Suffolk County Council

IPSWICH STRATEGIC PLANNING AREA LOCAL PLAN MODELLING

Forecasting Report - Forecasts with demand adjustments

ISPA 7.1
JANUARY 2020

PUBLIC

Suffolk County Council

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REPORT PURPOSE

WSP have been commissioned to undertake an updated assessment of the emerging Local Plans for the following Local Planning Authorities (LPAs):

- Babergh District Council (BDC)
- Ipswich Borough Council (IBC)
- Mid Suffolk District Council (MSDC)
- East Suffolk Council (Suffolk Coastal Local Plan)[1]

These four authorities form the Ipswich Strategic Planning Area (ISPA). The purpose of the assessment is to inform the identification of further detail in terms of mitigation of transport impacts related to growth being planned for through Local Plans.

The purpose of this report is to assess the impact upon the highway network of scenarios for growth within the respective Local Plans for a forecast year of 2036 and interim year of 2026. This report represents a further assessment following the strategic modelling reported in August 2019 related to the Preferred Option for IBC and the Suffolk Coastal Local Plan, as well as development options for BDC and MSDC. This report identifies junctions and links that are likely to experience significant peak hour congestion in the future. This report focuses on forecast capacity of the network, implementing a reduction in forecast car demand based on assumptions about the likelihood of achieving a modal shift away from private car travel. The details of the methodology are included within the ISPA Local Plan Modelling Methodology Report (December 2019).

For the assessment of individual junctions within this report, the volume to capacity (V/C) percentage is used. V/C percentages above 100% show a traffic flow beyond its capacity. These locations show the greatest network stress and suggest delays are likely. At these locations the network may cease to function efficiently and blocking back from queuing may occur, constraining the capacity and potentially causing congestion on adjacent links and junctions. Locations at which the V/C percentage is between 85-99% are also considered likely to experience congestion and are highlighted within the analysis.

[1] The Suffolk Coastal Local Plan covers the area of the former Suffolk Coastal District Council

WHAT HAS BEEN DONE

The strategic modelling detailed within this report is generally consistent with the modelling which is detailed in the August 2019 ISPA modelling results report. Changes which have been implemented include the following:

- Refinements to the housing and employment sites which represent the Ipswich Final Draft
- Update of assumptions in Babergh and Mid Suffolk to reflect the Preferred Option. Specific housing completions between 2016 and 2018 have also been included, previously growth for these intervening years was included as background residual growth
- HGV trip generation included for all developments designated with a B8 land use

The main focus of this report is the demand adjustments which have been implemented and what this subsequently means for the locations on the highway network which show capacity issues. The demand adjustments represent mitigation measures which will lead to a modal shift away from car travel.

The Suffolk County Transport Model (SCTM) includes a strategic highway model built in SATURN which has been calibrated and validated to reflect traffic conditions for a base year of 2016. Traffic forecasts have been generated from this base year model to reflect forecast years of 2026 and 2036.

The forecast modelling detailed in this report consists of the preferred housing and job growth options for Babergh, Ipswich and Mid Suffolk, as well as development planned within the Suffolk Coastal Final Draft Local Plan. The cumulative impact of the development across the four ISPA authorities has been tested to determine the impact on the highway network.

Details of housing and employment sites and their locations (assigned to SCTM zones) were provided by each LPA and included within the modelling, along with existing permissions and allocations, and completions since 2016. The remaining growth within each district has been accounted for using the Alternative Planning Assumptions tool in TEMPRO; the combination of potential development sites and background growth obtained from TEMPRO ensures that growth is applied in line with the proposed overall Local Plan target for each LPA. The approach of using TEMPRO for residual housing growth was undertaken for Babergh, Mid Suffolk and Suffolk Coastal.

All of the housing and job growth in Ipswich was assigned to specific developments as the dwelling total for these closely matched the overall Local Plan targets. In Babergh, Mid Suffolk, Suffolk Coastal all the Local Plan target job growth could be related to specific developments, therefore no residual job growth was applied using TEMPRO.

WSP have previously undertaken traffic modelling to support the Waveney Local Plan. Model runs which include specific development assumptions in Suffolk Coastal also utilise the assumptions from the Preferred Option scenario for Waveney.

The development information has been processed by WSP by specifically modelling developments, allocating growth to specific model zones or adjusting planning data in TEMPRO to generate adjusted background traffic growth factors. Employment density calculations have been applied to

commercial developments using the 2016 Economic Land Needs Assessment (ELNA) and reports from The Homes and Communities Agency (HCA)[2].

Developments greater than 500 dwellings / jobs have been explicitly modelled in terms of their specific site accesses and internal network being included in the model. All other developments between 10-499 dwellings / jobs have been allocated to a base year model zone and its respective loading point.

TRICS trip rates have been applied to the majority of developments based on land use type. The exception to this is developments included within background growth derived from TEMPRO. For larger developments, the specific Transport Assessment trip rates were collated and applied in place of the general TRICS trip rates.

TEMPRO background growth factors have been adjusted to match the residual housing and job growth which results from the difference between the overall Local Plan targets and the specific developments modelled. LGV and HGV growth has in general been constrained to the 2018 Road Traffic Forecasts available from the National Transport Model (NTM). In accordance with DfT WebTAG guidance, fuel and income factor adjustments have further been added to the car traffic growth within the forecasts.

The forecast traffic generation detailed in this report leads to increases of 20% in terms of growth in traffic between 2016 and 2026, which decreases to 15% because of targeted demand adjustments. Traffic growth between 2016 and 2036 was calculated at 39%, reducing to 33-34% as result of the demand changes.

The results within this report focus only on roads which are part of SCC's highway network. Impacts of adjusted ISPA Local Plan growth on the Strategic Road Network (SRN), namely the A14 and A12 (between Essex and A14 J55 Copdock Interchange) is reported in a separate technical note completed in July 2019.

WHAT THE RESULTS SHOW

Models have been generated to show future traffic growth for 2026 and 2036.This growth in traffic is a result of changing patterns of travel behaviour and predicted future growth in housing and jobs across Suffolk. The transport modelling factors in an element of growth when predicting future traffic impacts and has been adapted for the purposes of this assessment to consider the specific growth locations identified in the named local authorities. The results cannot therefore be interpreted as simply as 'Local Plan vs no Local Plan', i.e. it could not reasonably be assumed that if there were no Local Plan, traffic patterns would be the same in 2026 and 2036 as they were in 2016.

The growth assumptions for the modelling consider population growth and specific development locations, as well as car ownership and relative vehicle operating costs. This information comes from the Local Plans and the use of the Department for Transport TEMPro software

[2] The Home and Communities Agency is now known as Homes England.

Numerous locations across the network are shown to have capacity issues, measured using the volume to capacity (V/C) percentage which compares the capacity of the network to the assigned traffic flow. This report provides a summary of the results for all four LPAs with the ISPA boundary

Previous modelling results reported in relation to Local Plan growth in Suffolk Coastal and Ipswich is detailed below

Forecasting Report Volume 1 (August 2018) – Option modelling for Suffolk Coastal and Ipswich (August 2018) which outlines the junctions within Suffolk Coastal and Ipswich which showed capacity issues for different combinations of housing and job distributions. This also included Development Options for Babergh and Mid Suffolk

Modelling related to the preferred option for Ipswich and First Draft Local Plan for Suffolk Coastal have been published in the following document:

Forecasting Report Volume 2 (January 2019) – Modelling of the preferred option for Ipswich and First Draft Local Plan for Suffolk Coastal which outlines the junctions within Suffolk Coastal and Ipswich which showed capacity issues. This also included Development Options for Babergh and Mid Suffolk

Modelling taking into account a demand adjustment for 2026 and 2036 was submitted during the examination for the Suffolk Coastal Local Plan and was published in the following report:

ISPA Forecasting Report (August 2019) – Demand adjusted 2026 and 2036 assignments, modelling the preferred option for Ipswich and First Draft Local Plan for Suffolk Coastal. This also included Development Options for Babergh and Mid Suffolk. This report focused on congestion on the highway under control of SCC.

Modelling taking into account a demand adjustment for 2026 and 2036, focusing on the SRN and impact of potential RIS schemes on the A14 south of Ipswich was detailed in the following technical note:

A14 RIS impact Technical Note (July 2019) – This utilised the 2026 and 2036 demand adjusted assignments, focusing in particular on potential RIS schemes on the A14 south of Ipswich

WHAT DOES THIS MEAN

The analysis has shown that whilst many junctions may be close to or exceed capacity in 2026 and 2036; there are also many parts of the network that will operate well within their theoretical capacity. For junctions where the V/C is shown to approach or exceed operational capacity, the individual development proposals assessed within the model would, as part of their planning applications, need to consider additional measures to help mitigate any impact.

It is also necessary to remember that improvements in capacity through the removal of bottlenecks whilst desirable in one location can have knock on impacts which would be less desirable than the existing congestion. For example, as traffic is more freely able to move into the network, the problem will simply move to another location. Equally, hard engineering and infrastructure solutions are not the only solutions available. Other solutions involve the optimisation of existing infrastructure and an emphasis on sustainable transport, through for example personal travel planning. Over the lifetime of the Local Plans it is reasonable to assume that policies on sustainable transport will help to mitigate some of the increase in stress, and technological changes, such as those associated with

Connected and Autonomous Vehicles, have the potential to independently improve traffic flow and conditions.

WHAT IS BEING DONE TO ADDRESS THIS

As the respective Local Plans progress within each LPA, further assessment will be undertaken to inform any mitigation scenarios. This will identify the mitigation required. The modelling detailed within this report includes a demand adjustment which represents part of the mitigation strategy required to accommodate the housing and job growth included within the ISPA.

Whilst the development quantum and matrix development process differ between scenarios, there are committed highway infrastructure schemes across Suffolk which have been included within the appraisal. Specific schemes within Babergh, Ipswich, Mid Suffolk and Suffolk Coastal include the following:

- Improvements on key corridors within Ipswich such as Felixstowe Road and the A1214 through Kesgrave
- A12 corridor improvements associated with Brightwell Lakes[3] between the Martlesham roundabout and Seven Hills Interchange (A14 Junction 58)
- Bixley Road / Heath Road / Foxhall Road junction improvement
- Nacton Road / Maryon Road junction improvement
- Walton link road, between Walton High Street and Candlet Road, Felixstowe

WHAT HAPPENS NEXT

The ISPA demand adjustments which have been made represent a form of mitigation based on a combination of measures which can be implemented to reduce the level of car travel. This is car travel associated with both existing travel patterns and new developments which will come forward in the future. The adjusted demand forecasts detailed within this report are an estimation of the cumulative impact of these mitigation measures on the highway network within the ISPA. SCC produced a report “Transport Mitigation Strategy for the Ipswich Strategic Planning Area” in August 2019 which detailed a range of proposals as part of a package of mitigation measures which could result in the modal shift aware from car travel.

[3] Brightwell Lakes is the development formerly referred to as Adastral Park

1

GLOSSARY

1 GLOSSARY

- **Adjusted Planning Data** – TEMPro (see below) allows for the use of alternative assumptions which are different to the standard set of assumptions. This allows for specific allocated developments to be discounted from the assumptions or to adjust the overall assumptions to tie in with alternative data sources.
- **AM Peak** – the morning peak hour (08:00 – 09:00)
- **Assignment** – A Traffic Assignment Model, in this case SATURN, has been used. An assignment model requires two general inputs – a "trip matrix" and a "network" (thought of as the "demand" and "supply" inputs – provided by the user). These are input into a "route choice" model which allocates or assigns trips to "routes" through the network, as a result total flows along links in the network may be summed and the corresponding network "costs" (e.g. times) calculated.
- **BDC** – Babergh District Council
- **Committed Development** – All land with current planning permission or allocated for development in adopted development plans (particularly residential development) (Planning Portal Glossary).
- **ESC** – East Suffolk Council
- **HE** – Highways England
- **IBC** – Ipswich Borough Council
- **ISPA** – Ipswich Strategic Planning Area
- **Links** – Connect nodes together and represent the road network within the model
- **LinSig** – Industry standard software used to assess Signal-Controlled junctions
- **Local Plan** - A Local Plan is a set of documents that determine how development will be planned over time.
- **LPA** – Local Planning Authority
- **Matrix** – see Trip Matrix
- **MSDC** – Mid Suffolk District Council
- **Network** – specifies the physical structure of the roads, etc upon which trips take place and the parameters within it. In this report, parameters is being used as a generic descriptor of all of the pieces of information / options that go into the Saturn network, it is not a specific modelling term.
- **Nodes** – Nodes represent a change in speed or direction; most often they represent a junction.
- **NTEM** – National Trip End Model, Latest version 7.2. The National Trip End Model produces estimates of person travel by all modes based on 2011 Census boundaries. The model outputs trip productions (e.g. homes) and trip attractions (e.g. sites of employment) in each zone (collectively known as trip-ends), which may be separated by mode, journey purpose, household car ownership category and time period.
- **NTM** – National Transport Model provides a means of comparing the consequences of national transport policies or widely-applied local transport policies, against a range of background scenarios which consider the major factors affecting future patterns of travel. The model produces future forecasts of road traffic growth, vehicle tailpipe emissions, congestion and journey time (Department for Transport website).
- **PCU – Passenger Car Unit**, is a method used in Transport Modelling to allow for the different vehicle types within a traffic flow group to be assessed in a consistent manner. Measured to be

5.75 m. Factors used in the SCTM are 1 for a car or light goods vehicle and 2.3 for heavy goods vehicle.

- **Permitted Development** - Permission to carry out certain limited forms of development without the need to make an application to a local planning authority, as granted under the terms of the Town and Country Planning (General Permitted Development) Order (Planning Portal Glossary).
- **Person Trip Rate** – The number of people making a given trip as opposed to the number of vehicles making a trip.
- **PM Peak** – Afternoon Peak (17:00 – 18:00)
- **SATURN** – Simulation and Assignment of Traffic to Urban Road Networks is a suite of network analysis programs used to assess the impact of road-investment schemes. Current version 11.3.12U. See also assignment. Further information can be found here: https://saturnsoftware.co.uk/
- **SCC** – Suffolk County Council
- **SCDC** – Suffolk Coastal District Council (now part of East Suffolk Council)
- **SCTM** – Suffolk County Transport Model
- **TEMPro** - TEMPro is the Trip End Model Presentation Program. The National Trip End Model (NTEM) forecasts and the TEMPro software are used for transport planning purposes. The forecast includes: population, employment, households by car ownership, trip ends, and simple traffic growth factors based on data from the National Transport Model. The current version, and the version used for this work, is NTEM 7.2. Further information can be found at: https://www.gov.uk/government/collections/tempro
- **Trip Matrix** – the "Trip Matrix" Tij specifies the number of trips from zone i to zone j
- **V/C Ratio** – Volume / Capacity Ratio. The assigned model flow is the volume of traffic in PCUs per hour, with the V/C percentage calculated as the volume relative to the capacity in percentage terms.
- **WDC** – Waveney District Council (now part of East Suffolk Council)
- **WebTAG** – Web Transport Appraisal Guidance. Documentation produced by the Department for Transport (DfT) to assist in transport appraisal and modelling to ensure consistency and robustness.
- **Windfall Sites** – sites for housing that have yet to be identified, accounted for through background growth.
- **Zone Loading Point** – the origins and destinations of trips within a network

A further glossary of planning terms can be found here:
https://www.planningportal.co.uk/directory/4/glossary

2

INTRODUCTION

2 INTRODUCTION

2.1 BACKGROUND

2.1.1. WSP have been commissioned to undertake an assessment of the impact of Local Plan development assumptions for multiple Local Planning Authorities (LPAs) within Suffolk. The focus of this report is on the modelling results for all four of the LPAs within the ISPA boundary:

- Ipswich Borough
- East Suffolk (area covered by the Suffolk Coastal Local Plan)
- Babergh District
- Mid Suffolk District

2.1.2. The Local Plan development has been tested in terms of the impact on the highway network for a forecast year of 2036 representing the end of the Local Plan period for each LPA. An interim forecast year of 2026 has also been modelled. This has been generated as it forms a mid-point between the end of the Local Plan period (2036) and the base year for the strategic model (2016). This interim year provides an indication of whether the capacity issues which are apparent at the end of the Local Plan period (2036) also occur in 2026 to help provide an indication of when mitigation may be required.

2.2 TRANSPORT MODEL

2.2.1. The Suffolk County Transport Model (SCTM) has been developed by WSP as a multi-purpose modelling toolkit to enable Suffolk County Council (SCC), LPAs and other parties to test a variety of transport related improvements including for example:

- Highway scheme appraisal
- Major public transport scheme appraisal
- Inputs for transport business cases and funding applications
- Inputs for environmental appraisals
- Local plan / core strategy assessment
- Development impact assessment.

2.2.2. The assessment within this report uses the Highway Assignment Model (HAM)[4] only as the focus of the modelling is on how the highway network within Suffolk is affected by the proposed housing and job growth with the emerging Local Plans. A highway only assignment is considered proportionate and sufficiently robust to test the assumptions for each LPA.

2.2.3. The SCTM has been developed to an extent that it is able to serve as a high-level strategic assessment tool for various applications. However, no strategic model is capable of representing a

[4] The SCTM comprises a Highway Assignment Model (HAM) built in SATURN, as well as a Public Transport Assignment Model (PTAM) and Variable Demand Model (VDM) developed in VISUM.

whole county in fine detail, so the level of detail required for each application is reviewed prior to testing. It is often necessary to enhance a particular local area for a specific testing purpose.

