



Sevenoaks Local Plan
Local Plan Tests Report

July 2026

Sevenoaks District Council
SDC

Document history and status

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Sevenoaks Local Plan

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Limitation Statement

The sole purpose of this report is to describe the processes by which 2042 Sevenoaks Local Plan Tests have been carried out using the Sevenoaks Local Transport Model. It should be noted that this report has been prepared for use of Sevenoaks District Council (SDC) and should be read in full with no excerpts out of context deemed to be representative of the report and its findings as a whole. This report has been prepared exclusively for Jacobs and Jacobs' end client (SDC) and no liability is accepted for any use or reliance on the report by third parties.

Several of the figures within this report have been generated in the PTV VISUM software using OpenStreetMap® open source data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF). The data is available under the ODbL. For more information see:

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1. Introduction

1.1 Background

Sevenoaks District Council (SDC) is undertaking a Local Plan Review (LPR) for the district to address the latest Government standard methodology for calculating authorities' future housing numbers and extend the Plan period to at least 2042.

The current Sevenoaks District Core Strategy was adopted in 2011 and provides for the housing, employment and retail development needed for 2011-2026. The annual housing requirement will increase from the current Local Plan figure to up to approximately 1,164 homes/year from 2027 to 2042.

SDC needs to consider, and consult on, reasonable, alternative options for meeting housing and other development needs. As part of this process, SDC commissioned Jacobs to undertake transport modelling to gather evidence on the transport implications of the emerging draft LPR options.

The overall project objectives are to:

1. Assess the quality and capacity of transport infrastructure across the district and its ability to meet forecast demands – this can be developed through the traffic modelling proposed here.
2. Assess the cumulative impacts of the LP development options on the district's transport network – this can be developed through the traffic modelling proposed here.
3. Identify proposals and potential measures to mitigate the impacts of development to inform the infrastructure requirements associated with the LP. This should include, but is not limited to:
 - a. Identification of potential measures to enable and achieve higher levels of sustainable transport mode share across the district.
 - b. Identification of the potential barriers to the utilisation of sustainable transport modes across the district.
 - c. Identification of potential intervention measures on the transport network

The Sevenoaks Local Transport Model has been checked and enhanced using available data to prepare it for developing forecast scenarios and undertaking spatial assessments. More information can be found in the local base model report¹.

1.2 Purpose of this Document

This Report outlines the assumptions, approach, and results of developing the Local Plan Tests. This aims to understand the likely impacts of the local plan development's traffic on the network.

Flow difference plots, junction level of service, link volume / capacity ratio and journey time comparison were extracted from the transport models to identify key junctions and links issues.

It should be noted that this report has been submitted in draft form and is subject to review by Kent County Council (KCC) and National Highways (NH). Further revisions may be required in the final version, depending on feedback received from both parties.

¹ Stage 2 Tonbridge and Malling and Sevenoaks - Local Model Validation Report v2.docx

1.3 Document Structure

Following this introduction, the structure of this report is as follows:

- **Chapter 2** – provides an overview of the methodology and assumptions;
- **Chapter 3** – provides an overview of the Local Plan Options;
- **Chapter 4** – presents the forecast results and analysis;
- **Chapter 5** – provides a summary and recommendations.

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2. General Methodology and Assumptions

The overall methodology and assumptions used to develop the Local Plan tests follow the one for the Forecast Baseline and are summarised below. More details can be found in the *Reg19 Sevenoaks 2042 Forecast Baseline Report (DRAFT)*.

- **Uncertainty Log and Background Growth** - Table 1 below presents the assumptions used in developing the future demand for the Local Plan options. These were consistent with the Forecast Baseline, and the only difference is the addition of the demand from Local Plan developments.

Table 1 Sevenoaks – 2042 Local Plan Uncertainty Log and Background Growth Assumptions

Area	Assumptions
Sevenoaks	2042 Local Plan – Forecast Baseline + Local Plan Developments
Neighbouring Authorities (Tonbridge and Malling, Tunbridge Wells, Gravesham, Dartford, East Sussex, Surrey and Southeast London)	As the growth assumptions used in the Forecast Baseline. TEMPro (with adjustment of the default Housing and Job assumptions to match updated housing need/LP targets where known). Committed development (and potentially larger LP sites close to District boundary) agreed on a case-by-case basis (and subtracted from TEMPro v8 to avoid double-counting).
Other Areas	As the growth assumptions used in the Forecast Baseline. TEMPro v8 growth was applied.

- **Goods Vehicle Growth** – As the Forecast Baseline. National Road Traffic Projections (NRTP) 2022 published by DfT for Southeast of England LGV and HGV was used. NRTP22 scenario 1 is the reference case based on central projections for GDP (OBR), for fuel prices and for population (ONS).
- **Trip Generation** – The trip rates extracted from TRICs for the Forecast Baseline were used to calculate the vehicular trips of the local plan developments for the AM and PM peaks. Details of the local plan trip generation is presented in Appendix A.
- **Trip Distribution** - Base donor zone with similar land use in the vicinity of the new development was used to get a similar origin and destination information for each development to distribute vehicle trips around the network.
- **Forecast Network Development** – The 2042 Forecast Baseline network was used as starting point. More details are presented in the Section 3 for the network changes applied in Scenario 2.

3. 2042 Local Plan Scenarios

3.1 2042 Local Plan

The 2042 Sevenoaks Forecast Baseline was used as a starting point to develop the 2042 Local Plan. This includes the local plan developments provided by SDC. The locations of these developments are presented in Figure 1 to Figure 4. These local plan sites are modelled in addition to the committed developments included in the Forecast Baseline.

The origin and destination (departures and arrivals) trips for each development for the AM and PM peak were calculated using the trip rates extracted from TRICs for the 2042 Sevenoaks Forecast Baseline.

Base donor zone in the location of the new development has been used to get a similar origin and destination trip distribution pattern. This process has been done for each development to distribute vehicle trips around the network.

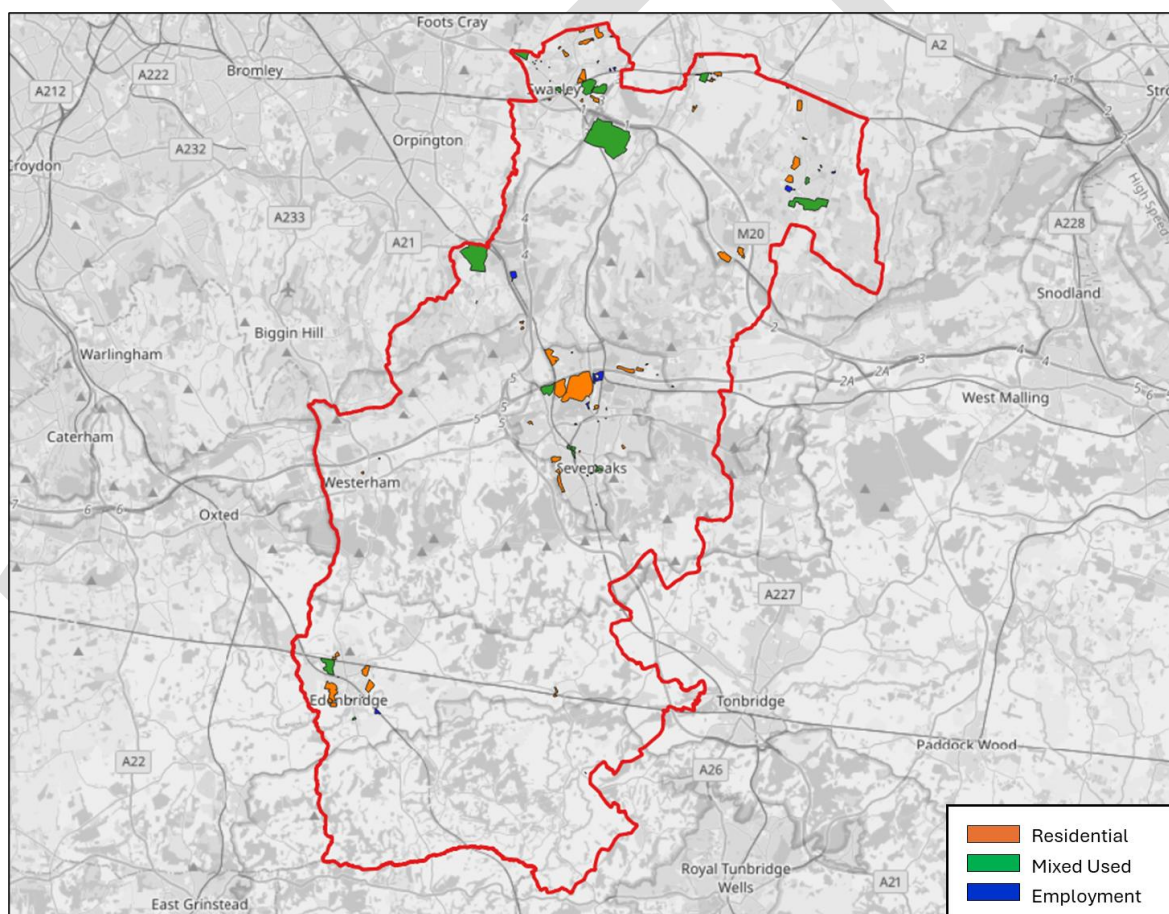


Figure 1 Location of Local Plan Developments – Sevenoaks District

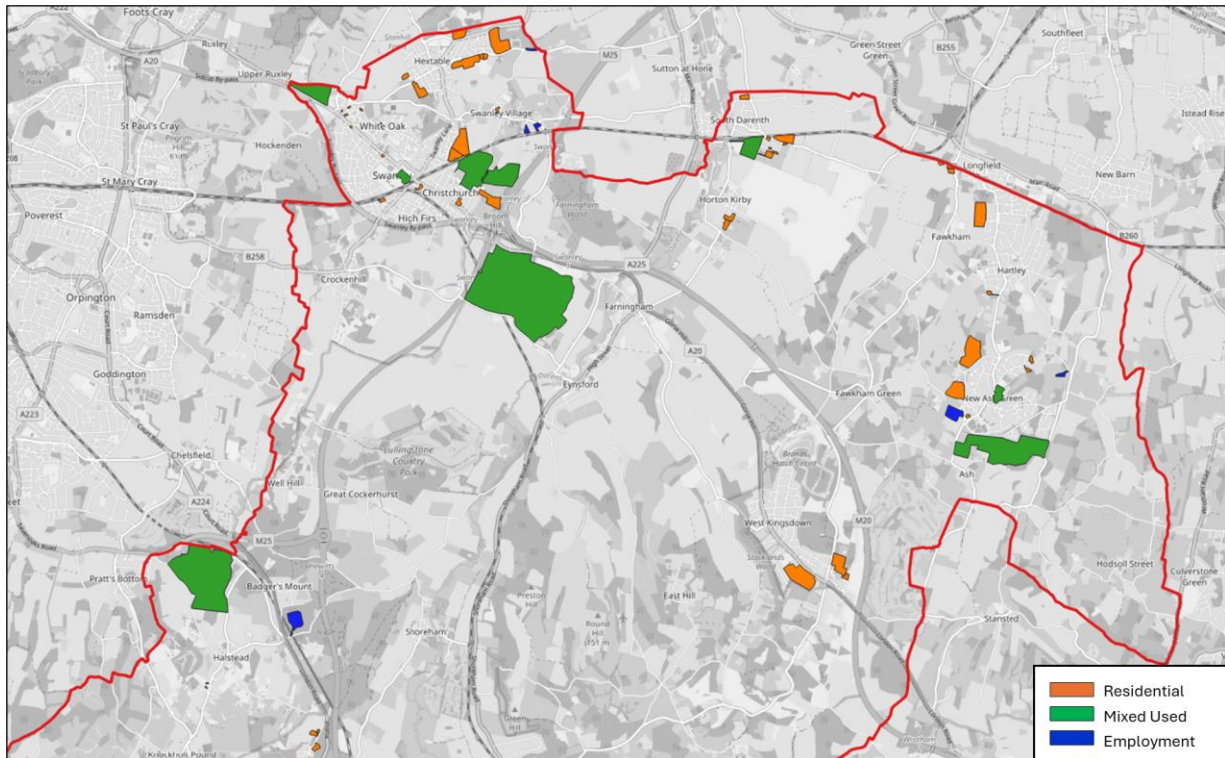


Figure 2 Location of Local Plan Developments – Swanley, Eynsford, New Ash Green and Halstead

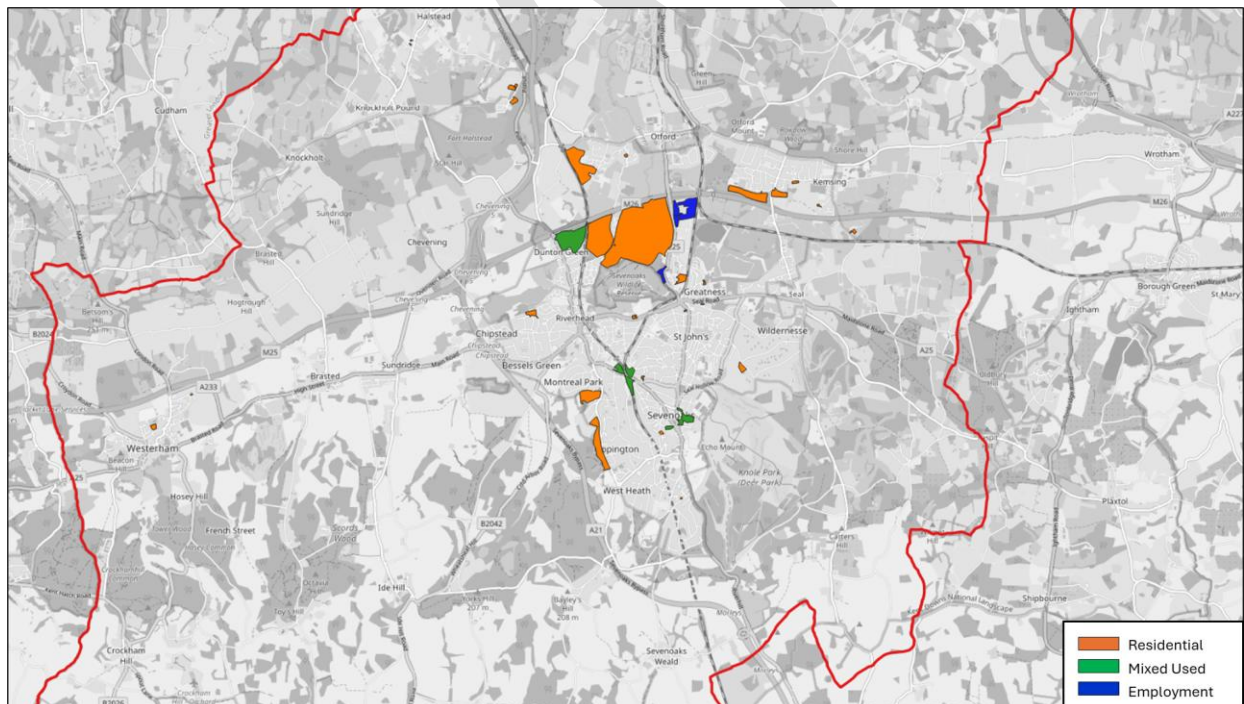


Figure 3 Location of Local Plan Developments – Sevenoaks and Otford

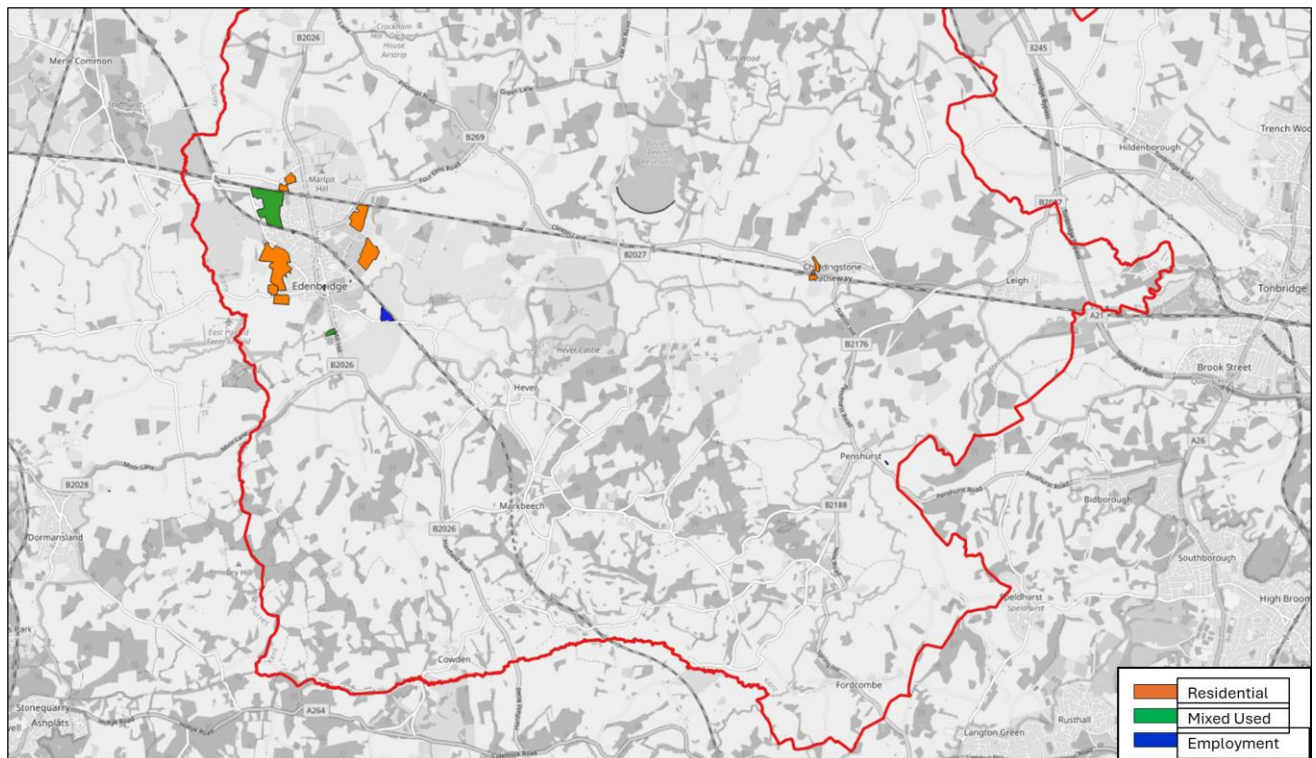


Figure 4 Location of Local Plan Developments – Edenbridge

3.2 M25 J3 Pedham Place Development Improvement Scheme

The Pedham Place development led improvement scheme at M25 J3 was also incorporated in 2042 Local Plan scenario. Figure 5 and Figure 6 show the network changes provided by the developer's consultant. The improvements include widening the roundabout and approaches to increase capacity. It should be noted that this is not a National Highways proposal. It was included in the transport modelling as part of the local plan scheme.

