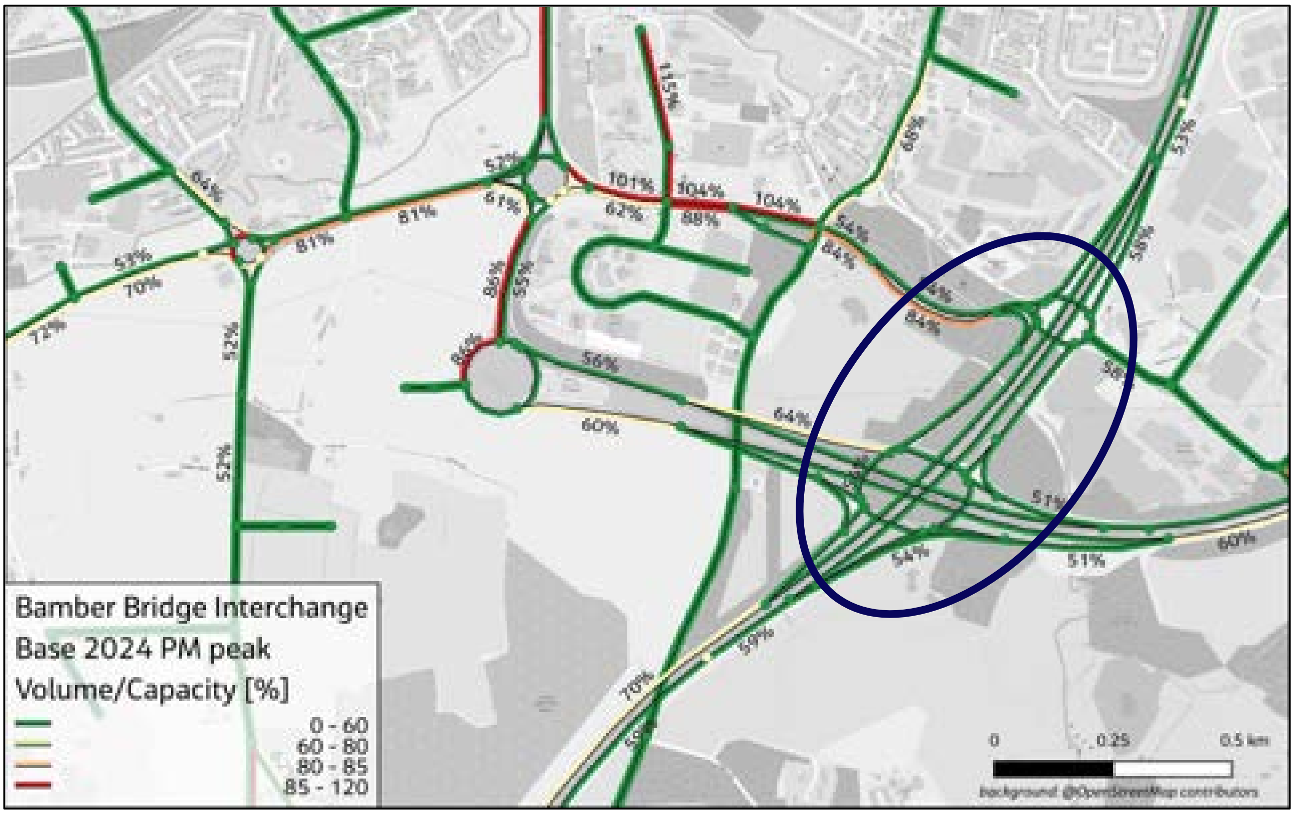


Figure 5.91 V/C Plot – Base Year PM– M6 J29

M6 Junction 31 Samlesbury Interchange

Figure 5.92 and Figure 5.93 represents the V/C ratio on M6 Junction 31, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

It can be observed from the figures that the base year model link flows are well within theoretical capacity. The increase in future year traffic flow causes some delay on the northbound mainline merge of the slip road in AM peak and the southbound mainline in PM peak.

Figure 5.92 V/C Plot – 2041 AM Local Plan Scenario – M6 J31

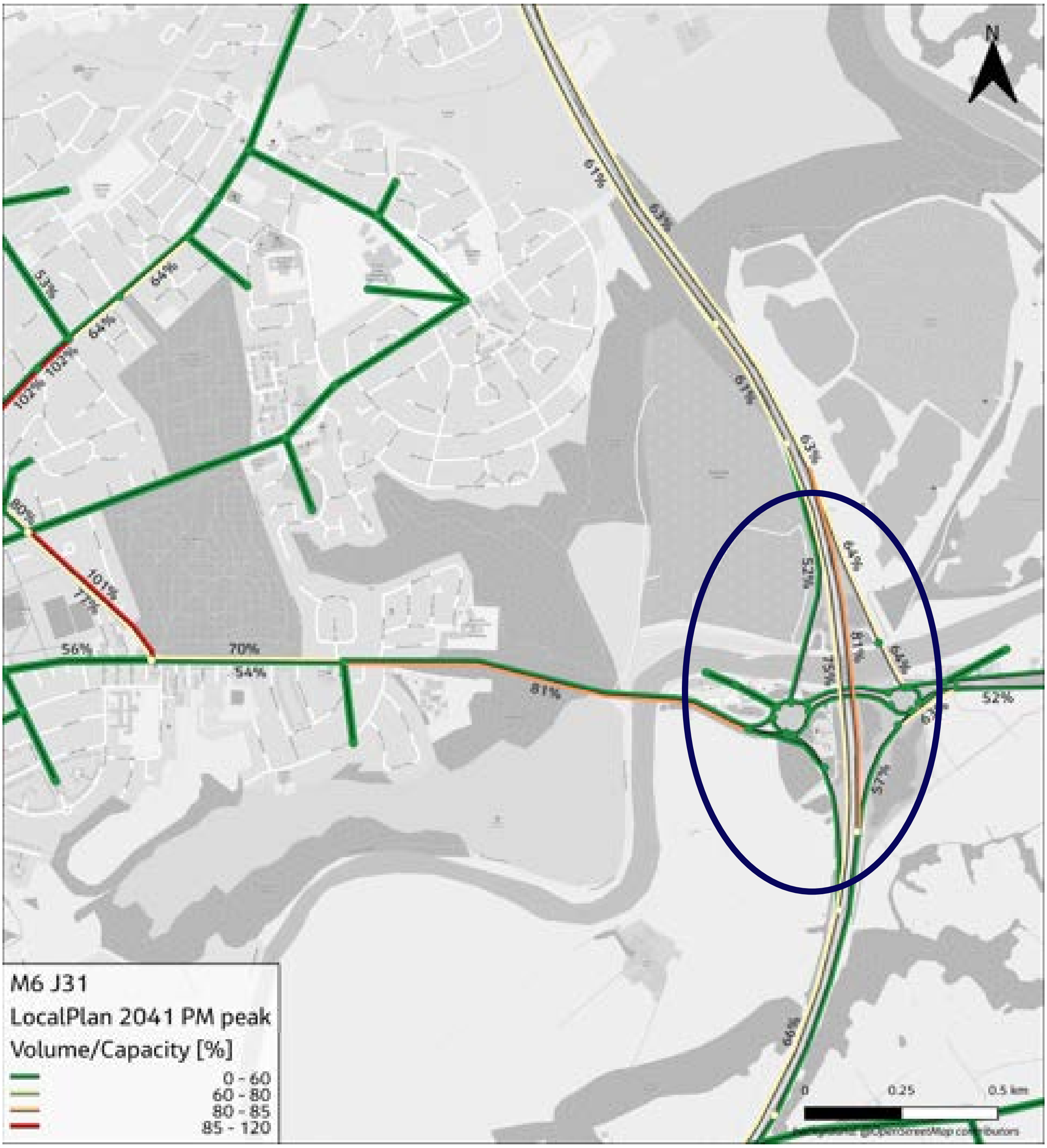


Figure 5.93 V/C Plot – 2041 PM Local Plan Scenario – M6 J31

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.94 and Figure 5.95. It can be observed that the congestion levels in the base year are within the acceptable limits in both AM and PM peak. Hence it can be inferred that the increase in V/C in the forecast year is primarily due to the increase in traffic flow in 2041.

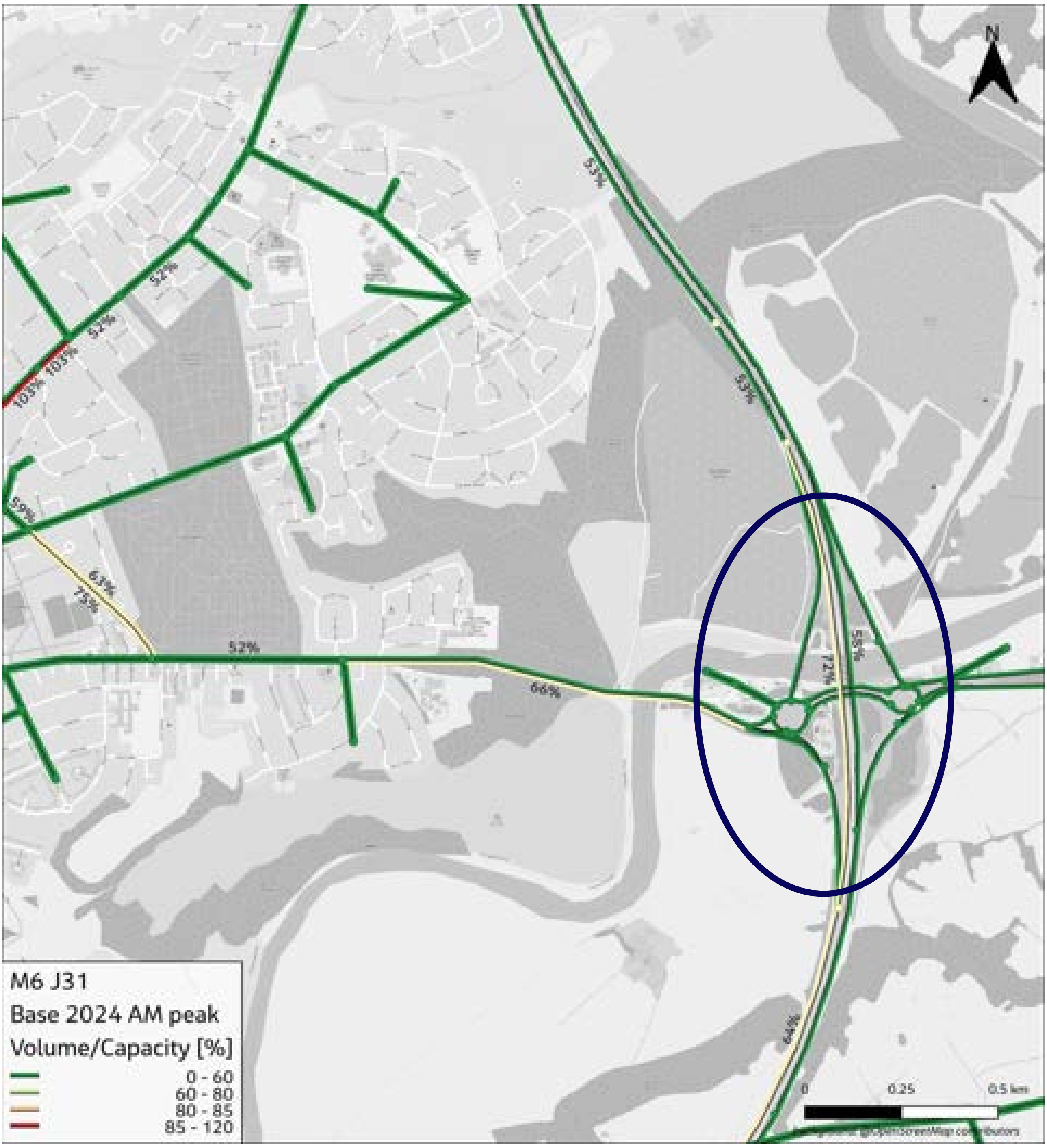


Figure 5.94 V/C Plot – Base Year AM– M6 J31

Figure 5.95 V/C Plot – Base Year PM – M6 J31

M6 Junction 31a

Figure 5.96 and Figure 5.97 represents the V/C ratio on M6 Junction 31A, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

In the AM peak, it can be observed at the merge point of the M6 northbound off-slip towards the Bluebell Way approaching capacity while in the PM peak, high congestion levels are observed in this section.