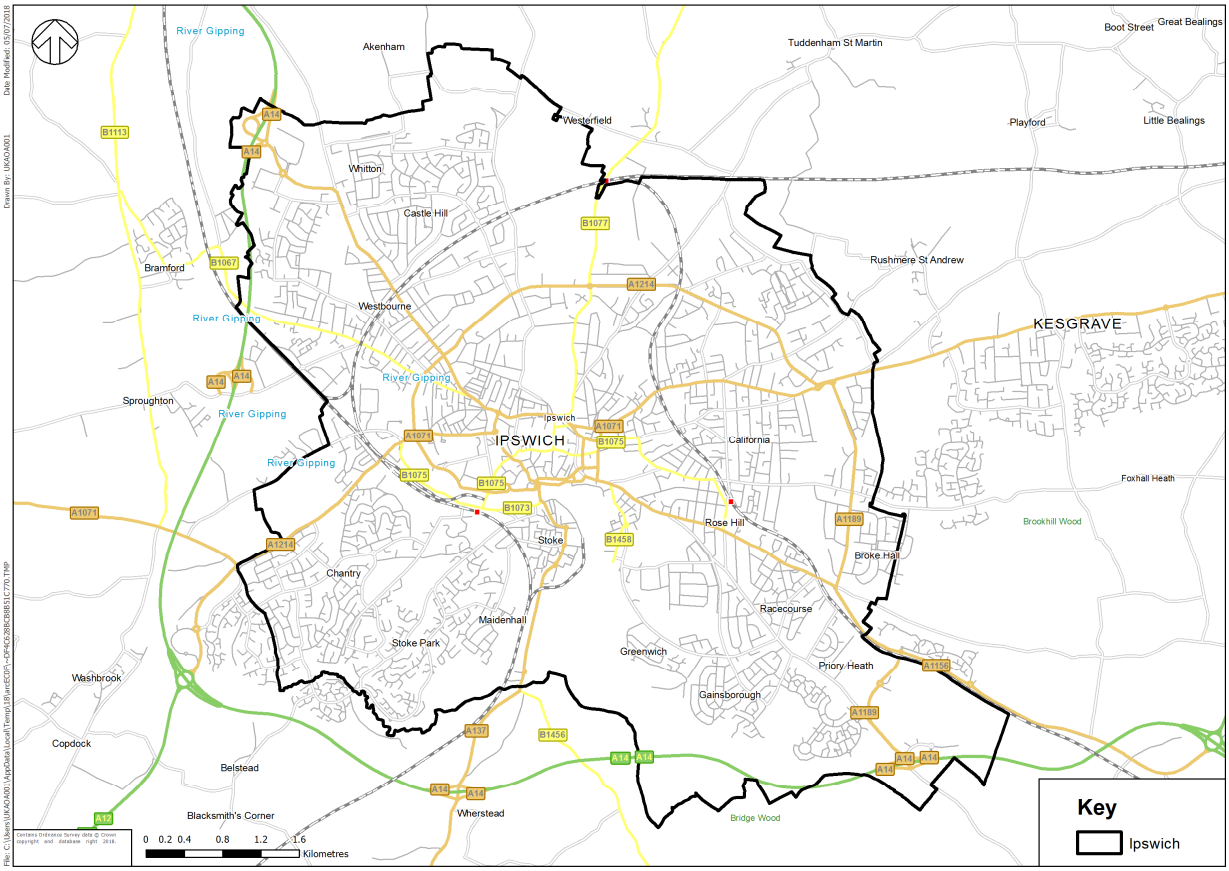
2.2.4. A review of the SCTM within the four LPAs was undertaken with the need for additional network detail and zone disaggregation undertaken. This was undertaken for the 2016 base year model which underpins the forecast modelling undertaken to assess the Local Plans. The validation of the 2016 base year model is presented for each of the LPAs in TN1 – SCTM Base Year Validation Version 2.1 (July 2018).

2.3 STUDY AREA

2.3.1. The study areas in this forecasting report focus on East Suffolk (area covered by Suffolk Coastal Local Plan), Ipswich Borough, Babergh District and Mid Suffolk District

2.3.2. Figure 1 shows the borough boundary for Ipswich Borough, detailing the strategic highway network and main urban areas.

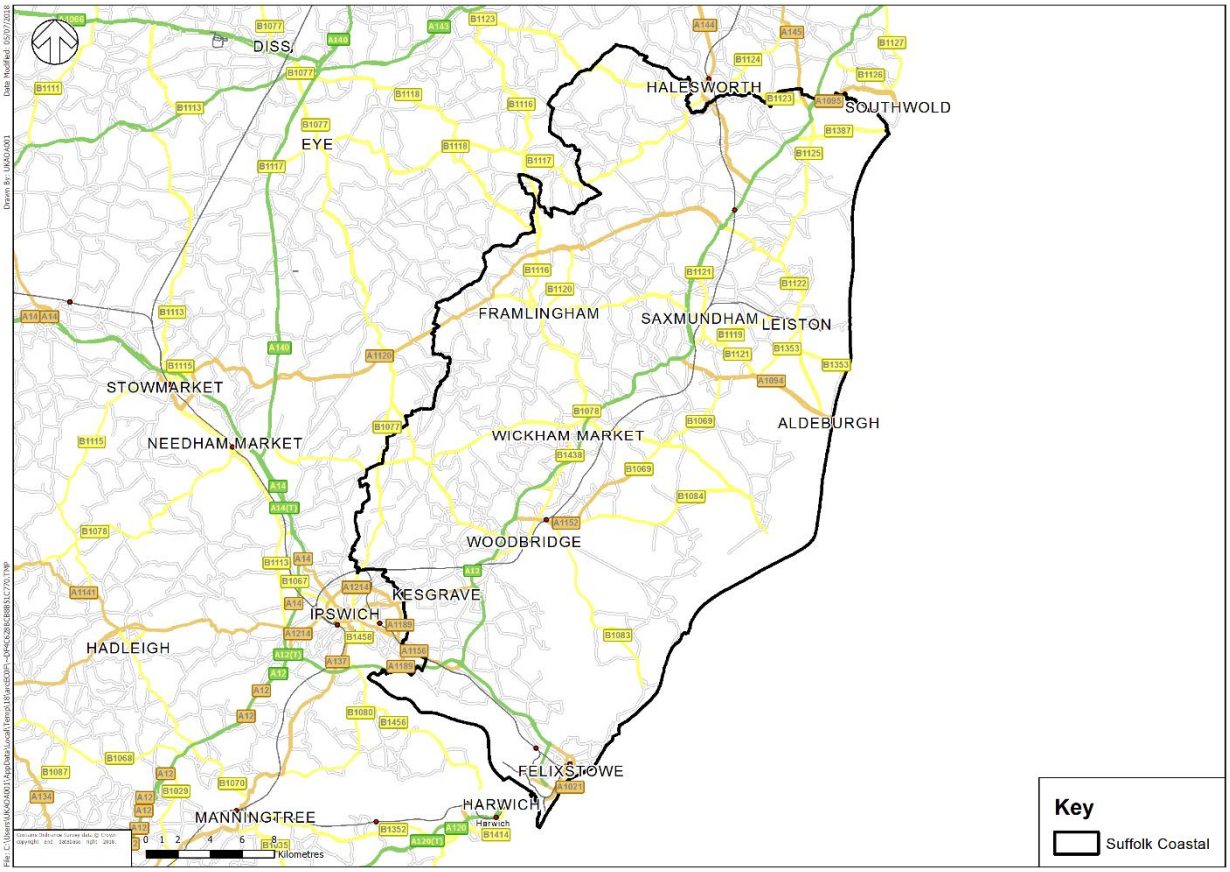
Figure 1 – Ipswich Borough boundary



2.3.3. The Ipswich Borough boundary covers the majority of the Ipswich urban area, though parts of the Ipswich urban area are included within the boundaries of Babergh, Mid Suffolk and Suffolk Coastal. Sections of the A14 are included within the Ipswich Borough boundary, including Junction 53 (Bury Road) and Junction 57 (Nacton).

2.3.4. Figure 2 shows the boundary of the area of East Suffolk covered by the Suffolk Coastal Local Plan, detailing the strategic highway network and main urban areas.

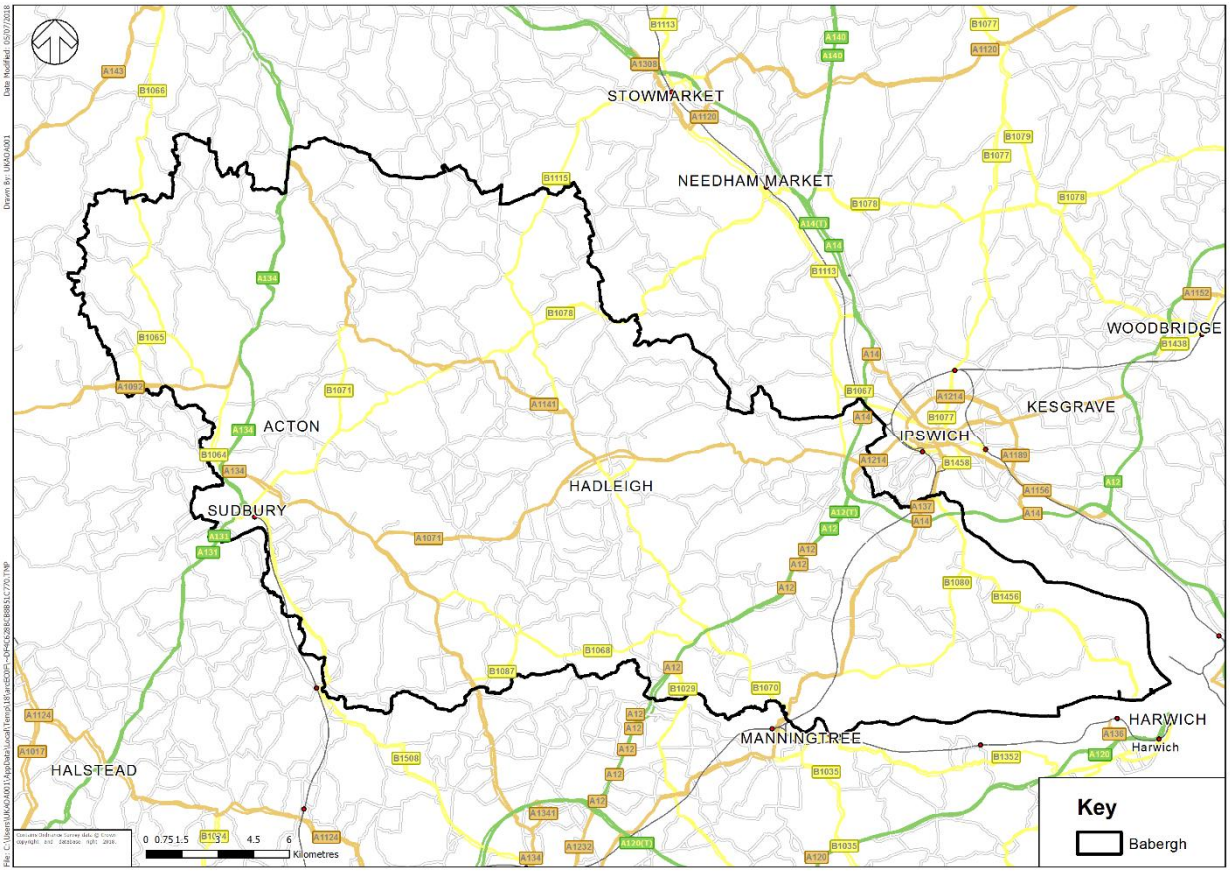
Figure 2 – Suffolk Coastal Local Plan boundary



2.3.5. The key strategic highway route through Suffolk Coastal is the A12, extending from the Seven Hills Interchange (A14 Junction 58) to Blythburgh. The A14 extends into Suffolk Coastal, culminating at Felixstowe.

2.3.6. Figure 3 shows the district boundary for Babergh, detailing the strategic highway network and main urban areas.

Figure 3 – Babergh District boundary[5]

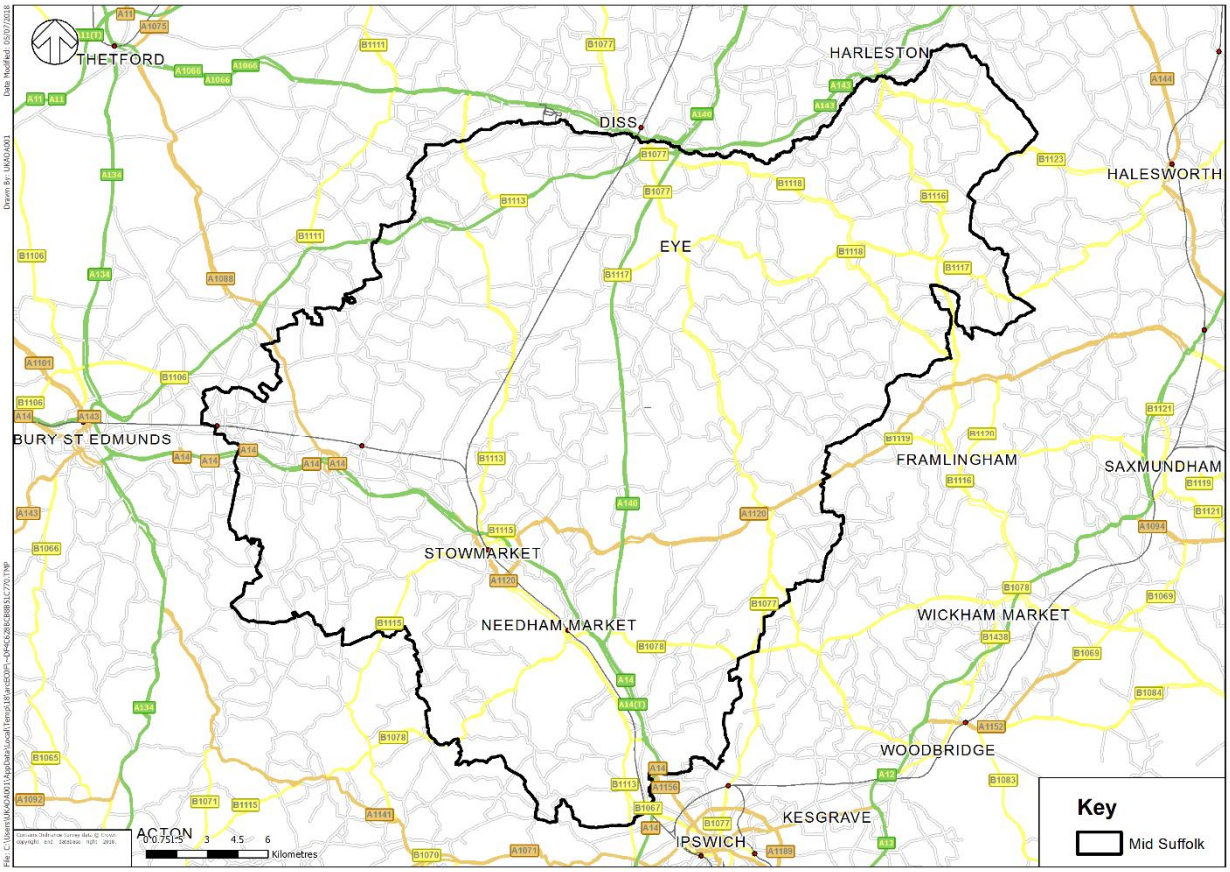


2.3.7. Sudbury is the largest urban area within Babergh, with the A12 crossing the district between Ipswich and Colchester. Another key strategic route within Babergh is the A134.

2.3.8. Figure 1 shows the district boundary for Babergh, detailing the strategic highway network and main urban areas.

[5] The figure should not be considered as placing emphasis on the particular importance of any locations within Babergh

Figure 4 – Mid Suffolk District boundary



2.3.9. Stowmarket is the largest urban area within Mid Suffolk, with the A14 Junction 46 east of Bury St Edmunds to Junction 52 (Claydon) included within the district boundary. The other major strategic routes within Mid Suffolk are the A140 which extends between the A14 and Norfolk, and the A143 Diss Road.

2.4 FUTURE HIGHWAY SCHEMES

2.4.1. It is assumed all highway schemes detailed below will be in place in both 2026 and 2036. Table 1 lists the highway schemes which have been included in Babergh and Mid Suffolk

Table 1 – Babergh / Mid Suffolk future highway schemes

District / Borough	Description	Mitigation
Babergh	Chilton Woods access road	Access road between A134 Springlands Way (new roundabout) and Acton Lane (new priority junction)
Babergh	A1071 / Swan Hill roundabout	Capacity improvements
Babergh	A1071 / Hadleigh Road signals	Capacity improvements
Babergh	A1071 / Poplar Lane	Signalisation as part of access arrangements for Wolsey Grange
Babergh	A1214 London Road	New signalised junction part of access arrangements for Wolsey Grange
Mid Suffolk	A140 Eye Airfield	Roundabout improvements

2.4.2. Table 2 shows the future highway schemes which have been included within Ipswich.

Table 2 – Ipswich future highway schemes

District / Borough	Description	Mitigation
Ipswich	Bixley Road / Heath Road / Foxhall Road	Additional lane NB for Bixley Road / Additional lane SB for Heath Road
Ipswich	Nacton Road / Maryon Road	Turn WB Nacton to two lanes, and EB Nacton to one lane
Ipswich	Upper Orwell Street	Changed to one-way southbound from St Helen's Street
Ipswich	St Helen's Street / Bond Street	Bus lane removal
Ipswich	A1214 / Bell Lane	Ban of right turn from A1214 onto Dr Watson Lane. Signalised junction of A1214 / Bell Lane changed to priority-controlled roundabout
Ipswich	Ipswich Radial Corridor Route improvements - Felixstowe Road	Capacity increase to Felixstowe Road & Bixley Road arms of roundabout with A1156 Bucklesham Road. Capacity increase at Bixley Road / Ashdown Way junction

District / Borough	Description	Mitigation
Ipswich	Ipswich Garden Suburb – Henley Gate	Two signalised junctions included as part of site access onto Henley Road
Ipswich	Ipswich Garden Suburb – Fonnereau	Priority controlled junction included on Westerfield Road in relation to access
Ipswich	Ipswich Garden Suburb – Red Hill Farm	Two priority-controlled junctions included on Westerfield Road, north and south of Fonnereau access junction
Ipswich	A1214 Valley Road / Westerfield Road	Increased capacity modelled on A1214 approaches to roundabout due to flares
Ipswich	A1214 Valley Road / Tuddenham Road	Increased capacity modelled on A1214 approaches to roundabout due to flares
Ipswich	Europa Way link road	Link road between Sproughton Road and Bramford Road, extension of Europa Way with priority-controlled roundabouts

2.4.3. Table 3 shows the future highway schemes included within Suffolk Coastal

Table 3 – Suffolk Coastal future highway schemes

District / Borough	Description	Mitigation
Suffolk Coastal	Brightwell Lakes - A12 corridor improvement[6]	A12 / Eagle Way / Anson Road roundabout signalisation
Suffolk Coastal	Brightwell Lakes - A12 corridor improvement	A12 / Eagle Way / Gloster Road roundabout signalisation
Suffolk Coastal	Brightwell Lakes - A12 corridor improvement	A12 / Foxhall Road / Newbourne Road roundabout signalisation
Suffolk Coastal	Brightwell Lakes - A12 corridor improvement	A14 Junction 58 signalisation
Suffolk Coastal	Brightwell Lakes - Main site access	Signalised junction between Gloster Road & Foxhall Road roundabouts

[6] Brightwell Lakes is the development formerly referred to as Adastral Park

District / Borough	Description	Mitigation
Suffolk Coastal	Brightwell Lakes - Other site accesses	Phase 2 access onto Newbourne Road, Phase 3 access onto link forming junction with Gloster Road
Suffolk Coastal	Walton Link Road, Felixstowe	Link road between Candlet Road and Walton High Street, as well as access junction for development
Suffolk Coastal	Innocence Farm access junction	Provision of access arrangements allowing all-movements junction to & from the site at the A14

2.4.4. Table 4 outlines the future highway schemes included outside of the ISPA within Suffolk

Table 4 – Other Suffolk future highway schemes

District / Borough	Description	Mitigation
St Edmundsbury	Bury St Edmunds Eastern Relief Road	Now built and open, but included in forecast only as base year model is 2016 prior to opening
St Edmundsbury	Haverhill NW Relief Road	Relief Road between A1307 and A143
St Edmundsbury	Bury St Edmunds South Eastern Relief Road	Link road south of A14 Junction 44
Waveney	Beccles Southern Relief Road	Relief Road between A145 and Ellough Road. Now built and open but included in forecast only as base year model is 2016, i.e. prior to opening.
Waveney	Lake Lothing Third Crossing, Lowestoft	Additional crossing within Lowestoft, priority-controlled roundabouts at both ends

2.5 FORECAST DEVELOPMENT ASSUMPTIONS

2.5.1. Each LPA provided details of the overall target in terms of housing and job growth up to 2036 detailed in their respective emerging Local Plan. Interim forecasts have been generated for a forecast year of 2026. This is summarised in Table 5.