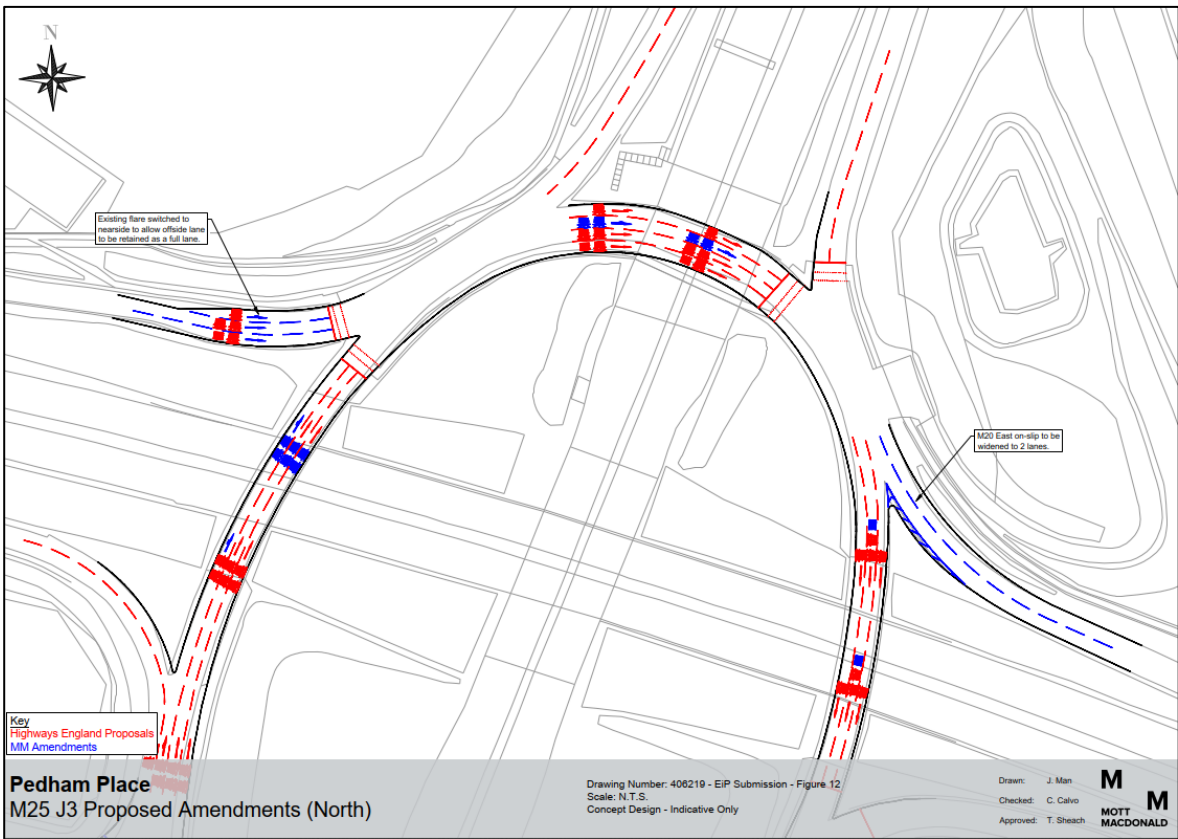


Figure 5 Local Plan Scheme at M25 J3 (North)

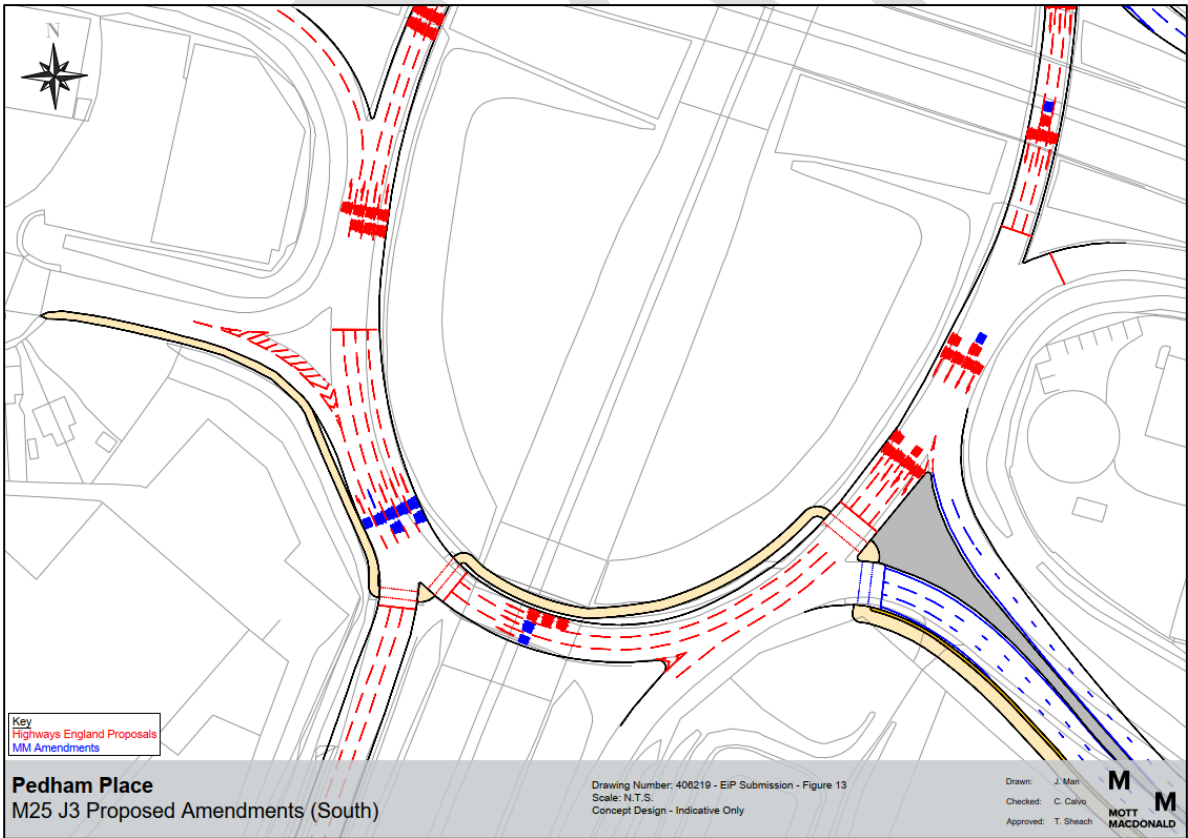


Figure 6 Local Plan Scheme at M25 J3 (South)

3.3 Summary of Dwelling Units

Table 2 below presents the estimated dwelling units considered for the 2042 Local Plan scenario.

Table 2 Summary of Dwelling Units

2042 Local Plan Scenario	
Completed Developments (from 2019)	2,509
Extant Permissions	3,878
Windfall Sites	949
Proposed Site Allocation	12,348
Total (excluding completed developments)	17,211

3.4 2042 Local Plan + Modal Shift

This scenario is consistent with the 2042 Local Plan baseline but incorporates modal shift factors applied to selected Local Plan sites.

As part of the Local Plan evidence base, a separate site assessment was undertaken to evaluate the potential for modal shift across individual sites. This assessment considered the characteristics of each site, including accessibility to sustainable transport modes, existing infrastructure, and opportunities to encourage non-car travel behaviours.

The assessment was structured in two stages. The first stage involved a high-level screening to identify sites with potential for modal shift based on existing conditions. The second stage comprised a more detailed appraisal, taking into account planned and proposed interventions to support sustainable travel.

A standalone report was prepared to document this assessment, providing a detailed methodology, assumptions, and findings for each site. However, a summary of the methodology and results is included below.

Stage 1 Assessment – Existing Conditions

In this stage, each cluster of sites is assessed against existing infrastructure within its vicinity (400m or 800m walking distance, depending on the metric). This includes:

- Rail stations
- Bus stations
- Frequent bus routes (more than 2 services per hour per direction)
- Cycling infrastructure (high-quality route provision), including NCN Routes 1 and 174

- Key destinations, such as:
 - GP surgeries / hospitals
 - Schools
 - Sports centres
 - Shops / supermarkets / town centres
 - Economic centres
 - Colleges

The outcome of this assessment is a **Red, Amber, or Green** rating:

- **Red** – Clusters that are likely to be predominantly car-oriented
- **Amber** – Clusters with some potential for mode shift (i.e. a proportion of trips could move away from car use)
- **Green** – Clusters in well-connected locations with viable alternatives to private car use (e.g. sites adjacent to a rail station)

Stage 2 Assessment – Potential / Proposed Conditions

In this stage, each cluster is evaluated against relevant planned or proposed transport measures. These may include:

- LCWIP routes
- Internalisation (where there is potential for strong interaction between housing and employment sites, both existing and proposed)
- Other transport measures proposed within the borough

The outcome is again a **Red, Amber, or Green** rating for future conditions.

Key principle:

- The Stage 2 rating for any cluster will not be worse than its Stage 1 rating.
- For example, an Amber cluster may remain Amber if proposed measures are not expected to significantly influence mode share or improve to Green if they are considered impactful. However, it cannot downgrade to Red.

Application to modelling:

- Stage 2 results inform potential reductions in car trip rates.
- Where a cluster improves between stages:
 - Red → Amber or Amber → Green: apply a percentage reduction factor
- Where a cluster remains the same:

- Red → Red or Green → Green: no reduction factor is applied
 - Exception: some Green → Green clusters may be classified as “improved” where strong existing conditions (e.g. proximity to a rail station) are further enhanced by proposed measures; in these cases, reduction factors may still be applied
- In summary, each site falls into one of the categories shown in Table 3 based on Stage 1 and Stage 2 outcomes. A 5% reduction is applied where sites improve to the Amber tier, and a 10% reduction where sites improve to the Green tier. These reduction factors are considered a robust assumption at this stage, based on the scale and nature of the proposed measures.

Table 3: Site Assessment Tiers

Stage 1 result	Stage 2 result	Result: Improved or stayed the same	Reduction % to apply
Red – car dependent / low potential for modal shift	Red	Stayed the same	N/A
	Amber	Improved	5%
	Green	Improved	10%
Amber – some potential for modal shift	Amber	Stayed the same	N/A
	Green	Improved	10%
Green – high potential for modal shift	Green	Stayed the same	N/A
	Green	Improved	10%

Based on this assessment, the reduction factors have been applied to the trip ends of the following sites listed in Table 4. The full site assessment will be documented in a separate Mode Share Strategy Report.

Table 4: List of Sites with Reduction Factors

Ref	Developments	Cluster name	Stage 1 Assessment - Existing conditions	Stage 2 Assessment - Future conditions	Improved in Stage 2?	Reduction % to apply
GT/25/00001	Goss Hill Lodge, Clement Street, Hextable	Swanley N	Red	Amber	Improved	5%
HO/21/00092	Garages, Conifer Way	Swanley N				5%
HO/21/00096	Meadow View (aka Fen's Farm), Top	Swanley N				5%

Ref	Developments	Cluster name	Stage 1 Assessment - Existing conditions	Stage 2 Assessment - Future conditions	Improved in Stage 2?	Reduction % to apply
	Dartford Road, Hextable					
HO/21/00135	Land west of College Cottages, Hextable	Swanley N				5%
HO/21/00217	Land adjacent Puddledock Lane, Top Dartford Road, Hextable	Swanley N				5%
HO/21/00223	Land south of Lower Road, Hextable	Swanley N				5%
HO/21/00275/B	Former Oasis Academy, 37 Egerton Avenue, Hextable	Swanley N				5%
HO/24/00015	Land to the east of Egerton Avenue, Hextable	Swanley N				5%
HO/25/00016	Land adjacent 72 Lower Road, Hextable	Swanley N				5%
HO/25/00025	Land at 70 Lower Road, Hextable	Swanley N				5%
MX/26/00004	Land north of Maidstone Road, Swanley	Swanley N				5%
SsM04	Gulf Petrol Station off London Road	Swanley N				5%
SW003	Garages off Russett Way	Swanley N				5%
SW015	Garages south of Alder Way	Swanley N				5%
SW019	Garages north of Conifer Way	Swanley N				5%
H1(m)	Bevan Place	Swanley C	Amber	Green	Improved	10%
H2(a)	Swanley Centre	Swanley C				10%
HO/25/00036	Media House, Azalea Drive, Swanley	Swanley C				10%

Ref	Developments	Cluster name	Stage 1 Assessment - Existing conditions	Stage 2 Assessment - Future conditions	Improved in Stage 2?	Reduction % to apply
SsM06	Whiteoak Garage off London Road	Swanley C				10%
EM/21/00003	Lower Daltons Nursery, Swanley Village	Swanley W	Red	Amber	Improved	5%
GT/24/00001	Park Lane Farm, Park Lane, Swanley Village	Swanley W				5%
H1(h)	Bus Garage, Kingdom Hall	Swanley W				5%
HO/21/00148	Old Forge Yard, Swanley Village Road, Swanley Village	Swanley W				5%
HO/21/00165	Land north of Beechenlea Lane, Swanley	Swanley W				5%
HO/21/00227	Land at Lullingstone Avenue, Swanley	Swanley W				5%
MX/21/00042	Parkwood Hall Co-operative Academy, Beechenlea Lane, Swanley	Swanley W				5%
MX/25/00011	Land north of Moultain Hill, Swanley	Swanley W				5%
HO/21/00024	The Cottage and associated land, Holmesdale Road, South Darenth	South Darenth	Red	Amber	Improved	5%
HO/21/00094	Land at Oakview Stud Farm, Lombard Street, Horton Kirby	South Darenth				5%
HO/21/00097	The Stables at Oakview Stud Farm, Lombard Street, Horton Kirby	South Darenth				5%

Ref	Developments	Cluster name	Stage 1 Assessment - Existing conditions	Stage 2 Assessment - Future conditions	Improved in Stage 2?	Reduction % to apply
HO/21/00170	Land east of Gorringe Avenue, Southdowns	South Darenth				5%
HO/21/00171	Land north of Gorringe Avenue, Southdowns	South Darenth				5%
HO/21/00172	Land north of Rabbits Road, South Darenth	South Darenth				5%
HO/21/00173	Land south of Prince Charles Avenue, Southdowns, South Darenth	South Darenth				5%
HO/21/00175	Land south of garages, Prince Charles Avenue, Southdowns, South Darenth	South Darenth				5%
HO/21/00176	Land south of Victoria Drive, Southdowns, South Darenth	South Darenth				5%
MX/21/00013	Land at Horton Road, South Darenth	South Darenth				5%
HO/25/00063/B	Land adjacent to Little Mote, High Street, Eynsford	Eynsford	Red	Amber	Improved	5%
MX/21/00044	Land at Pedham Place	Eynsford				5%
GT/21/00004	Station Court, Knockholt Road	Halstead NW	Red	Amber	Improved	5%
MX/21/00047	Broke Hill Golf Course, Halstead, Sevenoaks	Halstead NW				5%
EM/21/00007	Land at Bartram Farm and adjacent to Vestry Estate	Dunton Green W	Red	Amber	Improved	5%
EM/25/00001	Land at old Otford Road and Vestry Trading Estate	Dunton Green W				5%

Ref	Developments	Cluster name	Stage 1 Assessment - Existing conditions	Stage 2 Assessment - Future conditions	Improved in Stage 2?	Reduction % to apply
HO/21/00289	Land east of London Road, Dunton Green, Sevenoaks	Dunton Green W	Amber	Green	Improved	5%
HO/25/00012	Land north of Sevenoaks, west of Otford Road	Dunton Green W				5%
HO/21/00059	Abacus Furniture, Farm Road Garages	Bat & Ball				10%
HO/21/00287	Land at Cramptons Road, Sevenoaks	Bat & Ball				10%
MX/21/00039	109-119 St Johns Hill, Sevenoaks	Bat & Ball				10%
SE03	Garages off Hillingdon Avenue	Bat & Ball				10%
ST02	DG Autos off Bradbourne Vale Road	Bat & Ball				10%
H1(g)	Delivery & Post Office / BT Exchange, South Park	Sevenoaks C	Amber	Green	Improved	10%
HO/21/00003	Pinetops, 5 Crownfields	Sevenoaks C				10%
HO/21/00076	9 Clare Way, Sevenoaks	Sevenoaks C				10%
HO/21/00273	Land rear of Bowerwood House, 15 St Botolphs Road	Sevenoaks C				10%
HO/24/00001	Land north of Barnett Field, Blackhall Lane, Sevenoaks	Sevenoaks C				10%
HO/25/00042	Land west of Brittain's Lane, Sevenoaks	Sevenoaks C				10%
MX/21/00036	Sevenoaks Station and Car Park, Morewood Close	Sevenoaks C				10%

Ref	Developments	Cluster name	Stage 1 Assessment - Existing conditions	Stage 2 Assessment - Future conditions	Improved in Stage 2?	Reduction % to apply
MX/21/00049	Land east of High Street, Sevenoaks	Sevenoaks C	Amber	Green	Improved	10%
MX/26/00002	Sevenoaks Station, London Road	Sevenoaks C				10%
ENE14	Garage courts to the north of The Plat	Edenbridge				5%
HO/21/00044	Land west of Lingfield Road Recreation Ground and East of Skeynes Farm Cotts, Lingfield Road, Edenbridge	Edenbridge				5%
HO/21/00168	Land at Lingfield Road, Edenbridge	Edenbridge				5%
HO/21/00226	Land west of Ashcombe Drive and Meadow Lane, Edenbridge	Edenbridge				5%
HO/21/00228	Land at Crouch House Road, Edenbridge	Edenbridge				5%
HO/21/00232	Land south west of Skinners Farm, Edenbridge	Edenbridge				5%
HO/21/00233	Land north of Skinners Lane, Edenbridge	Edenbridge				5%
HO/25/00018	Land north of Springfield Road, Edenbridge	Edenbridge				5%
HO/25/00021	Land east of Cedar Drive, Edenbridge	Edenbridge				5%
MX/21/00009	Land at Breezehurst Farm, Crouch House Road	Edenbridge				5%

Ref	Developments	Cluster name	Stage 1 Assessment - Existing conditions	Stage 2 Assessment - Future conditions	Improved in Stage 2?	Reduction % to apply
MX/21/00014	78-80 and 82-84 High Street, Leathermarket, Edenbridge	Edenbridge				5%
GT/21/00001	Seven Acres Farm	Edenbridge S	Red	Amber	Improved	5%
HO/25/00038	Land to the rear of Stanholm, Mill Hill, Edenbridge	Edenbridge S				5%
MX/21/00001	Edenbridge War Memorial Hospital	Edenbridge S				5%

4. Results and Analysis

4.1 Model Outputs Criteria

Junction Level of Service (LOS) and link Volume / Capacity (VOC) ratio indicators were used as criteria to identify the link and junction “hot spots” in the study area.

Level of service plots provide a qualitative measure of how good the present traffic situation is on a given junction. As actual flow will vary for different days and different times in a day, LOS relates the traffic service quality to a given flow rate of traffic. VISUM defines the LOS based on the mean delay experienced by each vehicle. Table 4-1 defines the LOS by six levels ranging from level A to level F.

A	Level A represents the best quality of traffic where the driver has the freedom to drive with free flow speed.
B	Level B represents good traffic quality where driver can reasonably maintain free flow speed and maneuverability within the traffic stream is slightly restricted.
C	Level C represents stable traffic flows, at or near free flow. Ability to manoeuvre through lanes is noticeably restricted and requires awareness.
D	Level D represents almost unstable traffic flows. Speeds slightly decrease as traffic volume slightly increase. On this level driver comfort decreases.
E	Level E represents unstable traffic flows, operating at capacity. Driver's level of comfort becomes poor.
F	Level F represents the worst traffic quality with forced or breakdown traffic flows. Travel time cannot be predicted, with generally more demand than capacity.

Table 4-1: Level of Service Description

On the other hand, volume / capacity is the ratio of assigned traffic volume to the modelled link capacity and the ranges used are set out below.

V/C Ratio	Description
<= 75%	Stable flow with acceptable delay
<= 85%	Approaching unstable flow but with tolerable delay
<= 100%	Unstable flow
> 100%	Over-capacity

Table 4-2: Level of Service Description

4.2 2042 Local Plan Scenario

4.2.1 Flow Difference Plots

Figure 7 to 14 show the flow difference plots (presented in total actual vehicles and considering blocking back and queue effect) for each peak period comparing the 2042 Local Plan Scenario and 2042 Forecast Baseline.

In the AM and PM peak period, significant traffic increases (greater than 100 vehicles per direction) are predicted on the following corridors.