In AM peak, the M6 southbound mainline and the on-slip from Bluebell Way roundabout is observed to reaching capacity while PM peak is observed to have V/C greater than 85%.

It should be noted that the proposed new employment development is currently proposed to use the Bluebell Way eastern roundabout approach for access. This additional traffic could potentially causing higher delays in this corridor.

Figure 5.96 V/C Plot – 2041 AM Local Plan Scenario – M6 J31A

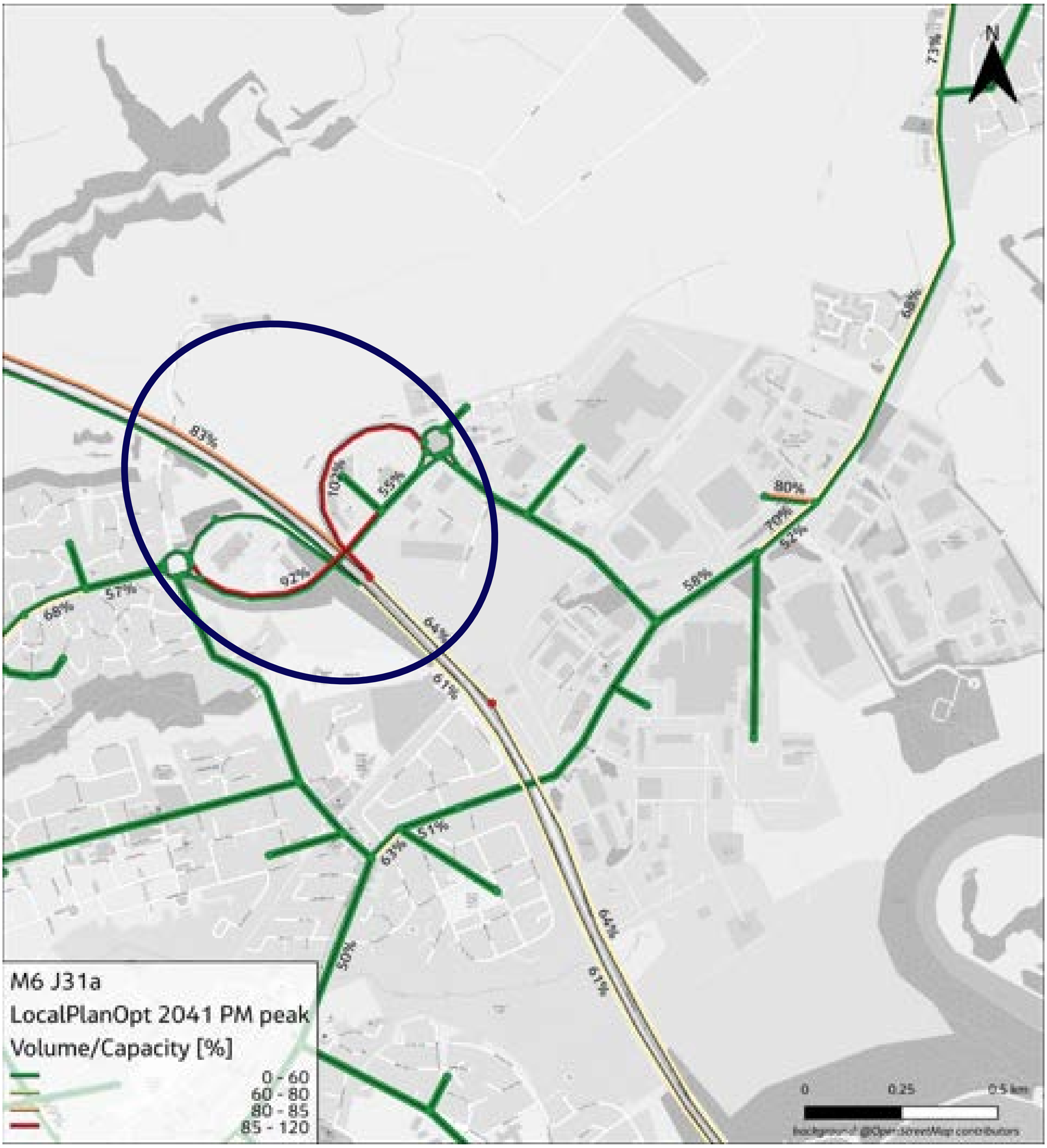


Figure 5.97 V/C Plot – 2041 PM Local Plan Scenario – M6 J31A

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.98 and Figure 5.99.

It can be observed that the congestion levels in the base year also shows some congestion in both AM and PM peak. Hence it can be inferred that the increase in V/C in the forecast year further deteriorates with increase in traffic flow in 2041.

Figure 5.98 V/C Plot – Base Year AM– M6 J31A

Figure 5.99 V/C Plot – Base Year PM– M6 J31A

M6 Junction 32 Broughton Interchange and M55 J1

Figure 5.100 and Figure 5.101 represents the V/C ratio on M6 Junction 32 and M55 J1, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

This junction is the one of the key route connection to Blackpool. In the AM peak, it can be observed at the merge point of the southbound slip joining M6 exhibiting a V/C of 90%, while in PM it is approaching capacity.

For both AM and PM peak, M6 section before J32 in both directions, especially in the southbound direction is observed to reaching capacity.

M55 J1 is observed to have V/C greater than 85% for the westbound slip roads approaching the signalised roundabout. There is also some delays caused by the weaving flows along this slip road between the vehicles approaching A6 and the vehicles going to M55.