Table 5 - Overall housing and job growth modelled by LPA

LPA	Scenario	Housing growth (2016 to 2026)	Job growth (2016 to 2026)	Housing growth (2016 to 2036)	Job growth (2016 to 2036)
Babergh	Preferred Option	3,922	1,411	8,117	3,306
Ipswich	Final Draft	3,768	5,471	9,502	10,348
Mid Suffolk	Preferred Option	5,291	2,726	10,739	5,905
Suffolk Coastal	Preferred Option[7]	7,682	6,101	13,298[8]	13,472

2.5.2. The ISPA Local Plan Modelling Methodology Report provides greater detail on the approach taken for each of the model runs and their associated development inputs

[7] This is the Suffolk Coastal First Draft Local Plan

[8] This includes completions 2016-18, permissions, existing allocations and development with a resolution to grant permission as at 31.03.18 (which are included in the core assumptions), site allocations, housing requirements for the Neighbourhood Plan areas and the windfall assumptions as contained in the Suffolk Coastal First Draft Local Plan

3

RESULTS

3 RESULTS

3.1 SUFFOLK HIGHWAY FOCUS

3.1.1. The results within this report focus only on roads which are part of SCC's highway network. Impacts of adjusted ISPA Local Plan growth on the Strategic Road Network (SRN), namely the A14 and A12 (between Essex and A14 J55 Copdock Interchange) has previously been reported in a separate technical completed in July 2019. Locations which are on the interface between the SRN and SCC's highway network are included in this report and are included separately junctions solely the responsibility of SCC.

3.2 VOLUME TO CAPACITY RATIO

3.2.1. Analysis has been undertaken to determine which junctions within the model are forecast to experience congestion. The Volume to Capacity (V/C) percentage has been focused on to determine which junctions are approaching or over capacity. The V/C percentage has been taken directly from SATURN and is based on a combination of flow, delay and capacity for each approach arm and turning movement at a junction.

3.2.2. Table 6 describes the typology used to distinguish between whether junctions are forecast to experience congestion problems in both peak hours or single peak hour and considers the severity of the congestion.

Table 6 – Volume to capacity ratio categorisation, Junctions

Type	Description
1	100%+ both peaks
2	100%+ in one peak / 85-99% in other peak
3	100%+ in one peak / Less than 85% in other peak
4	85-99% in both peaks
5	85-99% in one peak / Less than 85% in the other peak

3.2.3. Link based V/C has also been analysed representing individual approaches to junctions and intermediary links between junctions. The maximum V/C between the respective AM and PM peak hour assignments for each forecast year is graphically presented alongside overall junction V/C in this report.

3.3 MODEL RUNS COMPARED

The model runs considered within this report are as follows:

- 2026/36 AM/PM
- 2026/36 AM/PM with demand adjustments

3.3.1. The ISPA Methodology Report (December 2019) provides details on the approach which has been undertaken in terms of the demand adjustments. At an aggregate level across Suffolk, the demand adjustments lead to a decrease in car traffic of around 5% in 2026, and between 5-6% in 2036.

3.3.2. The model runs represent modelling assumptions which are consistent with the previous Local Plan modelling undertaken to support the Suffolk Coastal First Draft Local Plan. This updated modelling includes refinements to the assumptions which inform the preferred option within Ipswich. Preferred option assumptions have now also been included for Babergh and Mid Suffolk.

3.4 PASSENGER CAR UNIT HOUR DELAY REDUCTION BY LPA – DEMAND ADJUSTMENT IMPACT

3.4.1. A metric which can be used to demonstrate the benefit of the demand adjustment is the reduction in Passenger Car Unit (PCU) hours delay. The strategic model includes trips based on PCUs (1 PCU is equivalent to a standard car length of 5.75m). This is done to ensure the impact of HGVs on the road network is considered as they are representing in the SCTM by a PCU value of 2.3 which is consistent with DfT Transport Analysis Guidance (TAG).

3.4.2. The strategic model also provides information on the average delay per PCU for both links and junctions. The average delay can be multiplied by the number of trips and converted to hours to determine the total PCU hours delay.

3.4.3. This analysis has been undertaken for junctions within the ISPA on local highway authority links to demonstrate the reduction in delay which results from the demand adjustments.

3.4.4. Table 7 demonstrates an overall reduction in PCU.hours delay on the SCC Highway network of 22% in the AM 2026, with the reduction most marked within Ipswich which reduces by 28%. Table 8 shows an average reduction in delay of 17% for SCC/SRN interface junctions.

Table 7 – Reduction in PCU. Hours Delay (AM 2026) – SCC Highway

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	2014	1456	-558	-28%
Suffolk Coastal	1160	932	-227	-20%
Mid Suffolk	446	384	-62	-14%
Babergh	541	456	-85	-16%
Total	4160	3228	-932	-22%

Table 8 – Reduction in PCU. Hours Delay (AM 2026) – SCC Highway / SRN interface

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	105	75	-31	-29%
Suffolk Coastal	125	113	-12	-9%

Mid Suffolk	78	70	-8	-10%
Babergh	271	221	-50	-18%
Total	578	479	-99	-17%

3.4.5. Table 9 demonstrates an overall reduction in PCU.hours delay on the SCC Highway network of 21% in the PM 2026, with the reduction most marked within Ipswich which reduces by 26%. Therefore, the level of reduction in delay is generally similar between the AM and PM peak models in 2026. Table 10 shows an average reduction in delay of 15% for SCC/SRN interface junctions.

Table 9 – Reduction in PCU. Hours Delay (PM 2026) – SCC Highway

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	1923	1415	-508	-26%
Suffolk Coastal	1010	830	-180	-18%
Mid Suffolk	393	343	-50	-13%
Babergh	631	537	-94	-15%
Total	3957	3124	-832	-21%

Table 10 – Reduction in PCU. Hours Delay (PM 2026) – SCC Highway / SRN interface

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	59	46	-14	-23%
Suffolk Coastal	155	150	-5	-3%
Mid Suffolk	92	79	-12	-13%
Babergh	157	118	-39	-25%
Total	463	393	-69	-15%

3.4.6. Table 11 demonstrates an overall reduction in PCU.hours delay on the SCC Highway network of 23% in the AM 2036, with the largest reduction occurring with Ipswich which reduces by 28%. Table 12shows an average reduction in delay of 15% for SCC/SRN interface junctions.

Table 11 – Reduction in PCU. Hours Delay (AM 2036) – SCC Highway

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	3968	2875	-1094	-28%
Suffolk Coastal	1872	1474	-397	-21%
Mid Suffolk	1005	847	-158	-16%
Babergh	1034	863	-171	-17%
Total	7879	6059	-1820	-23%

Table 12 – Reduction in PCU. Hours Delay (AM 2036) – SCC Highway / SRN interface

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	99	93	-7	-7%
Suffolk Coastal	189	168	-21	-11%
Mid Suffolk	199	188	-11	-6%
Babergh	462	353	-109	-24%
Total	949	802	-147	-15%

3.4.7. Table 13 demonstrates an overall reduction in PCU.hours delay on the SCC Highway network of 24% in the PM 2036, with the reduction being highest in Ipswich which reduces by 30%. This demonstrates the demand reduction has a comparatively higher impact in the PM peak in 2036 compared to 2026. Table 14 shows there is generally a greater reduction in delays on the SCC/SRN interface, with an average reduction in delays of 34%.

Table 13 – Reduction in PCU. Hours Delay (PM 2036) – SCC Highway

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	3844	2696	-1148	-30%
Suffolk Coastal	1693	1330	-362	-21%
Mid Suffolk	762	639	-123	-16%
Babergh	1107	965	-142	-13%
Total	7406	5630	-1776	-24%

Table 14 – Reduction in PCU. Hours Delay (PM 2036) – SCC Highway / SRN interface

Adjustment	No Adjustment (PCU. Hrs Delay)	With Adjustment (PCU. Hrs Delay)	Abs Diff (PCU. Hrs Delay)	Prcnt Diff (PCU. Hrs Delay)
Ipswich	64	50	-14	-22%
Suffolk Coastal	517	258	-259	-50%
Mid Suffolk	162	149	-13	-8%
Babergh	292	229	-64	-22%
Total	1036	686	-350	-34%

3.4.8. The analysis of PCU hours delay demonstrates the demand adjustment has a significant benefit in reducing delays to vehicles across all authorities within the ISPA. Around 800 – 900 vehicle hours are saved on the SCC highway network in 2026, with this figure reaching between 1,800 vehicle hours in 2036. This demonstrates the mitigation will ease congestion on the highway network.

3.5 OVERALL JUNCTION V/C SUMMARY BY LPA – DEMAND ADJUSTMENT IMPACT

3.5.1. The analysis within the remainder of Section 3 focuses on the modelling results from the assignments which include the demand adjustments. Appendix A contains plots of the locations with link and node-based V/C issues without the demand adjustment for reference.

3.5.2. Appendix B provides tables detailing each of junction within the ISPA which is flagged as having a V/C of over 85% or greater in any of the model runs with or without the demand adjustments. Comparisons are also presented within Appendix B to indicate whether the junctions flagged also showed overall V/C issues in the August 2019 results report.

3.5.3. Analysis of the junctions in the forecast modelling which are shown to experience congestion have been analysed for the four ISPA LPAs.

3.5.4. The number junctions which reach an overall V/C of 85%+ is shown in the following tables

- Table 15 for AM peak SCC junctions
- Table 16 for AM peak SCC/SRN interface junctions
- Table 17 for PM peak SCC junctions
- Table 18 for PM peak SCC/SRN interface junctions

3.5.5. This analysis demonstrates the following:

- Ipswich Borough contains the highest number of congested junctions with a V/C of 85%+ in all time periods
- In 2026 AM, the demand adjustment leads to three fewer junctions reaching a V/C of 85%+. The description of these junctions is as follows:
  - A1022 College St / Bridge St (by St Peter's) (Ipswich)
  - A12 / A1214 (Main Rd) Roundabout – A1214 EB entry (Suffolk Coastal)
  - A12 / A14 Junction 58 A12 southbound approach (Suffolk Coastal SRN interface junction)
- In 2036 AM, the demand adjustment leads to four fewer junctions reaching a V/C of 85%+, the description of these junctions is as follows:

- Buck's Horns Lane/Church Lane (Babergh)
- A1189 Felixstowe Rd / Bucklesham Rd roundabout (Ipswich)
- Colchester Rd / A1214 Woodbridge Rd E (Ipswich)
- A1214 / A1189 (Ipswich)
- Bixley Road (Ipswich)

- In 2036 AM, the demand adjustment leads to one additional junction reaching a V/C of 85%+, the description of these junctions is as follows:
  - Copdock Northern Side Circulatory (Babergh SRN interface junction)

Table 15 – Junctions with overall V/C ratio of 85%+ (AM Peak) – SCC Highway

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	3	6	5	15	11
Suffolk Coastal	1	3	2	3	3
Mid Suffolk	0	0	0	2	2
Babergh	1	2	2	3	2
Total	**5**	**11**	**9**	**23**	**18**

Table 16 – Junctions with overall V/C ratio of 85%+ (AM Peak) – SCC Highway / SRN interface

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	0	0	0	0	0
Suffolk Coastal	0	1	0	1	1
Mid Suffolk	1	2	2	3	3
Babergh	0	0	0	0	1
Total	**1**	**3**	**2**	**4**	**5**

- In 2026 PM, the demand adjustment leads to five fewer junctions reaching a V/C of 85%+:
  - A12 / Woods Lane (Suffolk Coastal District)
  - Star Lane A1156 / Grimwade Street (Ipswich)
  - College Street / Foundry Lane (Ipswich)
  - A1022 College St / Bridge St (by St Peter's) (Ipswich)
  - A14 J57 Nacton - Nacton Road approach (Ipswich)

- In 2026 PM, the demand adjustment leads to one additional junction reaching a V/C of 85%+, the description of these junctions is as follows:
  - A14 / A12 on-slip Junction 58 (Suffolk Coastal)
- In 2036 PM, the demand adjustment leads to twelve fewer junctions reaching a V/C of 85%+, five in Ipswich, four in Suffolk Coastal, two in Mid Suffolk and one in Babergh, described below:
  - Langer Road / Beach Station Road – Felixstowe (Suffolk Coastal)
  - A140 Angel Hill / A1120 (West) (Mid Suffolk)
  - Star Lane A1156 / Grimwade Street (Ipswich)
  - A1214 / A137 / A1071 / Yarmouth Road (Ipswich)
  - A1214 / Tuddenham Road (Ipswich)
  - Woodbridge Rd / Albion Hill / Belvedere Rd (Ipswich)
  - Scrivener Drive / Shepherd Drive Roundabout (Babergh)
  - Foxhall Road / Bell Lane (Suffolk Coastal)
  - A1214 / A1189 (Ipswich)
  - A12 / B1438 (near Woodbridge) (Suffolk Coastal)
  - A14 / A1120 SW of J50 (Mid Suffolk SRN interface junction)
  - A14 / A12 - A1156 Entry (Suffolk Coastal SRN interface junction)

Table 17 – Junctions with overall V/C ratio of 85%+ (PM Peak) – SCC Highway

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	1	5	2	17	12
Suffolk Coastal	1	2	1	5	2
Mid Suffolk	0	0	0	1	0
Babergh	1	3	3	6	5
Total	**3**	**10**	**6**	**29**	**19**

Table 18 – Junctions with overall V/C ratio of 85%+ (PM Peak) – SCC Highway / SRN interface

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	0	1	0	0	0
Suffolk Coastal	0	0	1	2	1
Mid Suffolk	0	0	0	4	3
Babergh	0	0	0	1	1

Total	**0**	**1**	**1**	**7**	**5**

3.6 OVERALL LINK V/C SUMMARY BY LPA – DEMAND ADJUSTMENT IMPACT

3.6.1. Link based V/C will now be focused on across each ISPA LPA. Links which are over capacity with a V/C of 100%+ have been focused on as these represent the most congested locations on the road network which are likely to cause delay. Appendix C provides a text description of the junctions which have an over capacity approach, comparing without and with the demand adjustment. This comparison is based on the maximum V/C value shown for a link at the named junction. Comparisons are also presented within Appendix C to indicate whether the junctions flagged also showed overall V/C issues in the August 2019 results report.

3.6.2. Table 19 shows a comparison of over-capacity links in the AM peak with and without the ISPA demand adjustment. The results in this table show:

- Around 50% of the over-capacity links are in Ipswich
- The number of over-capacity links reduces by around 40% in 2026 AM following the adjustment
- Over-capacity links reduce by around 31% in 2036 AM following the adjustment

Table 19 – Over-capacity links with V/C ratio of 100%+ (AM Peak) – SCC Hwy

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	7	22	12	68	42
Suffolk Coastal	2	9	7	26	16
Mid Suffolk	3	6	3	19	16
Babergh	1	11	4	15	14
Total	**13**	**48**	**26**	**128**	**88**

Table 20 – Over-capacity links with V/C ratio of 100%+ (AM Peak) – SCC Hwy / SRN interface

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	1	1	1	2	1
Suffolk Coastal	0	2	1	3	3
Mid Suffolk	0	0	0	2	2
Babergh	1	3	2	5	4
Total	**2**	**6**	**4**	**12**	**10**

3.6.3. Table 21 shows a comparison of over-capacity links in the PM peak with and without the ISPA demand adjustment. The results in this table show:

- Without adjustment in 2026, 52% of over-capacity links are in Ipswich in the PM peak
- Without adjustment in 2036, 58% of over-capacity links are in Ipswich in the PM peak
- The number of over-capacity links reduces by 48% in 2026 PM following the adjustment. Ipswich shows the most significant impacts as a result of the demand adjustments with a 59% reduction in over-capacity links
- Over-capacity links reduce by 28% in 2036 PM following the adjustment

Table 21 – Over-capacity links with V/C ratio of 100%+ (PM Peak) – SCC Hwy

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	5	22	9	69	44
Suffolk Coastal	1	6	4	17	13
Mid Suffolk	2	3	1	16	14
Babergh	0	11	8	18	15
Total	**8**	**42**	**22**	**120**	**86**

Table 22 – Over-capacity links with V/C ratio of 100%+ (PM Peak) – SCC Hwy / SRN interface

LPA	2016 Base	2026 ISPA No Adjustment	2026 ISPA With Adjustment	2036 ISPA No Adjustment	2036 ISPA With Adjustment
Ipswich	0	1	0	1	1
Suffolk Coastal	0	1	1	4	3
Mid Suffolk	0	1	1	2	1
Babergh	0	3	2	4	4
Total	**0**	**6**	**4**	**11**	**9**

3.7 RESULTS SUMMARIES WITH DEMAND ADJUSTMENT

3.7.1. Following the demand adjustment which has been made to the 2026 and 2036 forecasts, the resultant locations which continue to show capacity issues are focused on based on study areas within each LPA as follows:

- Suffolk Coastal
  - Saxmundham

- Woodbridge & Melton
- A12 East of Ipswich
- Felixstowe
- Nacton to Trimley St. Martin

- Ipswich
- Babergh
  - West & South West Ipswich
  - Sudbury
  - Brantham
- Mid Suffolk
  - A140 corridor
  - Stowmarket

3.7.2. Results are presented for each of the study areas in terms of overall junction V/C as well as link-based V/C. The previous January 2019 results report presented results in terms of overall junction V/C only. In considering mitigation it is considered link V/C should also be analysed as overall junction V/C may not show there is an issue at a junction if the majority of junction approaches operate within capacity.

3.7.3. Commentary is provided as to how the modelling results compared to the January 2019 results report in order to demonstrate the impact of the demand adjustments which have been made.

