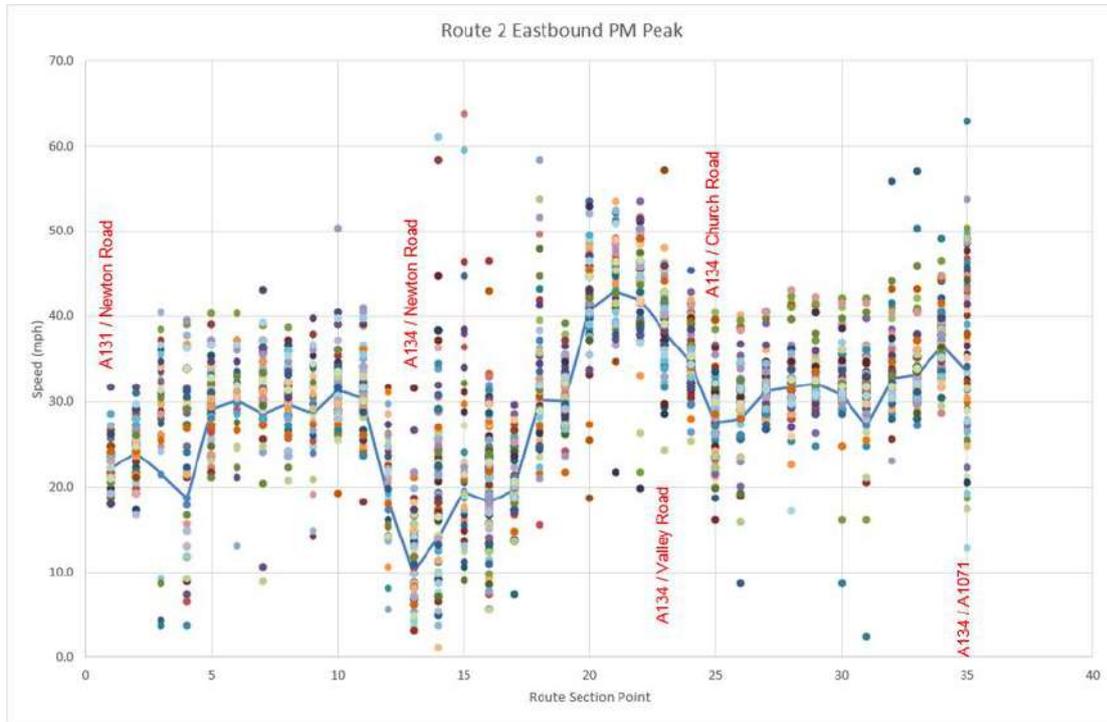


Figure 30 - Trafficmaster journey time average speed per section - Route 2 Eastbound (PM Peak)



2.2.24. Figure 28, Figure 29 and Figure 30 show that the section towards A134 / Newton Road junction has the slowest average speed in the AM, IP and PM peaks on Route 2 EB, with an average speed of 8-10mph. This is reflected in the 2016 base year SCTM results shown in Figure 18 to Figure 20 which indicate delays on A134 / Newton Road junction in all peak hours.

Figure 31 - Trafficmaster journey time average speed per section - Route 2 Westbound (AM Peak)

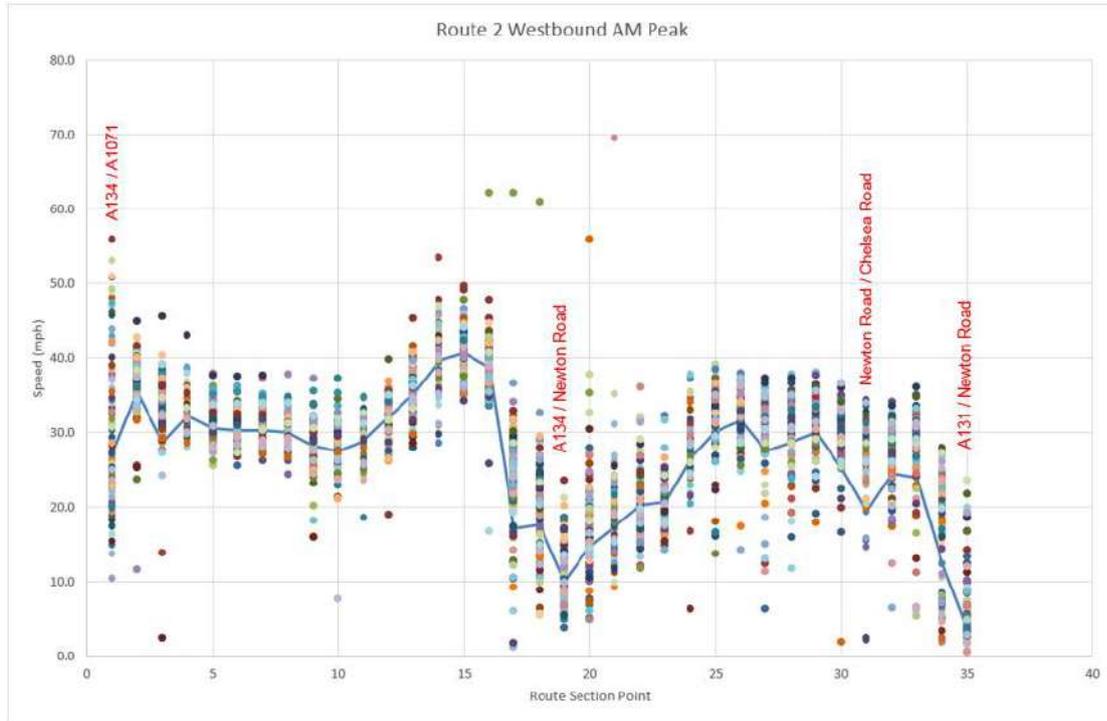


Figure 32 - Trafficmaster journey time average speed per section - Route 2 Westbound (Inter Peak)

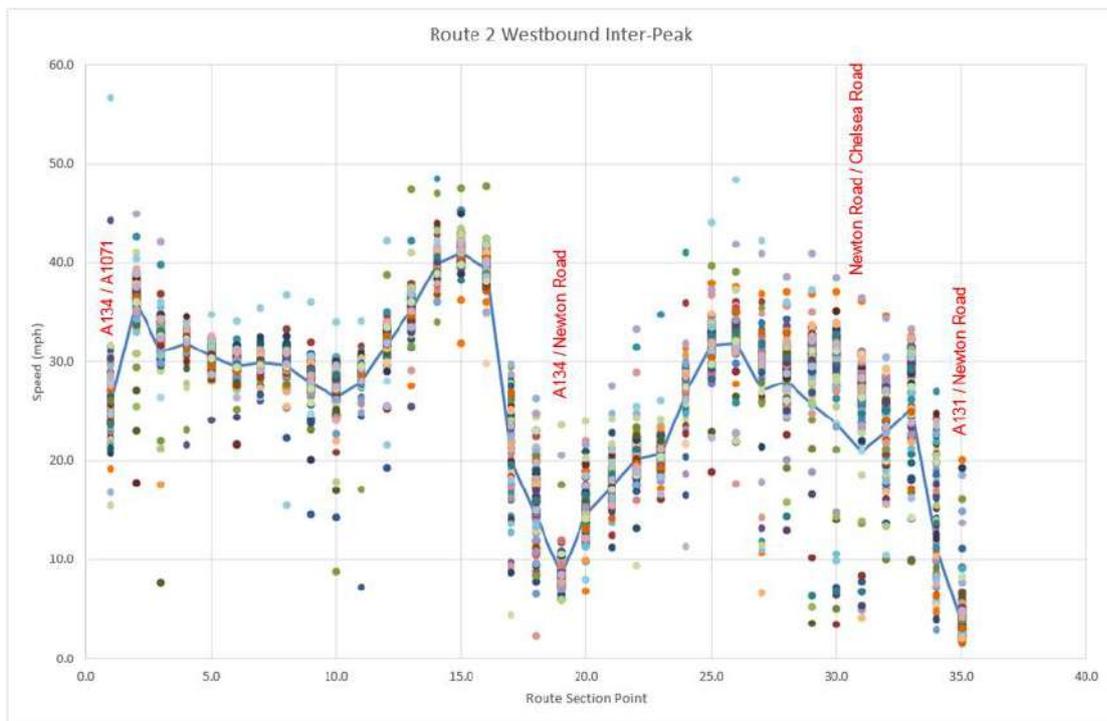
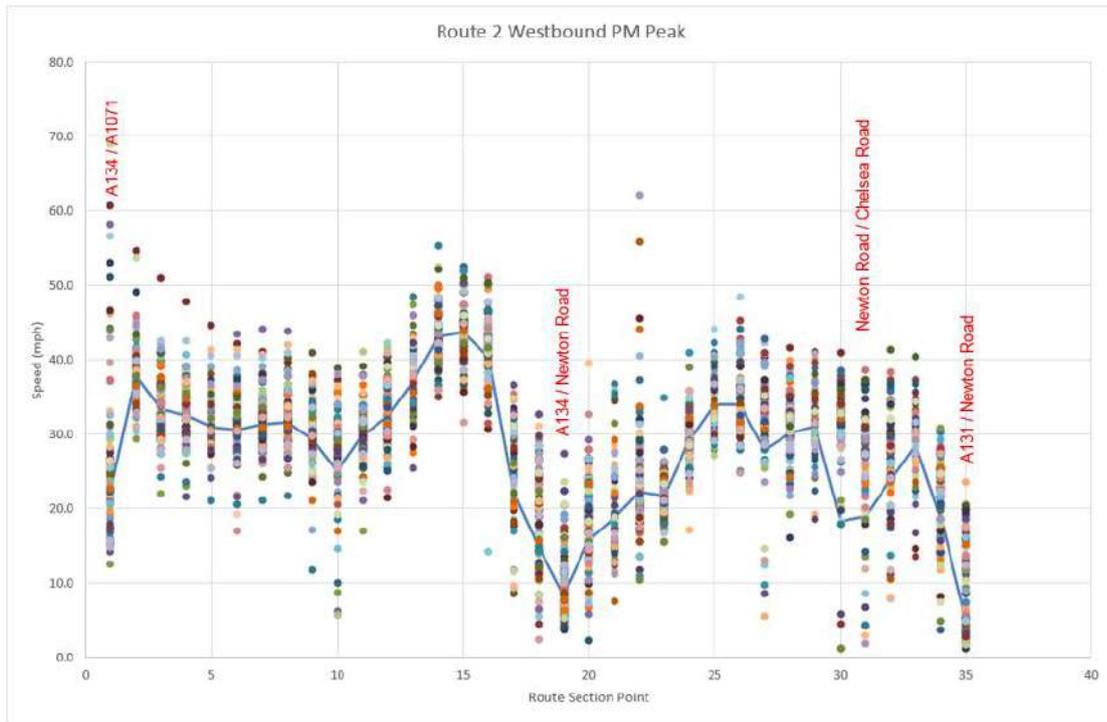


Figure 33 - Trafficmaster journey time average speed per section - Route 2 Westbound (PM Peak)



2.2.25. Figure 31 to Figure 33 show that the end of the route (i.e. A131 / Newton Road junction) has the slowest average speed in the AM, IP and PM peaks on Route 2 WB, with an average speed of 4-5mph.