Swanley, Eynsford, New Ash Green and Halstead

- M25
- A20
- M20
- B2173
- B258 Swanley Lane
- Highlands Hill
- Swanley Village Road
- Ash Road
- Sevenoaks Road
- A224 Orpington By-Pass

Sevenoaks Town and Otford

- M25
- A21
- A224 London Road
- A224 Morants Ct Road

Edenbridge Town

- Crouch House Road

- Hilders Lane
- Swan Lane
- B2027 Four Elms Road

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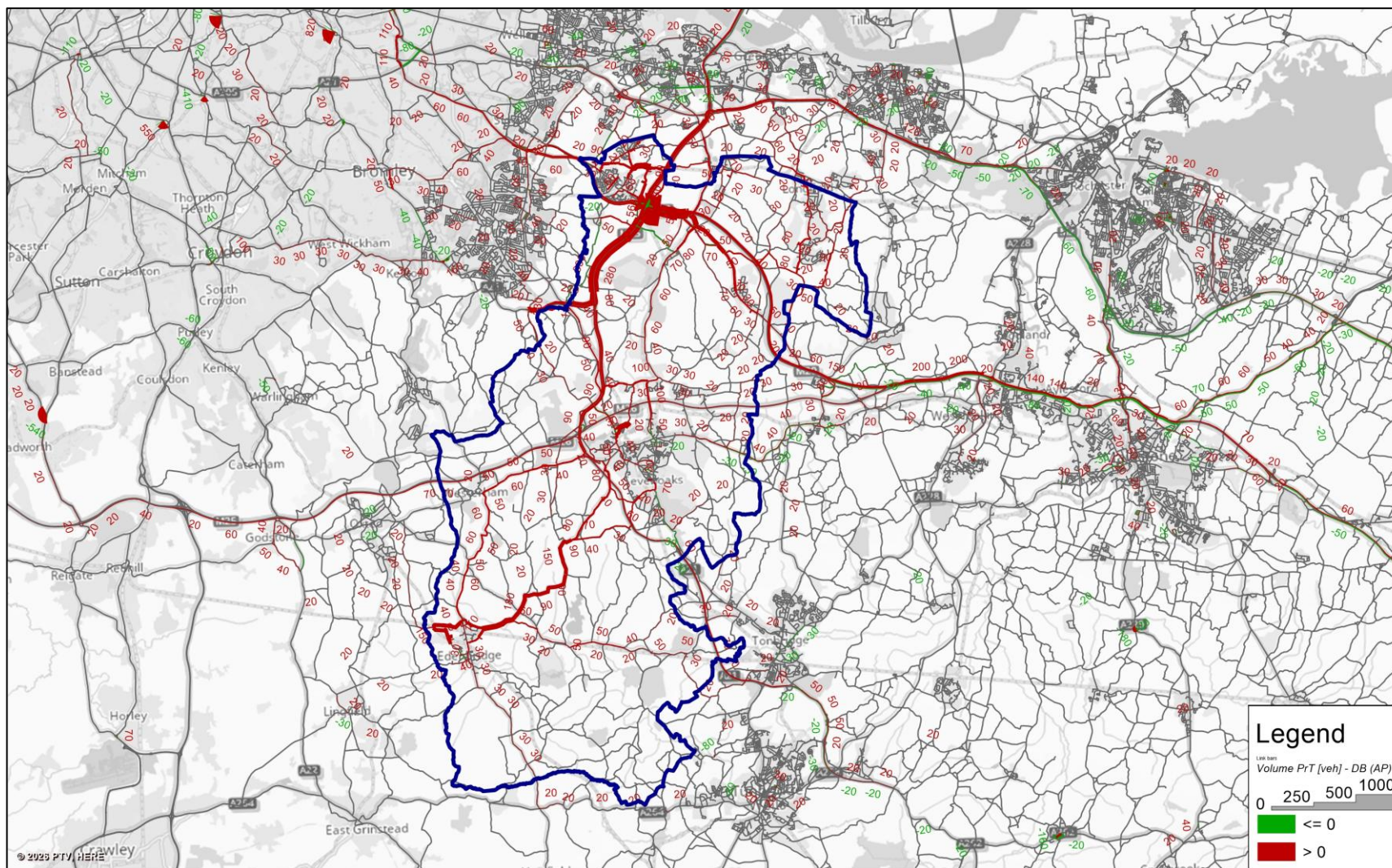


Figure 7 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario AM Peak – Sevenoaks District

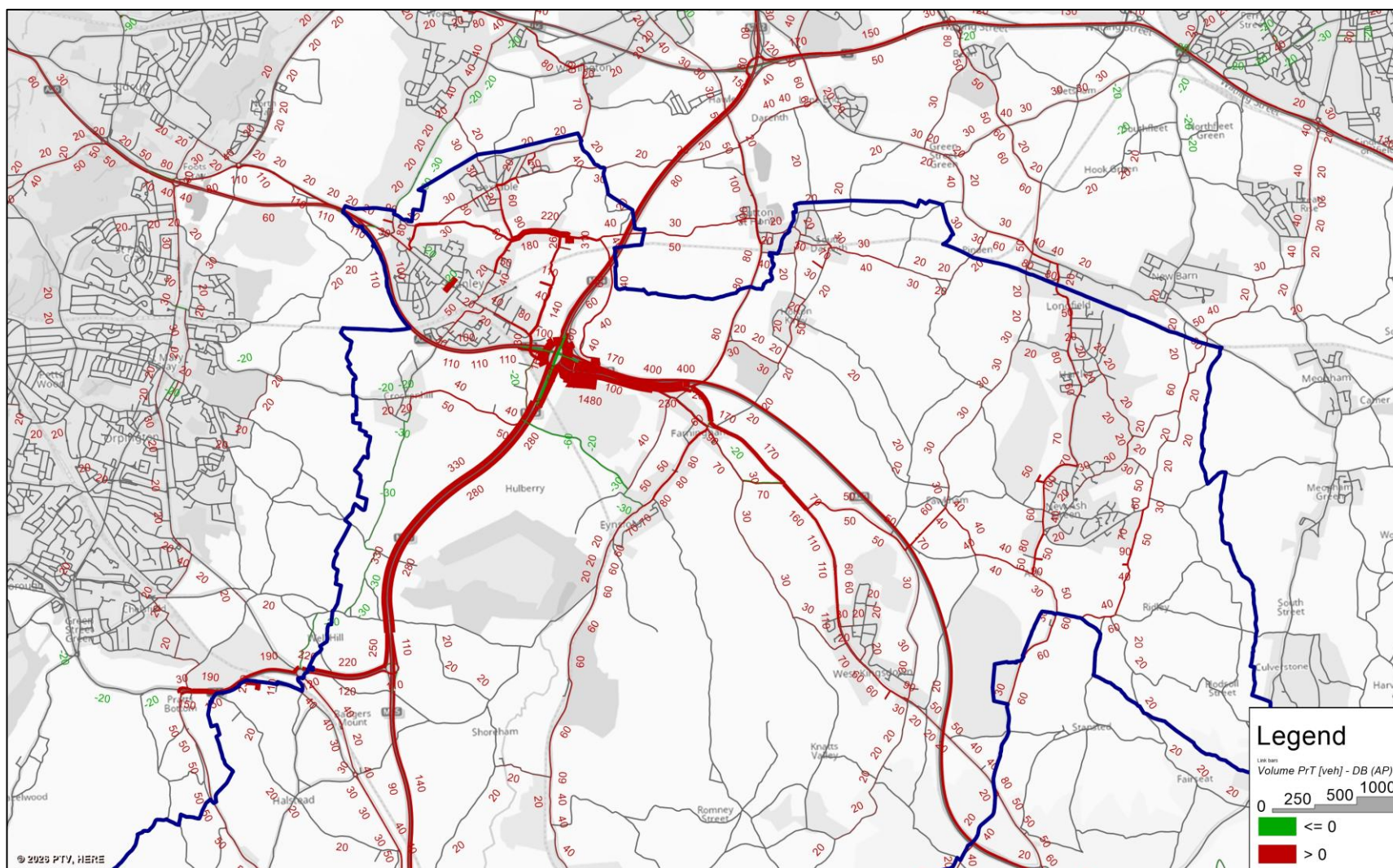


Figure 8 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario AM Peak – Swanley, Eynsford, New Ash Green and Halstead

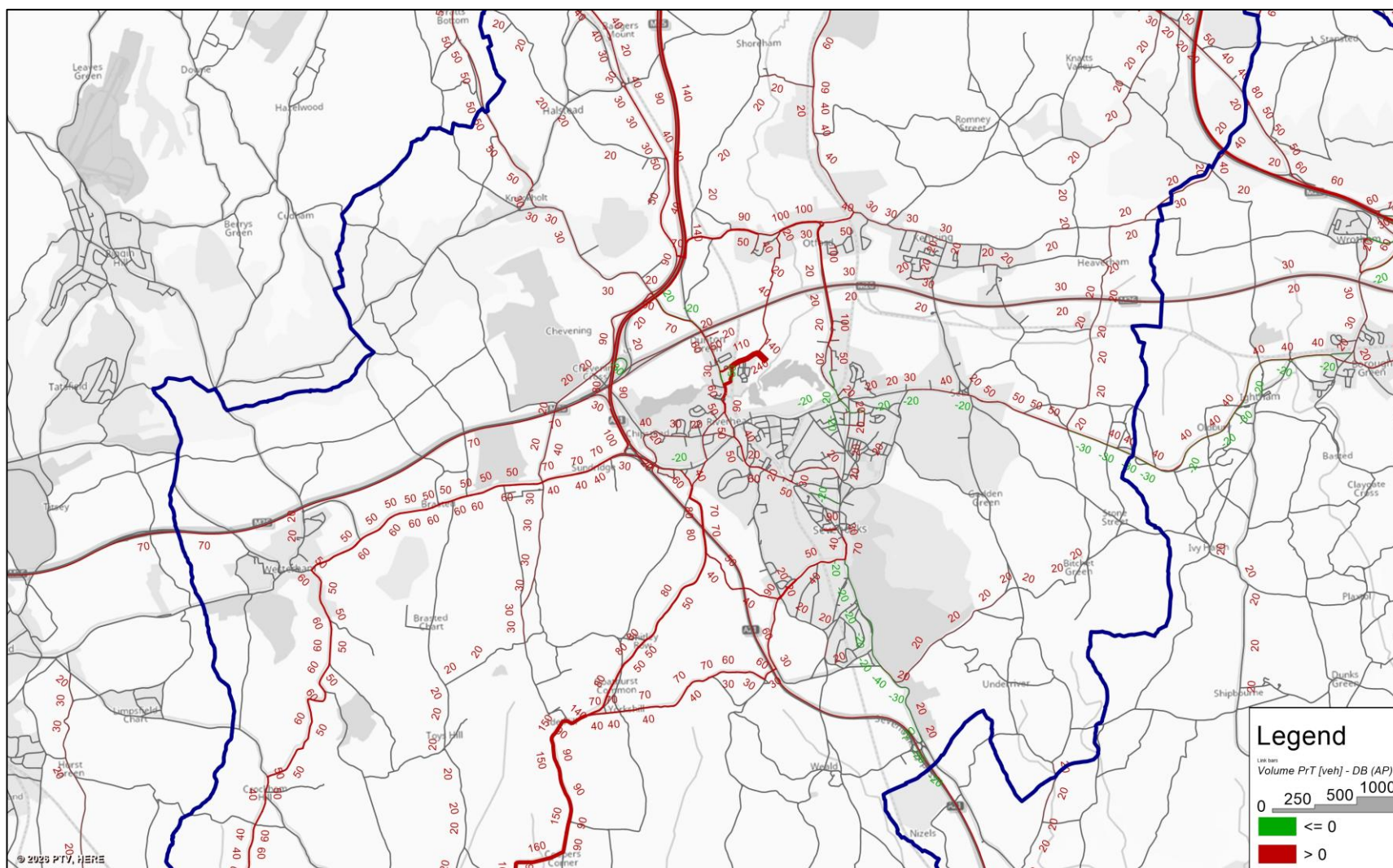


Figure 9 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario AM Peak – Sevenoaks and Otford

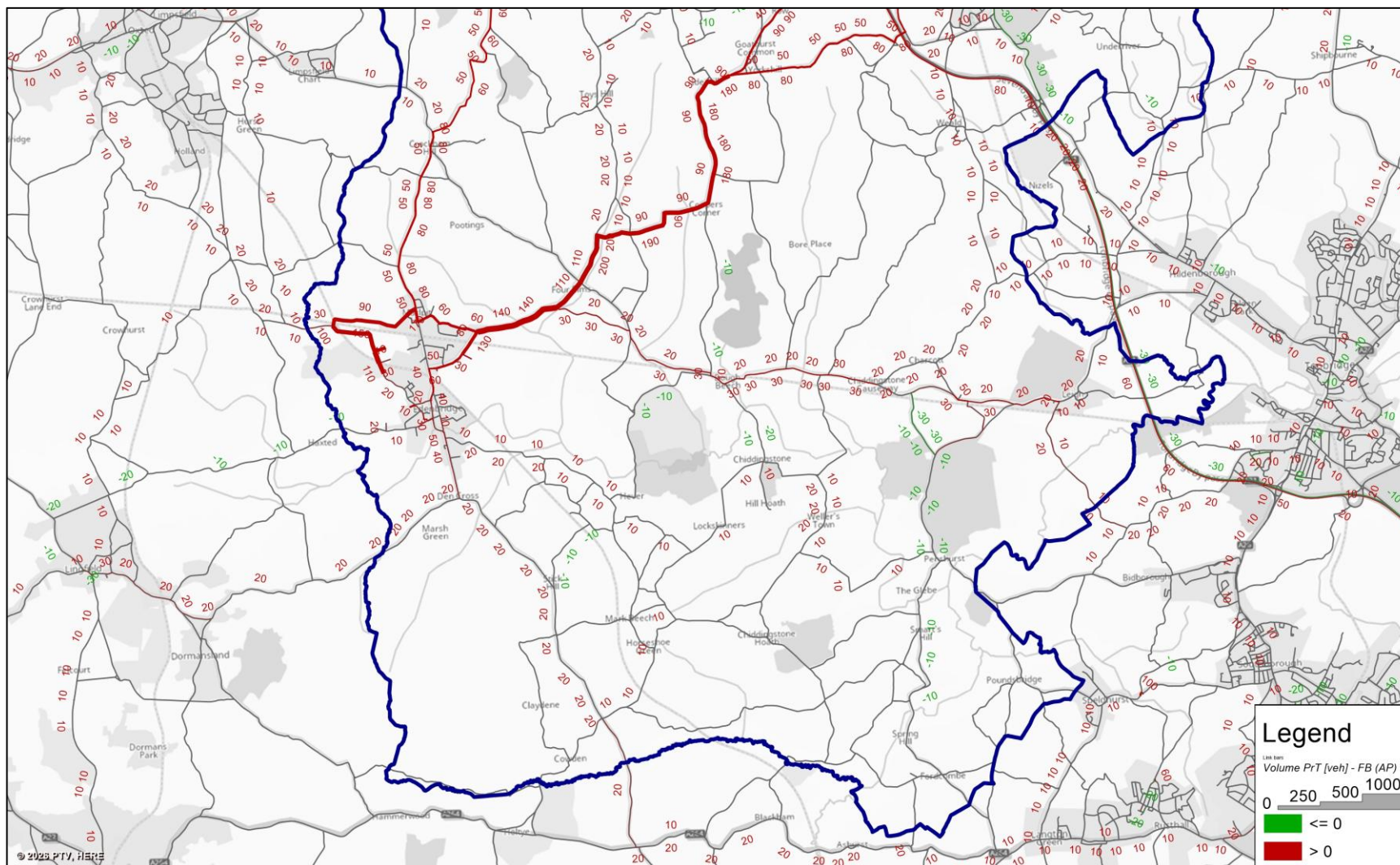


Figure 10 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario AM Peak – Edenbridge

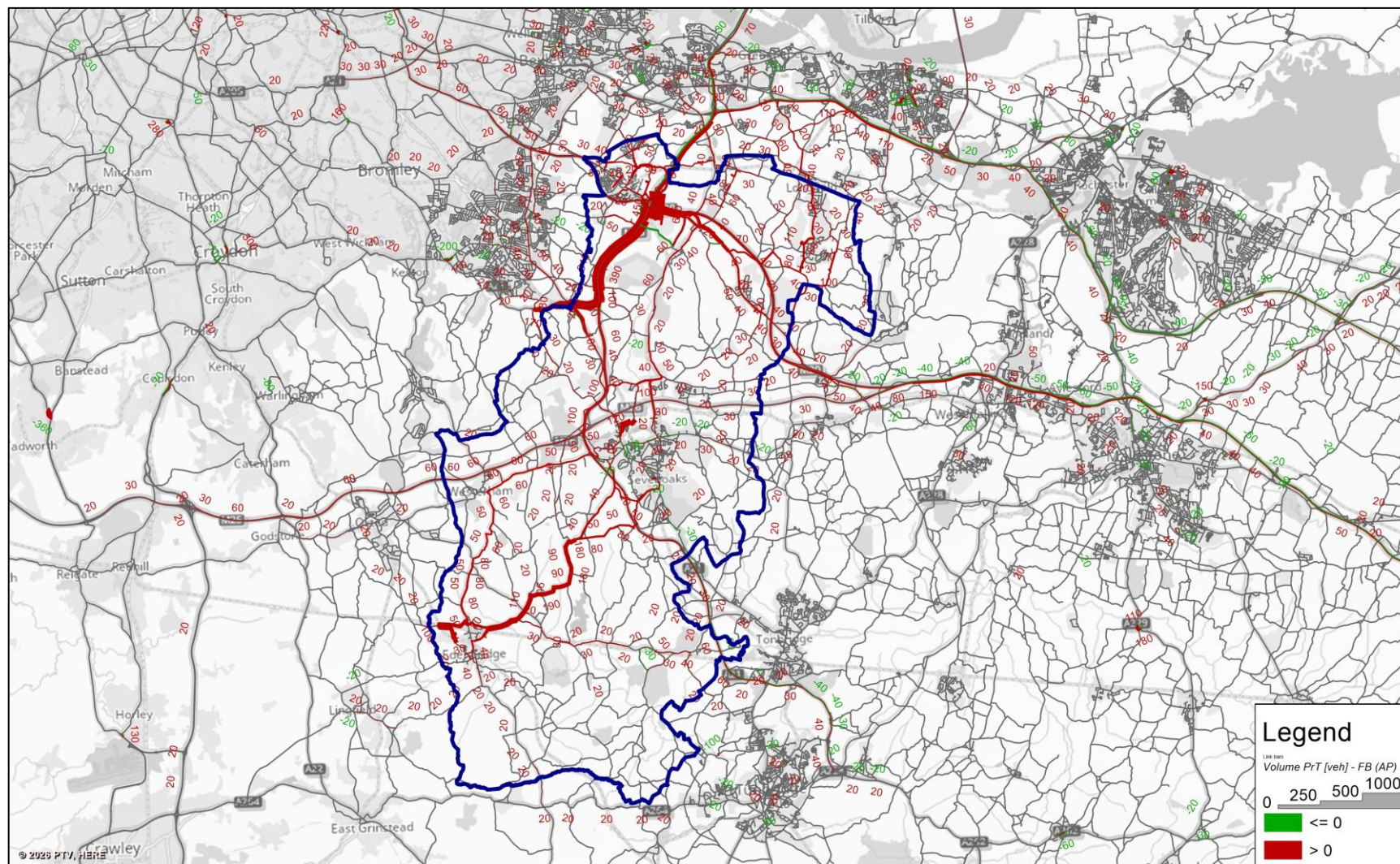


Figure 11 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario PM Peak - Sevenoaks District