3.8 SUFFOLK COASTAL RESULTS SUMMARY

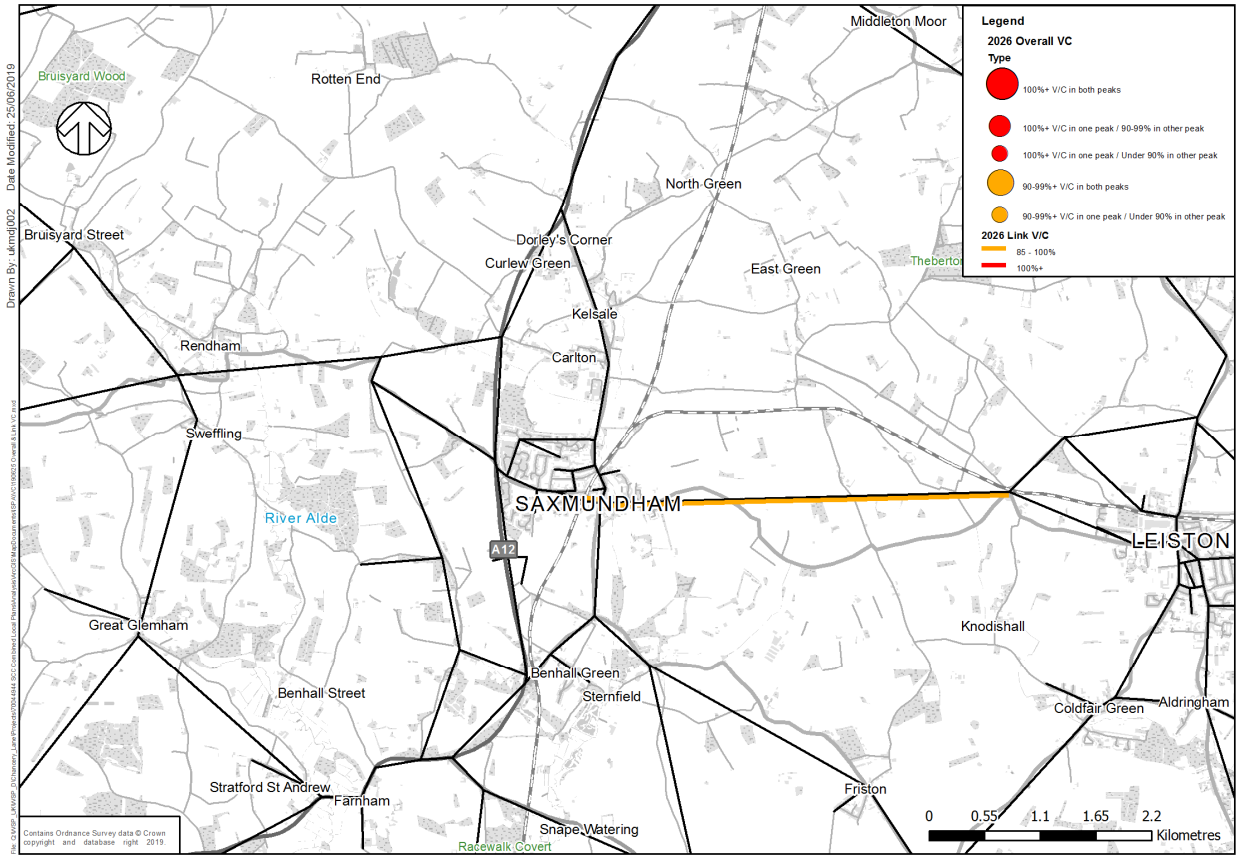
SAXMUNDHAM

3.8.1. Junctions near Saxmundham operate with an overall V/C less than 85%. However, individual movements operate nearing or at capacity

- B1121 / Chantry Road
  - AM Peak: East approach nearing capacity in 2026, over capacity in 2036
  - PM Peak, East and west approaches nearing capacity in 2026/2036

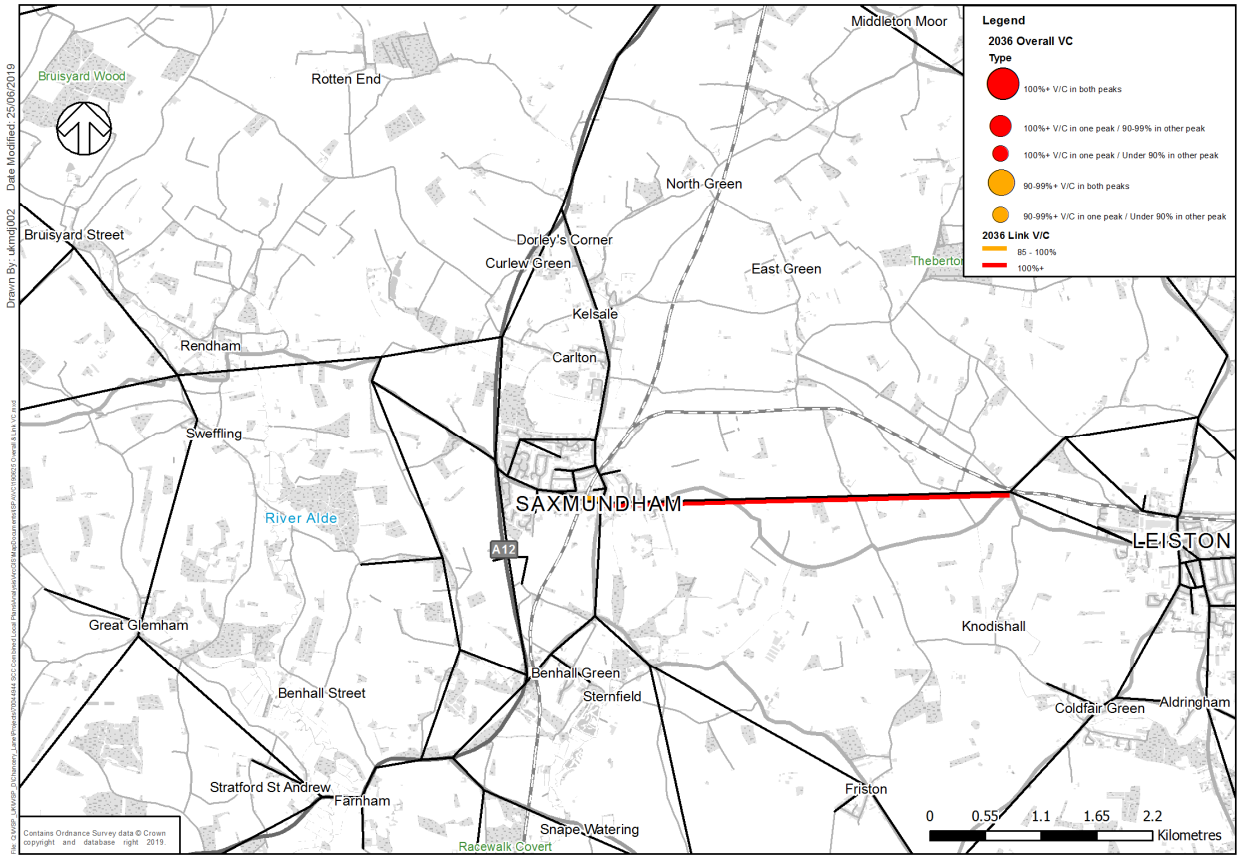
3.8.2. Figure 5 shows the B1121 / Chantry Road link approaching capacity within Saxmundham in 2026.

Figure 5 – Saxmundham – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.8.3. Figure 6 shows the B1121 / Chantry Road at capacity within Saxmundham in 2036

Figure 6 – Saxmundham – 2036 Links and Junctions with V/C 85%+ - With Adjustment



The 2036 modelling results with the demand reduction show the same issues in Saxmundham as those highlighted in the August 2019 and January 2019 results report. This is because the demand reductions which have been applied in Saxmundham (see Section 5.2 of the August 2019 ISPA Methodology Report) are lower as a significant proportion of the trips will either start or end in a rural location. The trip reductions take account of the fact there are limited alternatives to car travel in rural areas for strategic trips

WOODBRIDGE / MELTON

3.8.4. Junctions near Melton operate with an overall V/C less than 85%. However, individual movements operate nearing at or capacity

- B1083 / A1152 (Location 1 in Figure 7/Figure 8)
  - AM Peak south approach nearing capacity in 2036
  - PM Peak north approach nearing capacity in 2026/2036
- Melton Road / A1152 (Location 2 in Figure 7/Figure 8)
  - AM Peak: North approach over capacity in 2026/2036, east approach nearing capacity in 2026, over capacity in 2036
  - PM Peak, North approach over capacity in 2026/2036

3.8.5. Several of the A12 corridor junctions, west of Woodbridge, operate with an overall V/C greater than 85%.

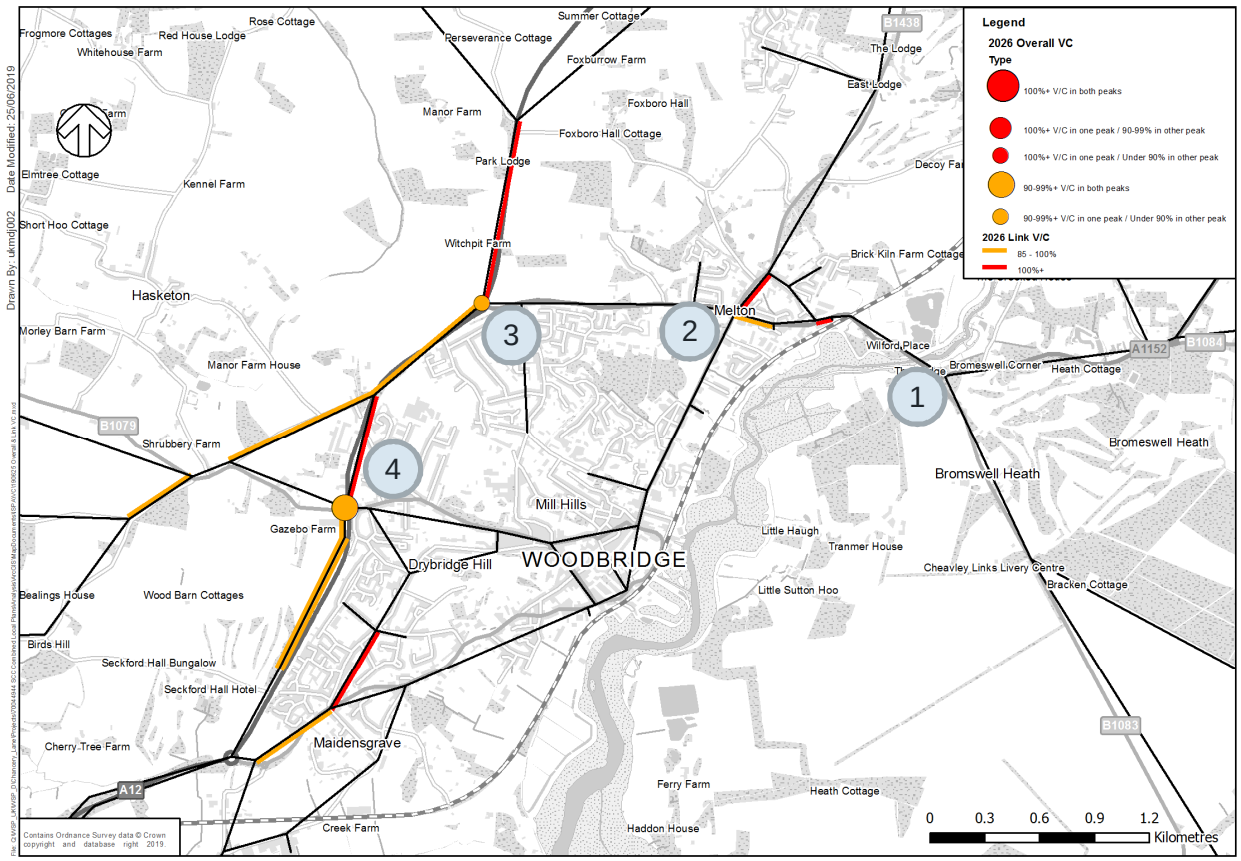
- A12 / A1152 – approaching capacity in AM/PM peaks in 2026/2036 (Location 3 in Figure 7/Figure 8)
- A12 / Grundisburgh Road – approaching capacity in AM/PM peaks in 2026/2036 (Location 4 in Figure 7/Figure 8)

3.8.6. Link V/C ratios show that on the A12 corridor;

- AM peak,
  - the A12/Wood Lane junction is over capacity southbound in 2026 and 2036, and approaching capacity northbound in 2036
  - The A12/Manor Road junction is approaching capacity eastbound in 2026/2036
  - the A12 / Grundisburgh Road junction is over capacity southbound at in 2026 and 2036, and approaching capacity northbound and eastbound in 2036
  - The A12 between Grundisburgh Road and the A1348 is approaching capacity in both directions in 2026 and 2036
  - The A12 is approaching capacity on the eastbound approaches to the B1348 in 2026/2036, and on the southbound approach in 2036
  - the Old Barrack Road / Ipswich Road north approach is nearing capacity in 2036
- PM peak,
  - the A12 is approaching capacity southbound at Wood Lane in 2036
  - Wood Lane is approaching capacity westbound at the A12 in 2036
  - the A12 is approaching capacity northbound at Wood Lane in 2026 and 2036
  - Manor Road eastbound is approaching capacity in 2026
  - the A12 at Grundisburgh Road is over capacity northbound in 2026 and 2036, approaching capacity southbound in 2026 and 2036, and approaching capacity westbound in 2026, and exceeding capacity westbound in 2036
  - The A12 between Grundisburgh Road and the A1348 is approaching capacity in both directions in 2026 and 2036, exceeding capacity northbound in 2036
  - The A12 is approaching capacity on the eastbound approaches to the B1348 in 2026/2036
  - the Old Barrack Road / Ipswich Road north approach is over capacity in 2026 and 2036

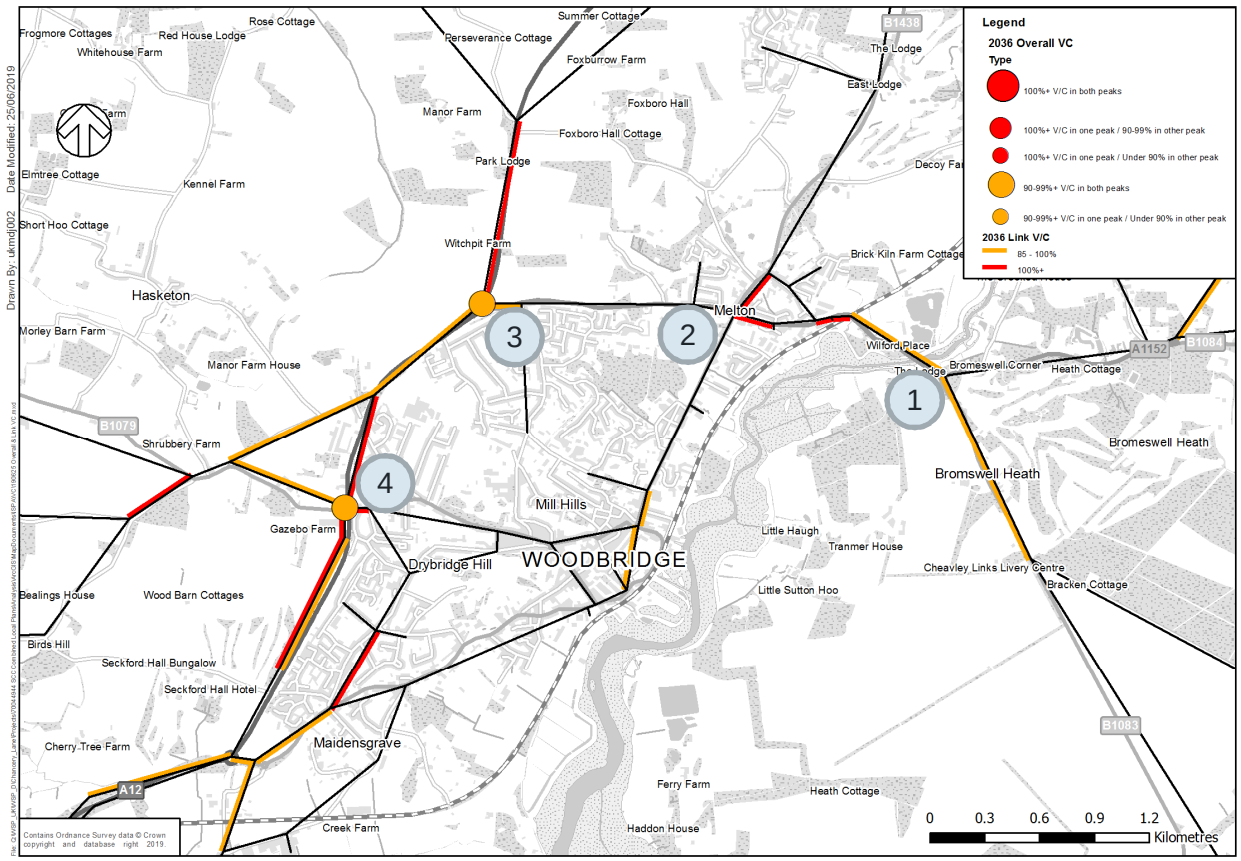
3.8.7. Figure 7 presents the overall junction and link-based V/C for both Woodbridge and Melton in 2026.

Figure 7 – Woodbridge & Melton – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.8.8. Figure 8 presents the overall junction and link-based V/C for both Woodbridge and Melton in 2036

Figure 8 – Woodbridge & Melton – 2036 Links and Junctions with V/C 85%+ - With Adjustment



3.8.9. The 2036 modelling results with the demand reduction show that despite the demand reductions which have been applied the Melton Crossroads junction continues to have approaches which are over capacity, consistent with previous results reports. The southern Melton Road arm does show improvement in the PM peak, reducing from 86% V/C in the previous Jan 2019 modelling to 63% V/C in the modelling with demand adjustments.

3.8.10. In terms of the A12, the demand adjustments have not alleviated the capacity issues shown on the A12 corridor to the west of Woodbridge.