Figure 34 - Trafficmaster journey time average speed per section - Route 3 Northbound (AM Peak)

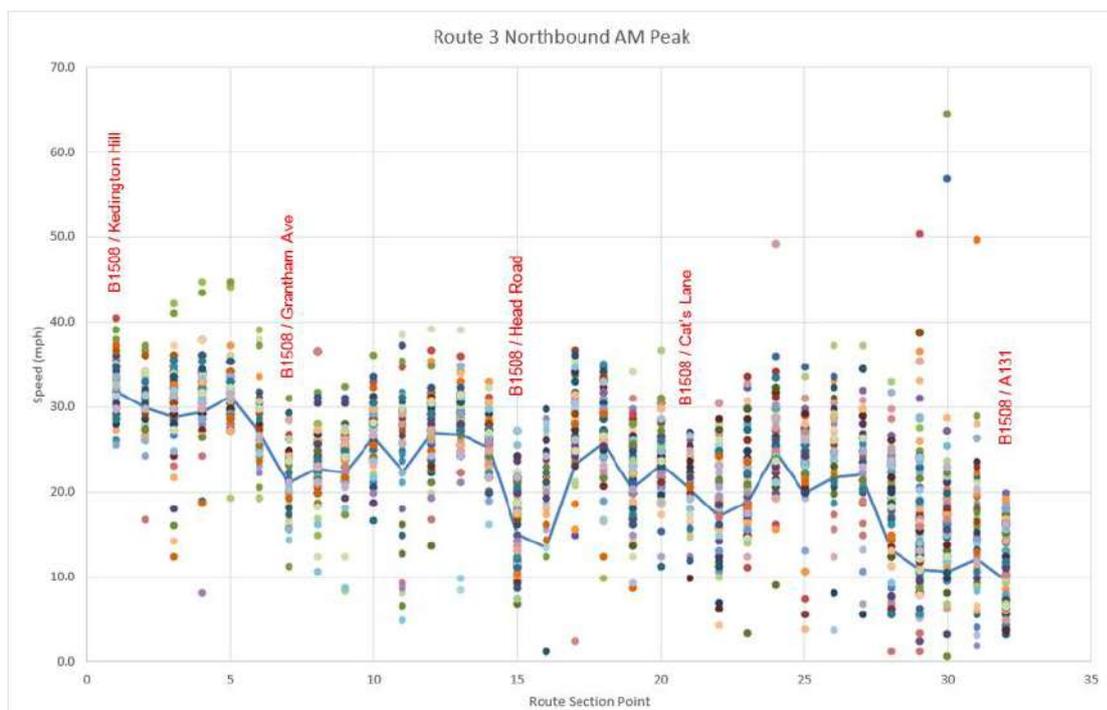


Figure 35 - Trafficmaster journey time average speed per section - Route 3 Northbound (Inter Peak)

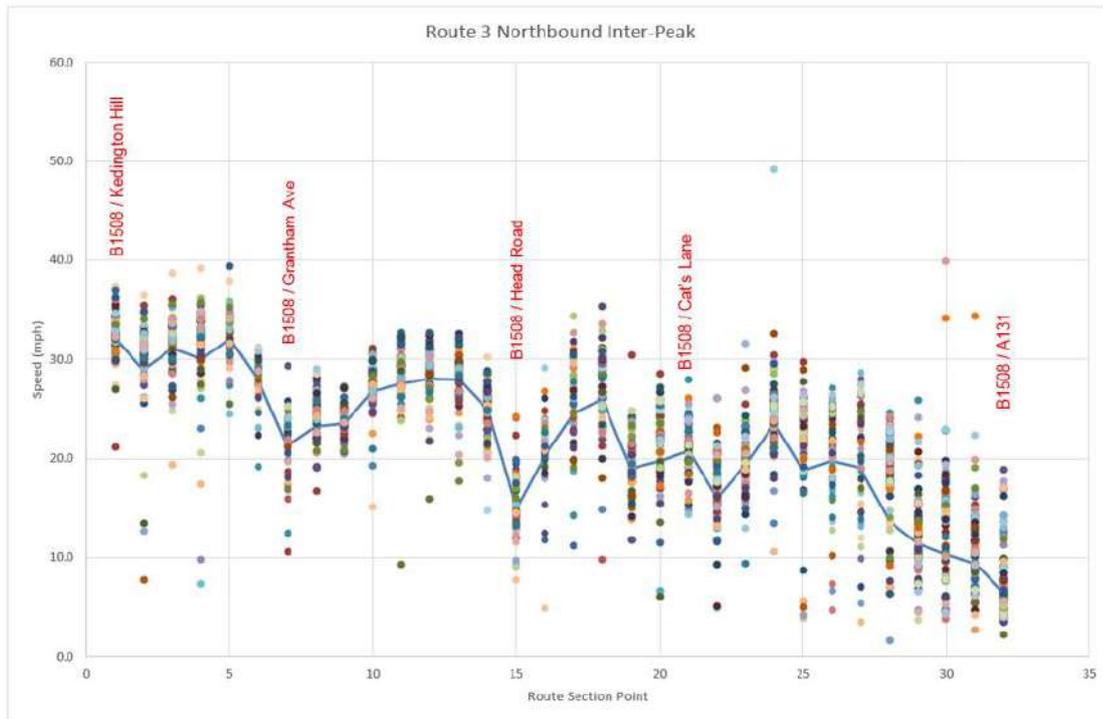
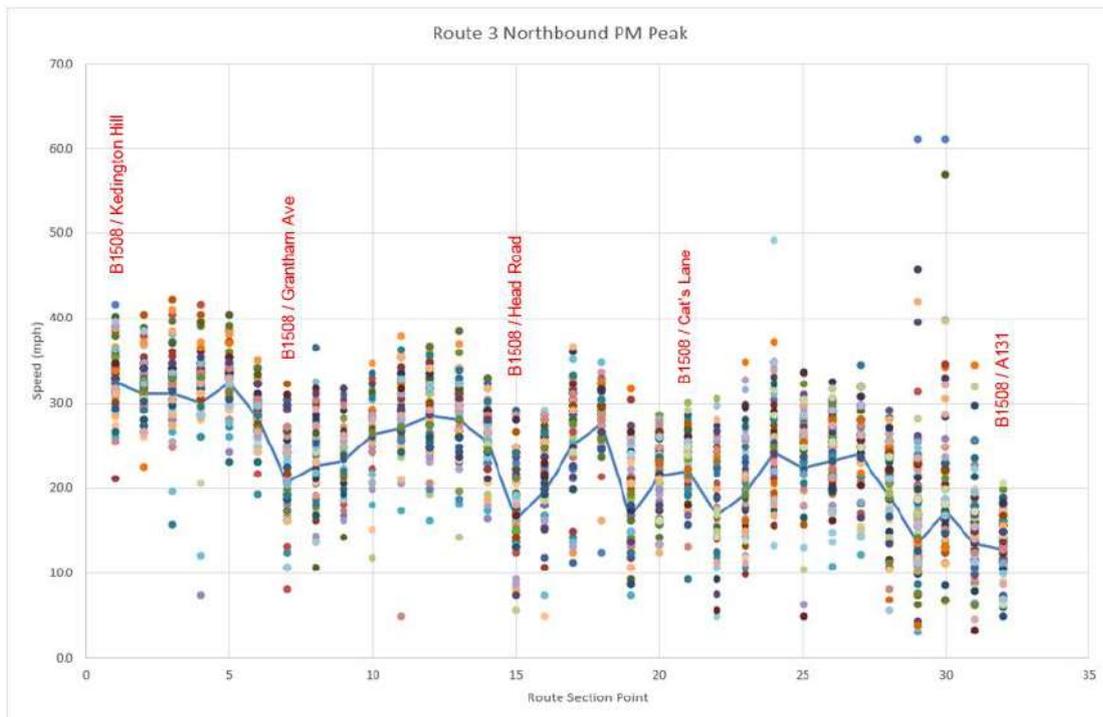


Figure 36 - Trafficmaster journey time average speed per section - Route 3 Northbound (PM Peak)



2.2.26. Figure 34 to Figure 36 show that the end of the route (i.e. A131 / B1508 junction) has the slowest average speed in the AM, IP and PM peaks on Route 3 NB, with an average speed of 10, 12 and 7mph, respectively.

Figure 37 - Trafficmaster journey time average speed per section - Route 3 Southbound (AM Peak)

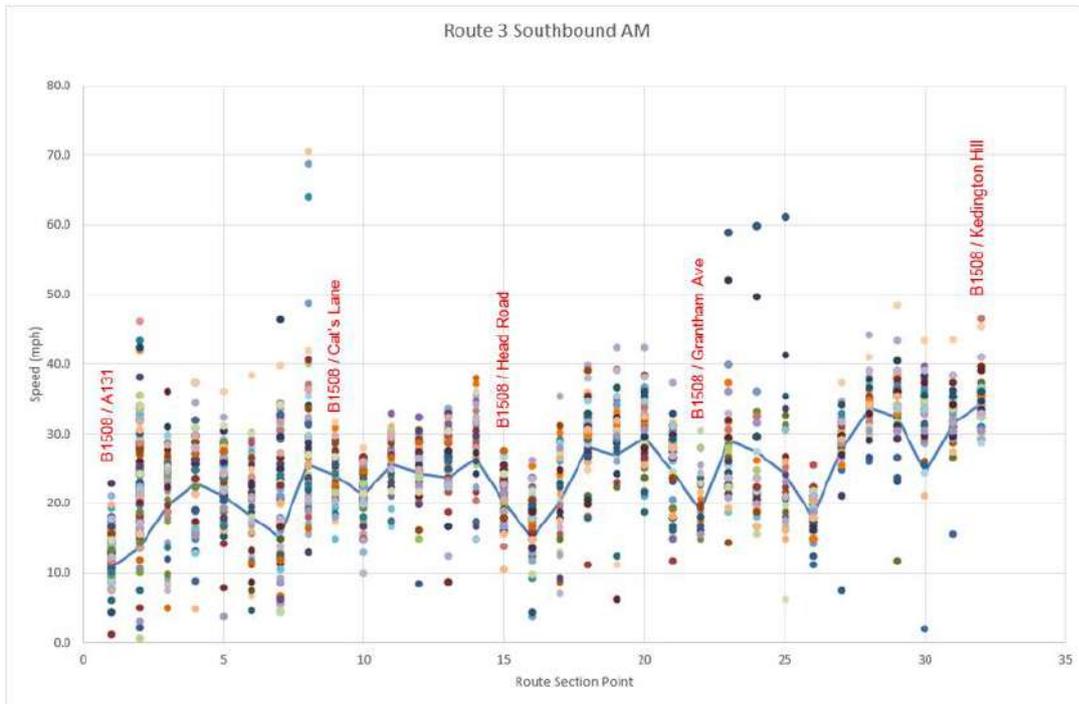


Figure 38 - Trafficmaster journey time average speed per section - Route 3 Southbound (Inter Peak)