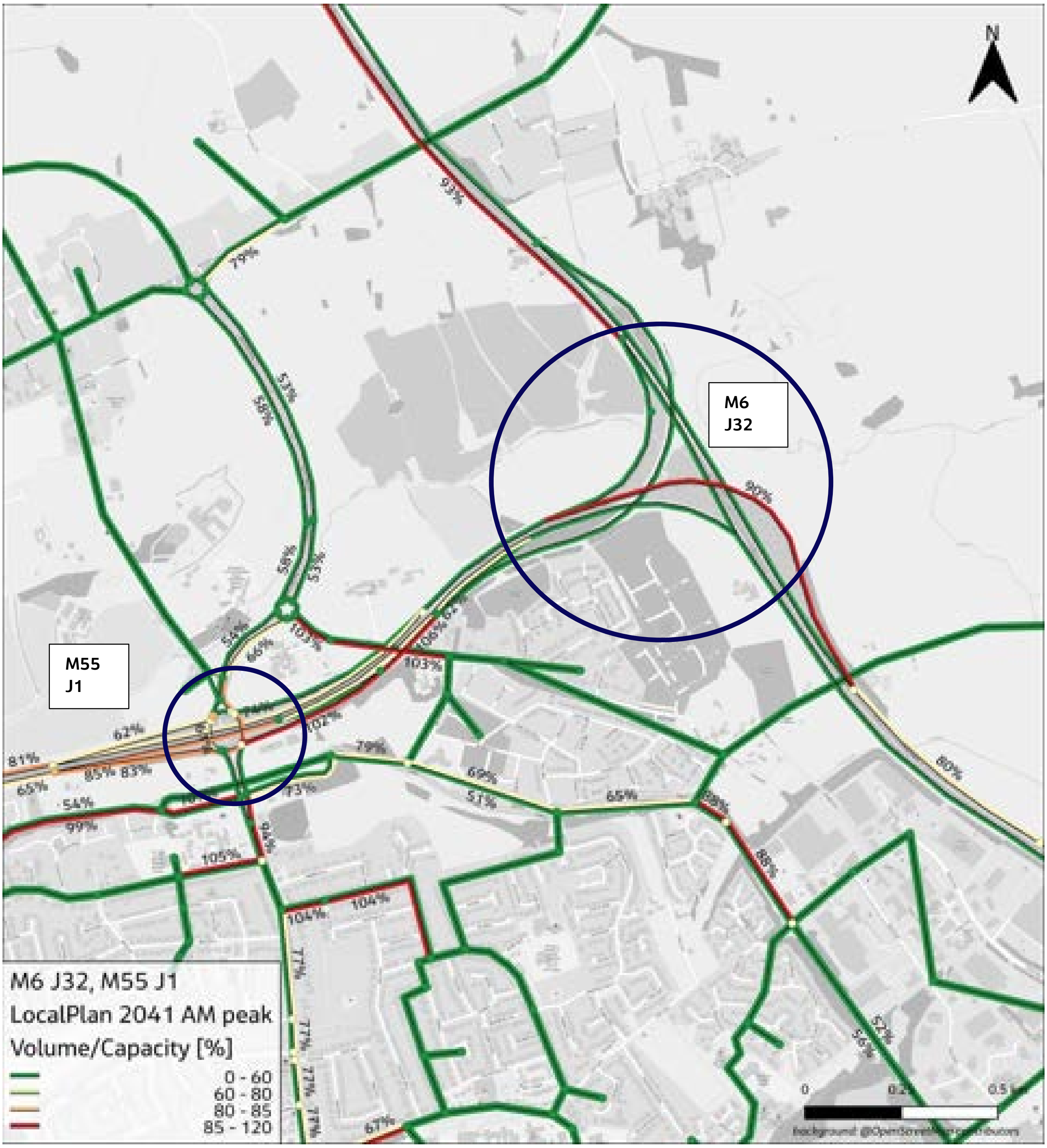


Figure 5.100 V/C Plot – 2041 AM Local Plan Scenario – M6 J32 and M55 J1

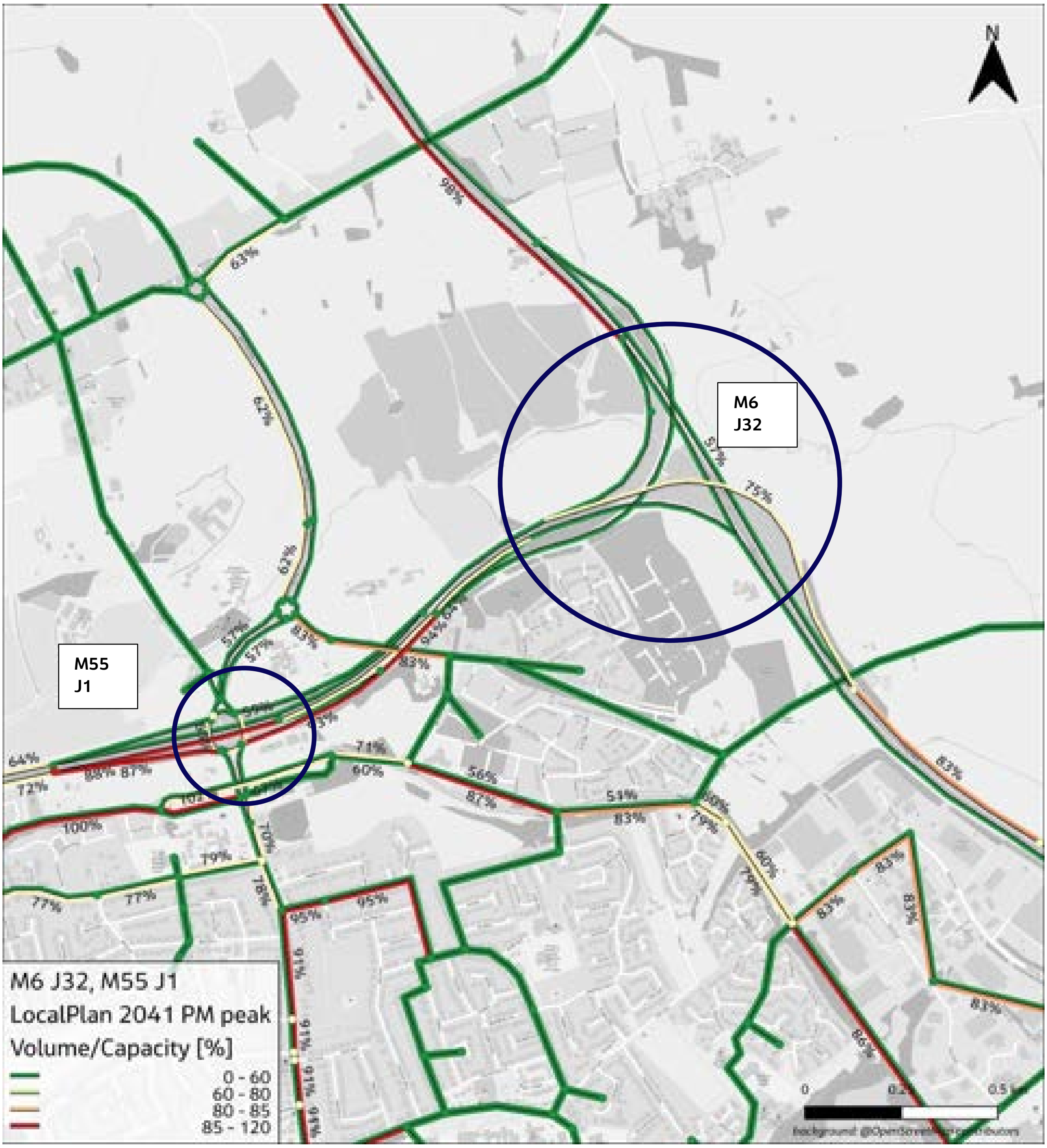


Figure 5.101 V/C Plot – 2041 PM Local Plan Scenario – M6 J32 and M55 J1

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.102 and Figure 5.103. It can be observed that the congestion levels in the base year also shows some congestion in both AM and PM peak. Hence it can be inferred that the increase in V/C in the forecast year further deteriorates with increase in traffic flow in 2041.

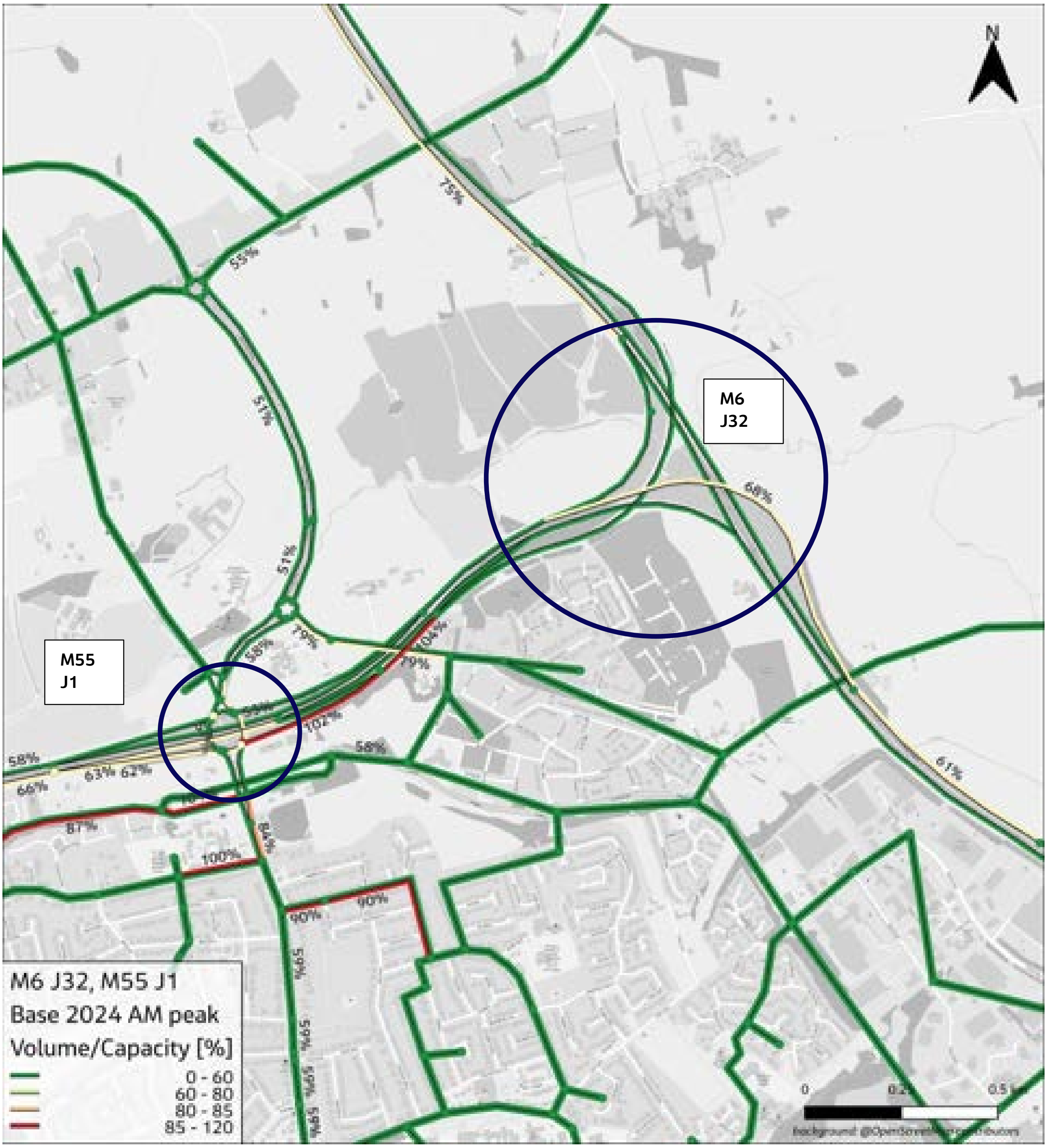


Figure 5.102 V/C Plot – Base Year AM– M6 J32 and M55 J1

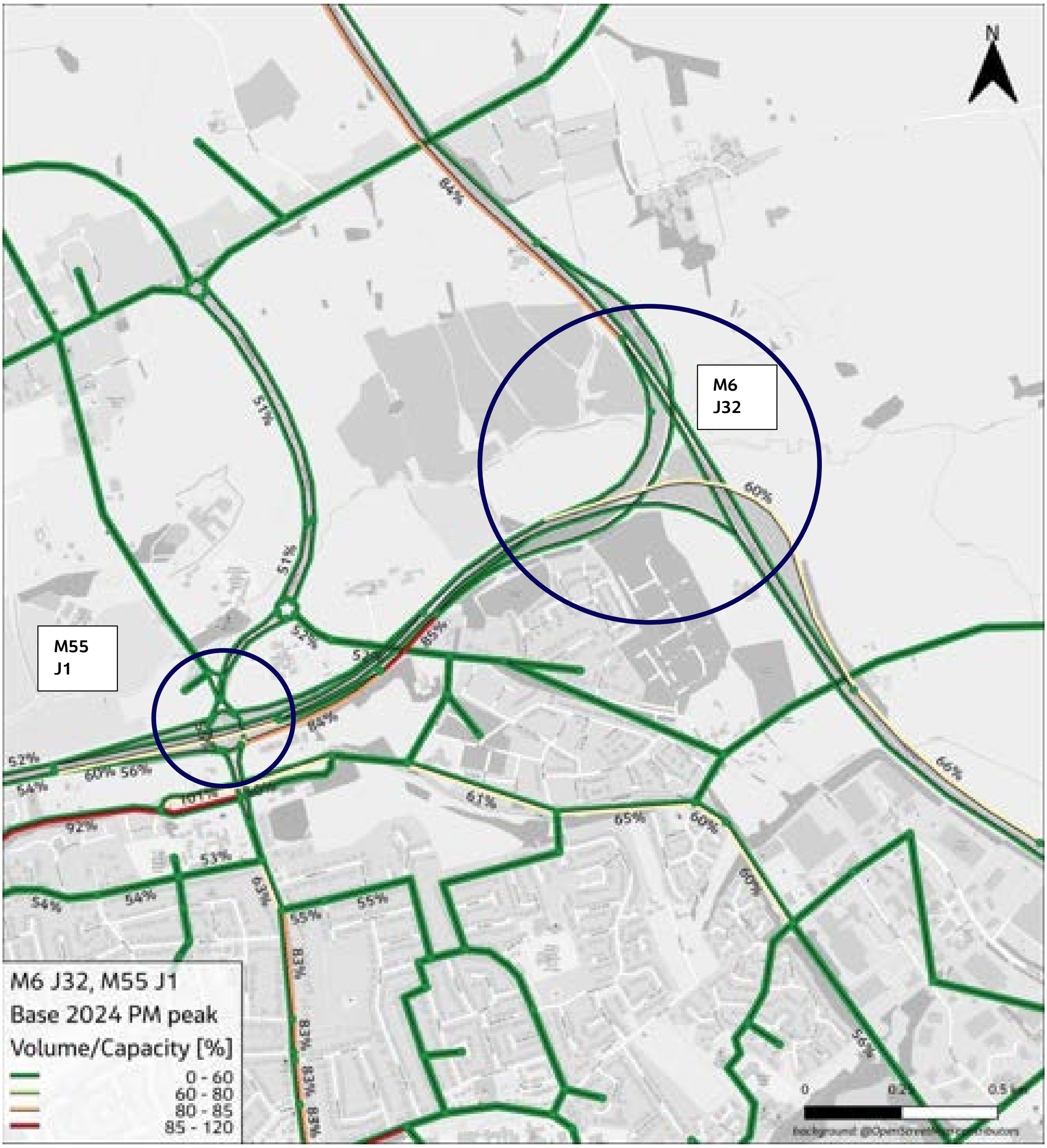


Figure 5.103 V/C Plot – Base Year PM– M6 J32 and M55 J1

M55 J2

This is a new interchange on the M55 (Junction 2) and provides a 2.5-mile-long dual carriageway to the A583/A5085 Blackpool Road/Riversway at Lea.