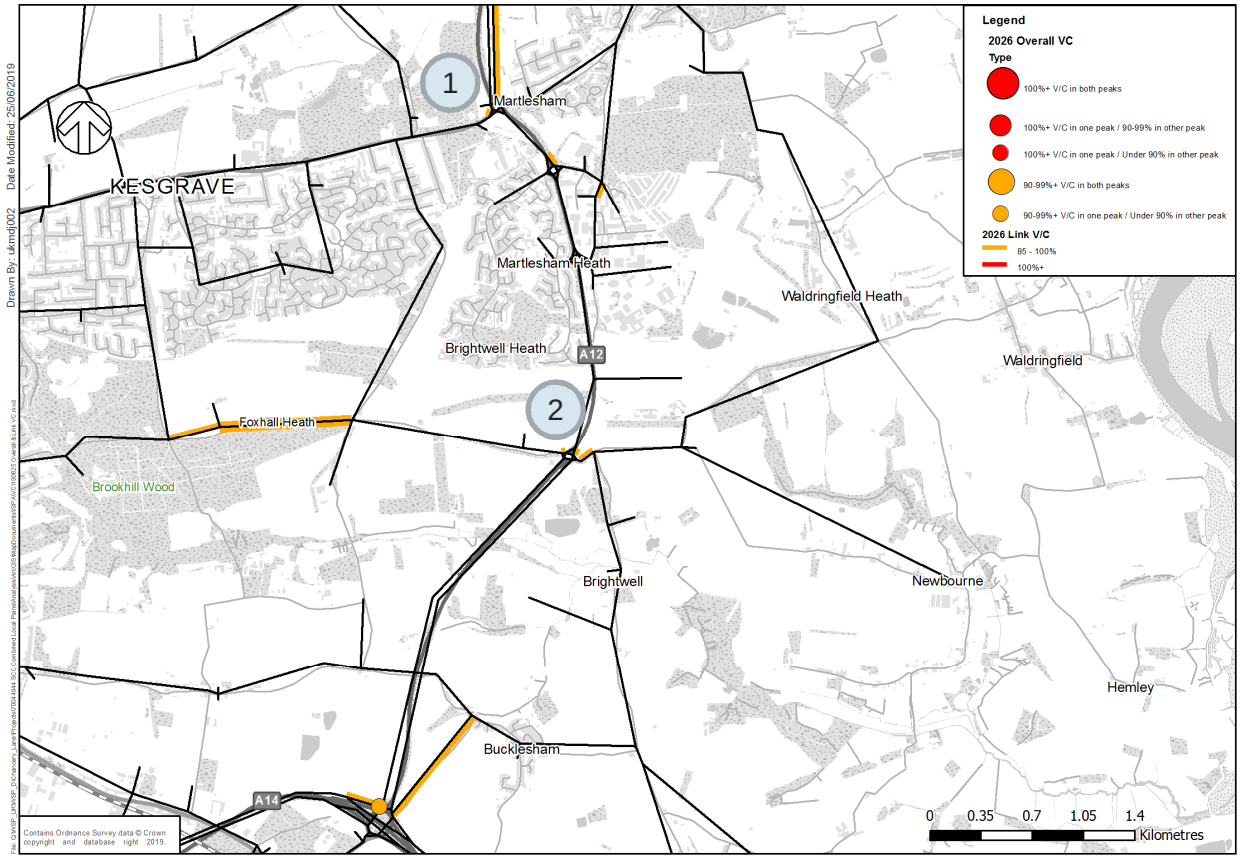
A12 EAST OF IPSWICH

3.8.11. Analysis of the A12 East of Ipswich demonstrates all junctions and links operate within capacity in 2026, as shown in Figure 9. This demonstrates the transport mitigation associated with Brightwell Lakes can accommodate the 2026 Local Plan growth. The following locations are show the highest VC values:

- AM peak
  - A1214 Main Road approach to the A12 / Main Road roundabout reaches 94% V/C (Location 1 in Figure 9
  - Foxhall Road approach to the A12 / Foxhall Road roundabout reaches 93% V/C (Location 2 in Figure 9)

- PM peak
  - A12 southbound approach to the A12 / Main Road roundabout reaches 89% V/C (Location 1 in Figure 9)

Figure 9 – A12 East of Ipswich – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.8.12. Figure 10 shows the V/C performance around the A12 East of Ipswich corridor for 2036. The following junction approaches are shown to be over capacity:

- AM peak
  - A1214 Main Road approach to the A12 / Main Road roundabout reaches 103% V/C (Location 1 in Figure 10
  - Foxhall Road approach to the A12 / Foxhall Road roundabout reaches 103% V/C (Location 2 in Figure 10)
- PM peak
  - Anson Road approach to the A12 / Anson Road / Eagle Way roundabout reaches 103% V/C (Location 3 in Figure 10)

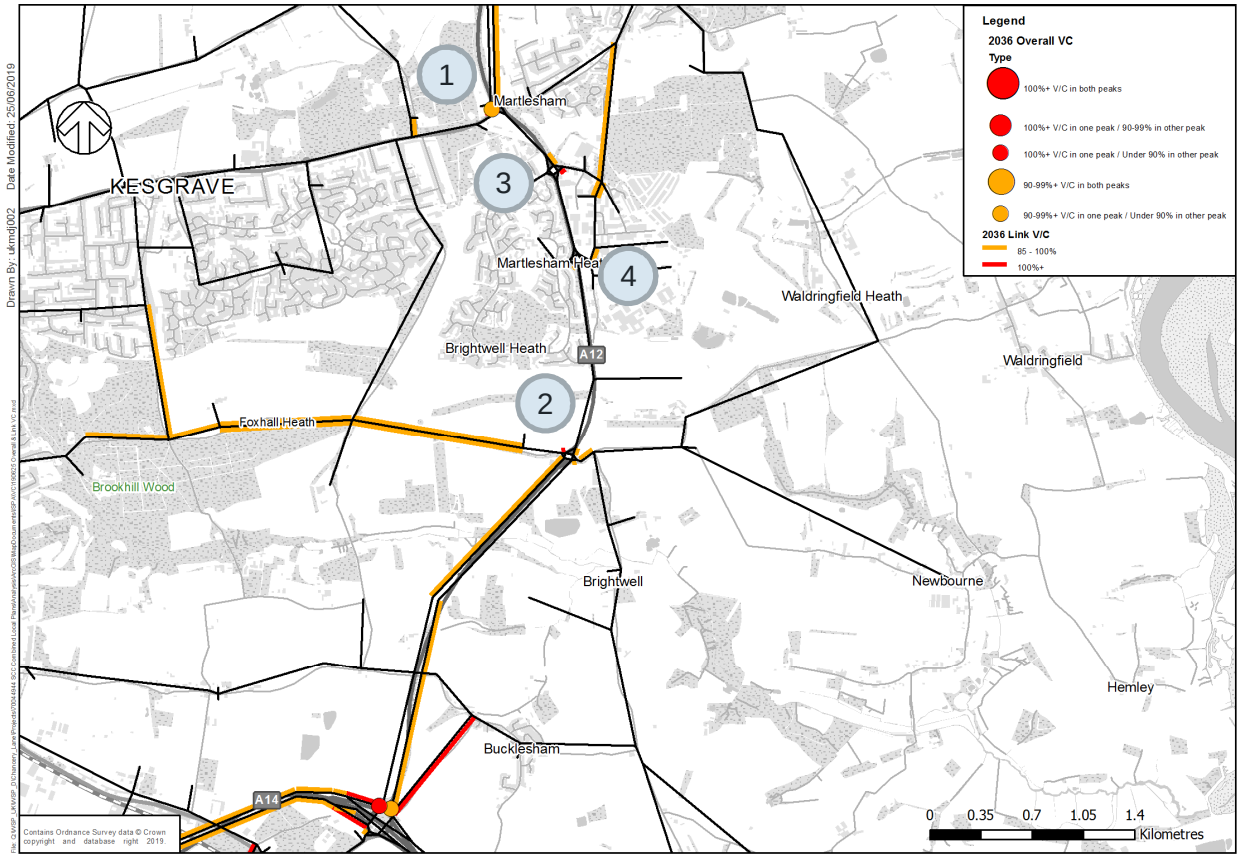
3.8.13. Other locations which are approaching capacity in 2036 are as follows:

- AM peak

- A12 southbound approach to the A12 / Anson Road / Eagle Way roundabout reaches 95% V/C (Location 3 in Figure 10

- PM peak
  - Gloster Road approach to the Gloster Road / Barrack Square junction reaches 96% V/C (Location 4 in Figure 10)
  - A12 southbound approach to the A12 / Main Road roundabout reaches 94% V/C (Location 1 in Figure 10)
  - A12 southbound approach to the A12 / Anson Road / Eagle Way roundabout reaches 89% V/C (Location 3 in Figure 10)
  - A12 southbound approach to the A12 / Foxhall Road roundabout reaches 93% V/C (Location 2 in Figure 10)

Figure 10 – A12 East of Ipswich – 2036 Links and Junctions with V/C 85%+ - With Adjustment

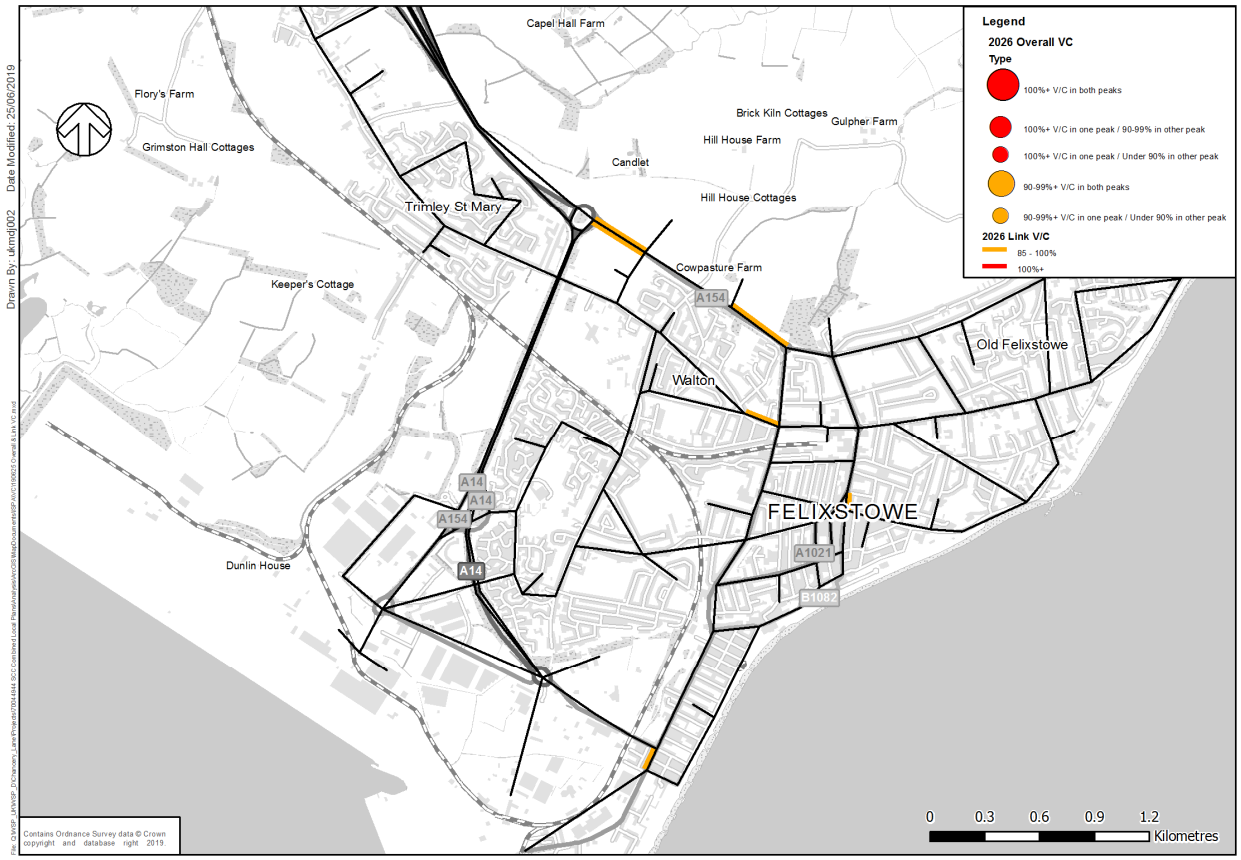


3.8.14. The 2036 modelling results with the demand reduction show a similar pattern of locations which show capacity issues compared to the previous results report. An exception to this is the A12 southbound approach to Seven Hills interchange which were previously reported to be over capacity in the January 2019 report. With the demand adjustment these locations are shown to operate within capacity. The Gloster Road approach to barrack Square also moves from over capacity to under capacity with the demand adjustment.

FELIXSTOWE

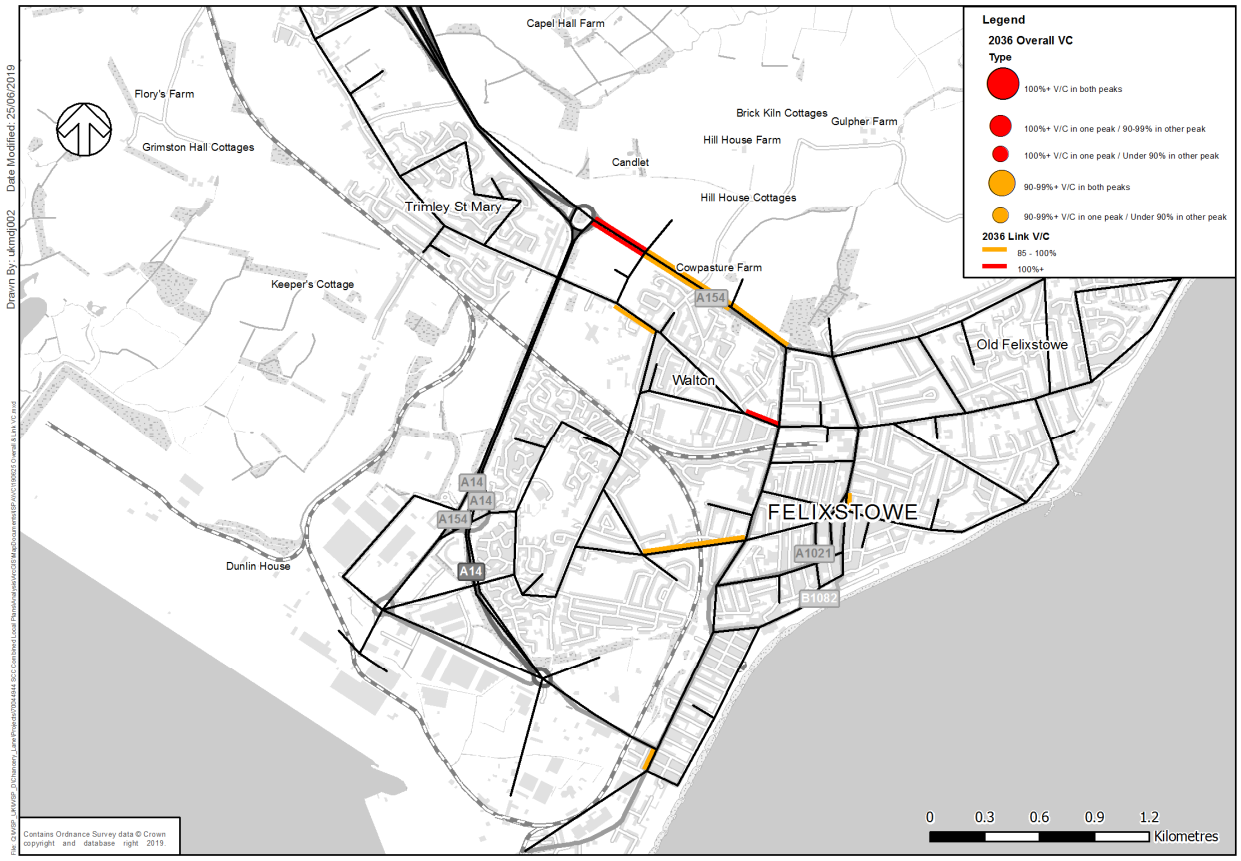
3.8.15. Analysis of link V/C ratios within Felixstowe indicate the A154 route (Candlet Road / Garrison Lane / Langer Road) is approaching or exceeding capacity in AM and PM peak periods in 2026/2036. Figure 11 presents the links approaching capacity within Felixstowe in 2026.

Figure 11 – Felixstowe – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.8.16. Figure 12 shows the over-capacity and close to capacity links within Felixstowe in 2036.

Figure 12 – Felixstowe – 2036 Links and Junctions with V/C 85%+ - With Adjustment



3.8.17. The 2036 modelling results with the demand reduction show there are fewer capacity issues in Felixstowe compared to the Jan 2019 results report. This is due to a combination of changes to the trip generation associated with trip generation associated with North Felixstowe Garden Neighbourhood, and the assumed demand reductions which have been applied based on the classification of Felixstowe as an urban area. The forecast growth in existing traffic patterns in Felixstowe is shown in the ISPA Methodology Report (December 2019) to have been reduced by -14-15%.

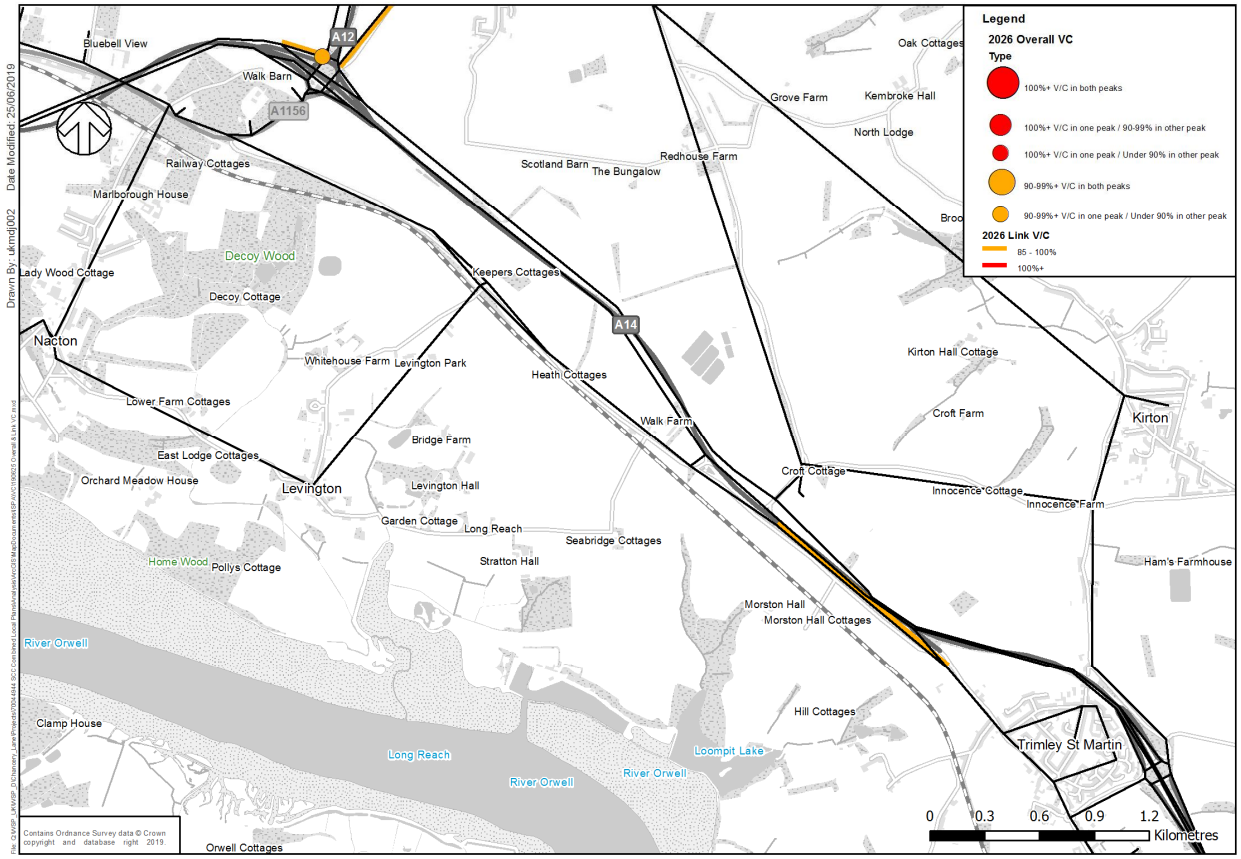
NACTON TO TRIMLEY ST. MARTIN

3.8.18. Junctions near Innocence Farm between Nacton to Trimley St. Martin operate with an overall V/C less than 85%. However, individual movements operate close to capacity;

- AM Peak has all links operating with V/C <85% in 2026/36
- PM Peak
  - The minor road parallel to the A14 is approaching capacity in 2026/2036
  - The Innocence Lane approach to the A14 is approaching capacity in 2036
  - The Street in Nacton is over capacity in 2036
  - The minor Felixstowe Road approach to the A1156 Felixstowe Road junction is nearing capacity in 2036

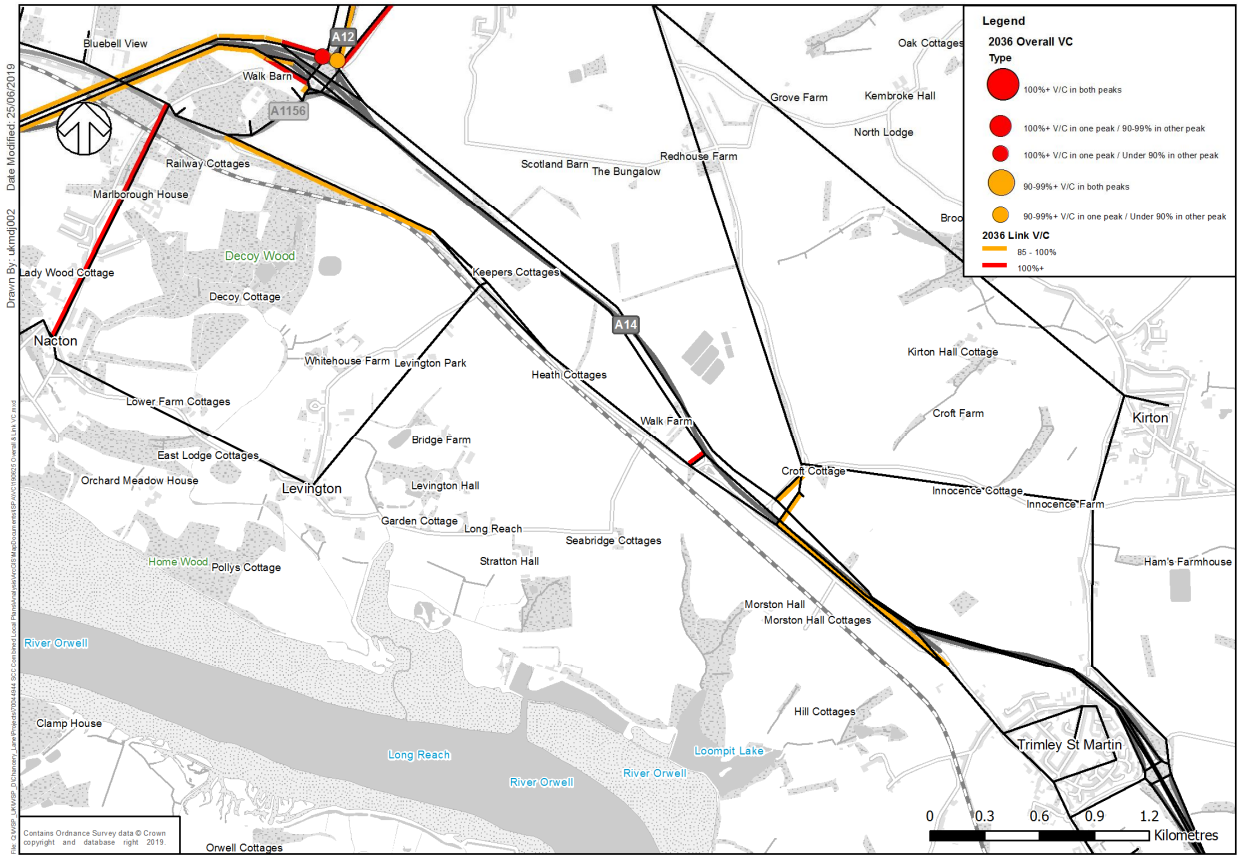
3.8.19. Figure 13 shows the link which is close to capacity adjacent to Innocence Farm in 2026.