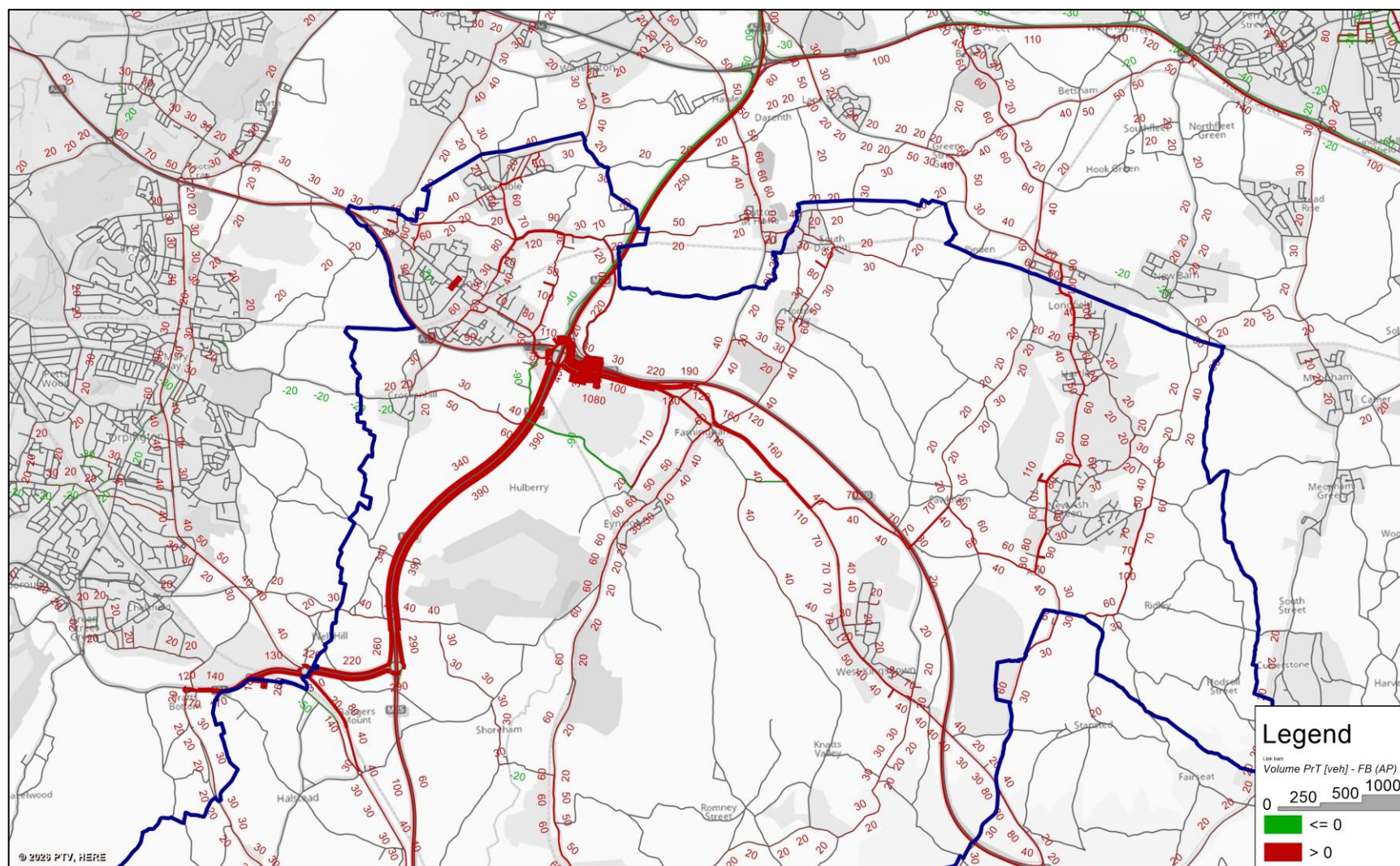


Figure 12 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario PM Peak – Swanley, Eynsford, New Ash Green and Halstead

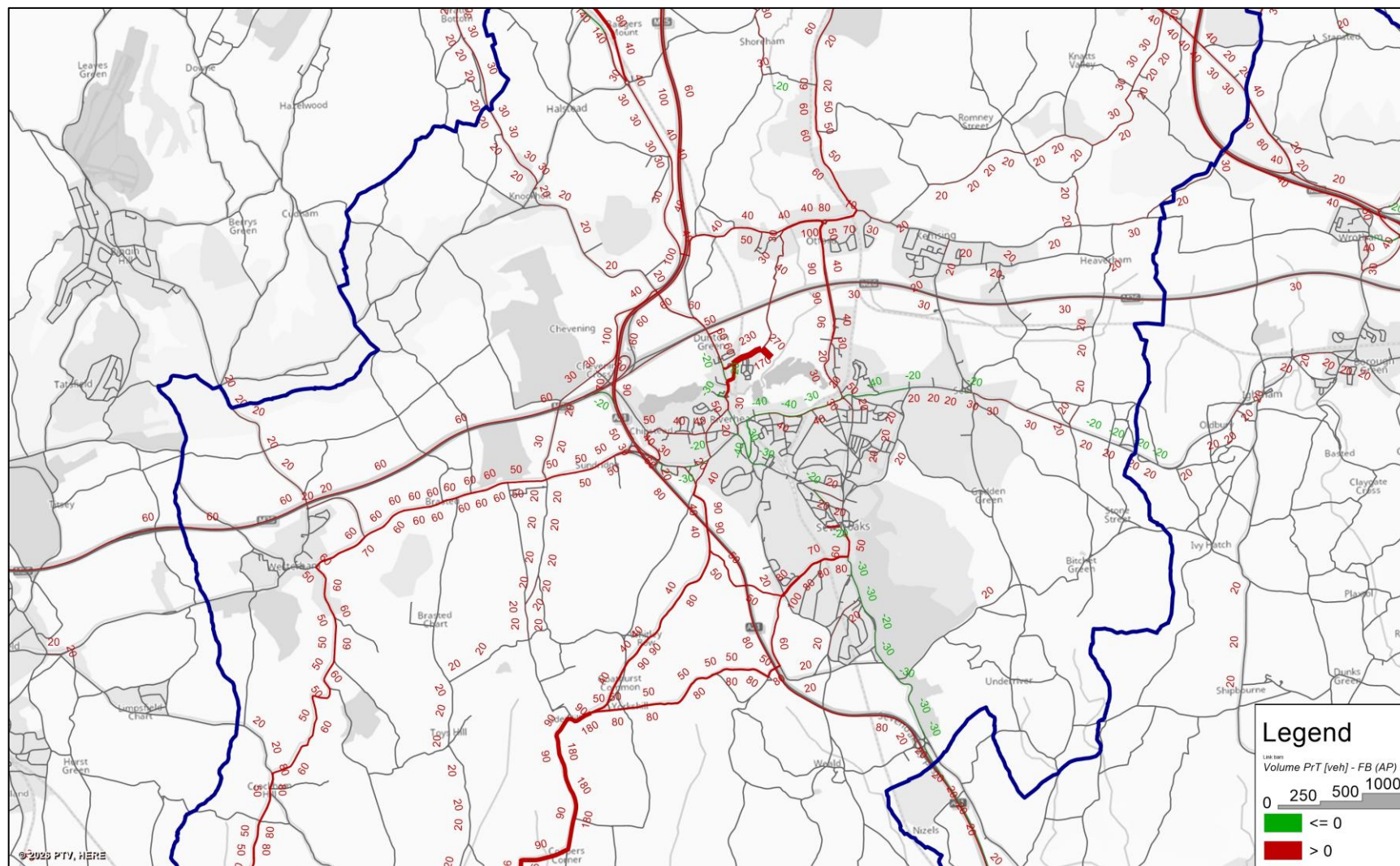


Figure 13 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario PM Peak – Sevenoaks Town and Otford

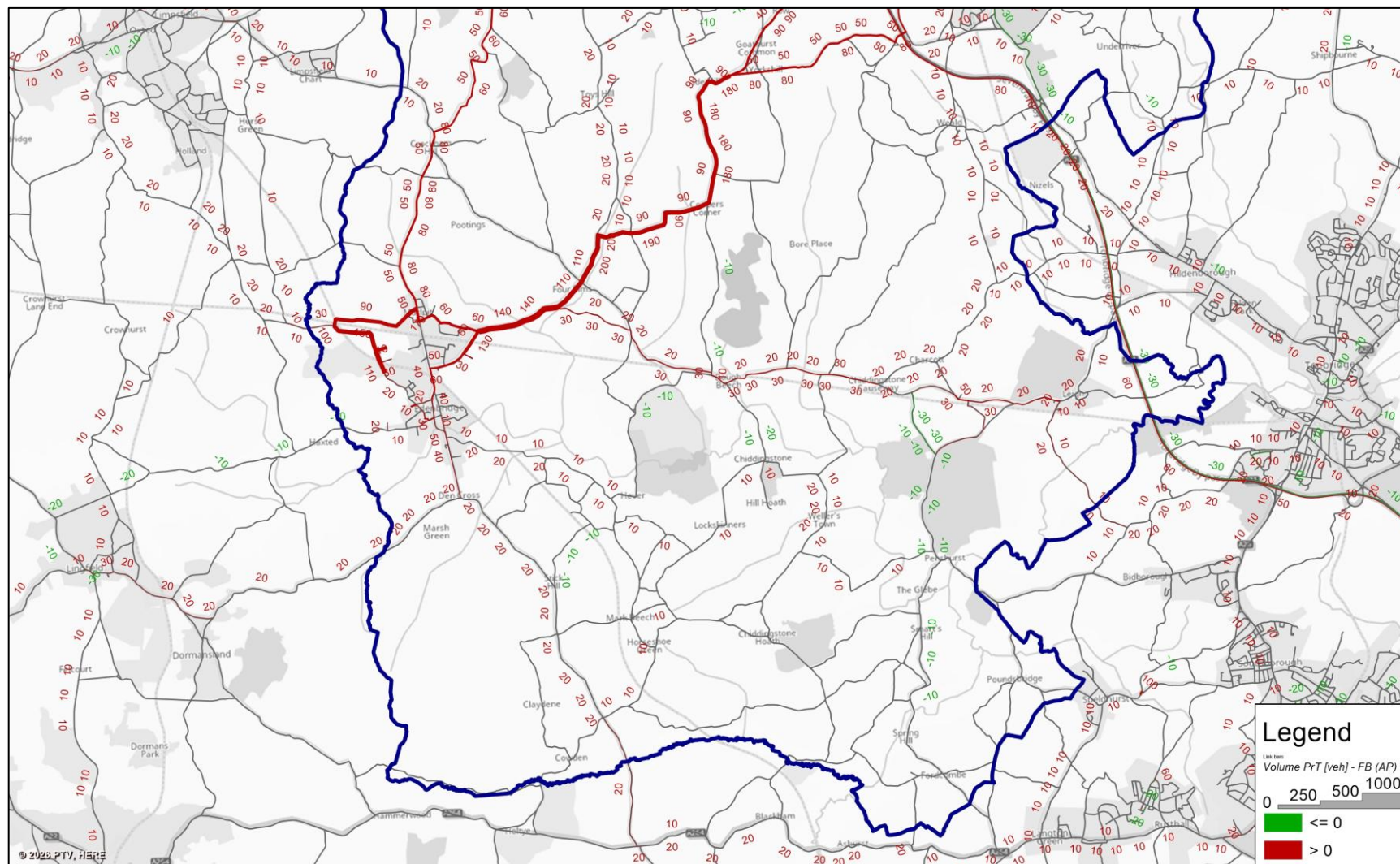


Figure 14 2042 Sevenoaks Forecast Baseline vs Local Plan Scenario PM Peak – Edenbridge

4.2.2 Junction and Link “Hot-Spots”

Figure 15 to Figure 22 present the junction LOS and link V/C ratios for the 2042 Local Plan scenario in the AM and PM peak periods. These results are summarised in Table 4-3.

Many of the junction and link “hot spots” identified in the 2042 Local Plan scenario are also present in both the 2019 Base Model and the 2042 Forecast Baseline. This indicates that network pressures already exist along several corridors within the district, even in the absence of Local Plan developments.

Table 4-3 identifies the locations of junctions and corridors operating at LOS E or F and/or with V/C ratios exceeding 85%. In several instances, link performance deteriorates further in the Local Plan scenario compared to the 2042 Forecast Baseline. This worsening is primarily attributable to forecast traffic growth associated with Local Plan sites.

In the northern part of the district, including Swanley, Eynsford, New Ash Green and Halstead, sections of the M25 between Junctions 3 and 4 (southbound) and the A20 Main Road exhibit increasing pressure, with V/C ratios exceeding 100%. In addition, the High Street / St Georges Road junction and M25 Junction 3 operate at LOS F under the Local Plan scenario.

Within Sevenoaks Town and Otford, several junctions that operate at LOS E or F in the 2042 Forecast Baseline show similar performance in the Local Plan scenario. However, this does not imply an absence of impact. In some cases, junctions are already operating at LOS F in the baseline scenario, which represents the lowest performance category; therefore, further deterioration is not reflected in the LOS metric despite increased demand.

A similar pattern is observed in Edenbridge, with the additional impact that the B2026 Main Road / Hilders Lane / Hillcrest Road junction is forecast to operate at LOS F in the Local Plan scenario.

It should be noted that the junction and link “hot spots” identified in this assessment, based on the strategic model, provide only a high-level indication of potential capacity constraints. Strategic modelling is inherently less detailed and is primarily intended to highlight locations where further, more detailed analysis may be required.

Accordingly, local junction modelling was undertaken as the next step to confirm whether capacity issues are likely to arise and to determine the extent of any impacts. This more detailed level of modelling incorporates refined network coding, including junction geometry, lane allocation, signal staging, and operational characteristics, which cannot be fully represented within the strategic model framework.

As a result, it is possible that not all junctions identified in Table 4-3 will ultimately be shown to experience significant operational issues or require mitigation once assessed using local junction models. The outcomes of the detailed modelling may therefore differ from the initial high-level findings presented here.

The undertaking of local junction modelling forms part of the Sevenoaks Local Plan evidence base and the results of this are documented in a separate report.

Area		Road /Junction	2019 Base	2042 Forecast Baseline	2042 Local Plan
Swanley, Eynsford, New Ash Green and Halstead	V/C >85%	Bartholomew Way	>85%	>100%	>100%
		High Street	>85%	>100%	>100%
		M25 between J3 and J4 Southbound	-	>85%	>100%
		A20 Main Road	-	>85%	>100%
	LOS E or F	High Street/St Georges Road	E	E	F
		M25 J3	F	E	F
		Hewitts Roundabout	F	F	F
Sevenoaks Town, and Otford	LOS E or F	A25 / Bradbourne Road	E	F	F
		Seal Road/Filmer Lane/ Seal Hollow Road	E	F	F
		Westerham Road/Larkfield Road	E	F	F
		A25 / Otford Road / St Johns Hill	F	A	A
		High Street/Pembroke Road	F	F	F
		Westerham Road/ A21 Onslip SB	F	F	F
		Station Road / Shoreham Road / Pilgrims Way E	E	E	F
		Westerham Road / Cold Arbor Road	-	E	E
		Worship Road / Witches Lane	-	E	E
		A25 London Road / Maidstone Road	-	E	E
		Morleys Roundabout	-	E	E
Edenbridge	LOS E or F	Mont St Aignan Way/Lingfield Road	F	F	F
		Mont St Aignan Way/Stangrove Road	F	F	F
		B2026 Station Road/High Street	E	E	E
		B2026Main Road / Hilders Lane / Hillcrest Road	-	-	F

Table 4-3: 2042 Local Plan List of Junction and Link "Hot Spots"

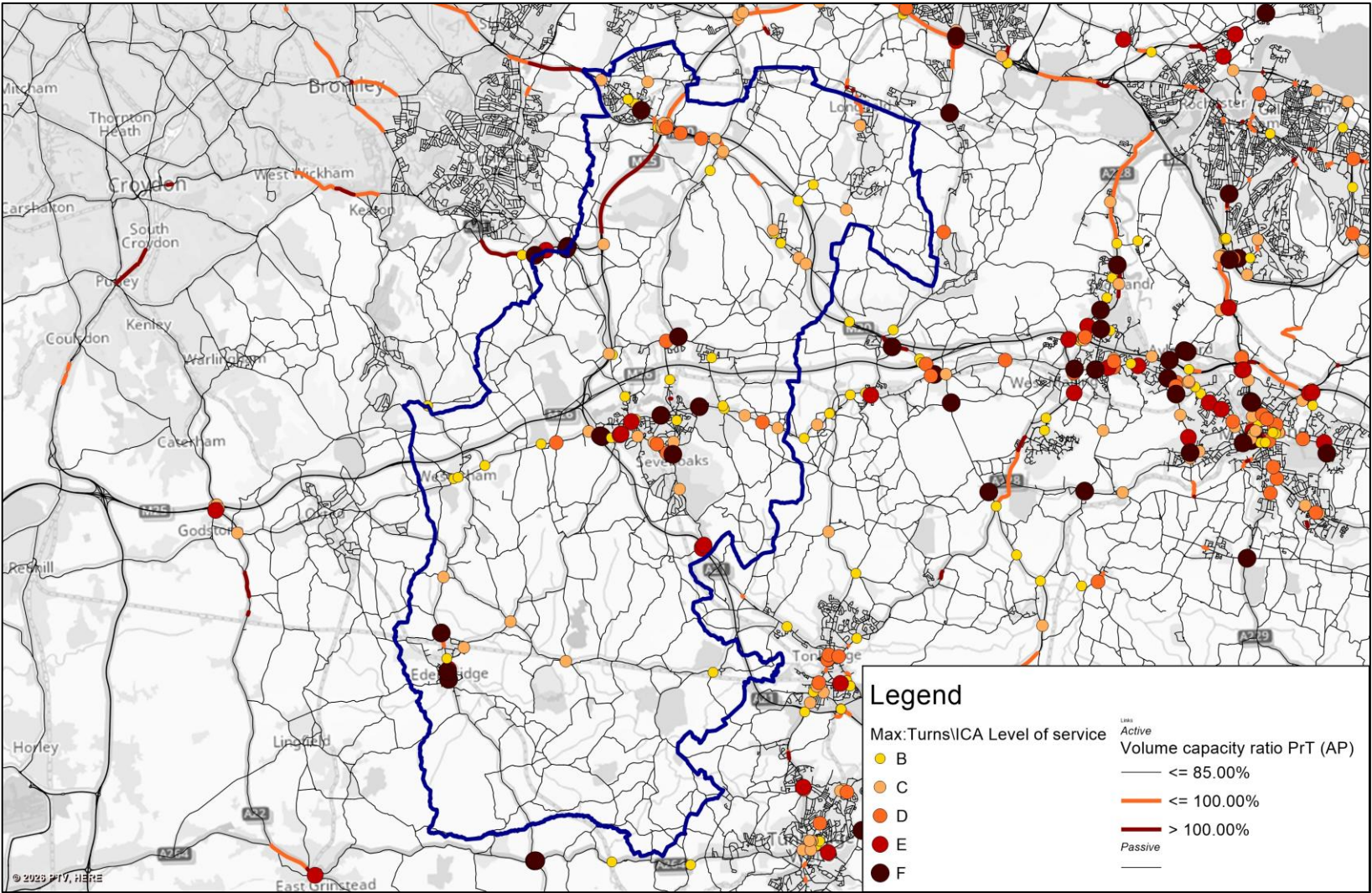


Figure 15 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio AM Peak – Sevenoaks District