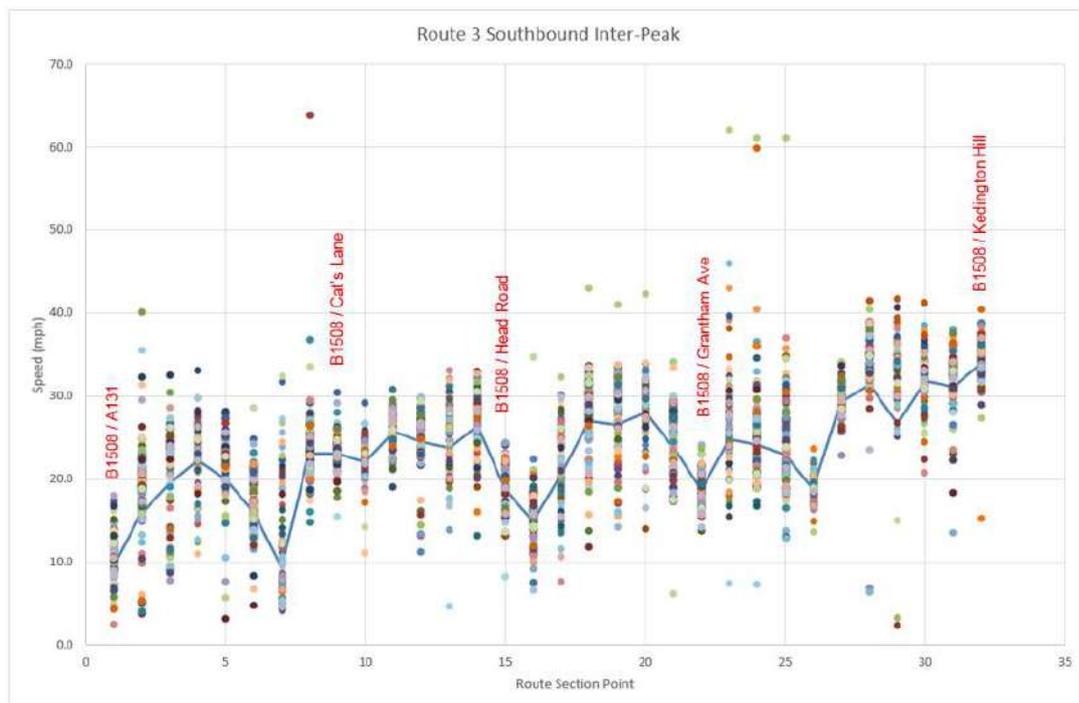
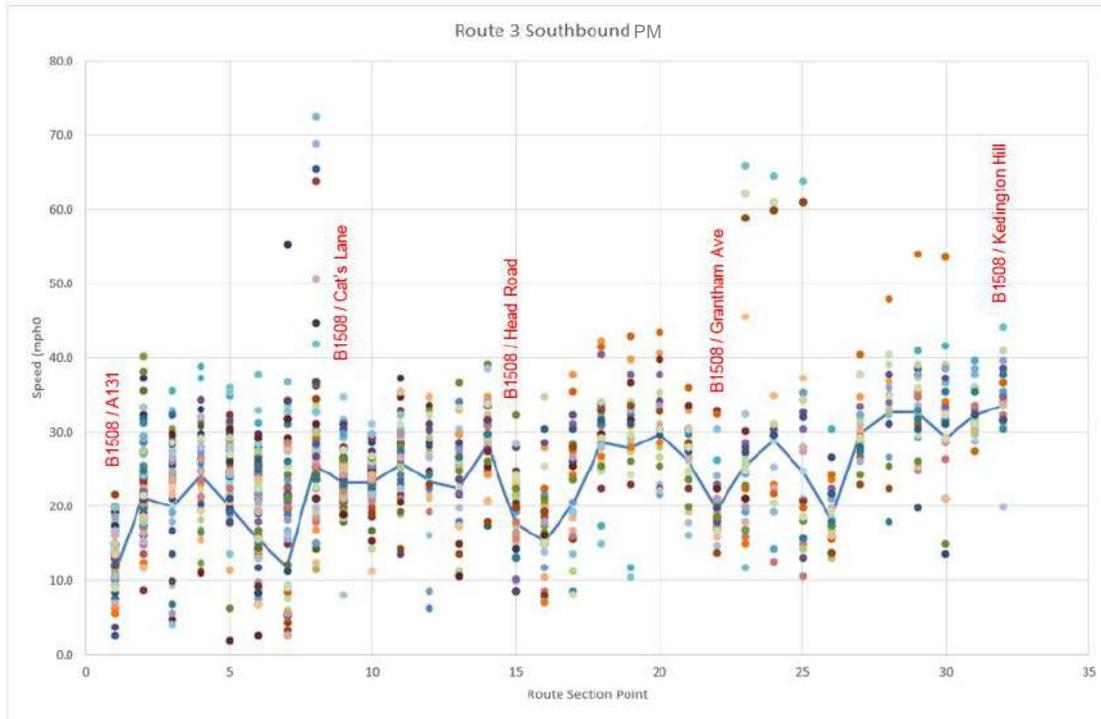


Figure 39 - Trafficmaster journey time average speed per section - Route 3 Southbound (PM Peak)



- 2.2.27. Figure 37 to Figure 39 show that the start of the route (i.e. A131 / B1508 junction) has the slowest average speed in the AM, IP and PM peaks on Route 3 southbound, with an average speed of 10mph.
- 2.2.28. The analysis above shows that the junction identified in section 2.2.18 are resulting in congestion on key routes accessing, or passing through Sudbury town centre. Reduction of delays on these key junctions would have beneficial impacts on the overall movement of traffic on these important routes.

2.3 ACCIDENTS

- 2.3.1. Figure 40 shows the road traffic accidents that have occurred in Sudbury between 2012 - 2016. The figure shows that the key areas are A134-B1115 junction and around Sudbury town centre. Of these, five accidents have been fatalities (Figure 41).
- 2.3.2. Overall the accidents are quite spread out in and around the town centre.

Figure 40 – Accidents around Sudbury (2012 – 2016)

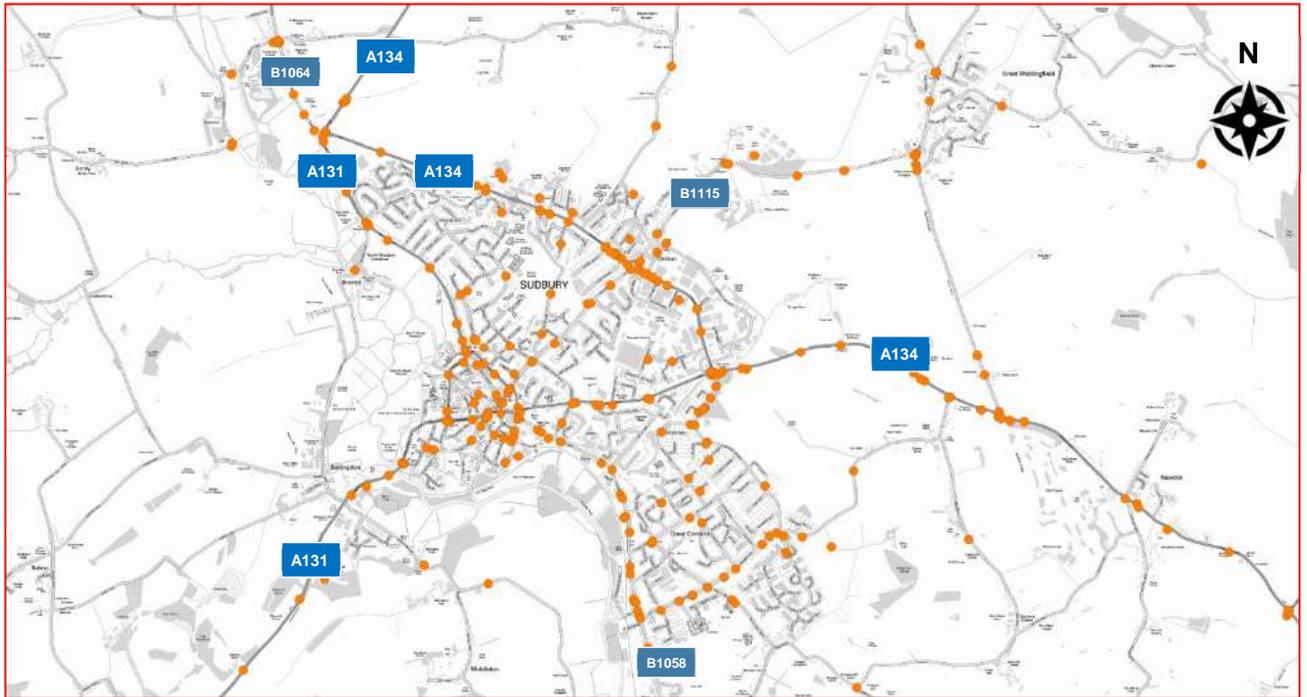


Figure 41 – Fatal Accidents around Sudbury (2012 – 2016)



2.4 POLICY CONTEXT

2.4.1. The policy context for the project is determined from the national and local policies and strategies presented below. These also influenced the selection of project objectives presented in section 5.

NATIONAL POLICIES AND STRATEGIES

Moving Britain Ahead – the Government’s Transport Investment Strategy⁶

2.4.2. The Government’s strategy for transport investment, published in July 2017, sets out the case for continued investment in Britain’s transport infrastructure. Through this investment, the government seeks to:

- i create a more reliable, less congested, and better-connected transport network that works for the users who rely on it.
- i build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities.
- i enhance our global competitiveness by making Britain a more attractive place to trade and invest.
- i support the creation of new housing.