Figure 13 – Nacton to Trimley St. Martin – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.8.20. Figure 14 shows the links which are over capacity or close to capacity in 2036. The Street in Nacton is over capacity as a result of congestion on the westbound on-slip at the Nacton Interchange (A14 Junction 57). As a result of this delay traffic opts to re-route away from Ipswich Road / Nacton Road in order to access the A1156 Felixstowe Road.

Figure 14 – Nacton to Trimley St. Martin – 2036 Links and Junctions with V/C 85%+ - With Adjustment



3.8.21. The 2036 modelling results with the demand reduction show a similar pattern level of capacity issues compared to the previous January 2019 report. The main differences are that Innocence Lane is no longer shown as being over capacity on the approach to the left-in / left-out junction onto the A14, and the eastbound route parallel to the A14 to Trimley St. Martin is no longer over capacity. These differences occur because the demand adjustments lessen the cumulative impact.

3.9 IPSWICH RESULTS SUMMARY

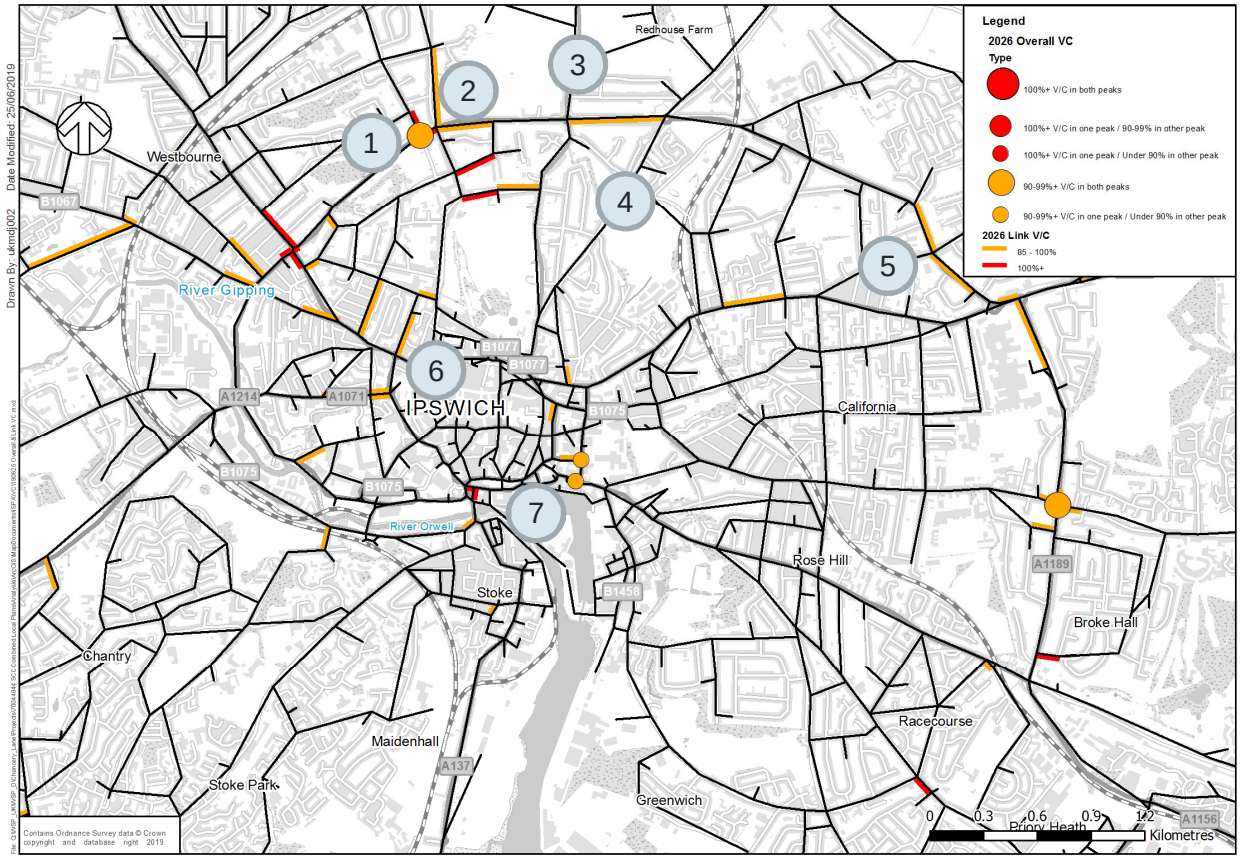
3.9.1. Several of the A1214 corridor junctions operate with an overall V/C greater than 85%.

- A1214 / Dale Hill Lane – approaching capacity in AM/PM peaks in 2036 (Location 1 in Figure 15/Figure 16)
- A1214 / Henley Road –approaching capacity in 2036 AM/PM (Location 2 in Figure 15/Figure 16)
- A1214 / Westerfield Road – approaching capacity in 2036 AM/PM peaks (Location 3 in Figure 15/Figure 16)
- A1214 / Tuddenham Road – approaching capacity in AM peak in 2036 (Location 4 in Figure 15/Figure 16)
- A1214 / Rushmere Road – approaching capacity 2036 AM/PM peaks (Location 5 in Figure 15/Figure 16)

3.9.2. V/C results show congestion in the AM and PM peak on Key Street/College St (Location 7 in Figure 15/Figure 16 and St Helens Street / Old Foundry Road / Crown Street (Location 6 in Figure 15/Figure 16) corridors in Ipswich town centre.

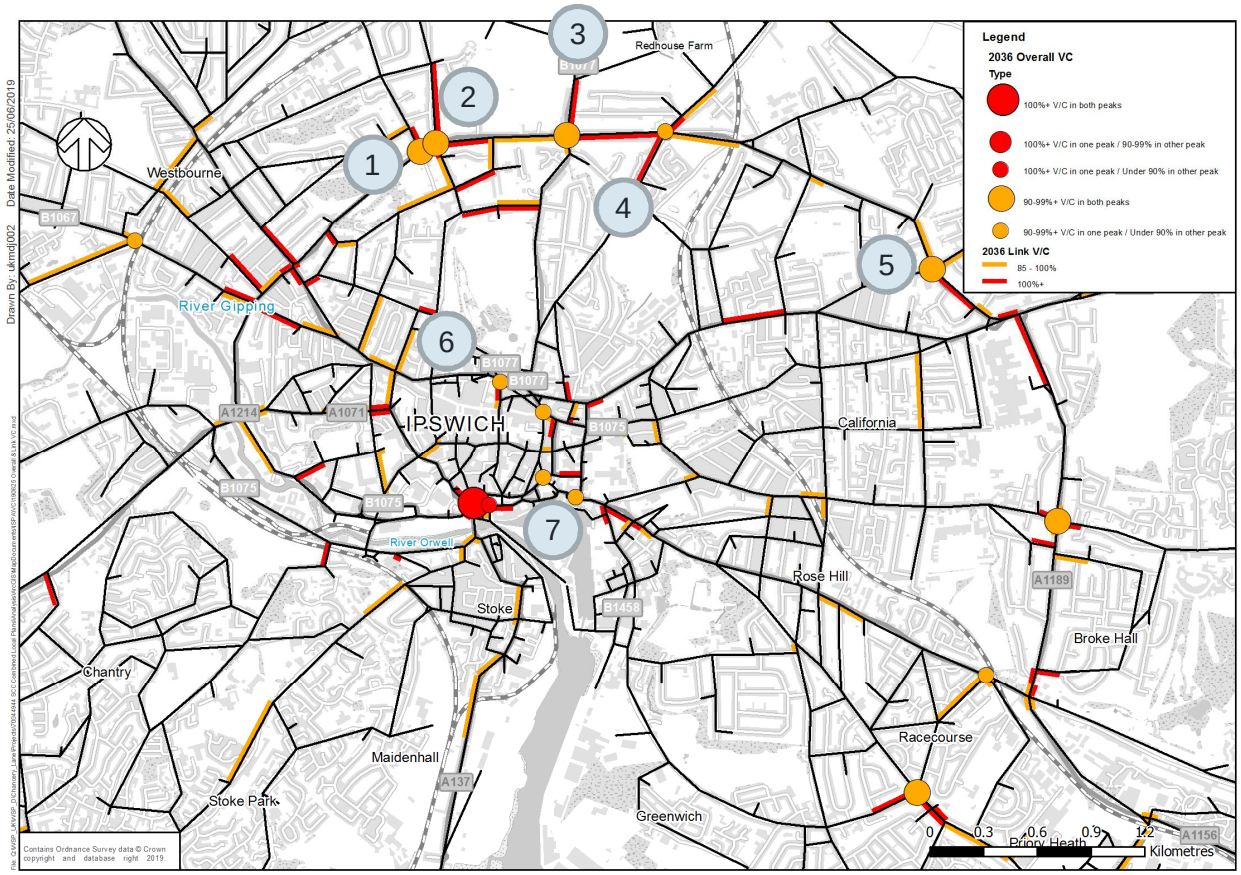
3.9.3. Figure 15 shows the overall junction V/C and link-based V/C above 85% within Ipswich in 2026.

Figure 15 – Ipswich – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.9.4. Figure 16 shows the overall junction V/C and link-based V/C above 85% within Ipswich in 2036.

Figure 16 – Ipswich – 2036 Links and Junctions with V/C 85%+ - With Adjustment



3.9.5. The 2036 modelling results with the demand reduction demonstrate that a total of five junctions (as per Table 17) are no longer flagged as having V/C issues. However, numerous junctions around the A1214 are shown to have capacity issues as per the previous results report. However, the latest modelling shows a fewer number of links which are over capacity compared to the previous modelling.

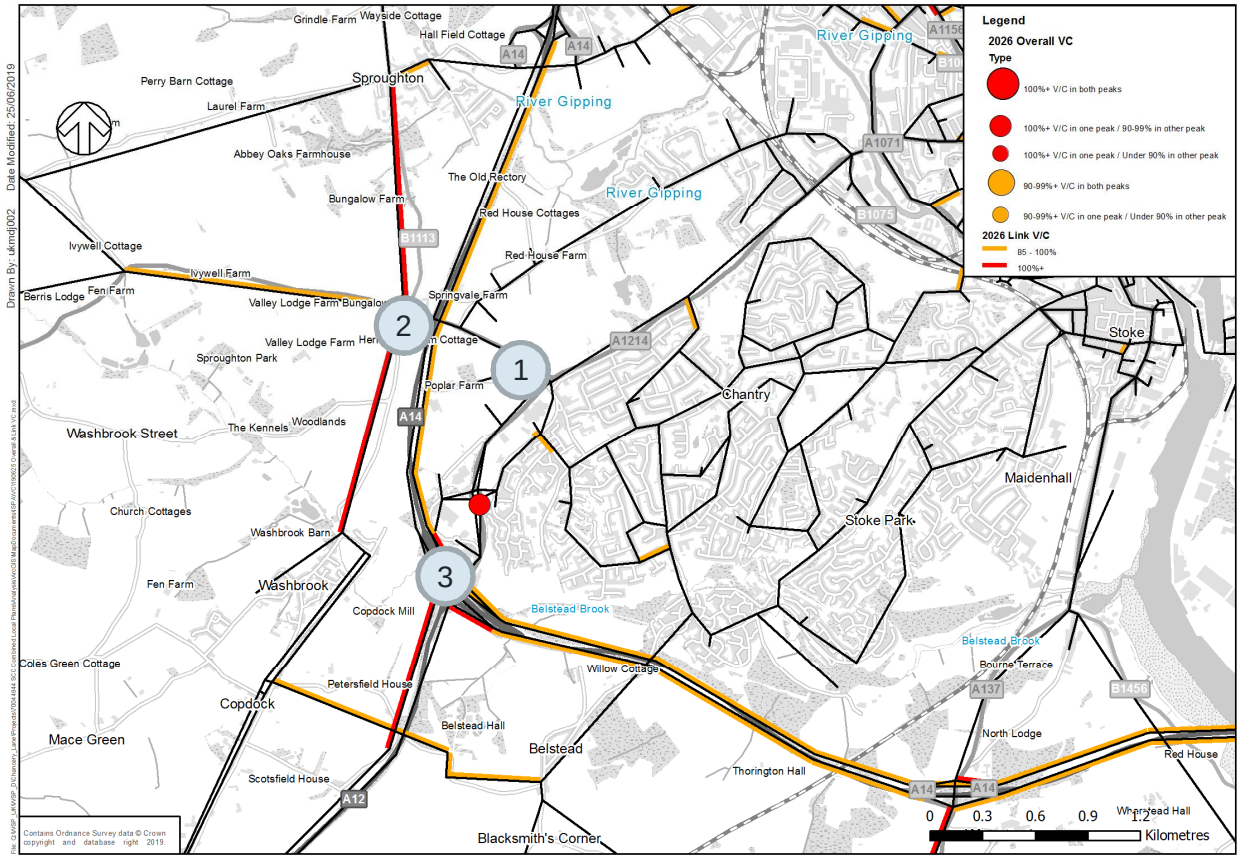
3.10 BABERGH RESULTS SUMMARY

WEST / SOUTH WEST OF IPSWICH

3.10.1. The A1071 is nearing capacity on the west approach to Hadleigh Road in the 2036 PM peak (Location 1 in Figure 17/Figure 18). The A1071 / B1113 (Beagle roundabout) is approaching or over capacity on multiple arms during the AM and PM peak in 2026/36 (Location 2 in Figure 17/Figure 18). Congestion in this area is significantly affected by the increasing delay at the A12 approach to the Copdock Interchange (A14 Junction 55, Location 3 in Figure 17/Figure 18) which does not include any mitigation in the modelling. The high delay on the A12 approach leads to increased pressure on adjacent non-SRN road network as traffic opts to seek alternative routes.

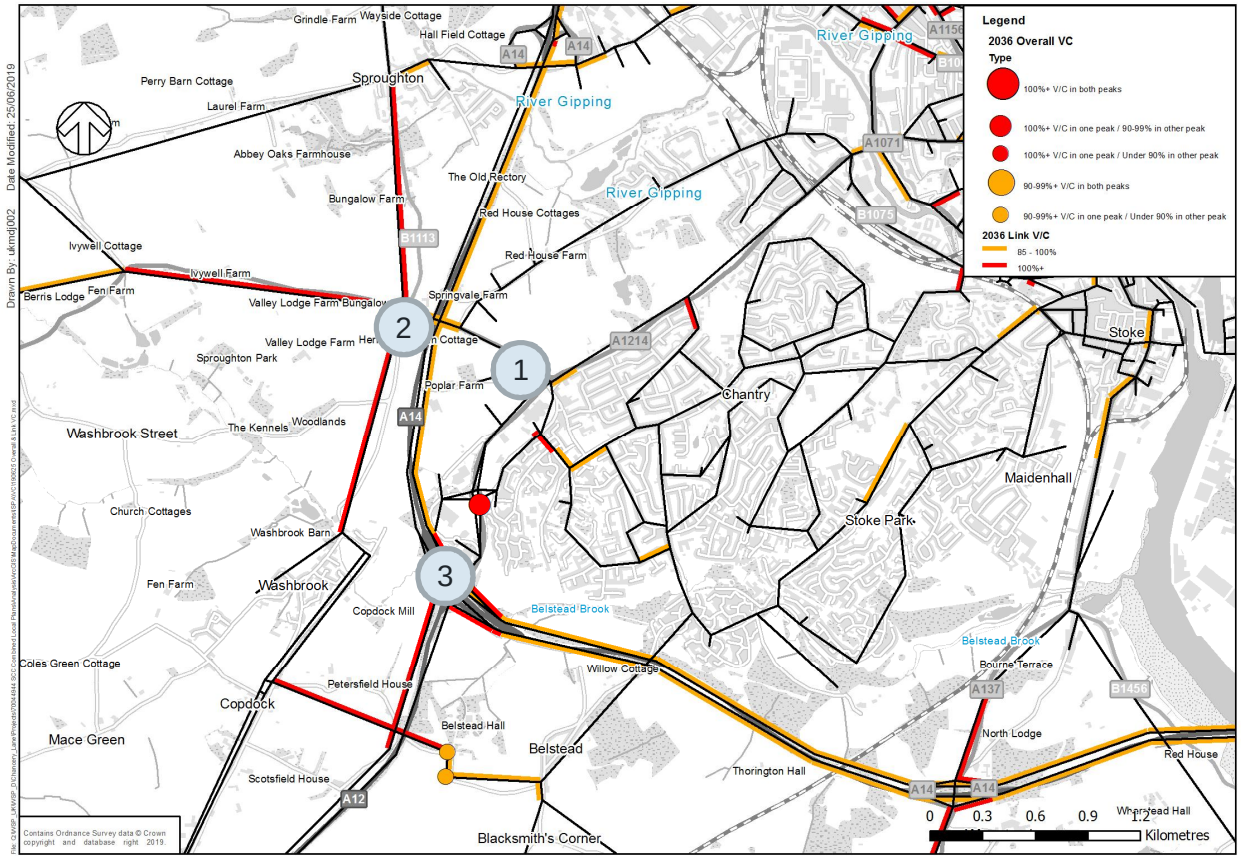
3.10.2. Figure 17 shows the 2026 V/C performance for the west and south-western edge of Ipswich which is within Babergh.