Figure 5.104 and Figure 5.105 represents the V/C ratio on M55 J2, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

In the AM peak, it can be observed at the Edith Rigby Wy. road approaching the roundabout junction with M55 is predicted to have a V/C of 93%, while in PM it is approaching capacity. This delay is mainly due to the queue back up at the merge of the eastbound slip on to the M55 mainline.

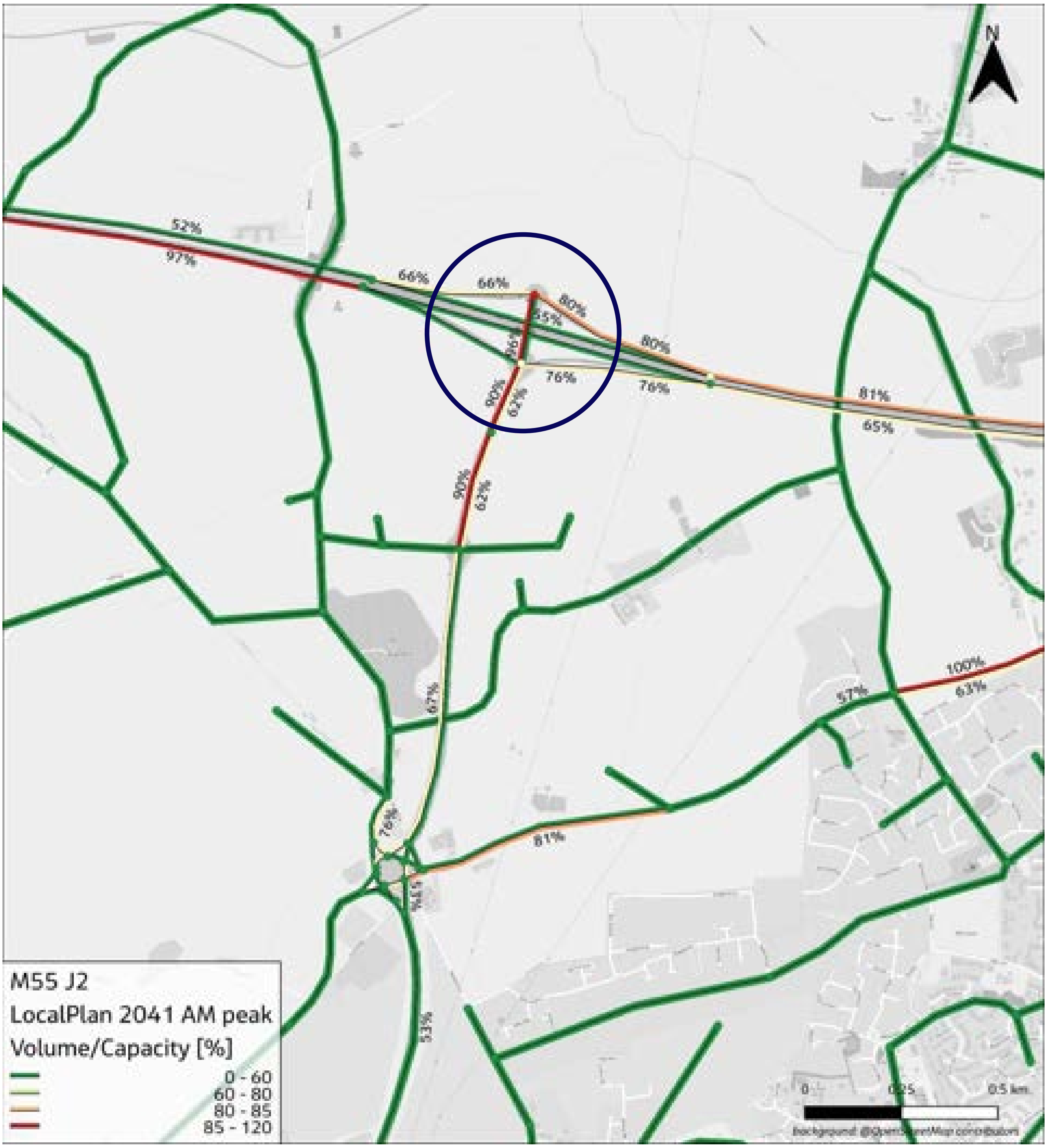


Figure 5.104 V/C Plot – 2041 AM Local Plan Scenario – M55 J2

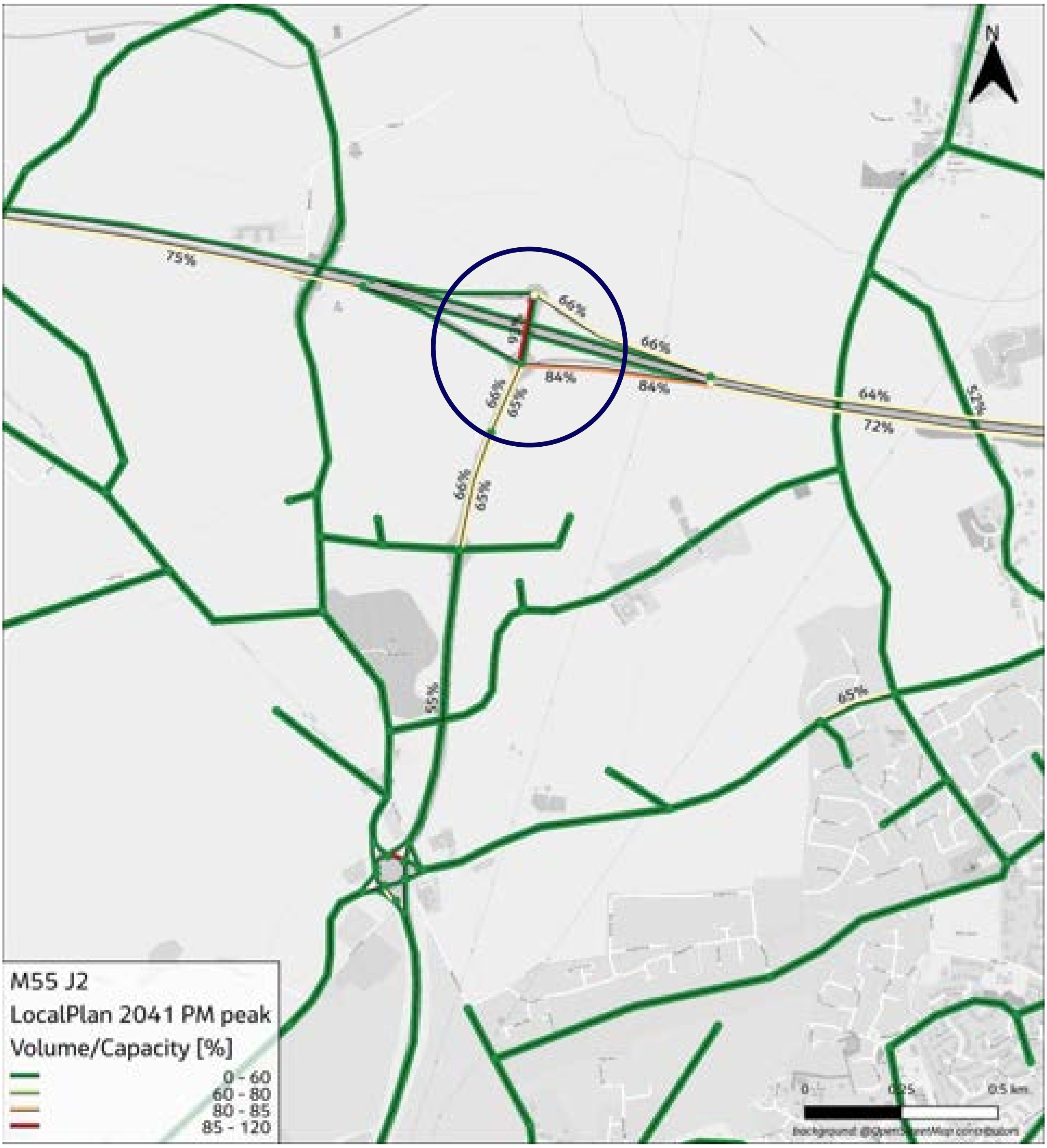


Figure 5.105 V/C Plot – 2041 PM Local Plan Scenario – M55 J2

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.106 and Figure 5.107.

It can be observed that the congestion levels in the base year also shows no significant congestion in both AM and PM peak. Hence it can be inferred that the increase in V/C in the forecast year further deteriorates with increase in traffic flow in 2041.