The Government’s Industrial Strategy (2017)⁷

2.4.3. The objective of the Industrial Strategy is to help deliver a “stronger, fairer economy” as well as improving living standards and economic growth by increasing productivity and driving growth across the whole country. It identified five foundations to align the Government’s vision for a transformed economy, which were:

- i Ideas - by having the world’s most innovative economy;
- i People – creating / providing good jobs with a greater earning power for all;
- i Infrastructure – upgrading the UK’s infrastructure;
- i Business environment – with aspirations to make the UK the best place to start and grow business; and
- i Places – ensuring we have prosperous communities across the UK.

2.4.4. The most relevant foundation above to this study relates to the investment in infrastructure, which is seen as a method of increasing the productivity of the economy. The strategy states “Infrastructure is the essential underpinning of our lives and work, and having modern and accessible infrastructure

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/627306/transport-investment-strategy.docx

⁷ <https://www.gov.uk/government/policies/industrial-strategy>

throughout the country is essential to our future growth and prosperity... Efficient transport systems bring a wide range of work within people's reach, and bring goods from suppliers to markets".

Creating Growth, Cutting Carbon – making sustainable local transport happen⁸

2.4.5. This Government White Paper, published in 2011:

- i Sets out the Government's vision for "a transport system that is an engine for economic growth, but one which is also greener, safer and improves quality of life in our communities.
- i Highlights the need to make transport choices that support society as a whole, as well as needing to reduce our carbon emissions to meet national commitments.
- i Highlights the Government's commitment to more equal access to employment, education and healthcare by increasing social mobility.
- i Considers that better design and management of the local network can improve traffic flow and the attractiveness of the local environment.

The National Infrastructure Delivery Plan (2016 – 2021)⁹

2.4.6. The Delivery Plan, published in March 2016:

- i Outlines the Government's plans for economic infrastructure over the five-year plan period to support the delivery of housing and social infrastructure
- i Outlines the Government's commitment to providing a step change in the capacity of the Strategic Road Network (SRN).
- i Local roads are a crucial element of the transport system and their maintenance and improvement is the responsibility of Local Authorities.

Roads Investment: The Roads Funding Package¹⁰

2.4.7. The funding package, published by Government in November 2016, states that:

- i Roads are the backbone of the United Kingdom, connecting lives, linking communities and boosting business. Quicker and safer journeys help build a stronger economy, promote jobs and enable a country that works for everyone, not just the privileged few.
- i The Government is committed to upgrading and renewing the local highway infrastructure and complementing other investment initiatives to help economic growth both locally and nationally and to ensure that all road users have a well maintained and safe network which is fit for the future.

⁸ <https://www.gov.uk/government/publications/creating-growth-cutting-carbon-making-sustainable-local-transport-happen>

⁹ <https://www.gov.uk/government/publications/national-infrastructure-delivery-plan-2016-to-2021>

¹⁰ <https://www.gov.uk/government/publications/the-roads-funding-package>

MRN Consultation¹¹

2.4.8. As part of the Transport Investment Strategy, the government committed to creating a Major Road Network (MRN). Proposals for the MRN are currently subject to consultation, which asks for views on:

- ┆ How to define the MRN.
- ┆ The role that local, regional and national bodies will play in the MRN investment programme.
- ┆ Which schemes will be eligible for MRN funding.

2.4.9. A new MRN is expected to deliver the following objectives:

- ┆ Reduce congestion;
- ┆ Support economic growth and rebalancing;
- ┆ Support housing delivery;
- ┆ Support all road users; and
- ┆ Support the Strategic Road Network

2.4.10. The creation of an MRN will allow for dedicated funding from the National Roads Fund to be used to improve this middle tier of the busiest and most economically important local authority 'A' roads

Rebalancing Toolkit¹²

2.4.11. On 18th December 2017 DfT published the "Rebalancing Toolkit" for transport schemes. It is designed to assess how schemes fit with the objective of spreading economic growth across the country to areas and regions that are economically deprived, where government investment (particularly in transport infrastructure) could help to address this. It is closely aligned with the Industrial Strategy, which, as noted above, outlines its ambition to rebalance the economy and drive growth across the country.

REGIONAL POLICIES

Economic Strategy for Norfolk and Suffolk

2.4.12. The Economic Strategy for Norfolk and Suffolk, based on the 2014 Strategic Economic Plan, aims for the region to be¹³:

- ┆ The place where high growth businesses with aspirations choose to be.
- ┆ An international facing economy with high value exports.

¹¹ <https://www.gov.uk/government/consultations/proposals-for-the-creation-of-a-major-road-network>

¹²

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669043/supplementary-guidance-rebalancing-toolkit.pdf

¹³ <https://newanglia.co.uk/our-economic-strategy/>

- i A high performing, productive economy.
- i A well-connected place.
- i An inclusive economy with a highly skilled workforce.
- i A centre for the UK's clean energy sector.
- i A place with a clear, ambitious offer to the world.

2.4.13. As part of this, a number of 'priority places' are proposed to be developed, some of which, listed below may have some level of impact on Sudbury:

- i Ipswich.
- i The East/West corridors along the A47 from Lowestoft to King's Lynn and the A14 Felixstowe through Ipswich, Stowmarket, Bury St Edmunds, Newmarket.

LOCAL POLICIES

Suffolk County Council Local Transport Plan

- 2.4.14. The local transport plan sets out Suffolk County Council's long-term transport strategy for the next 20 years and the key focus is to support the county's economy and support future sustainable economic growth. The plan aims to improve Suffolk's transport networks, reduce congestion, and improve access to jobs and markets.
- 2.4.15. The plan agrees that the community of Sudbury is suffering as a result of the traffic issues. It highlights that severance is occurring due to difficulties of crossing the A12, A1071 and A137 to reach services.
- 2.4.16. The Plan also recognises that Sudbury "has severe air quality problems as a result of heavy good vehicle traffic and queuing at obstruction" and "a western bypass solution in the future will require significant work to overcome these concerns". The Local Transport Plan lists Sudbury western bypass as a strategic transport improvement scheme.

Babergh District Council Local Plan and Core Strategies & Policies

- 2.4.17. The statutory development plan for the Proposed Scheme area comprises of the following documents which form a part of the Babergh Local Plan for the BaDC area, these include:
- i Core Strategy and Policies 2011-203114: Adopted in February 2014. Contains the strategic objectives and policies to key planning issues of housing, employment, environmental protection and infrastructure improvement. The Core Strategy supersedes many of the policies in the Babergh Local Plan 2006.

¹⁴ Babergh District Council (2014) Core Strategy [Accessed on 15/08/18], Available at: <https://www.babergh.gov.uk/planning/planning-policy/adopted-documents/babergh-district-council/core-strategy/>

- i The Babergh Local Plan Alteration No.215: Adopted in 2006. Saved Policies from the Local Plan 2006. It sets out the detailed policies and proposals for the control of development across the district. Due to changes in planning regulation, and the adoption of subsequent planning documents some policies have been superseded.
- 2.4.18. The BaDC has started work on a Joint Local Plan for Babergh and Mid Suffolk districts. Once adopted this will replace the 2006 Local Plan.
- 2.4.19. The Local Plan is jobs led and sets out the level of growth needed to meet the district's aspiration. The 9,720 new jobs in a 30-year plan (to 2031) will require 485 new jobs per year. To meet this economic intensification, 5,975 new dwellings are to be built across the District over the plan period. Delivery of the dwellings is phased: 220 dwellings per annum in the first five years (2011-2016), rising to 325 dwellings per annum in the later years of the plan.
- 2.4.20. Babergh District Council plans to distribute the developments across the district in both the urban centres and rural areas. The plan shows 60% of the housing growth will be provided in urban areas (Sudbury/Great Comard, Hadleigh, and the Babergh Ipswich Fringe) and 40% across the rural areas. When the Local Plan was first developed the Sudbury/Great Comard area was to receive about a quarter of housing allocated to urban areas.
- 2.4.21. The Babergh Local Plan Alternation No.2 (2006) Saved Policies allocated 19 hectares of land for residential development and 20.2 hectares for general employment and low impact employment at Chilton. However limited progress has been made bringing this plan forward.
- 2.4.22. The cumulative delivery of housing from the Core Strategy start period of 2011 to 2015 is 7% above target. This is due to some large developments which have come forward early on in the plan. However recent build out rates for Babergh as a whole are poor and have begun to underperform. If the level of development remains at its current levels, the District will not deliver the level of new housing needed. The councils are reviewing possible factors that are limiting housing delivery. This review includes discussions with local developers.
- 2.4.23. The need for the addressing the identified issues related to congestion and accessibility is evident through, particularly around Braintree (connected to Sudbury via the A131). The Core Strategy (2011) recognises that much of the road network in the district experiences traffic problems, with towns such as Braintree being highlighted as such. The spatial strategy selects areas near Braintree on the A131 network as 'growth locations'. These are not attached to specific policies but are designated as reserved for employment and residential development. The connection to Sudbury via the A131, both areas of congestion and subject to additional future development, demonstrates the need to improve the local road capacity in this area.

¹⁵ Babergh District Council (2006) Local Plan Alteration No.2 [Accessed on 17/09/2018], Available at:

<https://www.midsuffolk.gov.uk/planning/planning-policy/adopted-documents/babergh-district-council/babergh-local-plan/>

Improving the Essex Road Network (December 2016)

- 2.4.24. Essex County Council has proposed improvements for the A120. The A120 between Braintree and the A12 is one of the most important east to west roads in Essex, yet has become one of the most congested. This has led to poor levels of service for drivers, including poor reliability and queuing traffic. Essex County Council are investigating the feasibility of a dual carriageway to reduce journey times and improve the reliability of the east to west route.

Braintree Local Plan – Interim Assessment (June 2016)

A120 Braintree to A12 Route Options

- 2.4.25. Highways England has asked the County Council to lead on the feasibility work to determine options for a new A120 route between Braintree and the A12 by summer 2017. A range of possible options to increase the capacity of the A120 have been assessed. Essex County Council and Highways England will recommend its preferred route to the Government for inclusion in the next Government Road Investment Strategy (RIS), which will run from 2020 to 2025.

A131 Route Based Strategies

- 2.4.26. The A131 between Braintree and Chelmsford has seen recent improvements, which formed part of the Essex County Council Route Based Strategies.
- 2.4.27. The A130 / A131 Chelmsford to Braintree Route Based Strategy also propose a number of options. These include: improved signing and road lining across the route, improving the bus provision along the route including an express bus service between Chelmsford and Braintree. Highway improvements aimed at reducing congestion include addressing the capacity problem at Sheepcotes roundabout.
- 2.4.28. These plans would improve the connectivity of A131 route coming into and passing through Sudbury. While it provides the strategic connectivity opportunity for Sudbury, this also has the potential to add to the congestion through Sudbury.

2.5 CONSTRAINTS

- 2.5.1. The following types of constraint have been taken into account in consideration when developing options to address the transport problems in Sudbury, noted above:

- i Physical.
- i Environmental.
- i Financial.
- i Contractual.
- i Public acceptability.