Figure 17 – West / South West of Ipswich – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.10.3. Figure 18 shows the 2026 V/C performance for the west and south-western edge of Ipswich which is within Babergh.

Figure 18 – West / South West of Ipswich – 2036 Links and Junctions with V/C 85%+ - With Adjustment

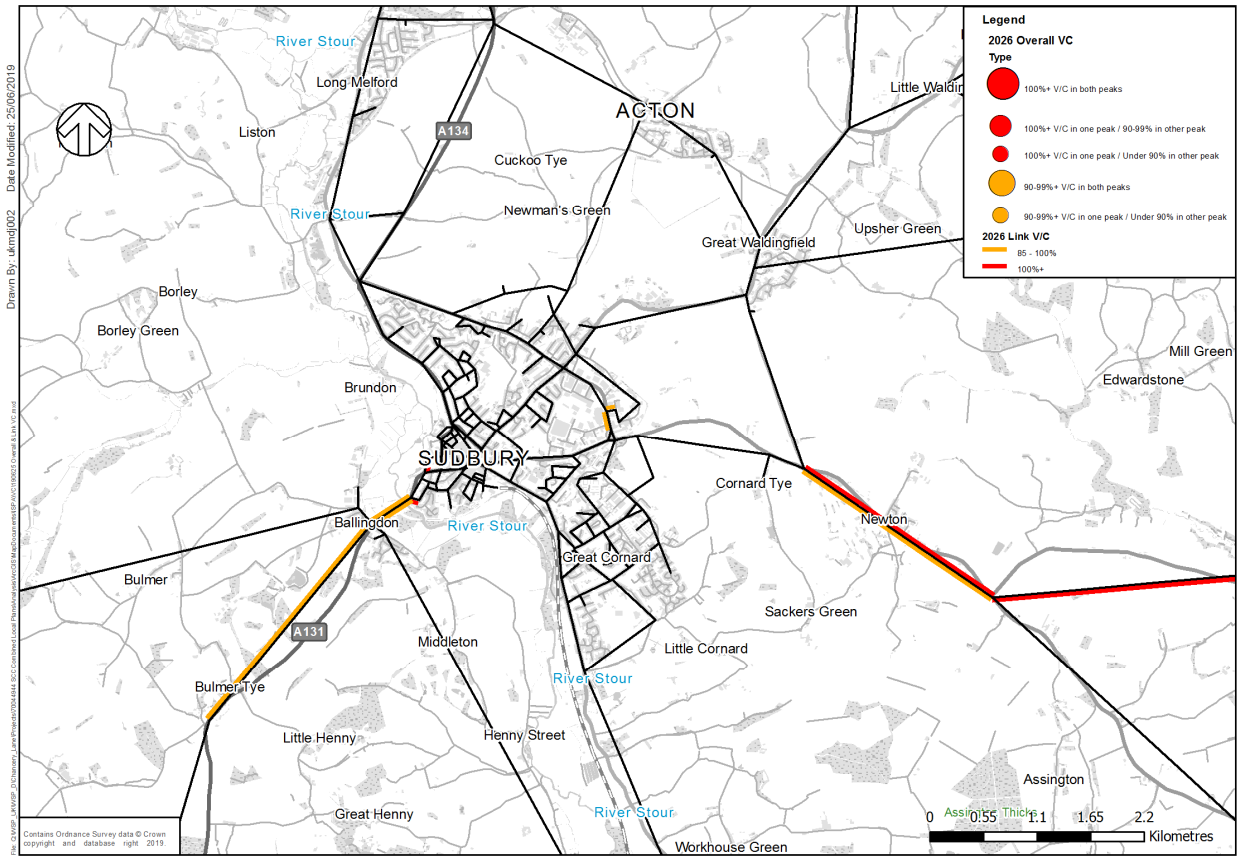


SUDBURY

3.10.4. There is congestion within Sudbury and on the approach routes to Sudbury. The A134 is congested between Valley Road and the A1071 in both directions in AM/PM 2026/36. The A131 is congested between Bulmer Road and the B1115 in both directions in AM/PM 2026/36.

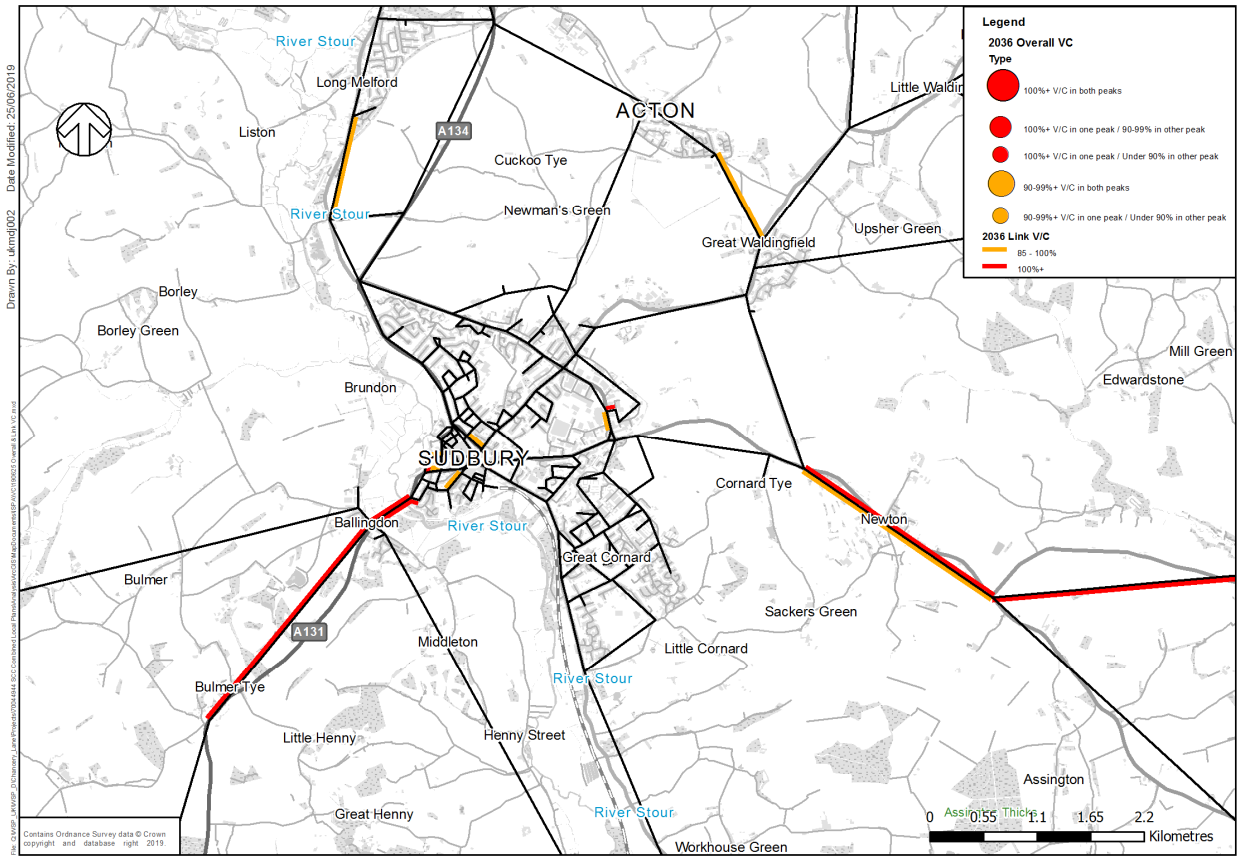
3.10.5. Figure 19 presents the V/C performance for Sudbury in 2026.

Figure 19 – Sudbury – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.10.6. Figure 20 shows the V/C performance for Sudbury in 2036.

Figure 20 – Sudbury – 2036 Links and Junctions with V/C 85%+ - With Adjustment

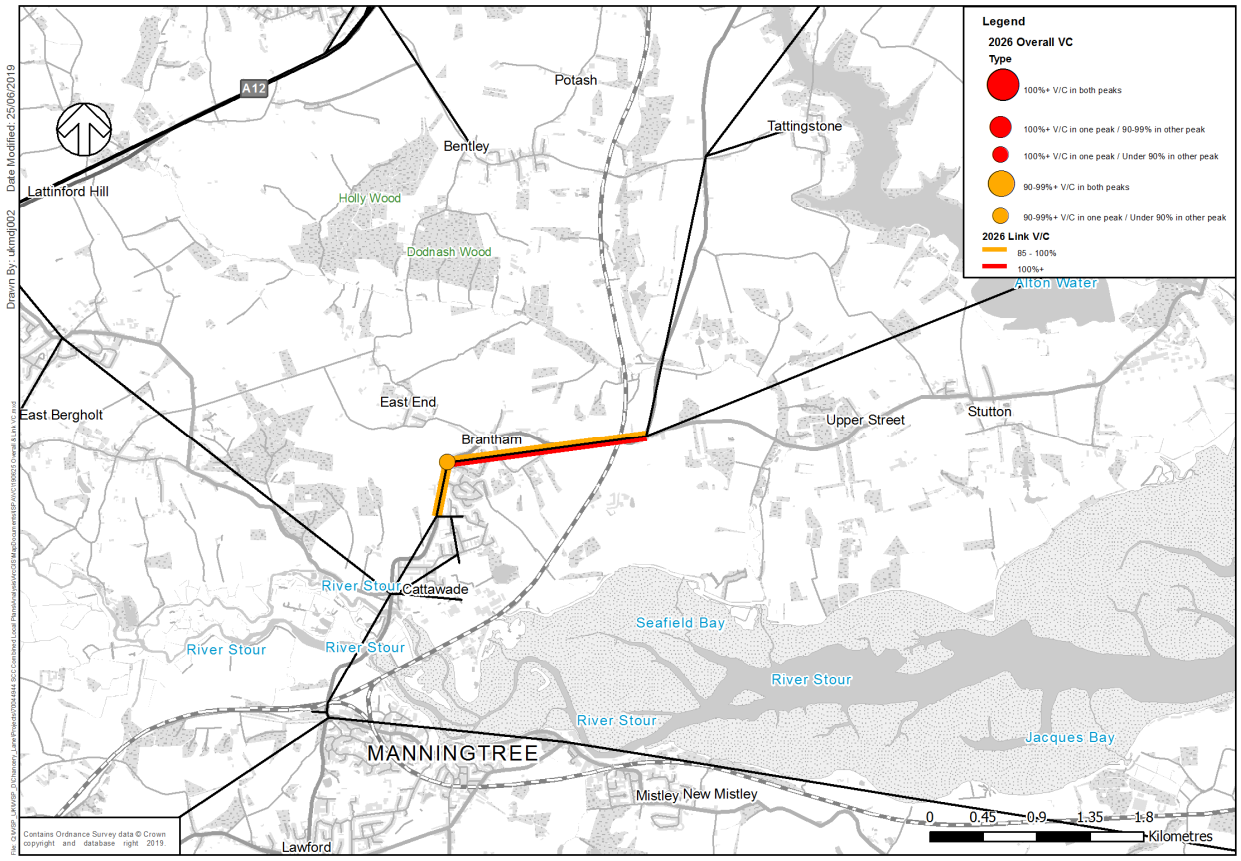


BRANTHAM

3.10.7. The A137 through Brantham is shown to be operating close to and over-capacity in 2026 and 2036. The issues at Brantham are in part to due to a potential lack of model detail at this location given this location is at the edge of the detailed simulation network within the model. There is a significant level of development associated with the Brantham Industrial Estate which has been included at this location.

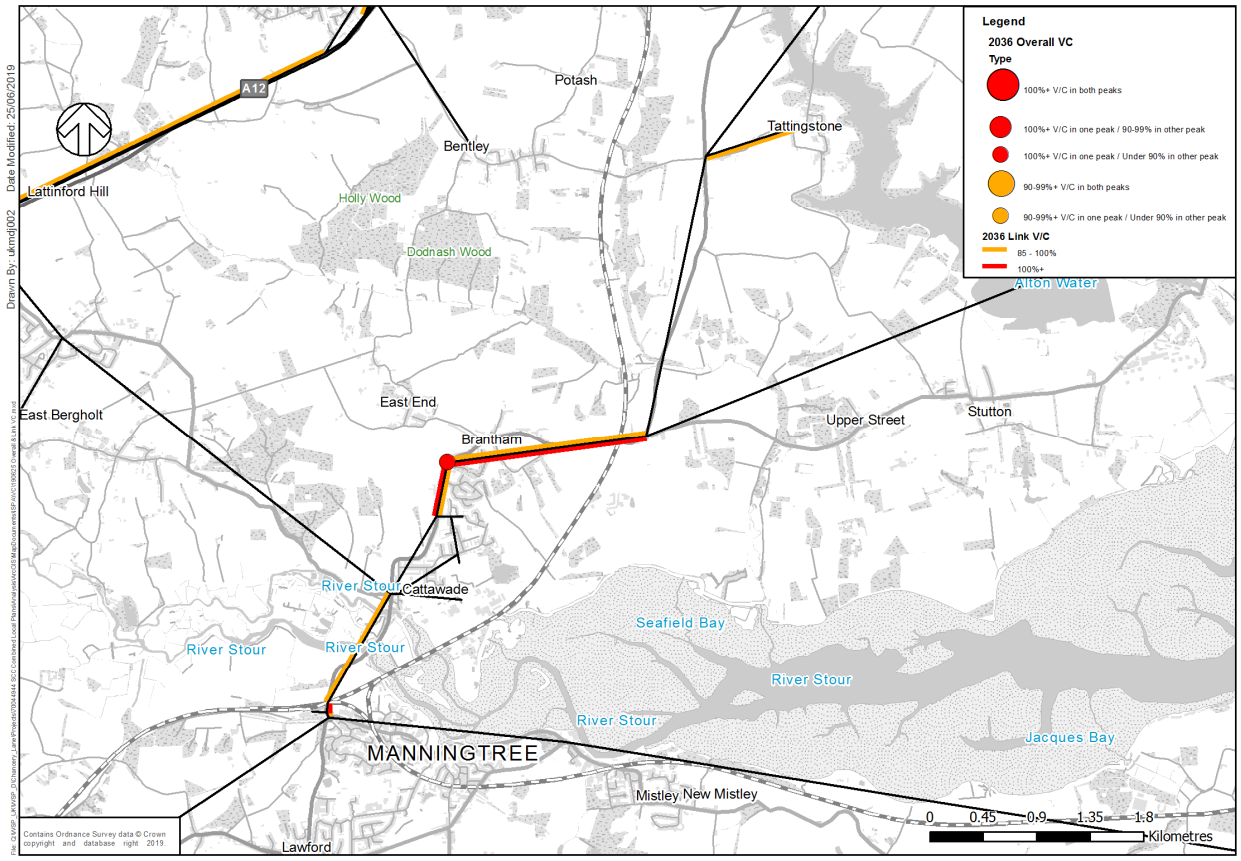
3.10.8. Figure 21 shows V/C performance around Brantham in 2026.

Figure 21 – Brantham – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.10.9. Figure 22 highlights the V/C performance in 2036 around Brantham.

Figure 22 – Brantham – 2036 Links and Junctions with V/C 85%+ - With Adjustment



3.11 MID SUFFOLK RESULTS SUMMARY

A140 CORRIDOR

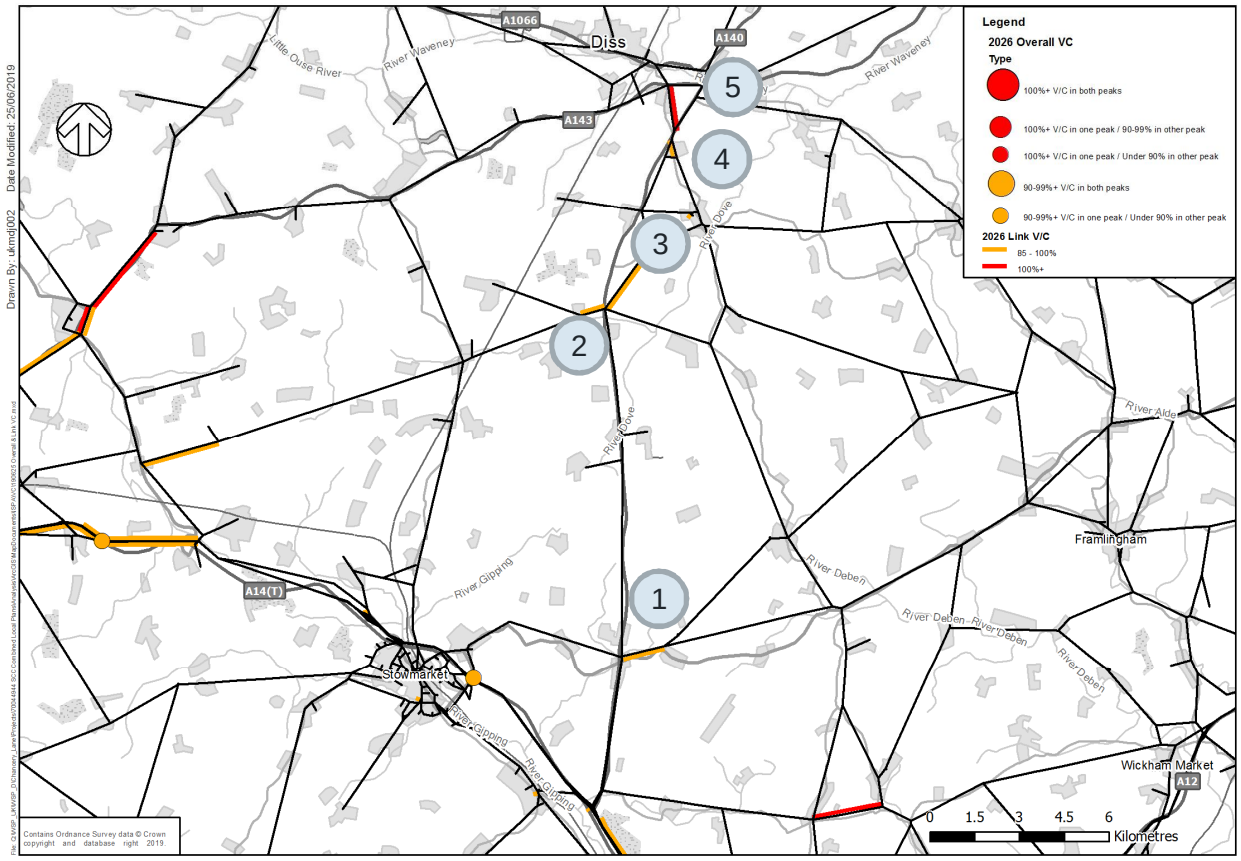
3.11.1. The A140/A1120 Junction is over capacity in the AM and PM peaks periods in 2026/36 (Location 1 in Figure 23/Figure 24).