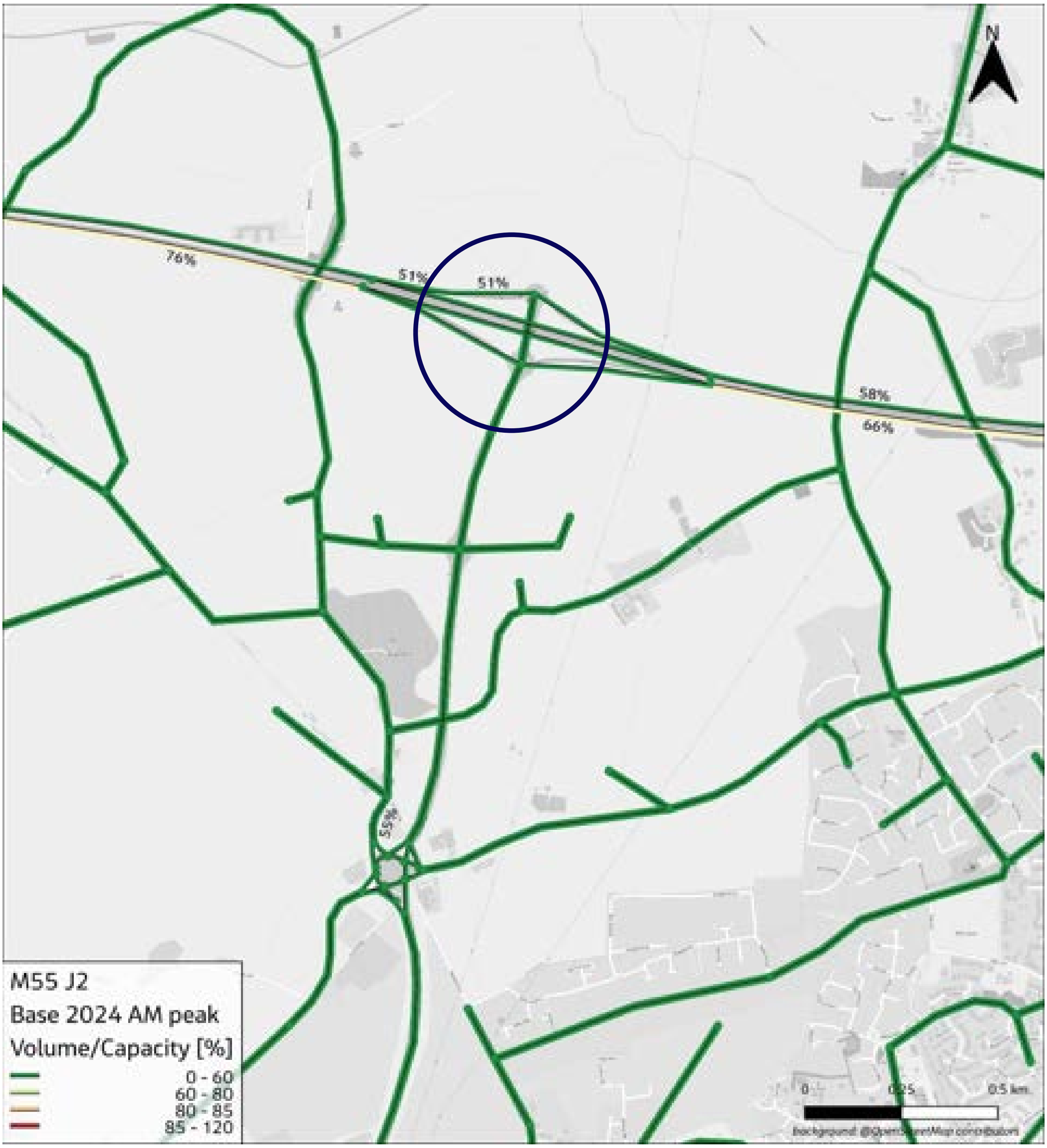


Figure 5.106 V/C Plot – Base Year AM Local Plan Scenario – M55 J2

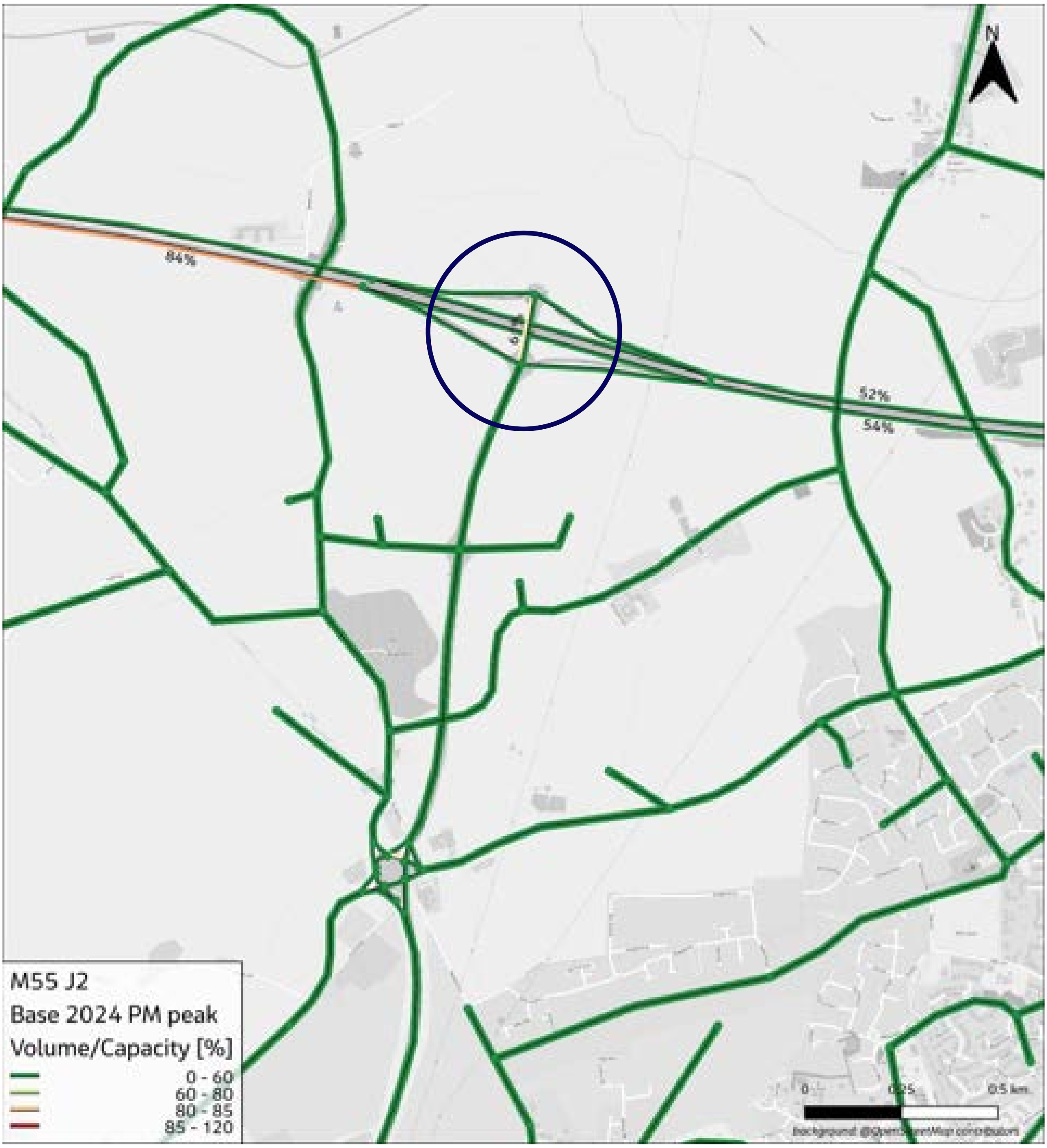


Figure 5.107 V/C Plot – Base Year PM Local Plan Scenario – M55 J2

M61/ M65 J9

Figure 5.108 and Figure 5.109 represents the V/C ratio on M61 J9, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

In both peaks most of the interchange arms are within the critical V/C of 85%, however there are few links which are approaching the capacity and can potentially cause congestion in peak. The eastern approach shows V/C greater than 85% for both the peaks. It was also noted that the there is blocking back from circulatory that spills on to the off slip.