- 2.5.2. These are described in more detail below.

Physical constraints

- 2.5.3. The assessment of existing traffic conditions has shown that parts of Sudbury town centre experience delays and congestion, particularly at peak times, as a result of the high volumes of traffic that are funnelled through the historic town centre's medieval road network.
- 2.5.4. The images in Figure 42, taken on a weekday in October (2015), show the congestion in the town centre, which results in adverse air quality impacts.

Figure 42 – Sudbury Town Centre Congestion



- 2.5.5. There are currently limited re-routing opportunities for traffic, especially those for strategic goods movement.
- 2.5.6. In terms of mode share, the lack of direct rail connections to / from Sudbury restricts opportunities for travel by modes other than the private car, or motorised goods vehicles from a regional connectivity perspective. The physical highway configuration, partly constrained by historic buildings (discussed below), constrains the free flow of traffic within the town, generating congestion and delay, which restricts future growth opportunities.

ENVIRONMENTAL CONSTRAINTS

- 2.5.7. To understand the environmental constraints, which could influence the development of options, a range of environmental surveys were undertaken, to supplement the collection of other environmental data. This information is presented in environmental constraints maps, shown in Appendix A. The following section summarises the observed constraints.

Air Quality

- 2.5.8. The relevant standards for ambient concentrations of NO₂ are set by the Air Quality (England) Regulations 2000¹⁶ and the Air Quality Standards Regulations 2010¹⁷ to protect public health and are outlined in (Table 3).
- 2.5.9. The Air Quality (England) Regulations 2000 require that likely exceedances of the AQS objectives are assessed in relation to:

“...the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present...”

¹⁶ The Air Quality (England) Regulations 2000 - Statutory Instrument 2000 No.928

¹⁷ The Air Quality Standards Regulations 2010 - Statutory Instrument 2010 No. 1001

- 2.5.10. The Air Quality Standards Regulations 2010 transpose the European Union Ambient Air Quality Directive (2008/50/EC)¹⁸ into law in England. This Directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as NO₂.
- 2.5.11. For some pollutants (e.g. NO₂) there is both a long-term (annual mean) standard and a short-term standard. In the case of NO₂, the short-term standard is for a 1-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants, for example temporary exposure on the pavement adjacent to a busy road, compared with the exposure at residential properties adjacent to a road.

Table 3 – NO₂ Air Quality Objectives

Pollutant	Applies to	Objective		
		Concentration	Measured as	Number of Annual Exceedances Allowed
Nitrogen Dioxide (NO ₂)	All UK	200µg/m ³	1 hour (hourly) mean	18
	All UK	40µg/m ³	Annual mean	-

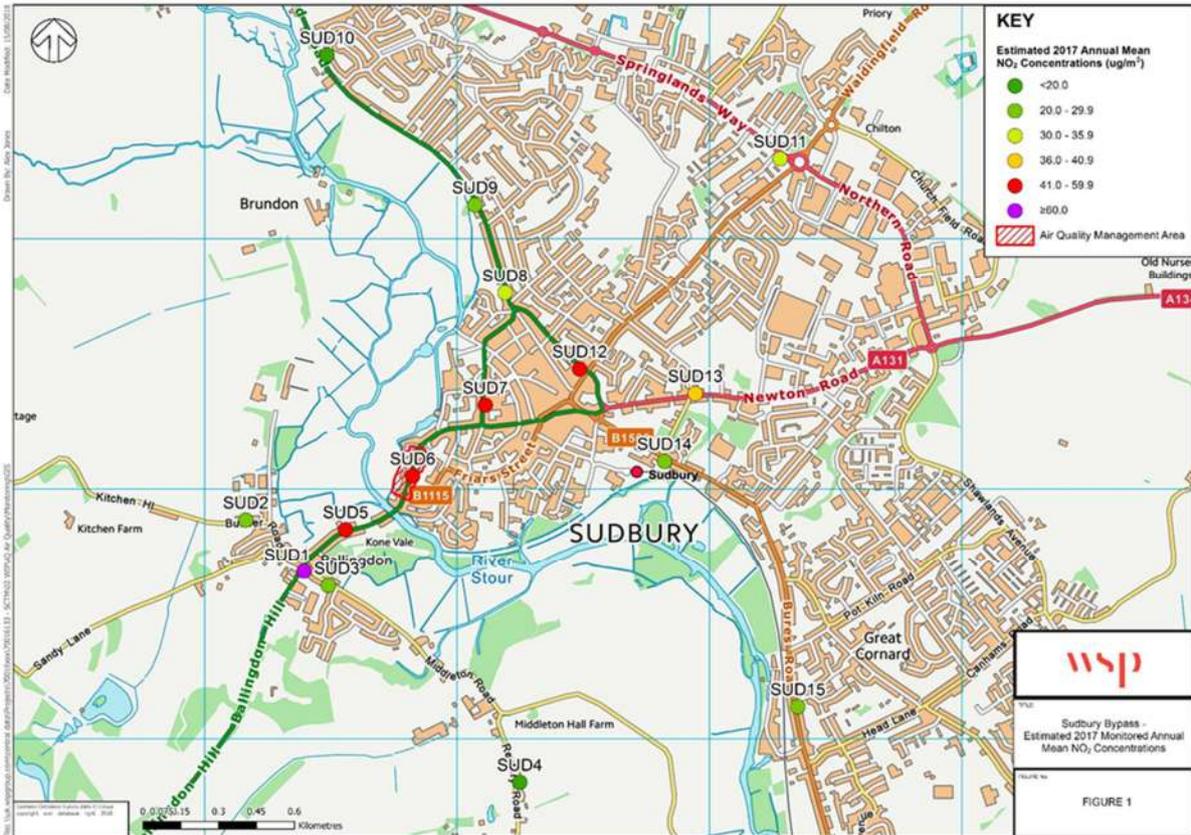
- 2.5.12. WSP has undertaken an air quality monitoring survey in Sudbury to indicate annual mean nitrogen dioxide (NO₂) concentrations at locations along the existing road network. The NO₂ concentrations were measured using passive diffusion tubes at 15 key locations close to residential properties along the main Sudbury routes.
- 2.5.13. The estimated annual NO₂ mean concentration for each monitoring location, after bias adjustment and annualisation, is shown in Figure 43.
- 2.5.14. The annual mean NO₂ AQS objective is 40µg/m³. The results show that NO₂ concentrations exceed the AQS objective at five of the 15 locations in Sudbury (SUD1, 5, 6, 7 and 12). These locations are all on the A131 (Ballington Hill, Ballington Street, Cross Street Gregory Street and Girling Street respectively).
- 2.5.15. SUD6 (Cross Street - the centre of Sudbury town) is within the current Sudbury AQMA declared for exceedances of the NO₂ annual mean objective. There are a large number of existing residential properties within this AQMA, some of which experience above annual mean NO₂ objective levels multiple times a year¹⁹.

¹⁸ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

¹⁹ Babergh District Council (2008) *Air Quality Management Order 2008* [Accessed on 15/08/18], Available at: <https://www.babergh.gov.uk/environment/air-quality/>

2.5.16. SUD1 potentially exceeds the 1-hour NO₂ objective as the estimated 2017 concentration is above 60µg/m³ (68.8µg/m³). However, all other locations are not expected to exceed the 1-hour objective.

Figure 43 – Estimated 2017 Annual Mean NO₂ Concentrations (µg/m³)



Noise

2.5.17. There are four Noise Important Areas (NIAs)²⁰ along the A134 running from Sudbury town to the south-east of the study area. Three of these are concentrated along Newton Road, north of Newton Green and one on the eastern outskirts of Sudbury town (see Appendix A). The NIAs are associated with traffic noise and have a number of residential properties adjacent to them, along with other

²⁰ As per Defra's "Noise Action Plan: Roads (Including Major Roads) Environmental Noise (England) Regulations 2006, January 2014, for roads in agglomerations, the Important Areas will be where the top 1% of the population that are affected by the highest noise levels are located according to the results of the strategic noise mapping. This approach has been taken because the population at these locations is likely to be at the greatest risk of experiencing a significant adverse impact to health and quality of life as a result of their exposure to road traffic noise.

sensitive receptors such as schools and medical facilities. To the east of Sudbury are a series of recreational trails and Sustrans cycle routes, both sensitive to changes in noise levels.

Historic Environment

- 2.5.18. There are six scheduled monuments within the study area (see Appendix A). There are also 350 listed buildings in the study area (11 Grade I, 13 Grade II* and 326 Grade II). Most of these are concentrated within the Sudbury Conservation Area (located in the south of Sudbury town). Additionally, Sudbury's Local List²¹ includes over 200 locally listed buildings. A concentration of buried heritage assets is present in fields in the western portion of the study area (across the river from Sudbury town bounded by the Suffolk/Essex border, Brundon Lane and Borley Road).
- 2.5.19. Artistic heritage landscapes are also present, with viewpoints of nationally significant artists in the south-west and east of the study area. A number of Gainsborough's paintings (particularly 'Mr and Mrs Andrews') capture views of the landscape of the area.

Biodiversity

- 2.5.20. Within or near the study area there are no Special Protected Areas (SPAs)²², Special Areas of Conservation (SACs)²³, National Parks, National Nature Reserves or Ramsar sites²⁴.
- 2.5.21. Natural England can select all or part of land for protection when it believes the site has features of special interest, such as its:
- i Wildlife;
 - i Geology; and
 - i Landform.

²¹ Sudbury's Local List, Maintained by The Sudbury Society: <http://sudburysociety.org.uk/unlisted-buildings/> , accessed August 2018.

²² Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

²³ Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds).

²⁴ A Ramsar Site is a wetland site designated to be of international importance under the Ramsar Convention. The Convention on Wetlands, known as the Ramsar Convention, is an intergovernmental environmental treaty established in 1971 by UNESCO, and coming into force in 1975

- 2.5.22. This land is 'notified' (or designated) as a site of special scientific interest (SSSI). Cornard Mere, Little Cornard SSSI is such a site south of the study area (see Appendix A). Edwardstone Woods SSSI is another site east of the study area. Additional SSSIs lie outside of the study area (within 4km). Multiple local nature reserves (LNRs) are located in the study area; Sudbury Common Lands and The Railway Walks.
- 2.5.23. Multiple habitats classified as Priority Habitats Inventory (PHI) are present in the study area, and these are most concentrated in the west of the study area around the River Stour in the vicinity of Sudbury Town (see Appendix A). Areas of deciduous woodland are present across the study area, mostly in the south and west of the study area.
- 2.5.24. The River Stour is part of the 'Suffolk River Valleys' Environmentally Sensitive Area (ESA)²⁵. Small areas of ancient woodland are present in multiple locations in the west, east and south of the study area. Priority Bird Species (Corn Bunting and Lapwing) have priority areas within the study area and European Protected Species applications have been granted for Bats within Sudbury town²⁶. The presence of other protected species is unknown at this time.