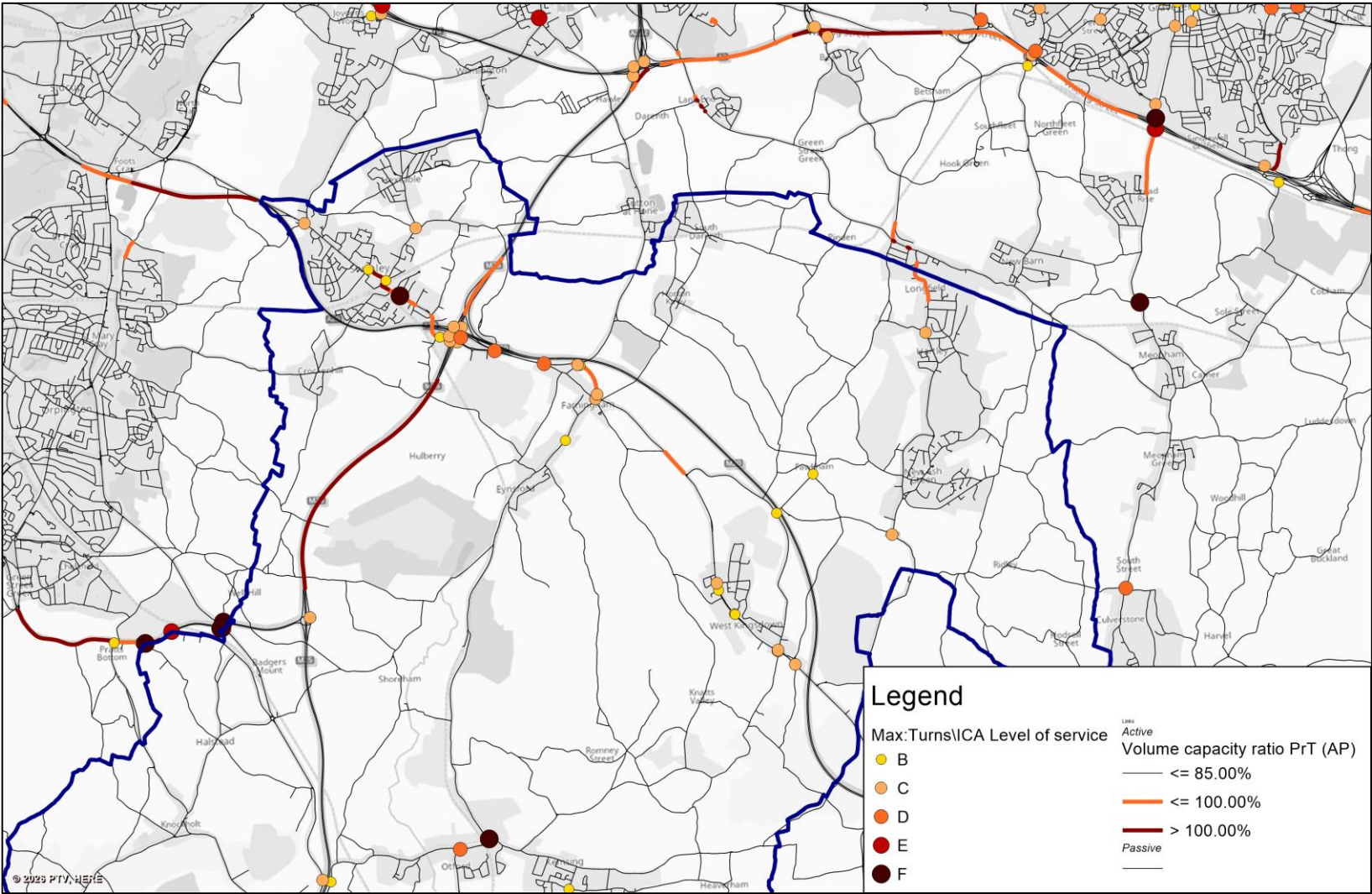


Figure 16 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio AM Peak – Swanley, Eynsford, New Ash Green and Halstead

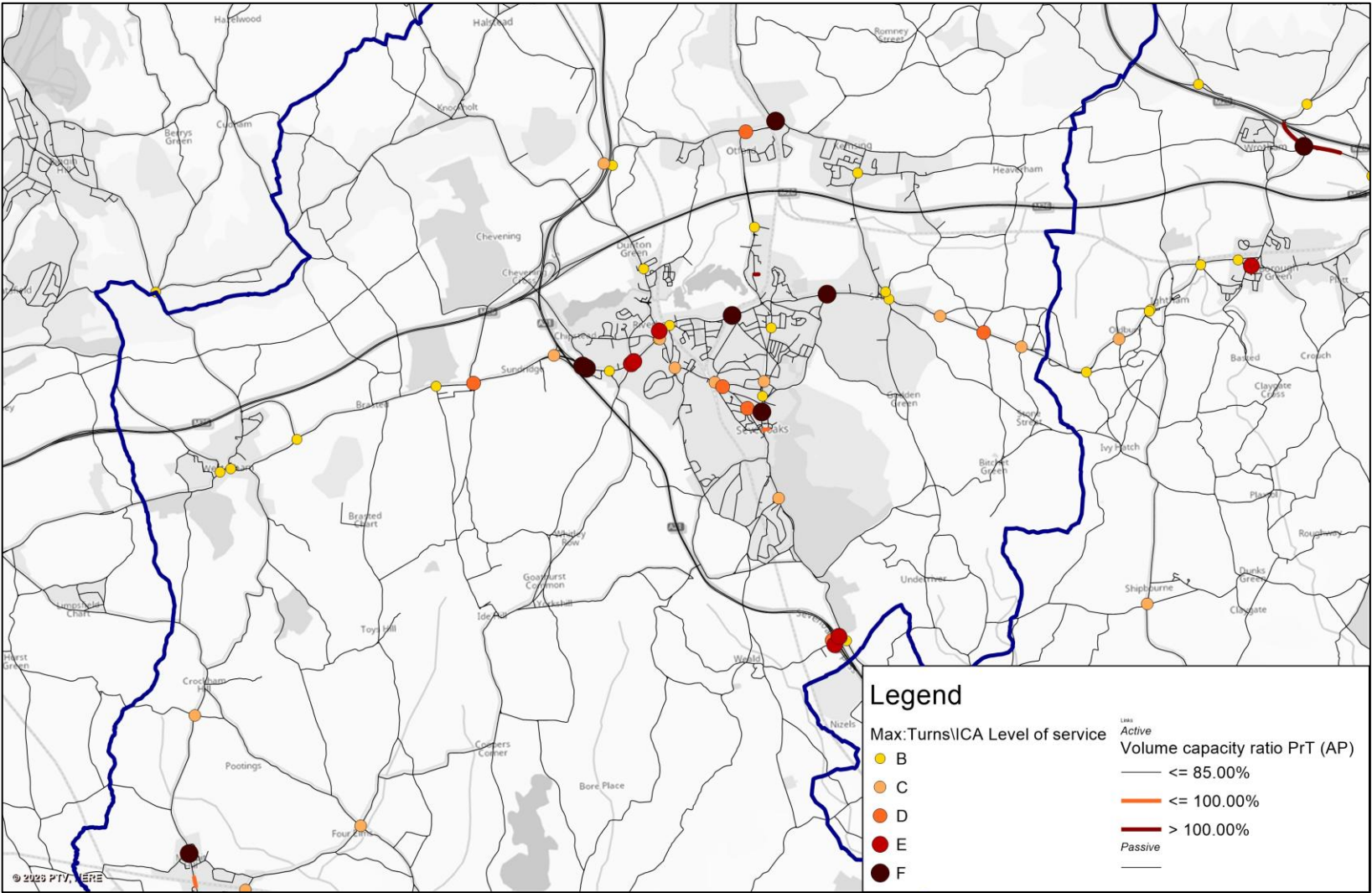


Figure 17 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio AM Peak – Sevenoaks Town and Otford

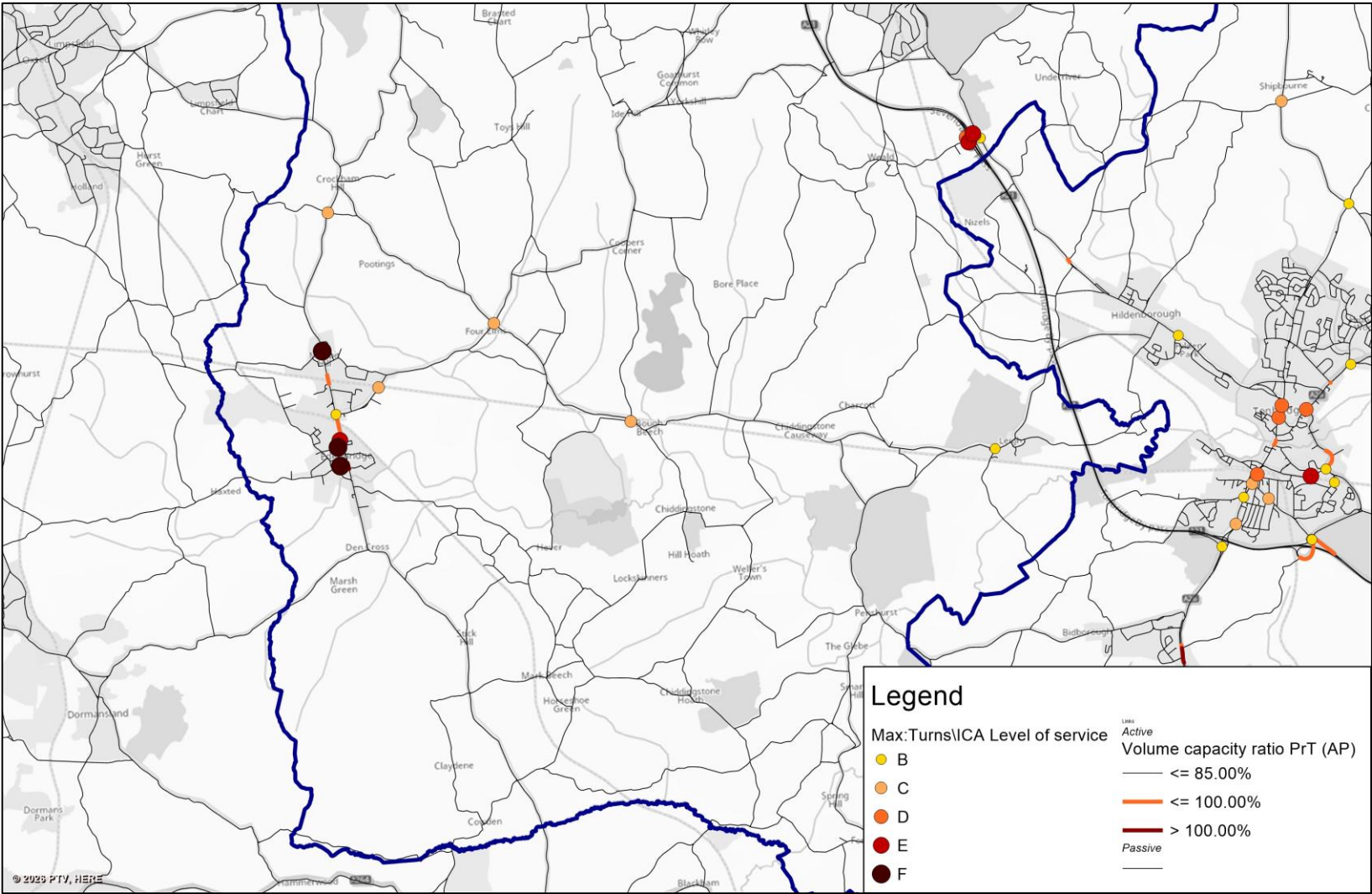


Figure 18 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio AM Peak – Edenbridge

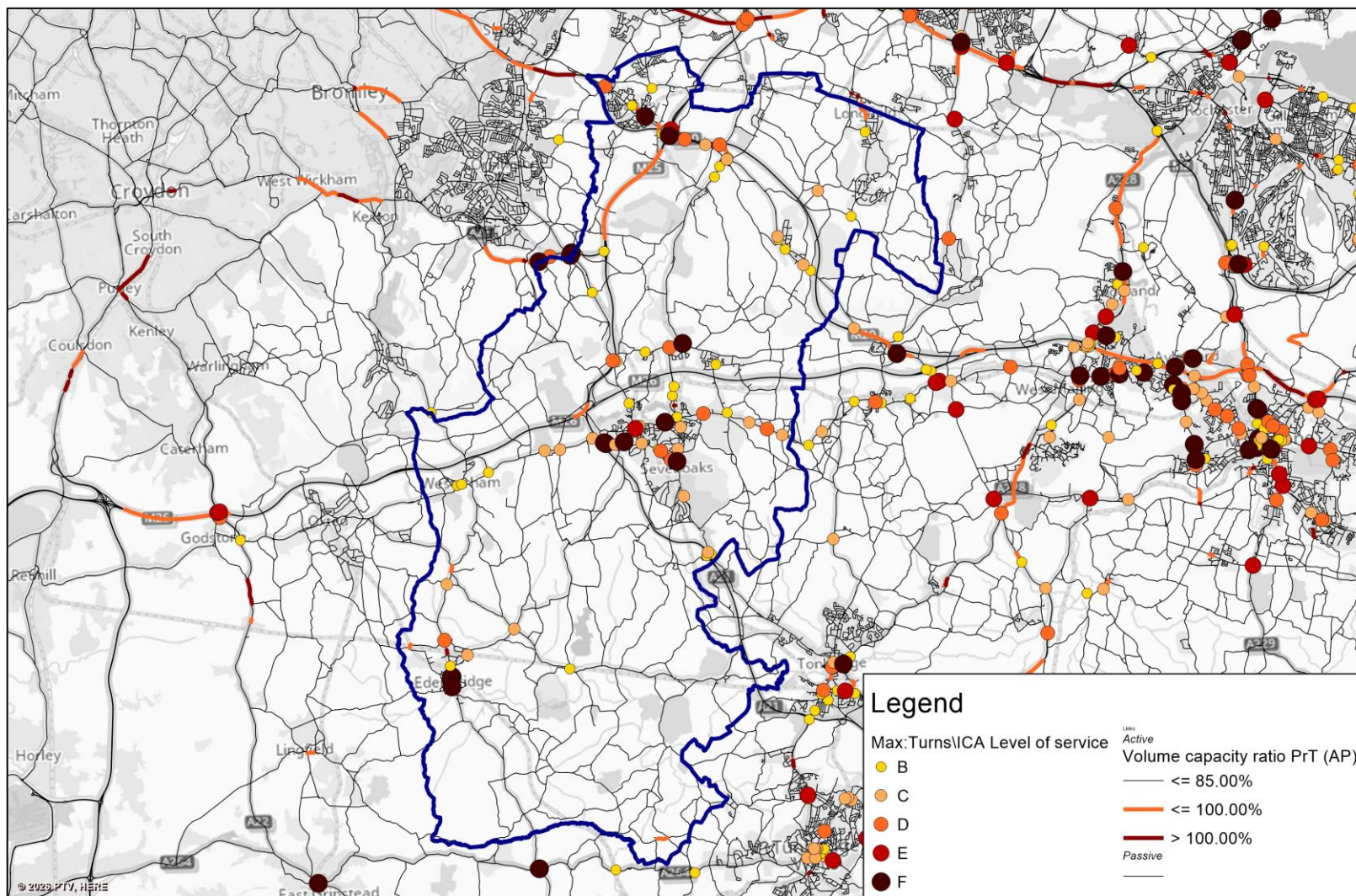


Figure 19 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio PM Peak –Sevenoaks District

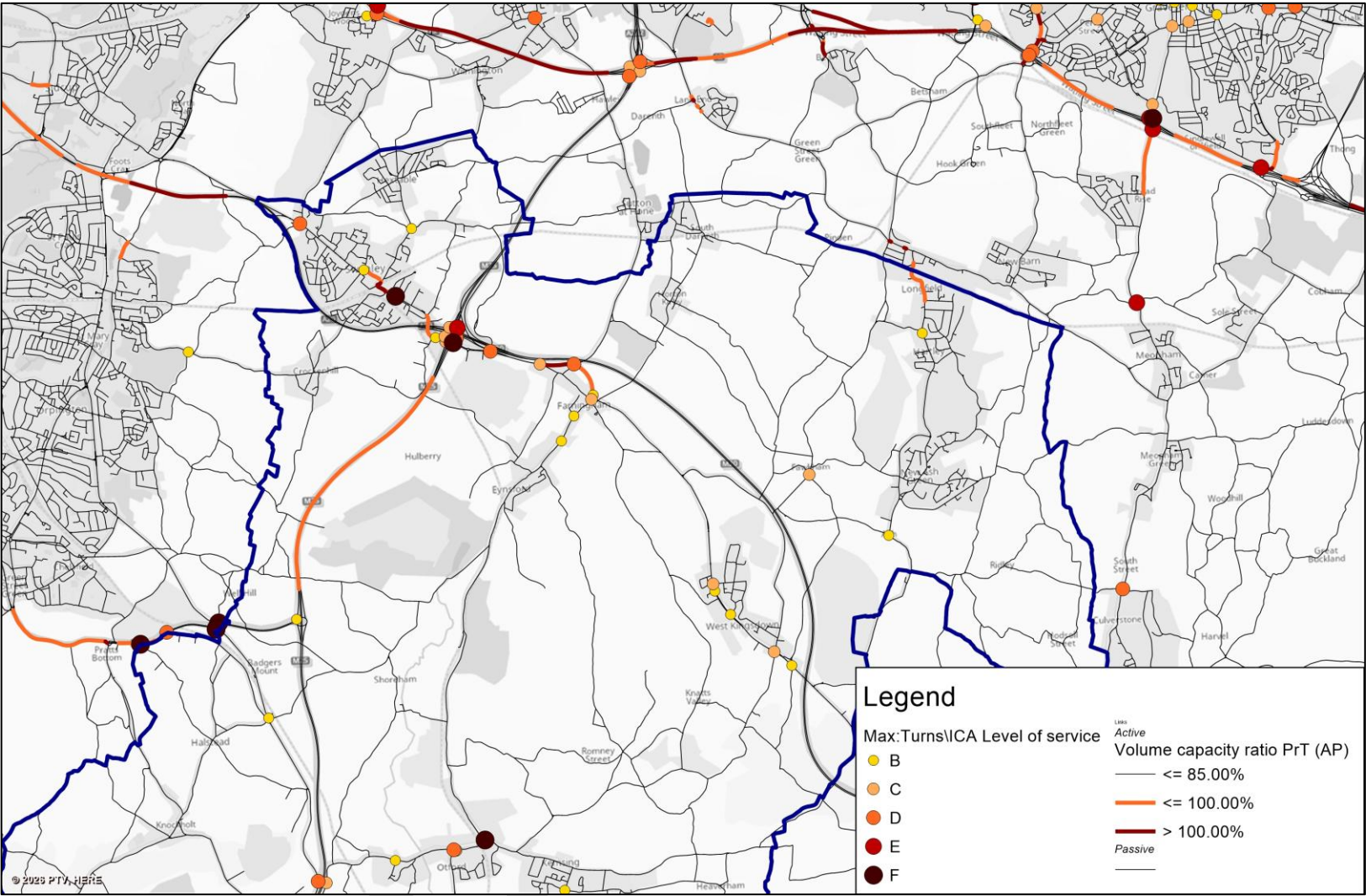


Figure 20 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio PM Peak –Swanley, Eynsford, New Ash Green and Halstead