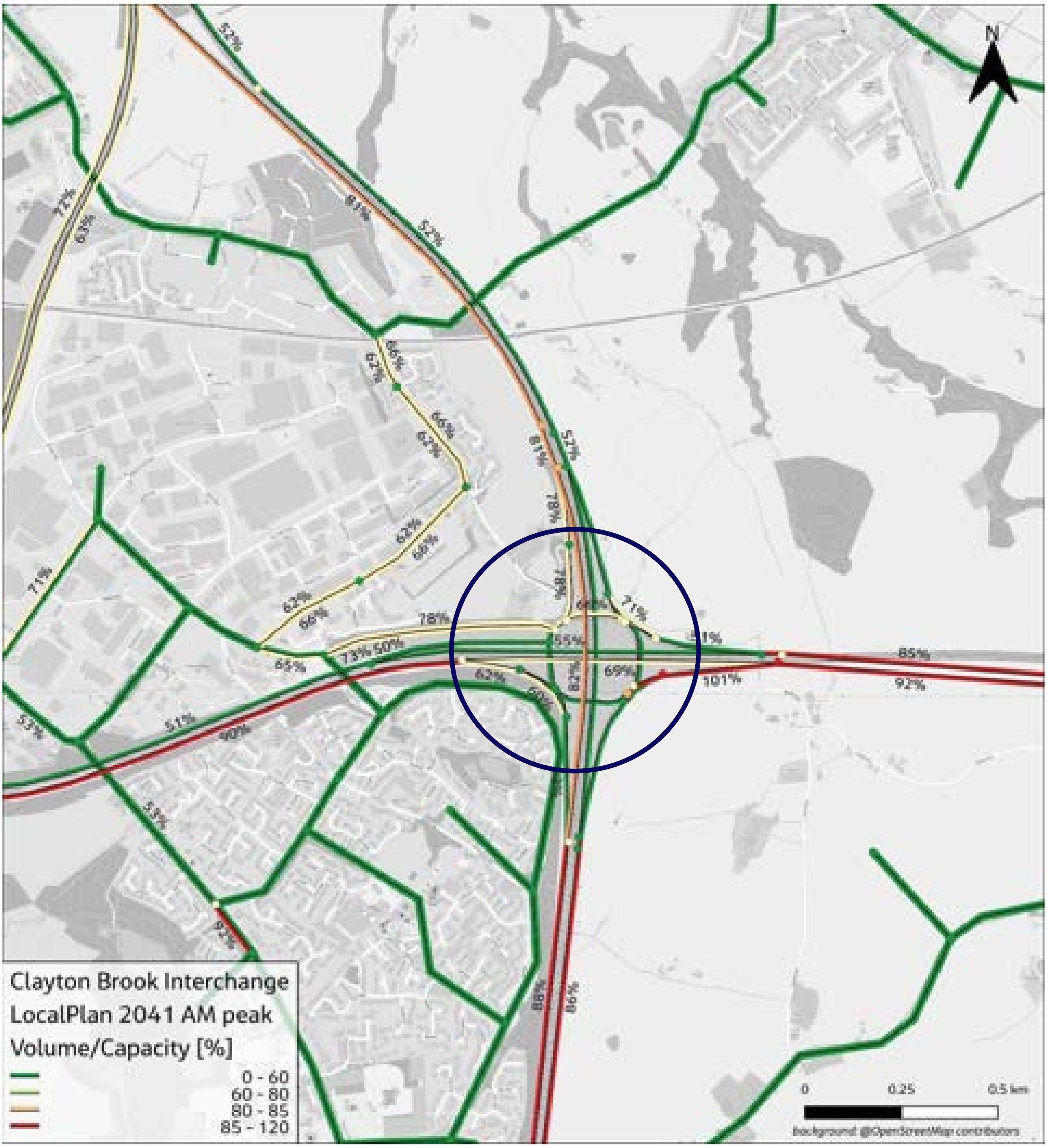


Figure 5.108 V/C Plot – 2041 AM Local Plan Scenario – M61/M65 J9

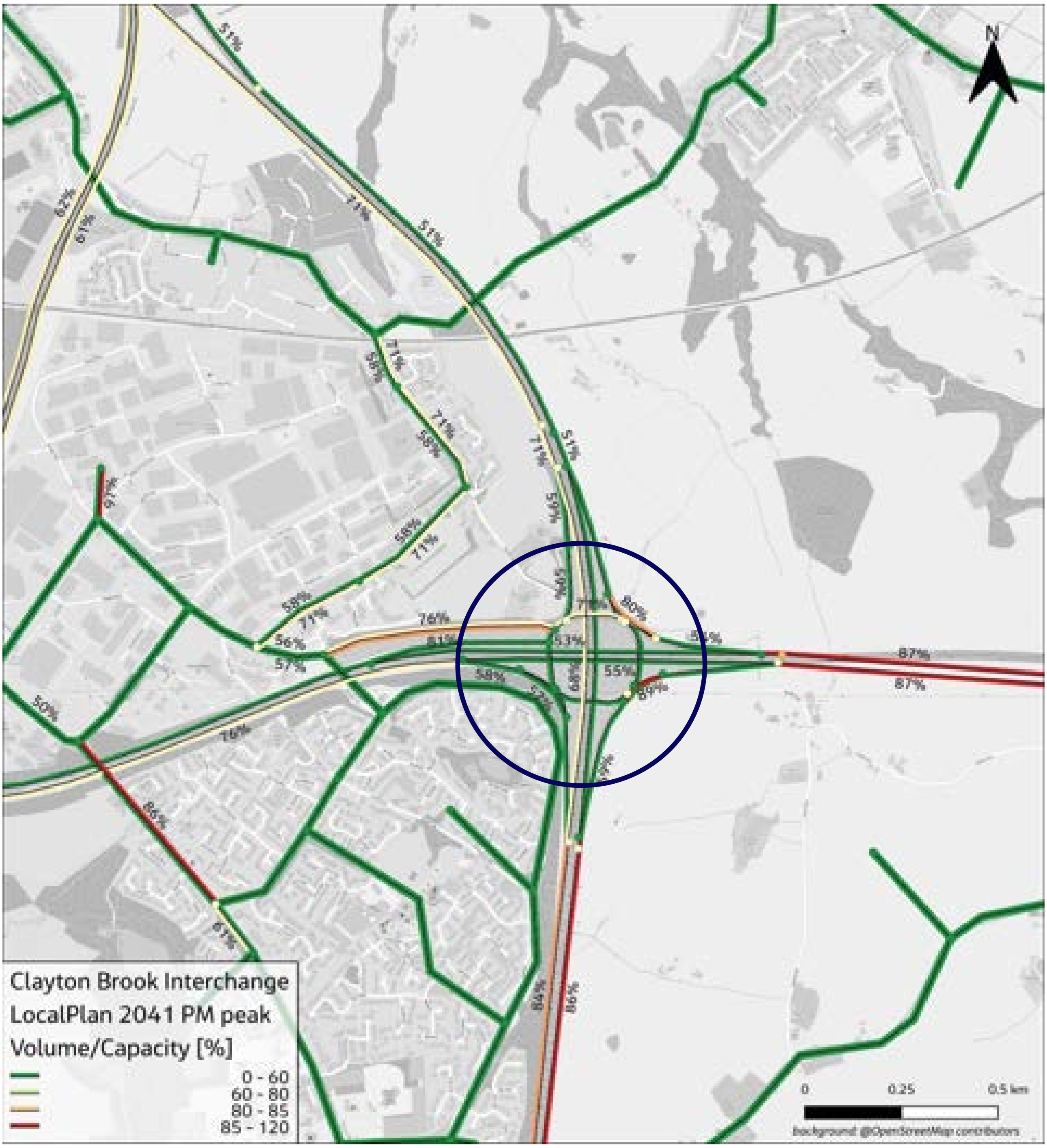


Figure 5.109 V/C Plot – 2041 PM Local Plan Scenario – M61/M65 J9

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.110 and Figure 5.111It can be observed that the congestion levels in the base year also shows no significant congestion in both AM and PM peak apart from the eastern approach arm to the junction. Hence it can be inferred that the increase in V/C in the forecast year further deteriorates with increase in traffic flow in 2041.

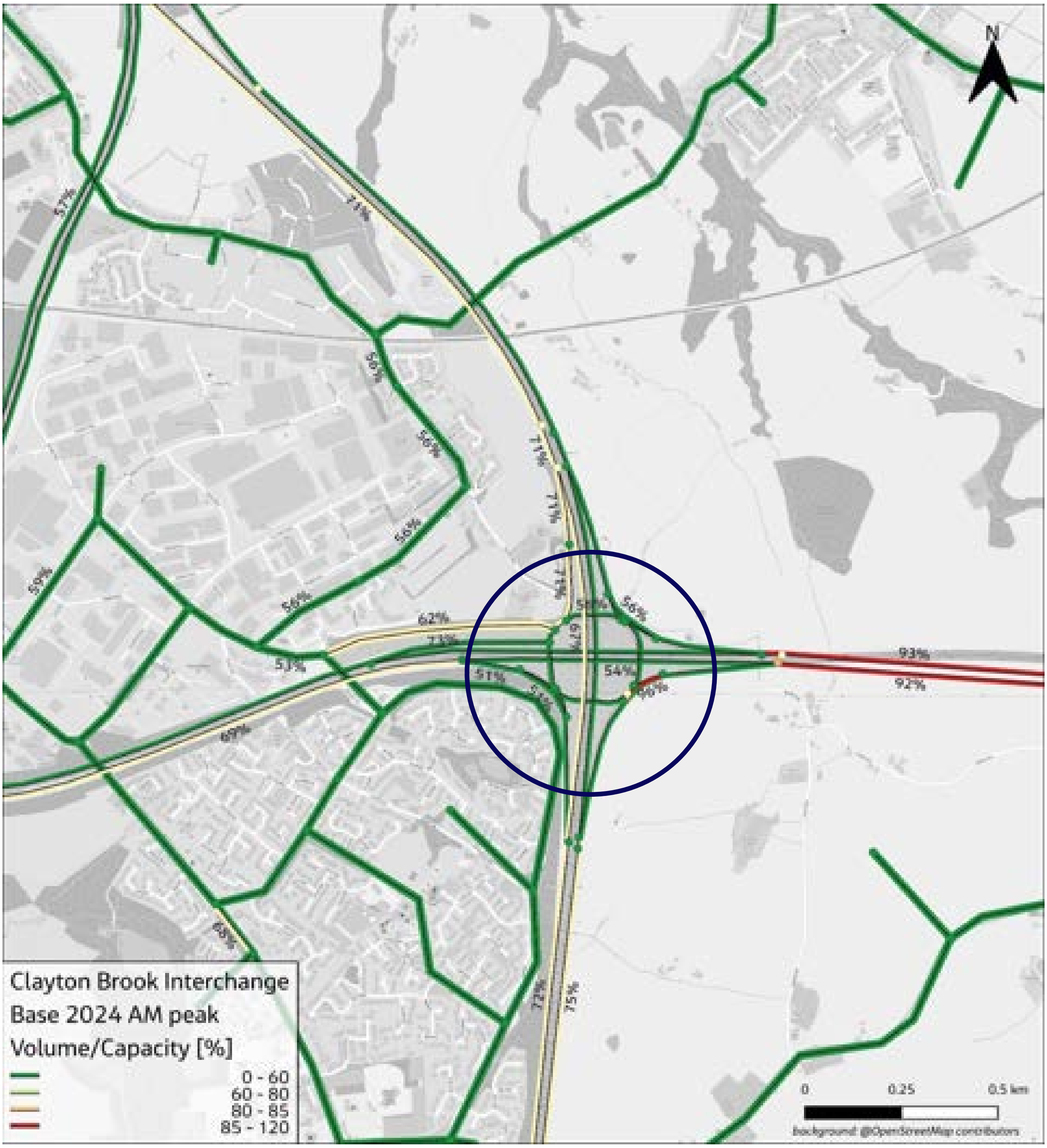


Figure 5.110 V/C Plot – Base Year AM– M61/M65 J9

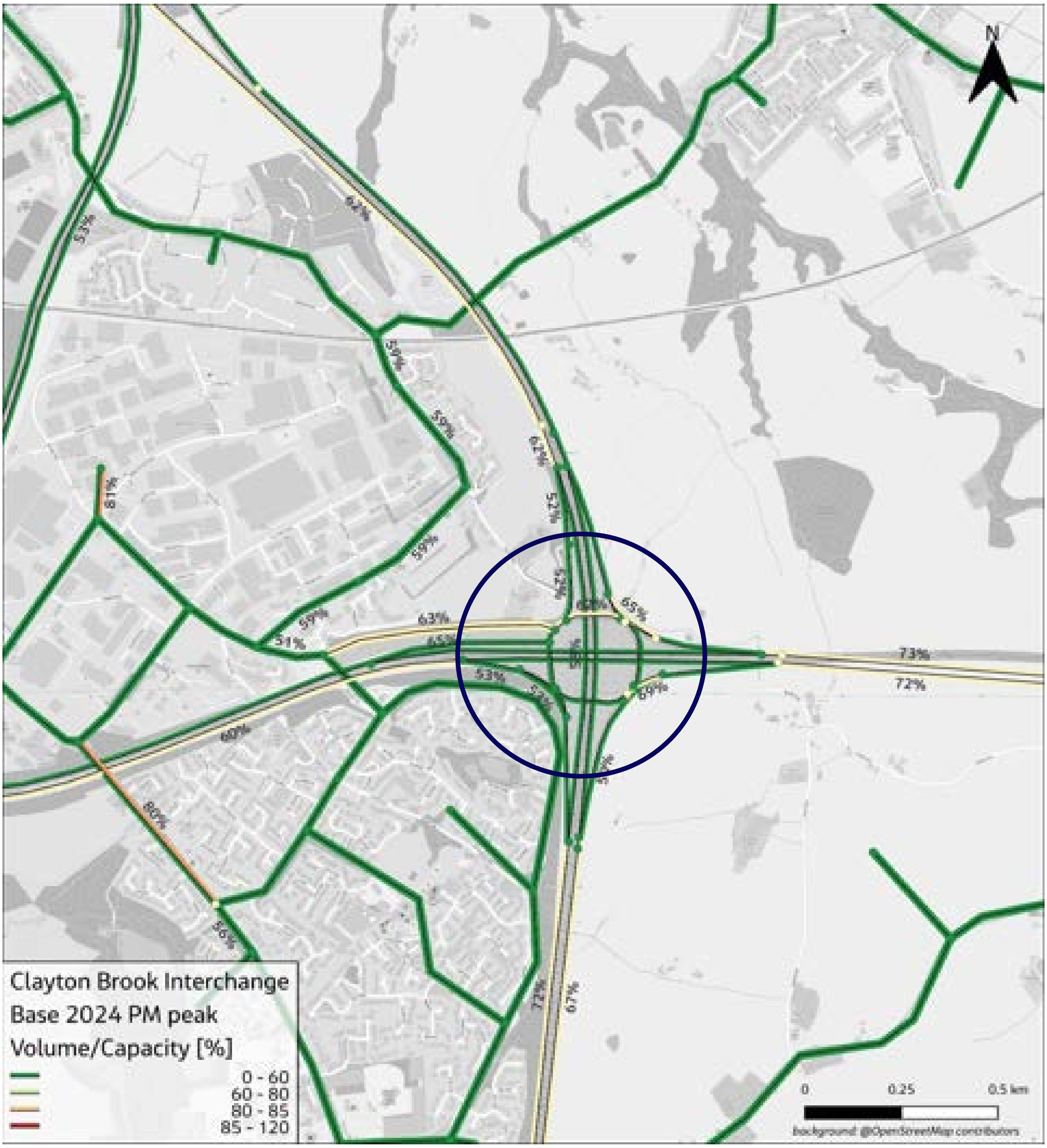


Figure 5.111 V/C Plot – Base Year PM– M61/M65 J9

M61 J8

M61 J8 is an important interchange that connects Chorley district with the rest of the UK.

Figure 5.112 and Figure 5.113 represents the V/C ratio on M61 J8, for the forecast year 2041 Local Plan scenario for AM and PM peaks respectively.

In both peaks most of the interchange arms are within the critical V/C of 85%, however there are few links which are approaching the capacity and can potentially cause congestion in peak. The eastern approach shows V/C greater than 85% for both the peaks.