Landscape and Visual Amenity

- 2.5.25. The study area includes an Area of Outstanding Natural Beauty (AONB) and candidate area for the extension of Dedham Vale AONB. The centre of the study area, Sudbury town, is urban while the surrounding area comprises agricultural land uses. The Stour Valley Special Landscape Area crosses the western portion of the study area (around the river) and three landscape character areas (Valley Meadowlands, Rolling Valley Farmlands and Ancient Rolling Farmland) are present across the study area. Multiple footpaths and bridleways are present in the special landscape area and in the east of the study area (see Appendix A for details and locations).

Water Environment

- 2.5.26. The River Stour is the major water feature within the study area and is west of Sudbury town. The entire study area is within the Stour Catchment Area²⁷. The area around the river is a Flood Zone 3 area (1% or more annual flood chance) and a Flood Zone 2 area (0.1 - 1% annual flood chance). Areas away from the River Stour have a low probability of flooding. A Groundwater Protection Zone²⁸ is within the study area, Zone I concentrated around the river and Sudbury town, Zone III on the western edge of the study area and Zone II covering the remainder of the study area.

²⁵ ESAs are designated countryside areas where landscape, wildlife and historic interest are of national importance. The ESA scheme was set up by the [DEFRA](#) to help farmers conserve landscape, wildlife and historic features of the countryside.

²⁶ Defra (2013) *MagicMap online GIS service* [Accessed on 15/08/18], Available at: <http://magic.defra.gov.uk/>

²⁷ <https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3424>

²⁸ Environment Agency (EA) have defined Source Protection Zones (SPZs) for groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. There are three main zones (inner, outer and total catchment) and a fourth zone of special interest, which EA occasionally apply, to a groundwater source.

Geology, soils and materials

- 2.5.27. The superficial geology of the study area consists of strips of alluvium through the west, River Terrace deposits to the north-west and south, diamicton (till) to the north, east and south-west and glacial sand and gravel to east and west. The bedrock geology is predominantly white chalk along the north-west, centre and south of the study area, Thames Group in the south-east and south-west, Lambeth Group forms surrounding Thames Group and a smaller area in the north of Sudbury town, Thanet Sand in the centre and north and undifferentiated gravel, sand, silt and clay across the north-east and centre of the study area²⁹. The soil types are unidentified in the urban areas and consist of Gleysols, Cambisols and Luvisols across the rest of the study area³⁰. There are no active quarries within the study area³¹. Much of the land surrounding the urban areas of Sudbury and Great Cornard is agricultural, of varying classifications.

CONTRACTUAL CONSTRAINTS

- 2.5.28. There are no known contractual, legal or institutional constraints which would impact on the delivery of a potential scheme.

FINANCIAL CONSTRAINTS

- 2.5.29. Delivery of any proposed scheme will depend on the ability of the Council to secure funding for the scheme. Results from further assessment will set out the case for the scale, and therefore the source of funding required to deliver any proposed scheme.

PUBLIC ACCEPTABILITY CONSTRAINTS

- 2.5.30. Public consultation took place in October 2002 and a southern relief road received very little acceptance from the local community. A western relief road received the most support out of the proposed options as the most appropriate solution to Sudbury and Great Cornard's traffic problems.
- 2.5.31. However, there are on-going concerns, especially those related to relief road schemes that will have an impact on the local environment and historical landscape. These were discussed and reiterated in the community forum meeting undertaken by SCC on 13 July 2018.
- 2.5.32. These would need to be addressed in the development and testing of the options.

²⁹ British Geological Survey *Geology of Britain Viewer* [Accessed on 15/08/18], Available at:

<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

³⁰ UK Soil Observatory (2017) *UK Soil Observatory Map Viewer* [Accessed on 15/08/18], Available at:

<http://www.ukso.org/mapViewer.html>

³¹ British Geological Survey *GeoIndex Onshore* [Accessed on 15/08/18], Available at:

<http://mapapps2.bgs.ac.uk/geoindex/home.html?topic=Minerals>

3 FUTURE SITUATION

3.1 INTRODUCTION

3.1.1. This chapter covers Step 2 of the Transport Appraisal Process, as defined in WebTAG, covering the future conditions in the study area. It covers:

- ▮ Future land-uses and policies.
- ▮ Future changes to the transport system and potential changes to transport demand.

3.2 FUTURE LAND-USES AND POLICIES

3.2.1. The forecast years in the SCTM model are 2023 and 2038. The assessments in this report have been undertaken for these years as they represent the potential opening year for a transport improvement scheme in Sudbury and the future design year (15 years after the opening year).

3.2.2. For the purposes of the option assessment, forecast traffic growth has been derived using the National Trip-End Model (NTEM) Version 7.2 results from TEMPRO. This has been applied at a district level to zones within the SCTM, ensuring future car traffic growth is constrained to NTEM projections. LGV and HGV traffic growth has been applied based on the 2015 Road Traffic Forecasts available from the National Transport Model (NTM).

3.2.3. At this stage, detailed forecast developments have not been included in the model forecasts, as the detail of these would normally be covered in the next stage of the scheme appraisal.

Figure 44 – Babergh: Approved Dwelling Sites

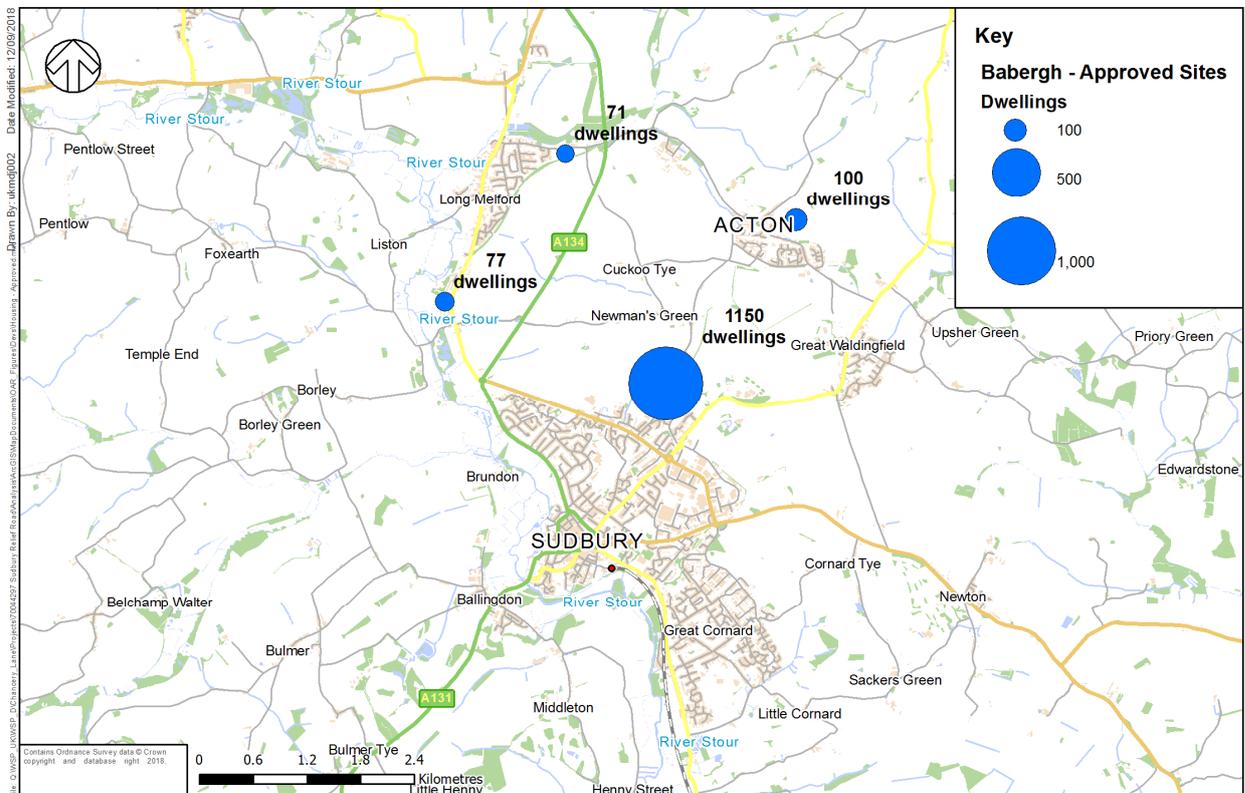
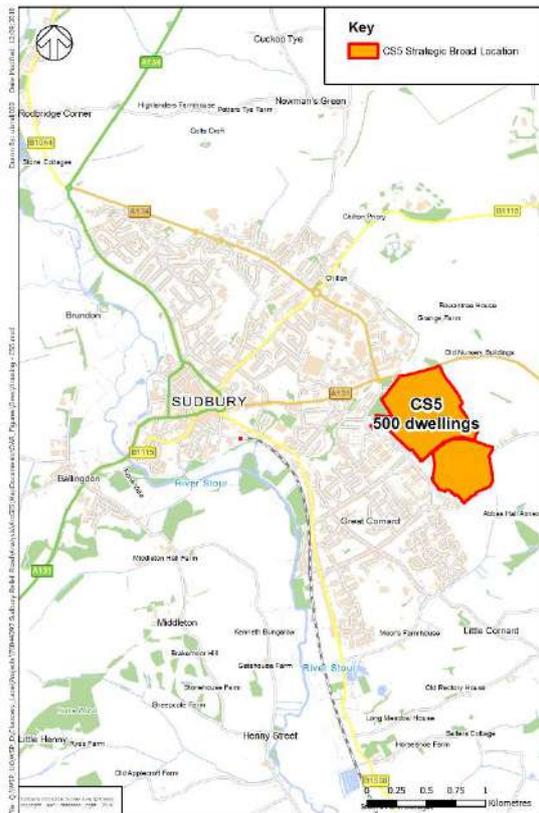


Figure 45 – CS5 Strategic Broad Location – East of Sudbury / Great Cornard



3.3 FUTURE CHANGES TO THE TRANSPORT SYSTEM

- 3.3.1. There are a number of significant highway infrastructure changes coming forward within Suffolk which may impact on the strategic traffic flows (potentially through Sudbury) and have been included in the SCTM forecasts.. The following schemes are closest to Sudbury and hence likely to have an impact to future traffic flows in the town:
- ¡ Haverhill North West Relief Road;
 - ¡ Bury St Edmunds Eastern Relief Road – included as a forecast scheme as the SCTM base year is 2016; therefore prior to this scheme opening in 2017; and
 - ¡ Bury St Edmunds South East Relief Road.
- 3.3.2. Additional highway infrastructure changes included within the SCTM forecast model include:
- ¡ Lake Lothing Third Crossing, Lowestoft;
 - ¡ The Upper Orwell Crossings, Ipswich;
 - ¡ Beccles Southern Relief Road;
 - ¡ Ipswich Radial Routes corridor improvements; and
 - ¡ A12 East of Ipswich junction improvements.