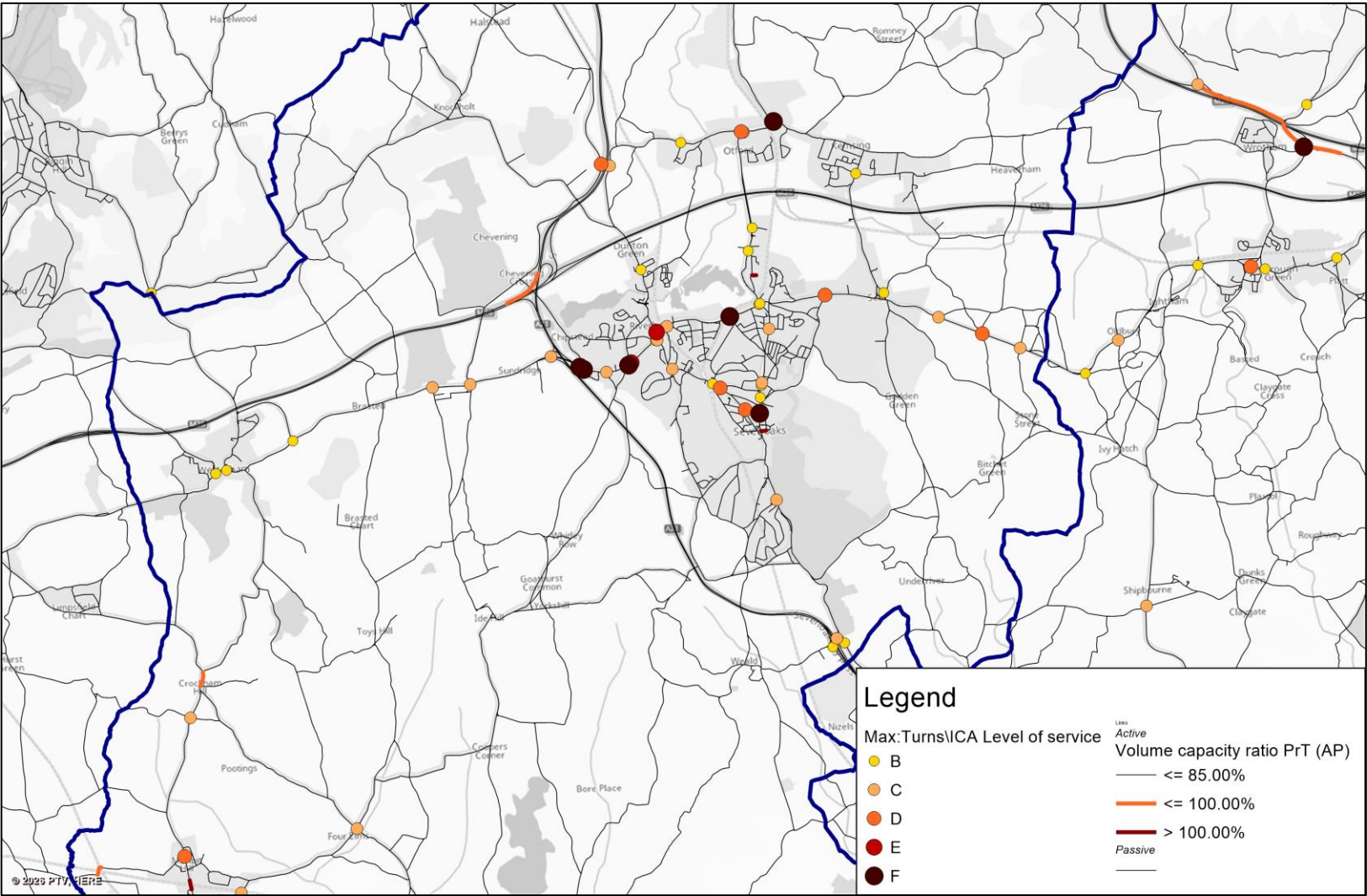


Figure 21 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio PM Peak –Sevenoaks Town and Otford

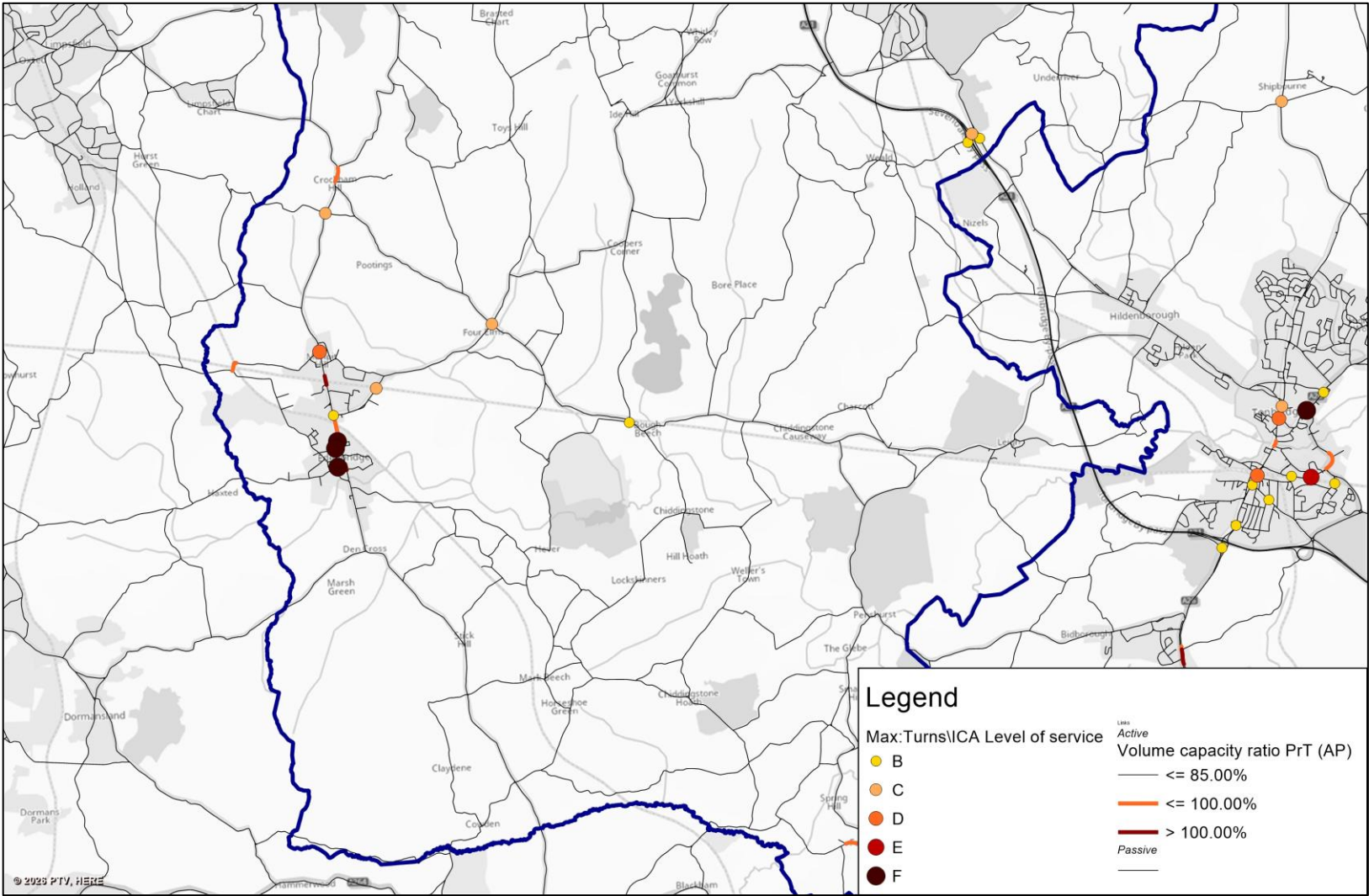


Figure 22 2042 LP Scenario Junction LOS and Link Volume Capacity Ratio PM Peak – Edenbridge

4.2.3 Journey Time Comparison

Figure 23 presents the routes considered for the journey time comparison. Detailed journey time comparison between the 2042 Local Plan Scenario and 2042 Forecast Baseline is shown in Table 4.

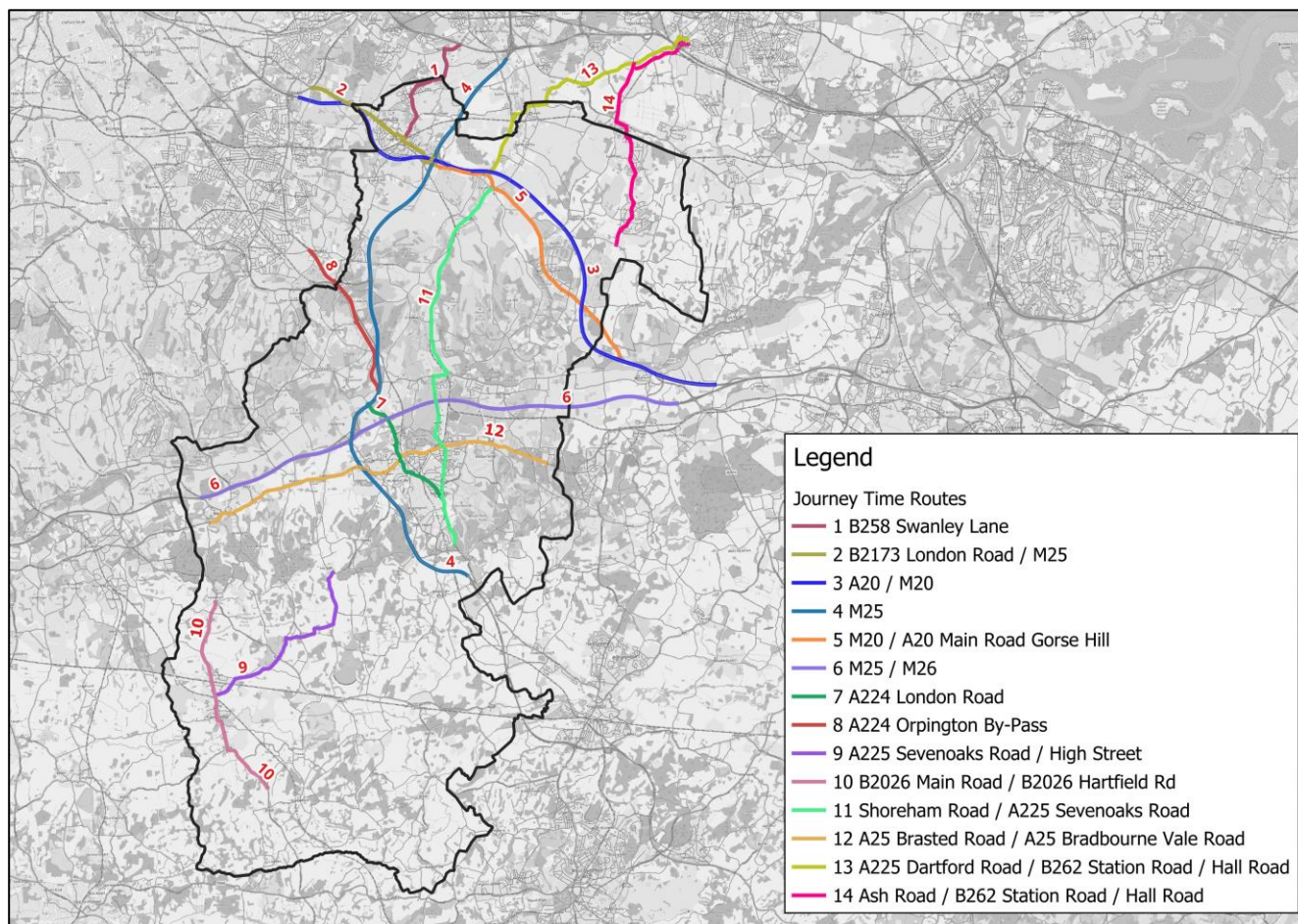


Figure 23 Journey Times Routes in Sevenoaks

Overall, the comparison of travel times between the 2042 Local Plan Scenario and the Forecast Baseline shows marginal differences (less than 10%). However, this may be due to the network already being congested in the Forecast Baseline.

Route 7 (A224 London Road) and Route 2 (B2173 London Road / M25) experience the highest increases in journey times, ranging from 11% to 20% during the PM peak. This is likely attributable to additional traffic associated with the proposed Land North of Sevenoaks and Pedham Place developments, as both developments are located in close proximity to these routes.

Table 4: 2042 Forecast Baseline vs Local Plan Scenario Journey Time Comparison

Route	Description	Direction	2042 Baseline Model [min:sec]		2042 Local Plan [min:sec]		Actual Difference [min:sec]		% Difference	
			AM	PM	AM	PM	AM	PM	AM	PM
1	B258 Swanley Lane	13_SB	07:06	07:10	07:15	07:20	00:09	00:10	2%	2%
	B258 Swanley Lane	13_NB	07:11	07:06	07:20	07:14	00:09	00:08	2%	2%
2	B2173 London Road / M25	14_EB	13:05	13:50	13:32	14:31	00:27	00:41	3%	5%
	B2173 London Road / M25	14_WB	17:18	15:57	17:02	17:43	00:16	01:46	-2%	11%
3	A20-M20	15_EB	12:18	13:38	12:22	13:40	00:04	00:02	1%	0%
	A20-M20	15_WB	13:15	11:19	13:27	11:20	00:12	00:01	2%	0%
4	M25	16_SB	16:32	15:03	16:52	15:25	00:20	00:22	2%	2%
	M25	16_NB	14:23	15:20	14:29	15:46	00:06	00:26	1%	3%
5	M20 / A20 Main Road Gorse Hill	17_SB	16:49	16:23	16:13	17:43	00:36	01:20	-4%	8%
	M20 / A20 Main Road Gorse Hill	17_NB	17:29	16:04	18:20	17:20	00:51	01:16	5%	8%
6	M25-M26	19_EB	10:52	11:59	10:52	12:00	00:00	00:01	0%	0%
	M25-M26	19_WB	11:54	11:14	11:57	11:15	00:03	00:01	0%	0%
7	A224 London Road	22_SB	09:26	11:15	11:49	12:47	02:23	01:32	25%	14%
	A224 London Road	22_NB	08:19	10:20	08:37	12:23	00:18	02:03	4%	20%
8	A224 Orpington By-Pass	24_NB	06:44	06:38	07:01	06:57	00:17	00:19	4%	5%
	A224 Orpington By-Pass	24_SB	06:35	06:43	06:39	06:57	00:04	00:14	1%	3%
9	A225 Sevenoaks Road / High Street	25_SB	08:53	08:47	09:09	09:19	00:16	00:32	3%	6%
	A225 Sevenoaks Road / High Street	25_NB	08:55	08:52	09:26	09:08	00:31	00:16	6%	3%
10	A224 Orpington By-Pass	26_NB	10:23	10:03	10:36	10:15	00:13	00:12	2%	2%
	A224 Orpington By-Pass	26_SB	10:13	10:37	10:25	10:55	00:12	00:18	2%	3%
11	Shoreham Road / A225 Sevenoaks Road	31_SB	22:33	21:46	23:08	22:01	00:35	00:15	3%	1%
	Shoreham Road / A225 Sevenoaks Road	31_NB	20:52	22:20	20:58	22:46	00:06	00:26	0%	2%
12	A25 Brasted Road / A25 Bradbourne Vale Road	32_EB	23:22	26:19	23:56	28:29	00:34	02:10	2%	8%
	A25 Brasted Road / A25 Bradbourne Vale Road	32_WB	26:22	23:43	27:35	25:17	01:13	01:34	5%	7%

Route	Description	Direction	2042 Baseline Model [min:sec]		2042 Local Plan [min:sec]		Actual Difference [min:sec]		% Difference	
			AM	PM	AM	PM	AM	PM	AM	PM
13	A225 Dartford Road / B262 Station Road / Hall Road	33_SB	18:29	14:44	18:30	14:59	00:01	00:15	0%	2%
	A225 Dartford Road / B262 Station Road / Hall Road	33_NB	17:46	16:33	17:57	16:39	00:11	00:06	1%	1%
14	Ash Road / B262 Station Road / Hall Road	34_SB	19:00	16:03	19:04	16:25	00:04	00:22	0%	2%
	Ash Road / B262 Station Road / Hall Road	34_NB	19:18	16:24	19:36	16:37	00:18	00:13	2%	1%

4.3 2042 Local Plan Scenario + Modal Shift

4.3.1 Flow Difference Plots

Figures 24 to 31 present the differences in traffic flows between the 2042 Local Plan scenarios with and without the application of modal shift assumptions.

The application of reduction factors to selected developments, as outlined in Table 4 earlier in this report, results in relatively modest changes across the wider highway network. Small reductions in traffic are observed along the following key corridors: M20, M25, A21, Four Elms Road and key local roads along Swanley, Sevenoaks Town and Edenbridge. These outcomes are consistent with the relatively conservative modal shift assumptions applied in the modelling, which incorporate reductions of 5% and 10% in vehicular trips.

At this stage of the assessment, these reduction factors are considered to be robust and proportionate, reflecting a reasonable level of modal shift based on current evidence. However, it is acknowledged that further supporting evidence may emerge at later stages, particularly in relation to larger-scale developments or targeted sustainable transport interventions. Should this occur, additional sensitivity testing could be undertaken, either through the Kent Transport Model or via developer-led transport assessments, to explore the potential for higher levels of modal shift and their corresponding impact on the network.

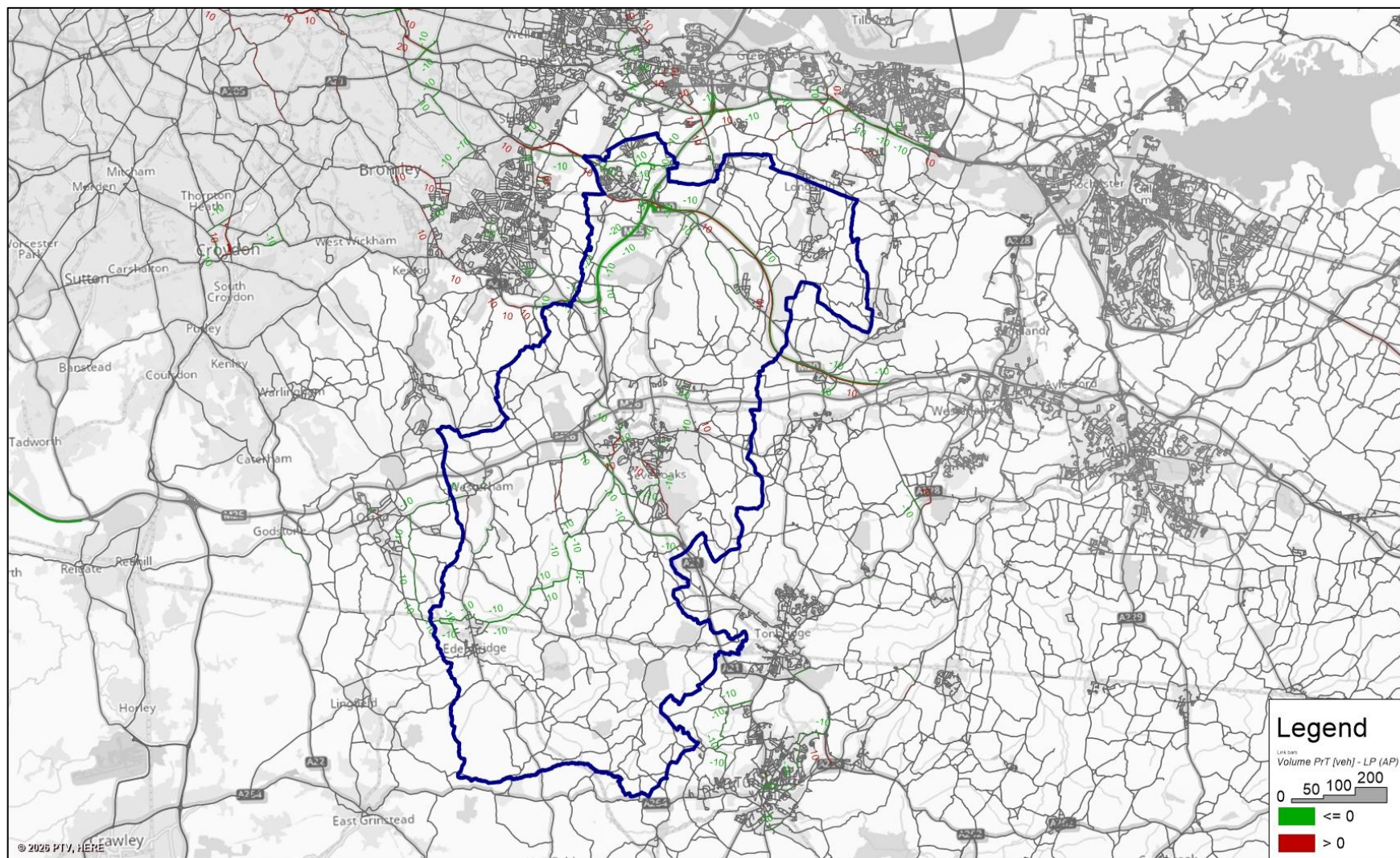


Figure 24: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario AM Peak – Sevenoaks District