As per the local knowledge, the roads around this interchange is already gridlocked with traffic from the Hartwood Roundabout backing up on to the M61 at peak times. While the traffic model does show severe delays on the A6 at the Hartwood roundabout, it does not show any high congestion on M61 for base and future years. If required, a junction model or a microsimulation model can be employed for this corridor to understand the level of mitigation required. It should be noted that there are some network improvements proposed for the Hartwood roundabout as part of the Botany Bay development. However, these are not included in the future year model as the final designs are not confirmed at this point.

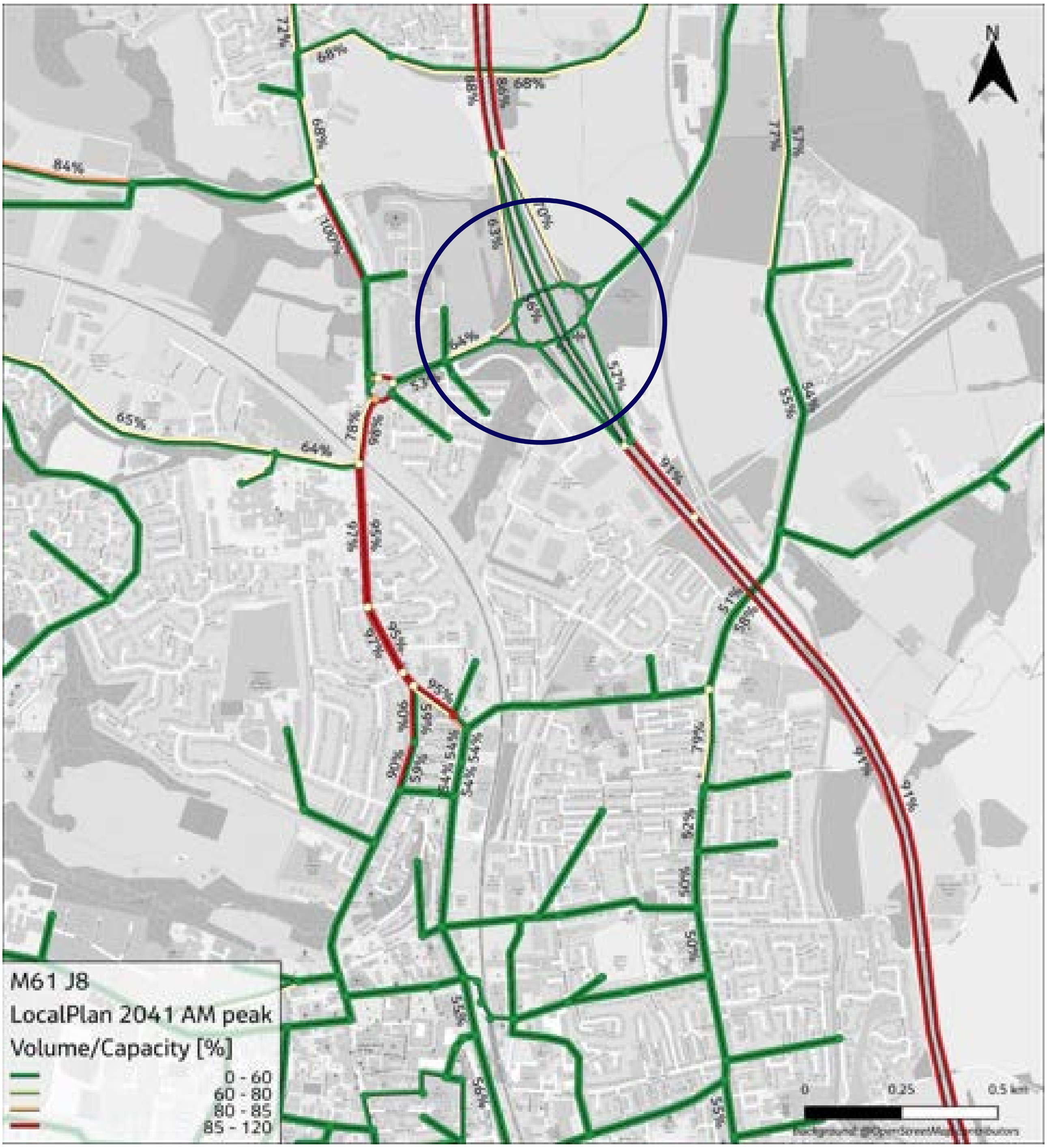


Figure 5.112 V/C Plot – 2041 AM Local Plan Scenario – M61 J8

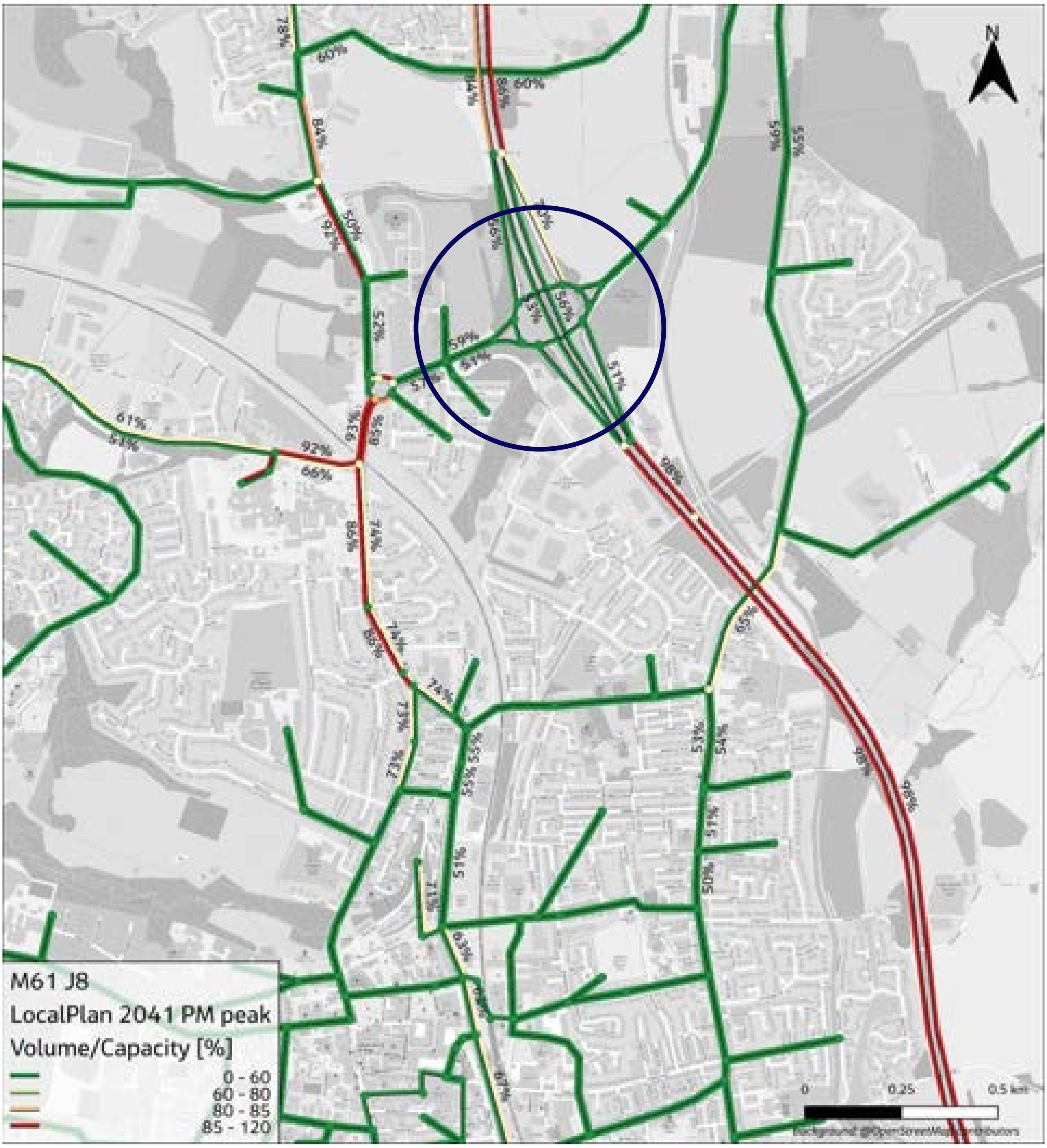


Figure 5.113 V/C Plot – 2041 PM Local Plan Scenario – M61 J8

A comparison is done against the 2024 Base year and the corresponding V/C values in base year are depicted in Figure 5.114 and Figure 5.115. It can be observed that the congestion levels in the base year also slight congestion in both AM and PM peak on some of the slip arms. Hence it can be inferred that the increase in V/C in the forecast year further deteriorates with increase in traffic flow in 2041.