3.4 FUTURE CHANGES TO TRANSPORT DEMAND AND LEVELS OF SERVICE

CHANGES TO TRANSPORT DEMAND

- 3.4.1. Daily traffic flows for strategic road network around Sudbury, and within Sudbury itself for 2023 and 2038 are presented in Figure 46 and Figure 47, respectively. It is estimated there will be 95,000 vehicular trips made within Sudbury per day by 2023, an increase of 13% compared to the 2016 base year. 52,500 of these trips (55%) will pass through the town centre.
- 3.4.2. In 2038, the flows will rise to over 105,00 vehicles per day, representing a 25% increase compared to 2016 base year traffic levels. Of these daily trips, around 59,000 (55%) will pass through Sudbury town centre. These forecast increases in traffic levels will lead to increased congestion and delays within Sudbury without some form of mitigation.
- 3.4.3. The dominant strategic movements within Sudbury are still expected to be the north-south movement A134 to/from A131 Ballingdon Hill, as well as east-west movement between the A134 to/from the A131.

Figure 46 - 2023 Do Min³² AADT Vehicles (Sudbury Area)



³² Do Min, or Do Minimum, refers to a future year traffic modelling scenario which is tested by assuming traffic growth based on the National Trip End Model (NTEM) and the base year network updated with all the committed road and public transport network schemes.

Figure 47 - 2038 Do Min AADT Vehicles (Sudbury Area)



3.4.4. This distribution of traffic in 2023 and 2038 are also reflected in the AM peak hour (0800-0900), average inter peak hour (1000-1600) and PM peak hour (1700-1800) flows which are shown in Figure 48 to Figure 53.

Figure 48 – 2023 Do Min AM Peak Total Vehicles



Figure 49 – 2023 Do Min Inter Peak Total Vehicles



Figure 50 – 2023 Do Min PM Peak Total Vehicles



Figure 51 – 2038 Do Min AM Peak Total Vehicles



Figure 52 – 2038 Do Min Inter Peak Total Vehicles



Figure 53 – 2038 Do Min PM Peak Total Vehicles



- 3.4.5. Figure 54 to Figure 57 show the 2023 and 2038 daily HGV traffic in south-west Suffolk and north-west Essex. The future HGV demand remains similar to the existing (2016) pattern, with the M11 and A12 carrying the largest volumes of HGV traffic.
- 3.4.6. It is estimated there will be around 2,900 daily HGV trips within Sudbury by 2023, representing an increase of 9% compared to the 2016 base year. The proportion of trips which will pass through the town centre remains the same as the base year HGV traffic, estimated to be around 1,400 daily HGV trips.
- 3.4.7. By 2038, daily HGV movements are forecast to increase by over 25% compared to 2016 to around 3,400 daily trips. Approximately 1,600 daily HGV trips are forecast to pass through Sudbury town centre.

Figure 54 - 2023 Do Min Daily HGV Flows (Wider Area)

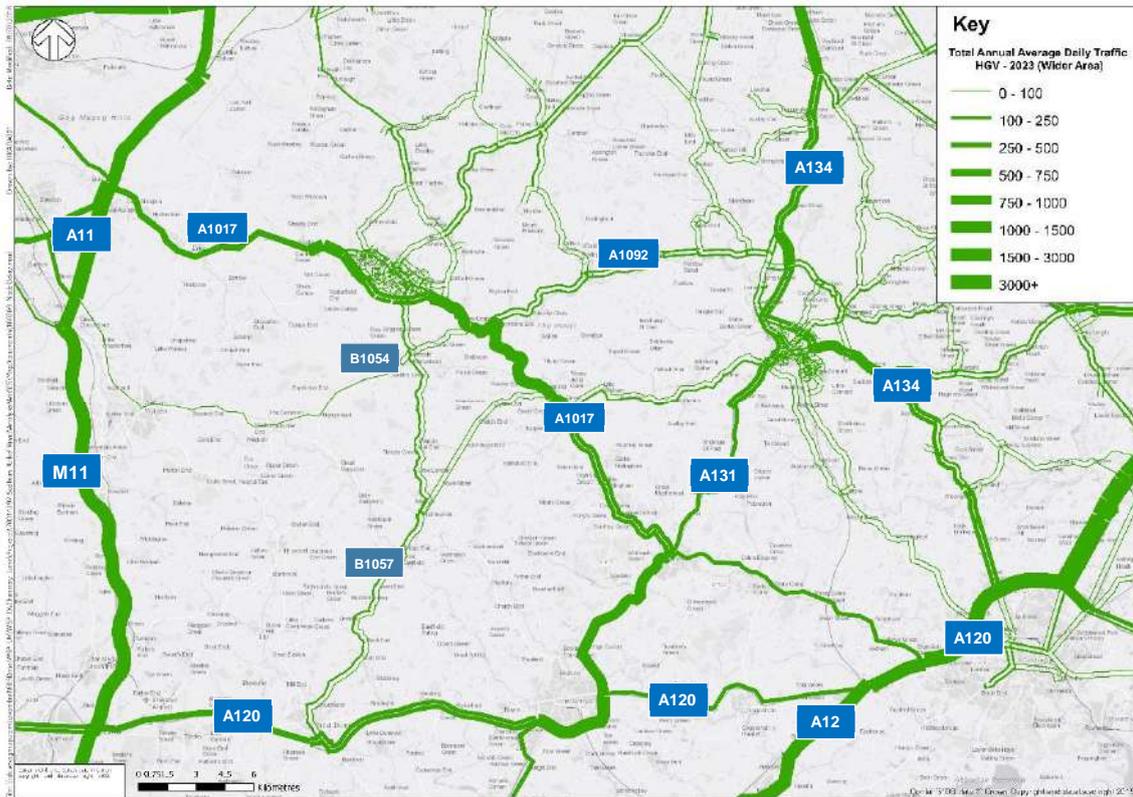


Figure 55 - 2023 Do Min Daily HGV Flows (Strategic Area)



Figure 56 - 2038 Do Min Daily HGV Flows (Wider Area)

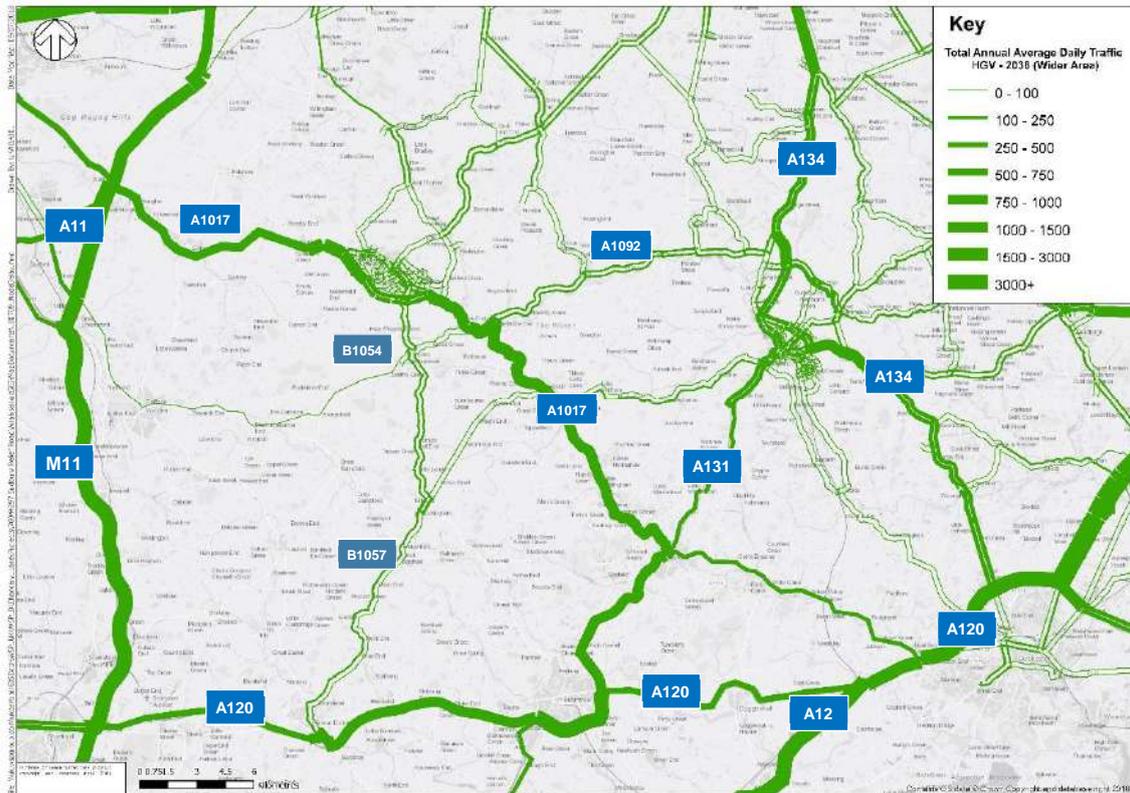


Figure 57 - 2038 Do Min Daily HGV Flows (Strategic Area)



Highway Level of Service

- 3.4.8. Although the travel patterns are forecast to remain unchanged in the future, the forecast increase in demand would be expected to affect the level of service provided by the network. Figure 58 to Figure 63 show the link V/C and junction delay results in 2023 and 2038 in AM peak, average inter peak and PM peak hour.
- 3.4.9. The SCTM version used for this OAR considered general forecast growth, and did not account for specific future developments. A more detailed forecasting approach that captures the impacts of specific developments could result in alternative junctions showing stress in 2023 and 2038.