3.11.2. The A140 / Workhouse Road / Stoke Road north and west approaches are nearing capacity in 2026 AM/PM peaks, and over capacity in 2036 AM/PM peaks (Location 2 in Figure 23/Figure 24).

3.11.3. Several approach roads to the A140 between Workhouse Road and the Scole Bridge are nearing or over capacity in the AM/PM peak in 2026/36 (Location 3 and 4 in Figure 23/Figure 24). The A140 at the Scole Bridge is nearing capacity in 2026 AM peak, and over capacity in 2036 AM Peak (Location 5 in Figure 23/Figure 24).

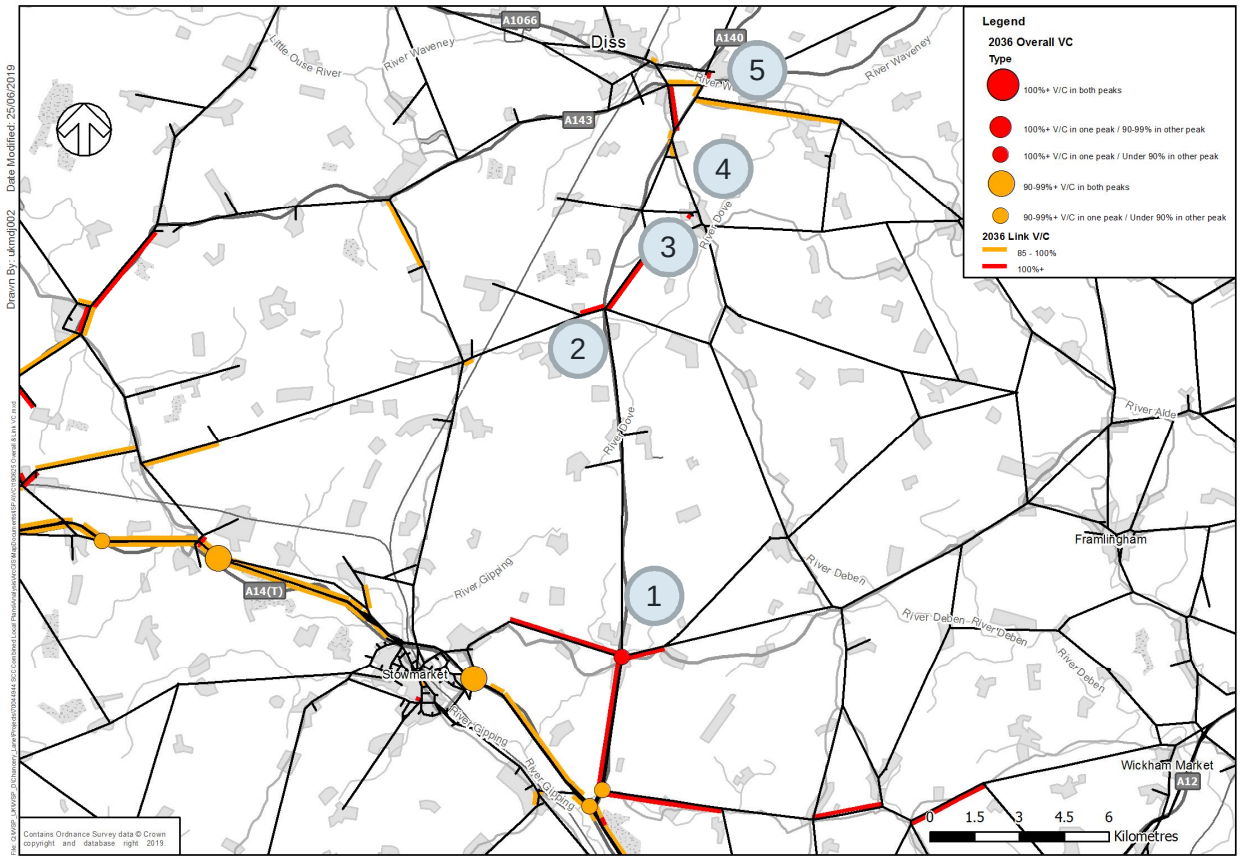
3.11.4. Figure 23 shows the V/C performance along the A140 corridor in 2026.

Figure 23 – A140 Corridor – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.11.5. Figure 24 shows the V/C performance along the A140 corridor in 2036.

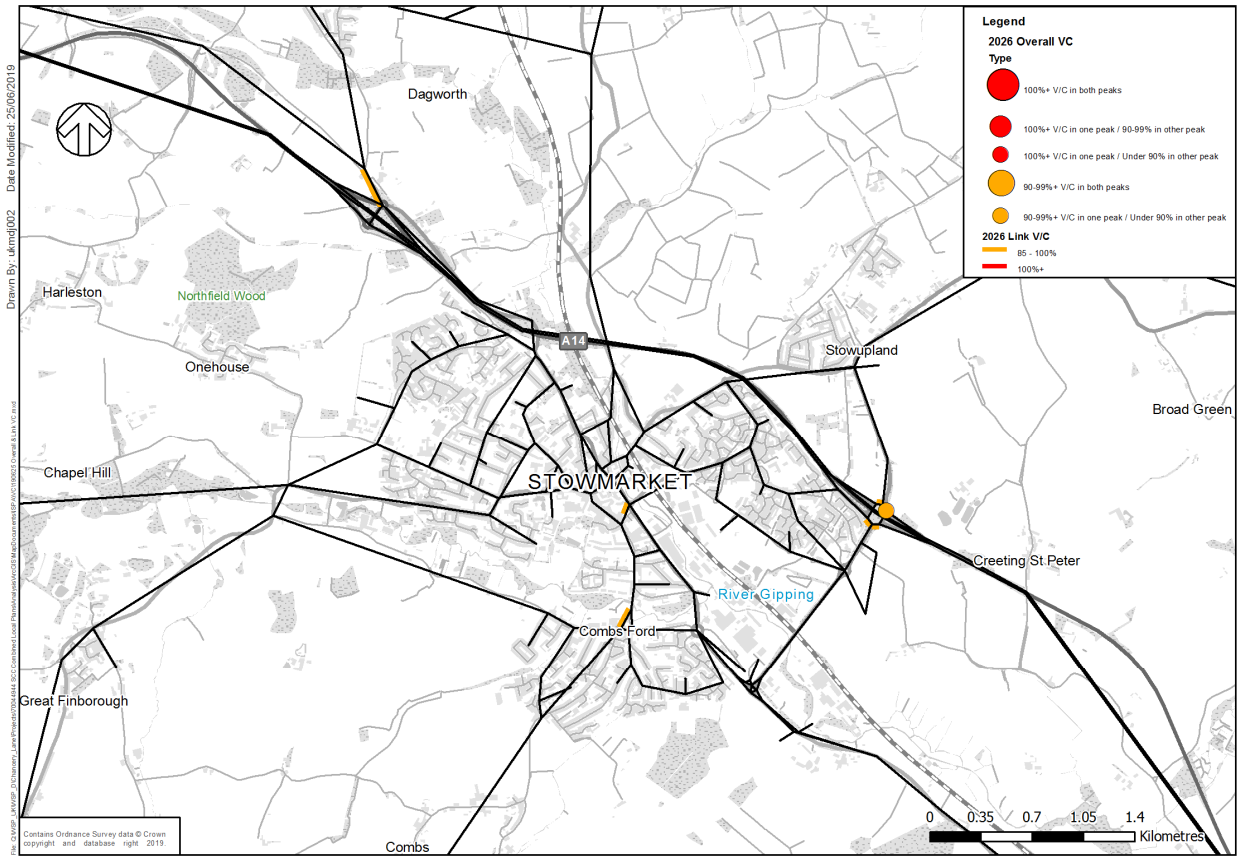
Figure 24 – A140 Corridor – 2036 Links and Junctions with V/C 85%+ - With Adjustment



STOWMARKET

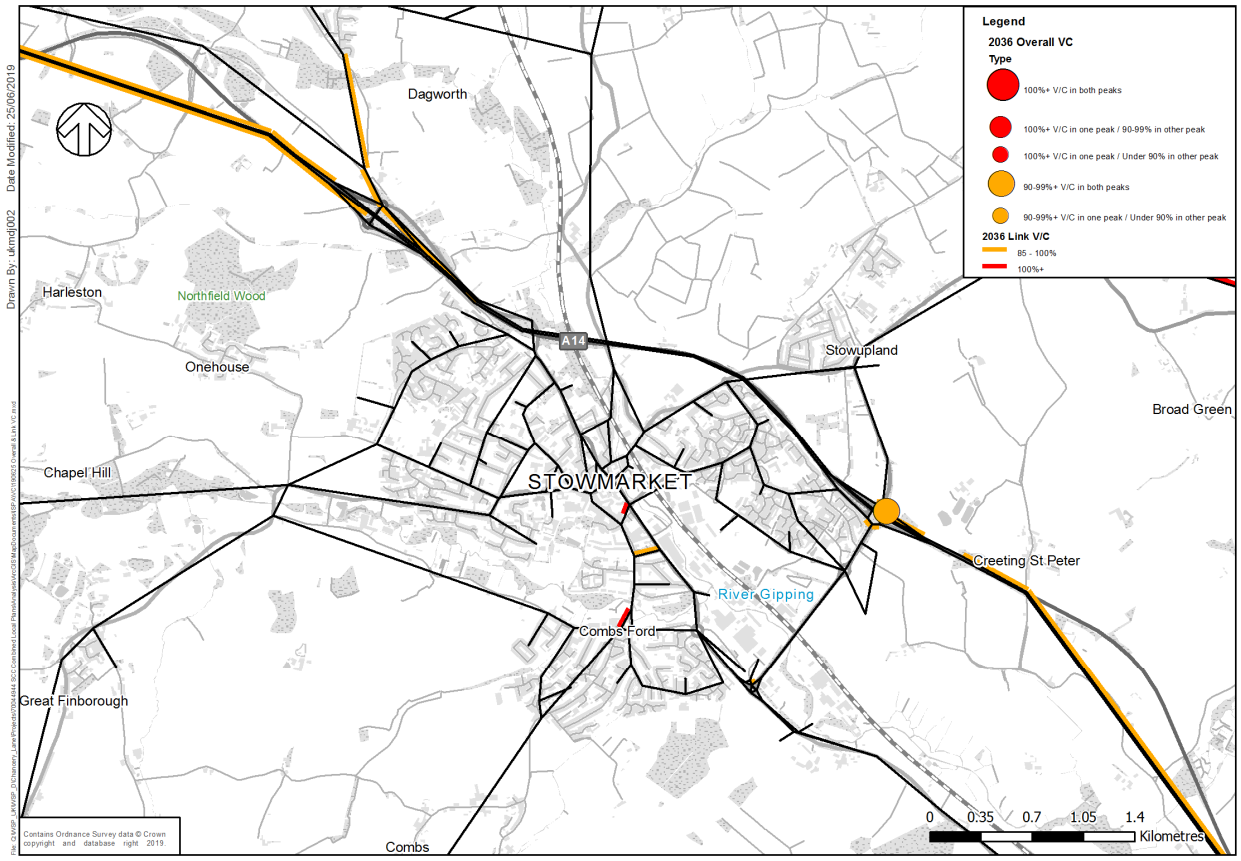
3.11.6. There is localised congestion within Stowmarket in the 2026/36 AM and PM peaks. The north approach of the B1115 / Combs Lane junction is approaching capacity in the 2036 AM peak. The north approach of the Fishponds Way / Tot Hill junction is approaching capacity in the AM peak in 2026. The south approach is approaching capacity in the PM peak in 2026/36. Figure 25 presents the V/C performance in and around Stowmarket in 2026.

Figure 25 – Stowmarket – 2026 Links and Junctions with V/C 85%+ - With Adjustment



3.11.7. Figure 26 shows the V/C performance in and around Stowmarket in 2036.

Figure 26 – Stowmarket – 2036 Links and Junctions with V/C 85%+ - With Adjustment



4

CONCLUSIONS

4 CONCLUSIONS

4.1 INTRODUCTION

4.1.1. WSP have undertaken additional strategic traffic modelling to inform an assessment of the Local Plans for all LPAs within the ISPA. The focus of this report is on the following forecast years:

- 2026; representing an interim forecast year in the middle of the period between the 2016 base year model and the end of the Local Plan period
- 2036; representing the end of the Local Plan period

4.1.2. The SATURN based Highway Assignment Model (HAM) within the Suffolk County Transport Model (SCTM) has been used to assess the forecast growth in housing and jobs. The SCTM has been updated and validated for a base year of 2016 to ensure it provides a suitable basis from which to generate 2026 and 2036 traffic forecasts.

4.1.3. The modelling detailed in this report represents an updated to the modelling reported in January 2019, taking into account revised development assumptions and takes consideration of potential mitigation measures which will reduce the forecast level of increase in car traffic.

4.2 MODEL RUNS AND REPORTING

4.2.1. The following forecast model runs have been considered:

- 2026/36 AM/PM
- 2026/36 AM/PM with demand adjustments

4.2.2. The methodology underpinning the forecast modelling is detailed within the following reports:

- MR7 SCTM Methodology Report (December 2019)
- MR1 SCTM Methodology Report v2 (January 2019)
- ISPA Local Plan Modelling Methodology Report (August 2019)

4.2.3. The model runs have been developed to assess the highway impacts of the preferred option for Babergh, Ipswich, Mid Suffolk and Suffolk Coastal[9].

4.2.4. Demand adjustments have been made to both 2026 and 2036 forecasts representing a targeted modal shift away from private car travel. The model assignments including the demand adjustment are the focus of the results within this report.

[9] Suffolk Coastal represents the area of East Suffolk Council formerly covered by Suffolk Coastal District Council

4.3 SUFFOLK COASTAL MODELLING RESULTS

4.3.1. The demand adjustments are not shown to make a significant change to the conclusions in relation to Saxmundham. The B1121 / Chantry Road signals, particularly the eastern approach to this junction, though by 2036 the Chantry Road arm continues to show a capacity issue.

4.3.2. Melton shows issues at the signalised crossroads (B1438 / A1152) has approaches which are over-capacity in both 2026 and 2036. The junction overall operates within capacity in 2026 and 2036. The demand reductions reduce the capacity issues at this junction, but the same approaches to the junction continue to be shown to be over capacity.

4.3.3. The demand adjustments do not alleviate the issues on the A12 corridor to the west of Woodbridge. This location is shown to have capacity issues at both the A12 / B1079 and A12 / A1152 roundabouts in both 2026 and 2036, with southbound approaches from the A12 going over-capacity. The A12 / B1438 roundabout has overall capacity issues in 2036. The single carriageway section of the A12 is shown to be approaching capacity in both 2026 and 2036.

4.3.4. Analysis of the A12 corridor to the east of Ipswich shows the network operates within capacity in 2026, demonstrating the mitigation associated with Brightwell Lakes can accommodate the Local Plan growth. However, the A1214 Main Road and Foxhall Road are approaching capacity. In 2036, specific approaches to junctions along the A12 corridor are over capacity, with the A12 itself nearing capacity in the PM peak at the A1214 Main Road, Anson Road/Eagle Way and Foxhall Road roundabouts.

4.3.5. The majority of locations within Felixstowe are shown to operate within capacity in 2026 and 2036. Compared to the previous modelling reported in January 2019, there are fewer capacity issues in Felixstowe which is a combination of the reduction of traffic generation associated with North Felixstowe Garden Neighbourhood and the demand adjustments. Candlet Road and approaches along Garrison Lane continue to be shown as nearing capacity in both forecast years. The Candlet Road approach to the A14 Dockspur roundabout is shown to be over-capacity in 2036.

4.3.6. Access links to / from the A14 adjacent to Innocence Farm are shown to operate within capacity in 2026 but are over capacity or reaching capacity in 2036. The overbridge included as part of the access strategy for this development is shown to be nearing capacity in the southbound direction in 2036. The demand adjustment model runs show fewer capacity issues at this location because of reduced capacity issues at the Seven Hills interchange (A14 Junction 58).

4.4 IPSWICH MODELLING RESULTS

4.4.1. Ipswich is highlighted as the location which benefits the most from the ISPA demand adjustments which have been applied. Ipswich experiences the highest proportional decrease in PCU Delay hours and reduction of junctions which show overall V/C issues.

4.4.2. Despite the significant benefits of the demand reductions, there are still various junction approaches along the A1214 corridor around Ipswich are shown to be over or close to capacity in both 2026 and 2036. Junctions in and around the Star Lane gyratory are shown to have capacity issues in both forecast years. Other junctions which show overall capacity issues include Nacton Road / Landseer Road and the St Augustine roundabout (Bucklesham Road / Felixstowe Road).

4.5 BABERGH MODELLING RESULTS

4.5.1. To the west and south-west of Ipswich, the Beagle roundabout (A1071 / B1113 / Swan Hill) is shown to have overall capacity issues, with multiple arms over-capacity in both 2026 and 2036. The A1071 / Hadleigh Road signalised junction is highlighted as having capacity issues in both forecast years. The congestion in this area is heavily influenced by delays at the A14 J55 Copdock Interchange which is not included in the modelling detailed within this report. Delays on the A12 approach, as well as the slip road approaches, is very significant which leads to traffic to use alternative routes to avoid this delay, increasing pressure on the surrounding SCC highway network.

4.5.2. Sudbury is shown to generally operate within capacity within the town itself in both forecast years. The southern A131 approach to / from Sudbury and A134 / A1071 junction shows capacity issues in both forecast years, going over capacity in 2036.

4.5.3. Brantham is shown to have capacity issues in both forecast years, with the A137 over capacity in both forecast years. This is in part due to the level of network detail within the model as well as the high level of development associated with Brantham Industrial Estate.

4.6 MID SUFFOLK MODELLING RESULTS

4.6.1. The A140 corridor is shown to have capacity issues at multiple locations including the A140 / A1120 staggered crossroads and A140 / Workhouse Road / Stoke Road junction.

4.6.2. Stowmarket is shown to generally operate within capacity in both forecast years, though isolated link approaches to Gipping Way and Ipswich Road are shown to have capacity issues in both forecast years.

4.7 SUMMARY

4.7.1. The modelling detailed within this report is considered to be a robust basis which enables each of the LPAs to be able to test the transport impacts of the proposed housing and job growth within their respective emerging Local Plans.

4.7.2. The modelling detailed in this report represents preferred options for Babergh, Ipswich, Mid Suffolk and Suffolk Coastal. The modelling tasks account of demand adjustments based on assumptions on the propensity for a shift away from private car travel within locations within the ISPA boundary. The results have been presented to identify key junctions and links where overall V/C is shown to approach or go over capacity.

4.7.3. This assessment is considered a robust assessment of the cumulative impact of proposed housing and job growth within the Local Plans for the ISPA authorities. progress within each of the LPAs and the impact of specific allocations or mitigation tested using the strategic model where appropriate.

Appendix A

V/C GIS FIGURES (WITHOUT ADJUSTMENT)

Appendix B

NODE BASED V/C SUMMARY TABLES

Appendix C

LINK BASED V/C SUMMARY TABLES

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