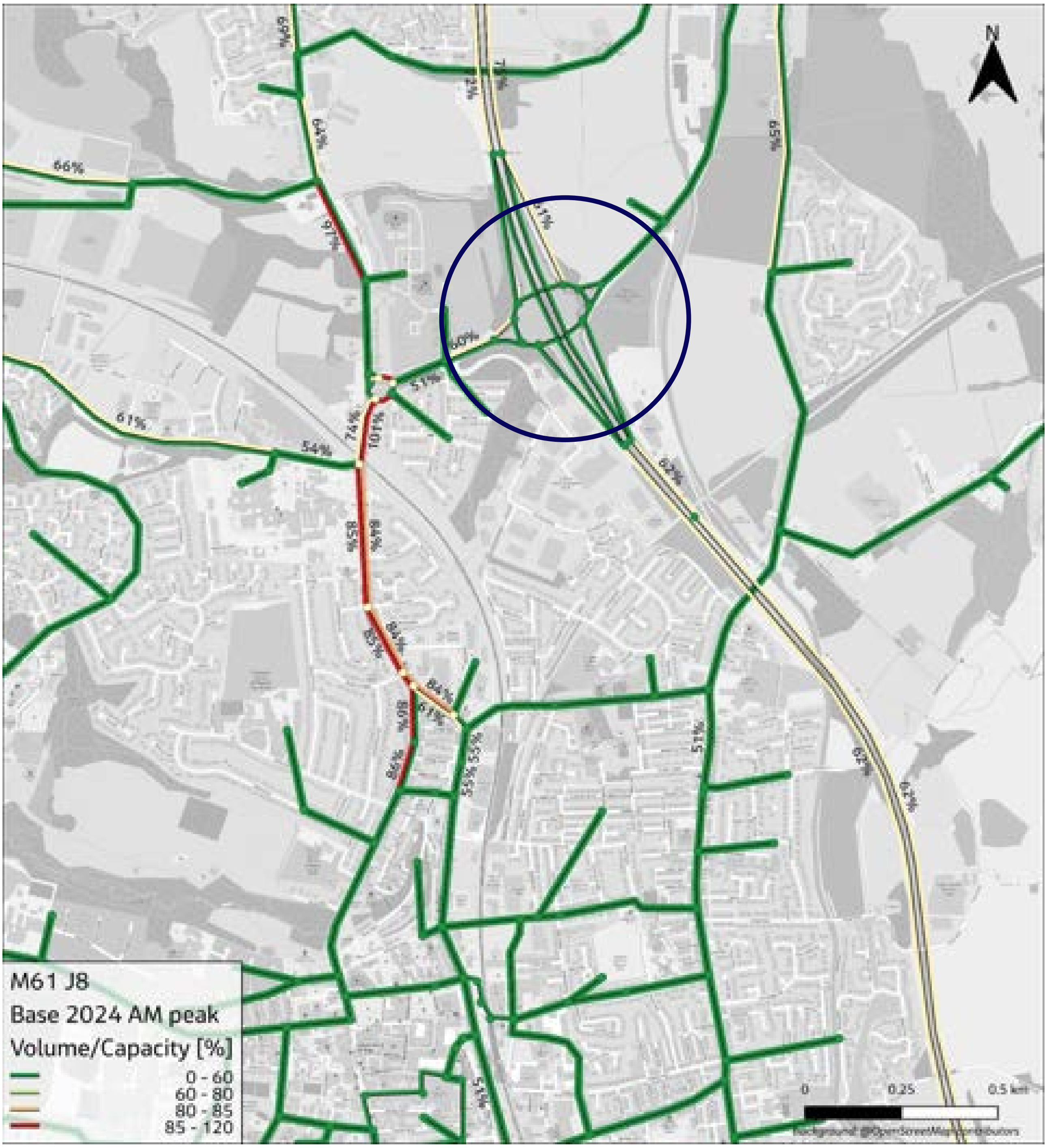


Figure 5.114 V/C Plot – Base Year AM – M61 J8

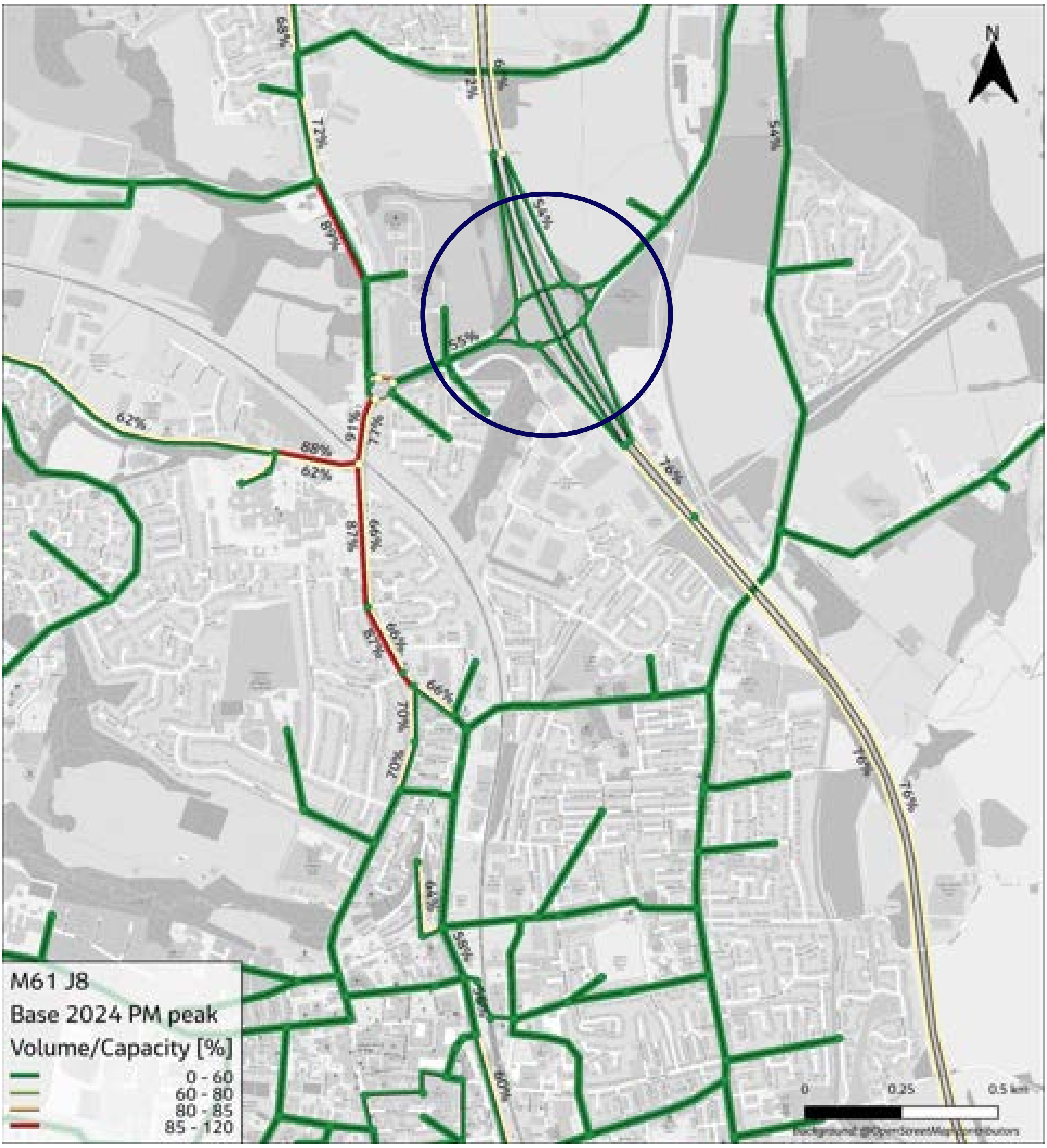


Figure 5.115 V/C Plot – Base Year PM – M61 J8

5.26 Summary and Next Steps

Government guidance highlights the importance for local authorities in undertaking an assessment of the transport implications in developing or reviewing their Local Plan so that a robust transport evidence base may be developed to support the preparation and/or review of that Plan. In response, the new Local Plan aims to be supported by a robust transport evidence base, which will consider the cumulative impact of existing, committed and new developments on transport networks, including local and strategic highway networks .As part of this a Strategic Transport Assessment (TA) is being undertaken to determine the potential impacts of the emerging draft Local Plan and to investigate possible mitigation measures to address such impacts.

Central Lancashire operates as a well-connected labor market, with strong commuting flows between Preston, South Ribble, and Chorley. Despite a comprehensive public transport network in urban areas, a good and developing cycling network, and improving pedestrian facilities, the private car remains the predominant mode of transport. According to the 2011 National Census, the percentage of people commuting by car or as a passenger is significantly higher than those using public transport or walking and cycling. Preston's car commuting rate is consistent with the North West regional average (63%), but Chorley and South Ribble have higher car usage (72%) and lower public transport (6% vs 12%) and walking/cycling rates (10% vs 13%).

The Stage 1 traffic modelling work evaluates the impact of emerging Local Plan site allocations on both local and strategic road networks and articulate a long-term transport investment strategy within the three districts in Central Lancashire. This work provides a cumulative assessment of traffic impacts associated with Local Plan site allocations rather than detailed analyses of individual sites.

This report summarises the transport evidence base gathered for the development of the Central Lancashire new Local Plan. The scope of work includes using the Central Lancashire Transport Model (CLTM) suite consisting of Highway Assignment Model in SATURN, Public Transport Assignment Model and Variable Demand Model (VDM) components in EMME to develop forecast year model scenarios for 2031 and 2041 with the proposed local plan development changes. As part of this the Jacobs have undertaken an update to 2019 base year CLTM to better support the local plan testing, and this updated base model (2024) is used for forecasting.

Future year models have been developed for forecast years 2031 and 2041 for a Reference Case, which includes forecast demand from all committed developments within the three districts, and includes all committed schemes in the highway network and a Local Plan scenario, which includes the new local plan development sites in addition to developments in the Reference Case. There is no change to the highway network between the scenario and represent the Do Minimum scenario.

Forecast travel demand is generated using national, regional, and local data sets. Detailed planning data from Preston, South Ribble, and Chorley identified new development locations, sizes, and types. Future land use information is combined with national data from the National Trip End Model (NTEM 8.0) and local trip rate from TRICS to infer car and bus trip generation for the forecast years. The DfT's Exogenous Demand Growth Estimator (EDGE) database provided growth rates for background rail demand, while LGV and HGV trips are adjusted using National Road Traffic Projections (NRTP22) forecasts.

This transport model estimates future year transport demand and predicts changes in travel behaviour and patterns due to the Local Plan, including route choices, travel modes, and journey destinations and the evidence base will highlight necessary transport-related infrastructure to accommodate new development.

In all three districts, traffic generally increases from the base year due to increased land use, population, and employment. Network-wide traffic flow increases are observed, attributed to new developments and broader population and employment growth. Traffic decreases are noted where rerouting has occurred due to committed schemes like the A582 improvements and new bus lanes. The Strategic Road Network experiences the largest absolute increase in traffic.

To identify areas with significant congestion, the model's output is examined in terms of the volume over capacity (V/C) ratio, comparing modelled traffic flow to capacity over an hour. Junctions with at least one arm showing a V/C ratio greater than 85% are flagged as potentially congested. Some signalized junctions show high V/C on certain movements, and therefore optimisation of signal timings may relieve capacity restraints at many junctions. A review of the combined impacts of both the additional development growth and the existing congestion hotspots has been undertaken so that a targeted approach to infrastructure testing can be implemented and schemes/corridors identified so that possible solutions and mitigation measures can be identified.

The modelling indicates some widespread problematic areas by the end of the plan period. Network delays are not solely caused by Local Plan growth; general traffic growth over the plan period is also forecast to cause delays that require attention. In some areas, Local Plan development exacerbates these delays, pushing junctions or links into higher delay categories.

Where transport modelling highlights delays and congestion, appropriate mitigation measures, including highway improvements, will be sought. Detailed work will be undertaken to see what improvements can be made to existing junctions to accommodate additional demand. These measures will be developed alongside smarter and active travel mitigation strategies to influence travel choices and reduce single-occupancy vehicle journeys.

Overall, it is clear that adding the Local Plan allocations to the existing land supply will present transport challenges that need to be planned for. The models show that current areas of constraint are inevitably worsened as a result of the planned level of growth associated with the Local Plan.

To achieve the growth outlined in Central Lancashire's Local Plan, investment in the transport network is essential. This will not only open up development areas but also address current and future congestion issues. New infrastructure will facilitate these developments, providing crucial links for development traffic to access the main and strategic networks beyond the district. The next phase of the Local Plan will include a detailed review of the infrastructure needed to support this development demand.

Whilst the evidence shows that Central Lancashire is in a good starting point for achieving this, more work is required to ensure the county remains a thriving, attractive and healthy place to live. The Local Transport Plan (LTP) should set out an overarching vision for transport in the county and the policies that will be required to deliver the vision. This approach will ensure that we have outlined a clear long-term ambition for transport in the county. The new LTP should take a more holistic approach and will recognise the broad range of factors affected by transport such as the environment, the economy, public health and place shaping. This approach will ensure that we deliver a plan that not only creates an efficient transport network but also a county that is a better place to live in.

The transport modelling and Transport Assessment work is an iterative process. As the Local Plan process progresses, further model runs will be undertaken to refine the preferred development and mitigation scenario. This will involve identifying and scoping the necessary mitigation measures to address areas of concern highlighted by the transport modelling outputs in this Stage 1 Transport Assessment.