Figure 58 – 2023 Do Min V/C on links and junction delay - AM Peak

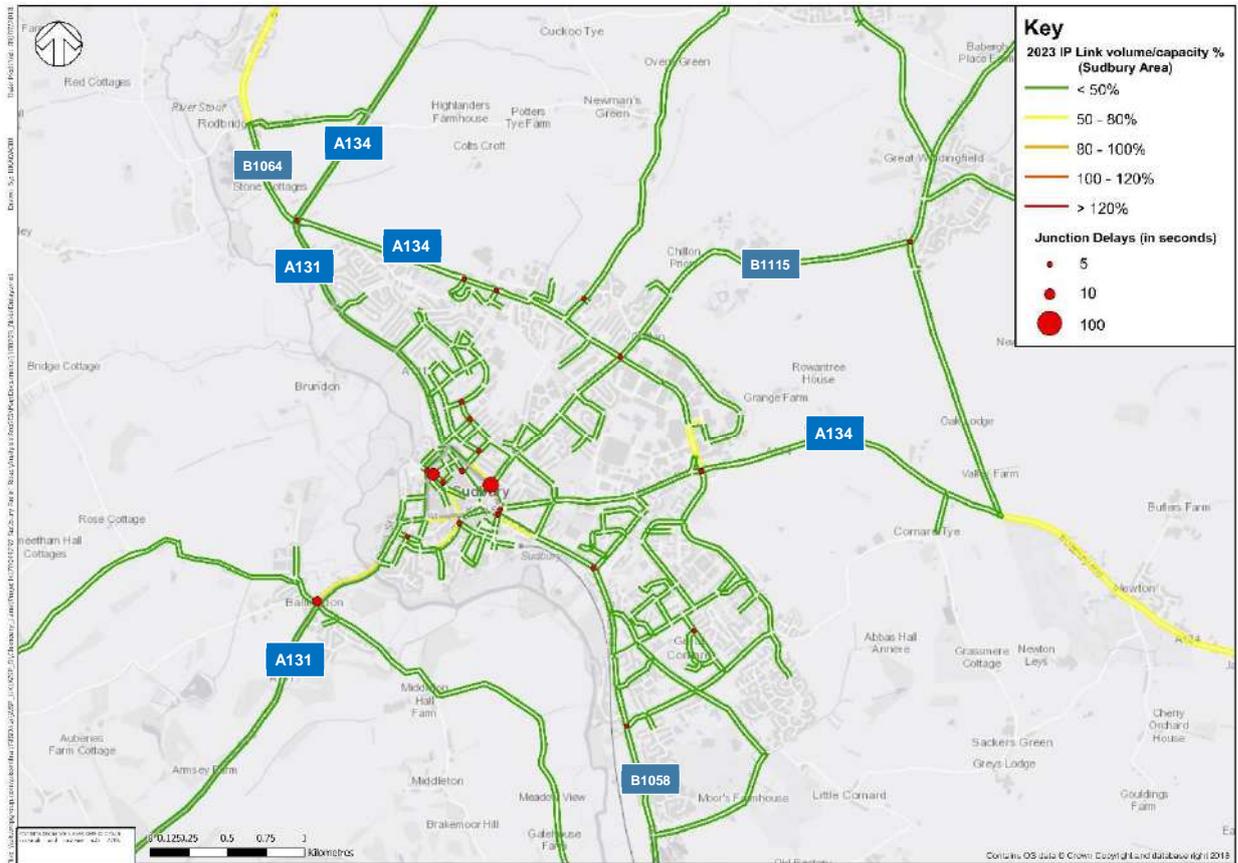


- 3.4.10. Figure 58 shows V/C on links and junction delay in the AM peak hour (0800-0900) in 2023. In comparison to the 2016 situation (Figure 18), there is a decrease in the level of service, as well as an increase in junction delay on the Sudbury gyratory. The following locations have capacity issues in 2023 compared to 2016 (with V/C above 80%):

- i A131 Girling Street (between Suffolk Road and East Street);

- 3.4.11. The model results show that B1064 Rodbridge Hill / Mills Lane is an additional junction that has notably worse delays in the AM peak hour in 2023 compared to 2016.

Figure 59 – 2023 Do Min V/C on links and junction delay - IP Peak



3.4.12. Figure 59 shows V/C on links and junction delay in the average inter peak hour (1000-1600) in 2023. Similar to 2016, all the roads in Sudbury are expected to have V/C below 80%.

3.4.13. The following are additional junctions in 2023 that have delays during inter peak hour compared to 2016:

- ┆ A131 Melford Road / A134 / B1064 Sudbury Road;
- ┆ A134 / Clermont Avenue;
- ┆ A134 / Richard Burn Way;
- ┆ B1508 Bures Road / Head Lane; and
- ┆ Highbury Way / Queensway.

Figure 60 – 2023 Do Min V/C on links and junction delay - PM Peak



3.4.14. Figure 60 shows V/C on links and junction delay in the PM peak hour (1700-1800) in 2023. The following locations have capacity issues in 2023 compared to 2016 results (with V/C above 80%):

- ▮ A134 Sudbury Road northwest bound to Valley Road.

3.4.15. The following are additional junctions in 2023 that have been flagged to have notably higher delays in the PM peak hour in 2023 compared to 2016:

- ▮ A131 Gainsborough Road / Beaconsfield Road; and
- ▮ A131 Gregory Street / A131 Gainsborough Street / A131 Stour Street / School Street.

Figure 61 – 2038 Do Min V/C on links and junction delay - AM Peak



3.4.16. Figure 61 shows V/C on links and junction delay in the AM peak hour (0800-0900) in 2038. In comparison to 2023 (Figure 58), the following locations have capacity issues in 2038 (with V/C above 80%):

- ┆ A131 Ballingdon Street (between Middleton Road and Church Street); and
- ┆ B1064 Rodbridge Hill to Mills Lane.

3.4.17. The following junctions are expected to have notably higher AM peak hour delays in 2038 compared to 2023:

- ┆ A131 Ballingdon Street / B1115 Church Street;
- ┆ A131 Ballingdon Street / Bulmer Road / Middleton Road;
- ┆ A131 Gregory Street / A131 Gainsborough Street / A131 Stour Street / School Street;
- ┆ A131 Gregory Street / Walnut Tree Lane;
- ┆ B1115 Friars Street / Station Road;
- ┆ B1115 The Heath / Tentree Road / Heath Way; and
- ┆ Milner Road.

Figure 62 – 2038 Do Min V/C on links and junction delay - Inter Peak

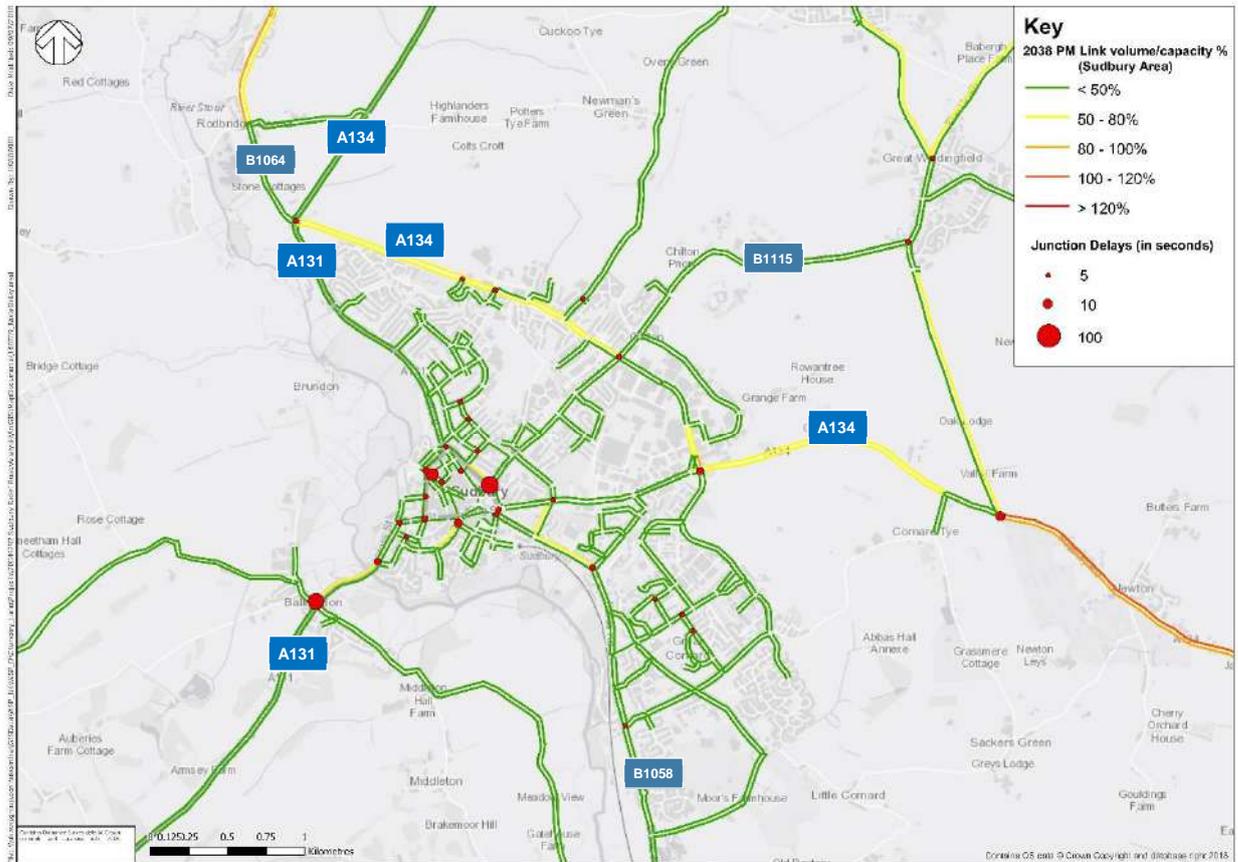


3.4.18. Figure 62 shows V/C on links and junction delay in the average inter peak hour (1000-1600) in 2038. None of the links are expected to have congestion (i.e. operating at a V/C ratio of above 80%) in 2038 in the inter peak period.

3.4.19. The following are junctions that have notably higher delays in the average inter peak hour in 2038 compared to 2023:

- ┆ A131 Ballingdon Street / B1115 Church Street;
- ┆ A131 Gregory Street / A131 Gainsborough Street / A131 Stour Street / School Street;
- ┆ A131 Gregory Street / Walnut Tree Lane; and
- ┆ Highbury Way / Pot Kiln Road.

Figure 63 – 2038 Do Min V/C on links and junction delay - PM Peak



3.4.20. Figure 63 shows V/C on links and junction delay in the PM peak hour (1700-1800) in 2038. The following locations have capacity issues in 2038 compared to 2023 (with V/C above 80%):

- ┆ A134 Sudbury Road (southeast bound of Valley Road junction);
- ┆ A131 Ballingdon Street up to Church Street junction;
- ┆ A131 Girling Street (between Suffolk Road and East Street); and
- ┆ B1064 Rodbridge Hill north of Mills Lane.

3.4.21. The following are junctions are expected to have notably higher delays in the PM peak hour in 2038 compared to 2023:

- ┆ A131 Mill Hill / Walnut Tree Lane;
- ┆ B1115 The Heath / Tentree Road / Heath Way;
- ┆ Newton Road / Ingram's Well Road / Chelsea Road; and
- ┆ Plough Lane / Salters Hall Mews / Straw Lane.