Figure 25: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario AM Peak – Swanley, Eynsford, New Ash Green and Halstead



Figure 26: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario AM Peak – Sevenoaks and Otford

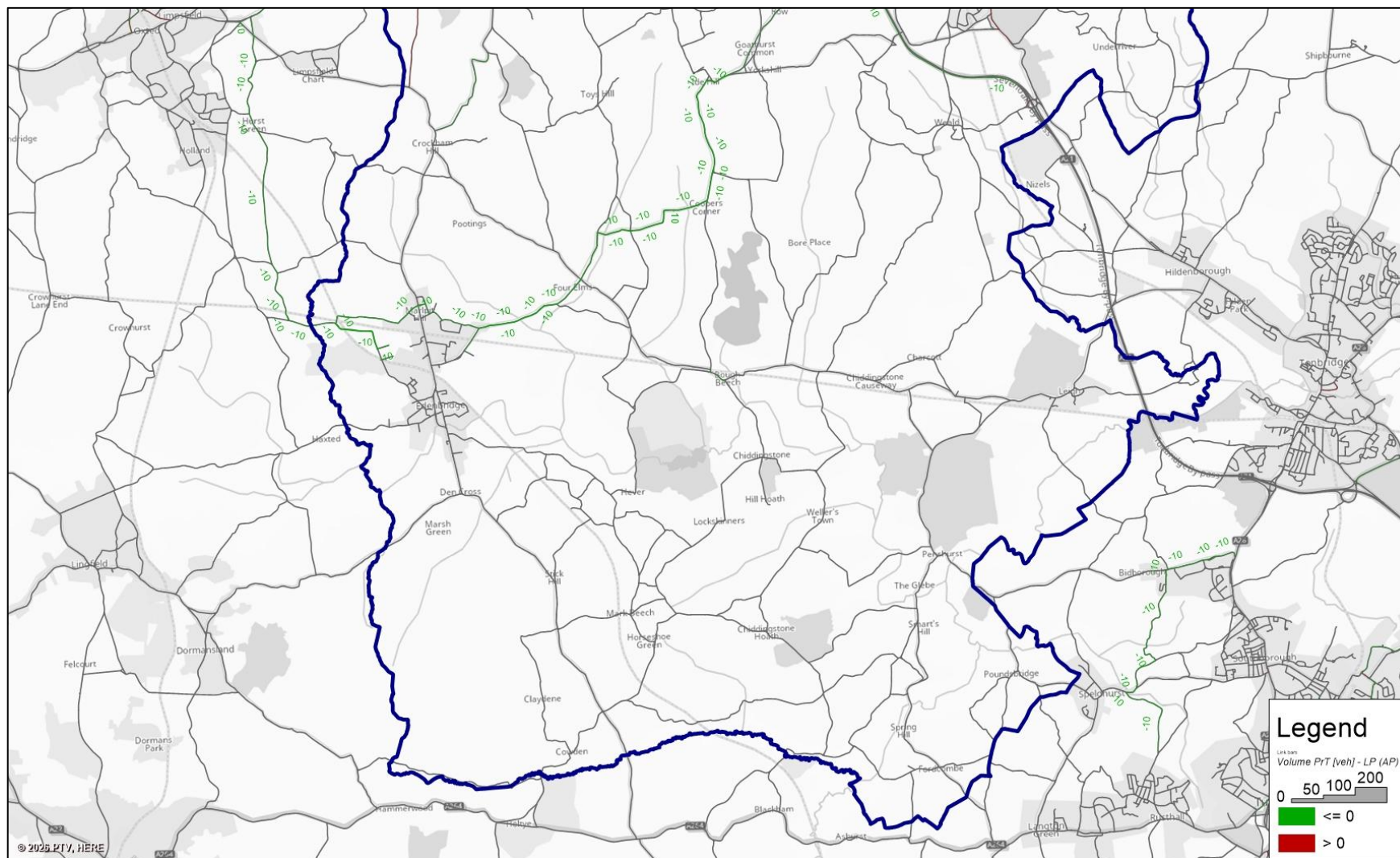


Figure 27: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario AM Peak – Edenbridge

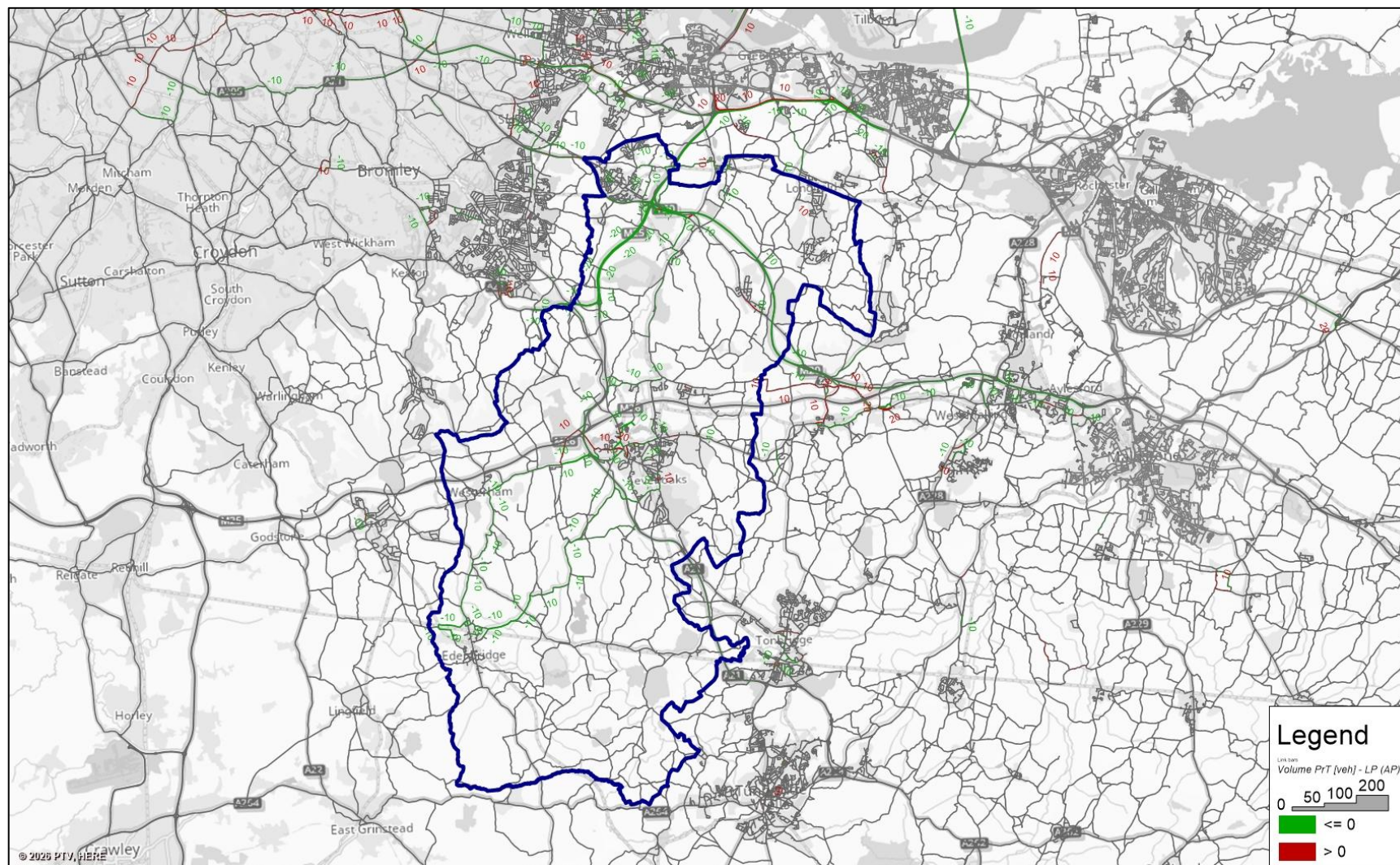


Figure 28: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario PM Peak – Sevenoaks District



Figure 29: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario PM Peak – Swanley, Eynsford, New Ash Green and Halstead



Figure 30: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario PM Peak – Sevenoaks and Otford

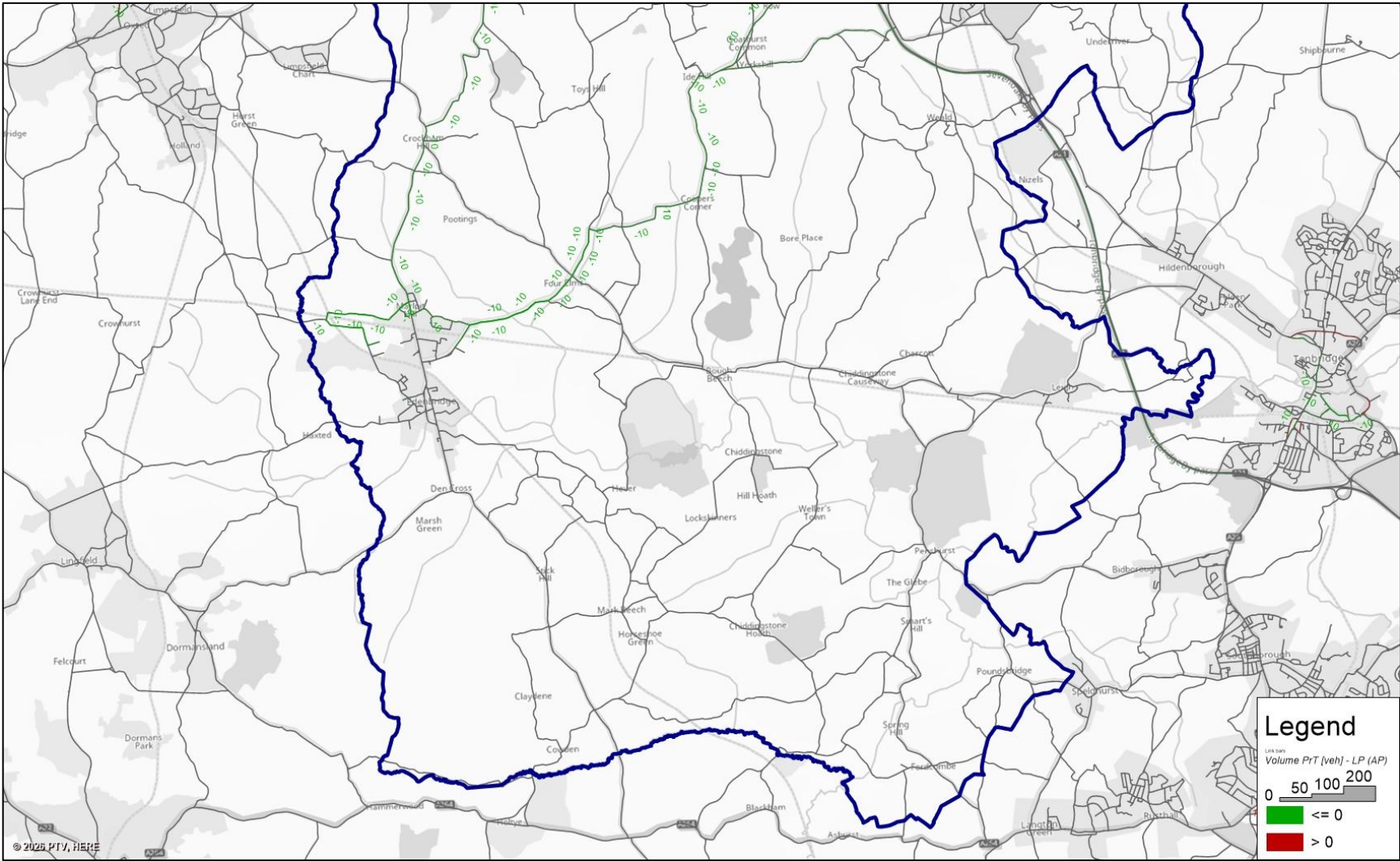


Figure 31: Sevenoaks Local Plan vs Local Plan with Modal Shift Scenario PM Peak – Edenbridge

4.3.2 Junction and Link “Hot-Spots”

Figure 32 to Figure 39 illustrate the junction LOS and link V/C ratios for the 2042 Local Plan scenario with the inclusion of modal shift assumptions. A summary of the identified network hot-spot junctions and corridors is provided in Table 7.

Overall, the pattern of identified hot-spots in this scenario closely mirrors that observed in the corresponding scenario without modal shift. This outcome is consistent with the relatively minor changes in traffic flows between the two scenarios, as discussed previously.

While the application of modal shift assumptions results in modest reductions in traffic demand, these changes are not sufficient to materially alter the operational performance of the most constrained parts of the network. As a result, the same key junctions and corridors continue to experience capacity pressures, indicating that further intervention may be required to address existing and future congestion issues.

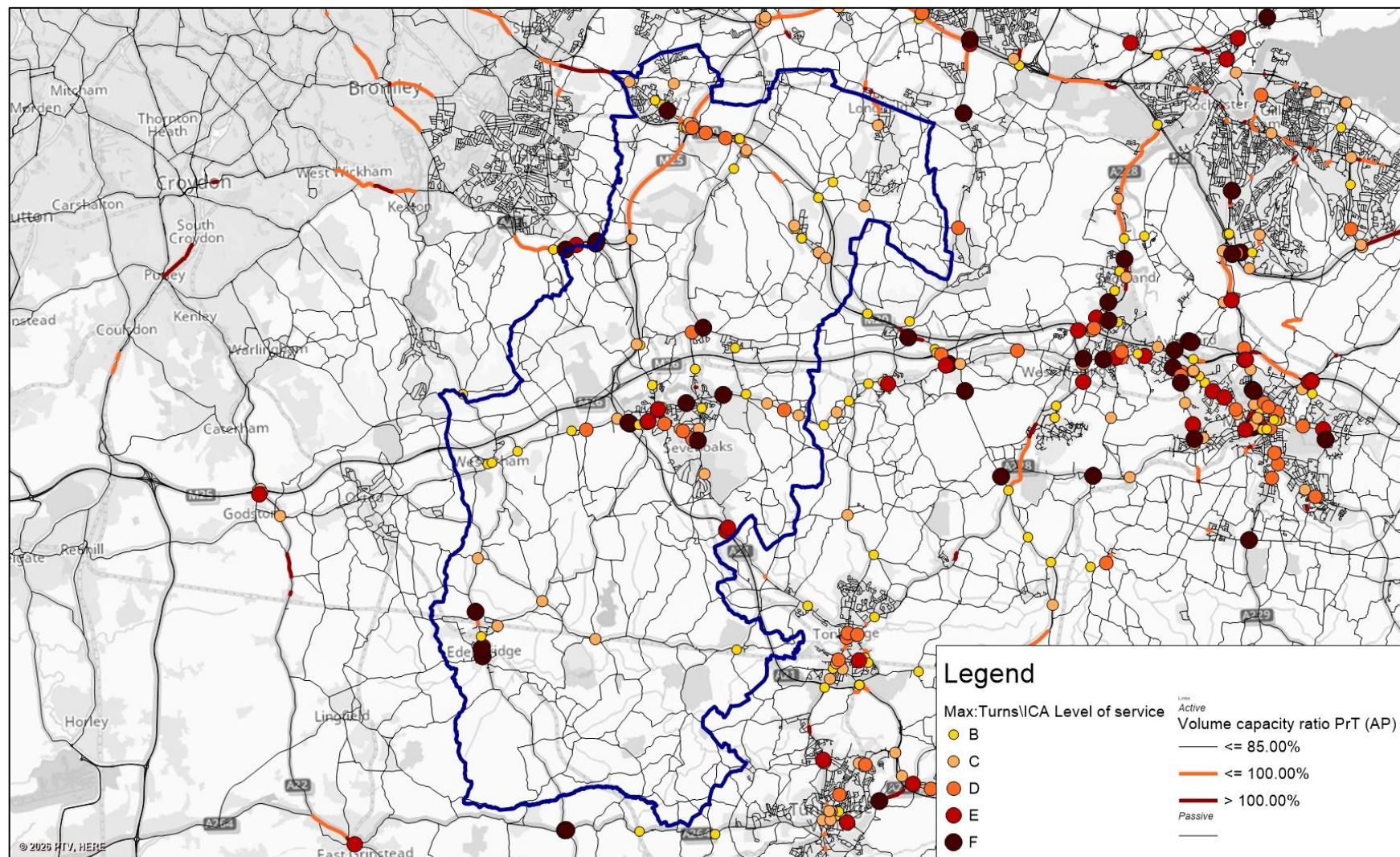


Figure 32 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio AM Peak – Sevenoaks District

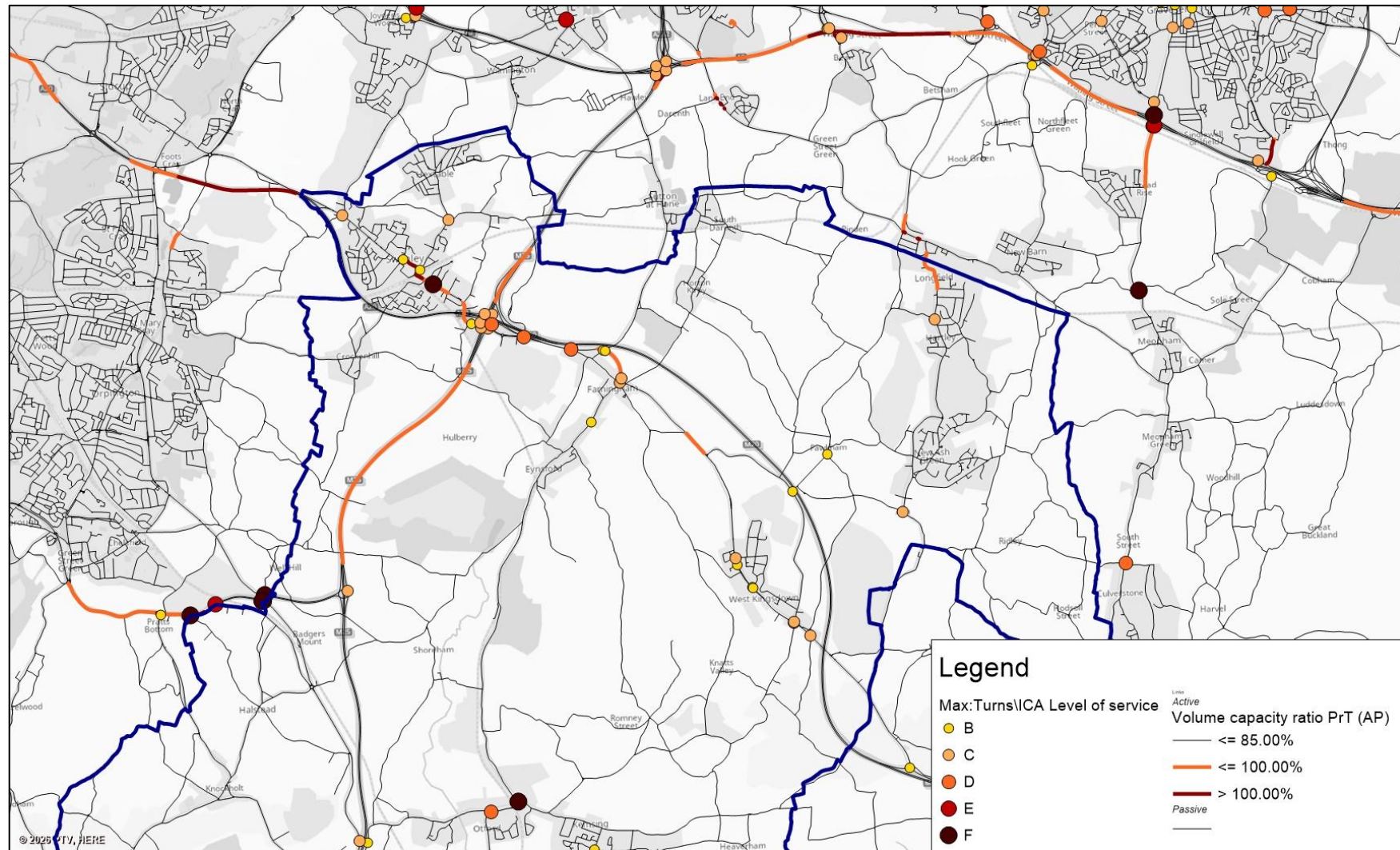


Figure 33 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio AM Peak – Swanley, Eynsford, New Ash Green and Halstead

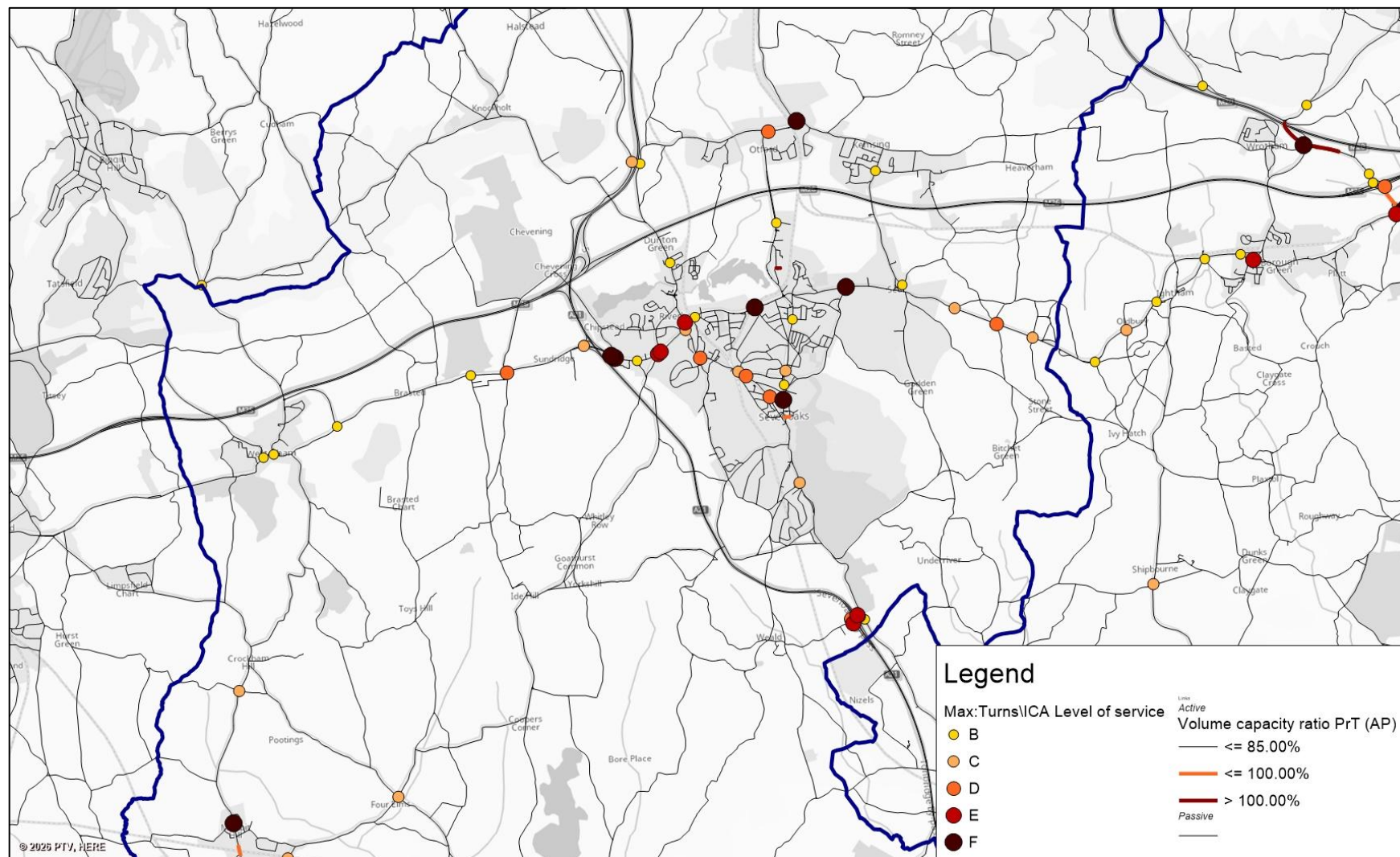


Figure 34 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio AM Peak – Sevenoaks Town and Otford

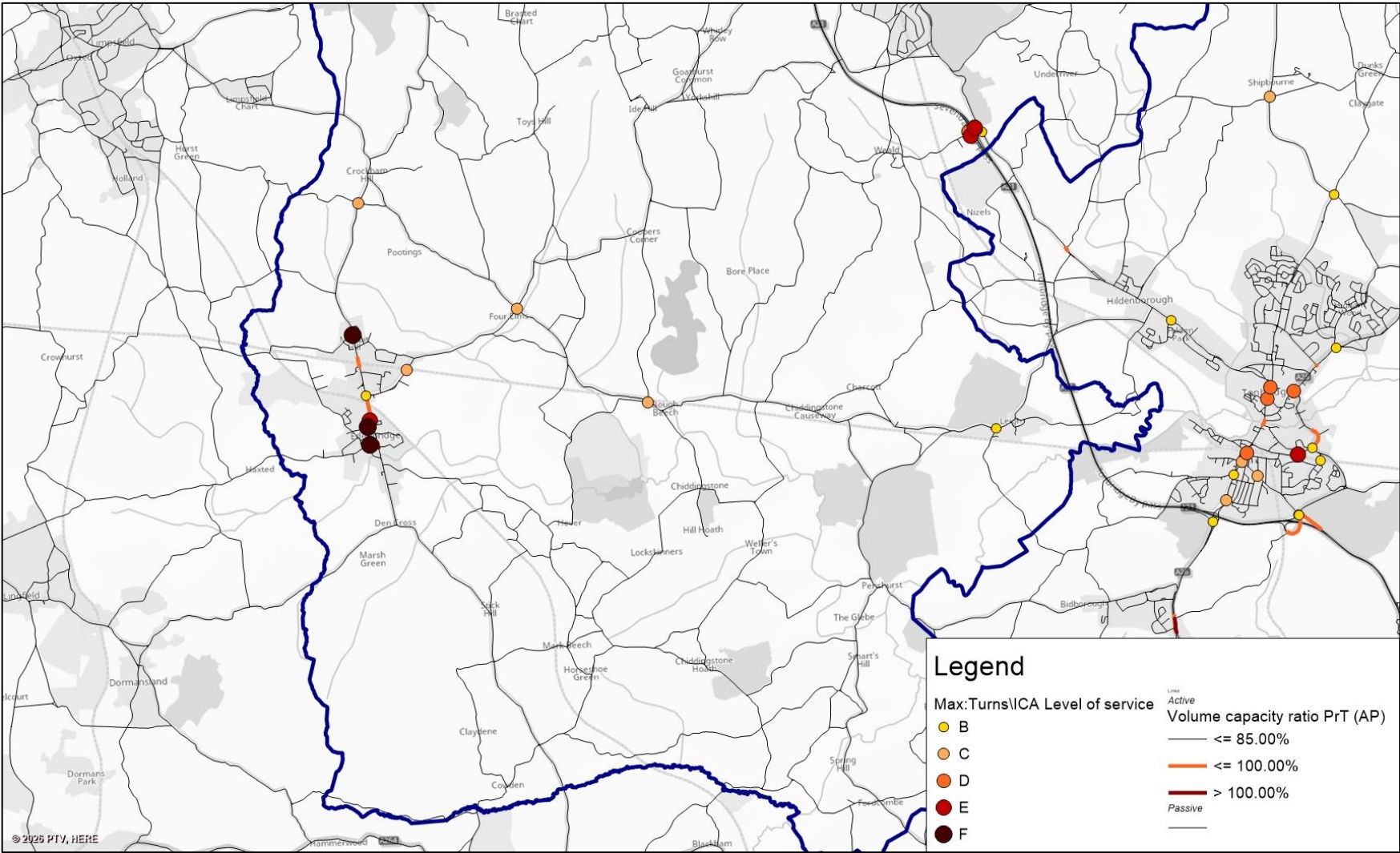


Figure 35 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio AM Peak – Edenbridge

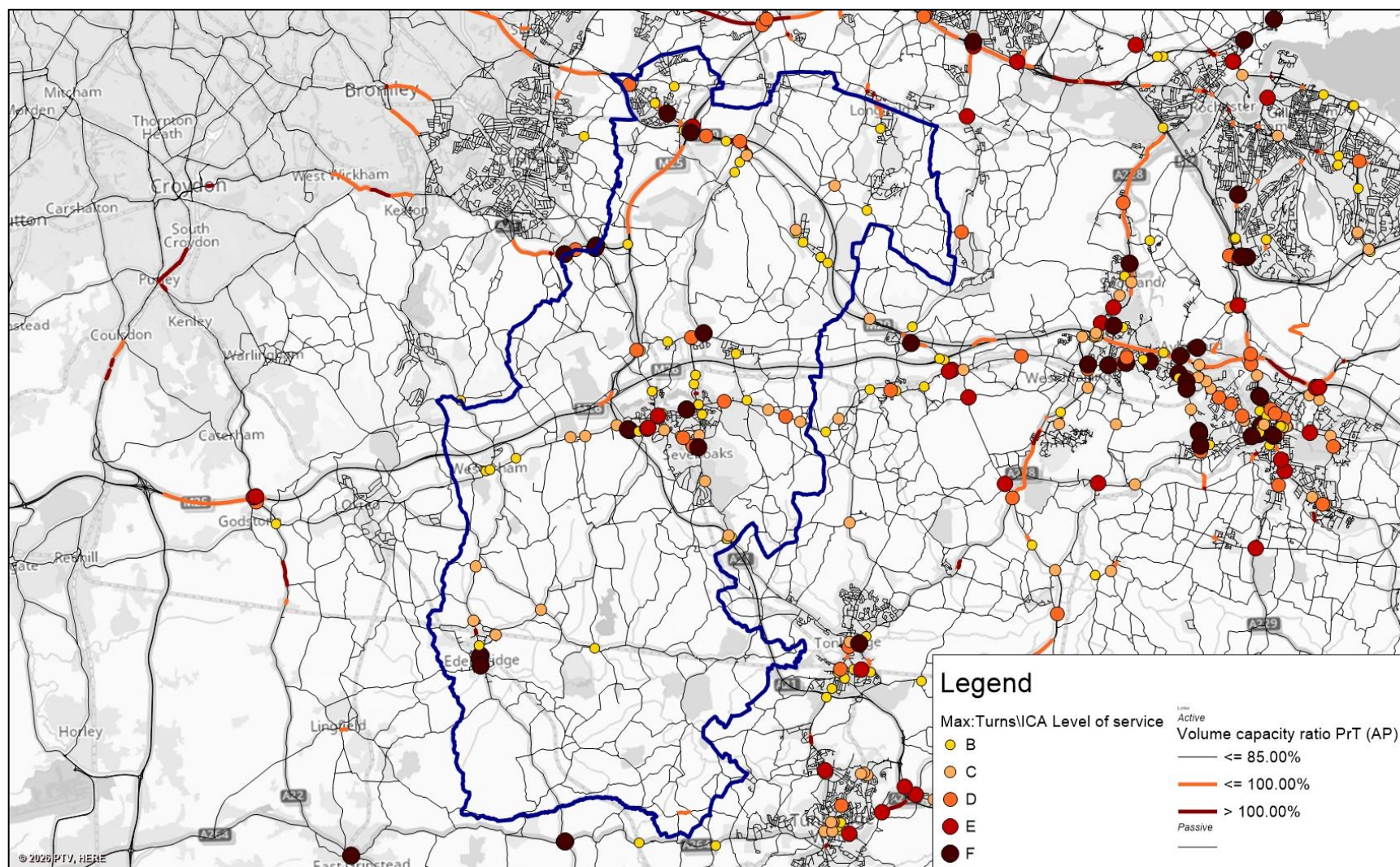


Figure 36 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio PM Peak – Sevenoaks District

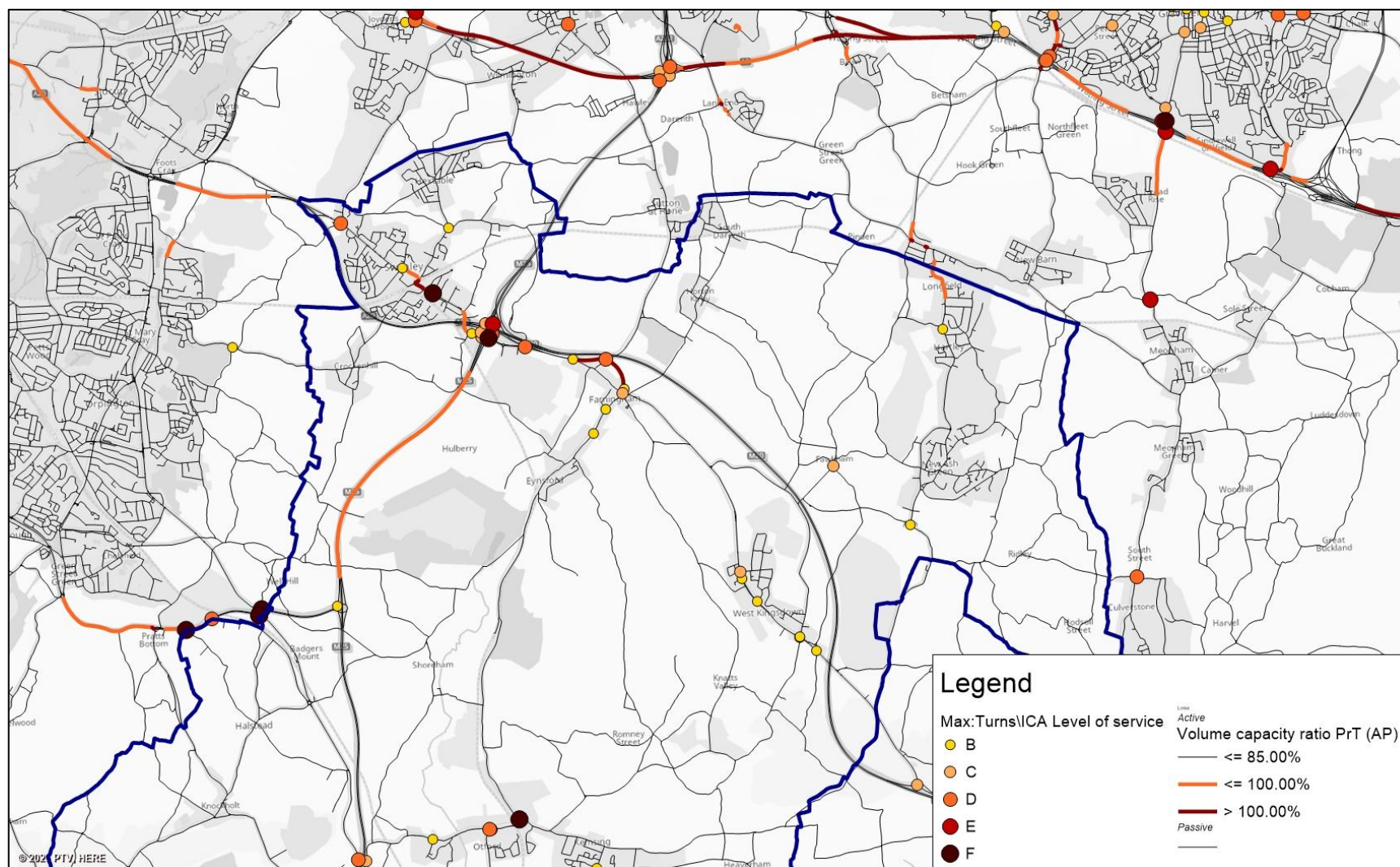


Figure 37 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio PM Peak – Swanley, Eynsford, New Ash Green and Halstead

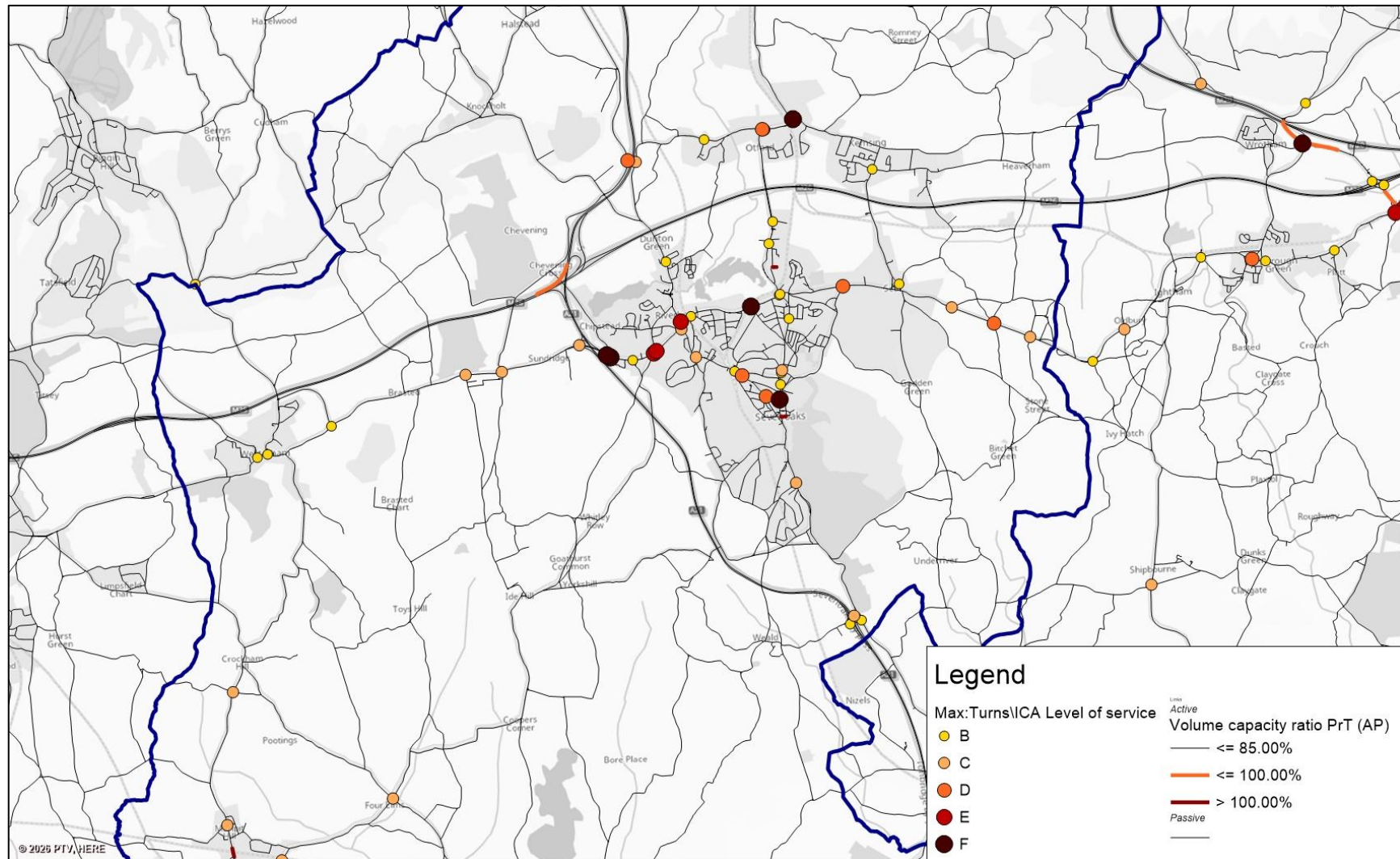


Figure 38 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio PM Peak – Sevenoaks Town and Otford

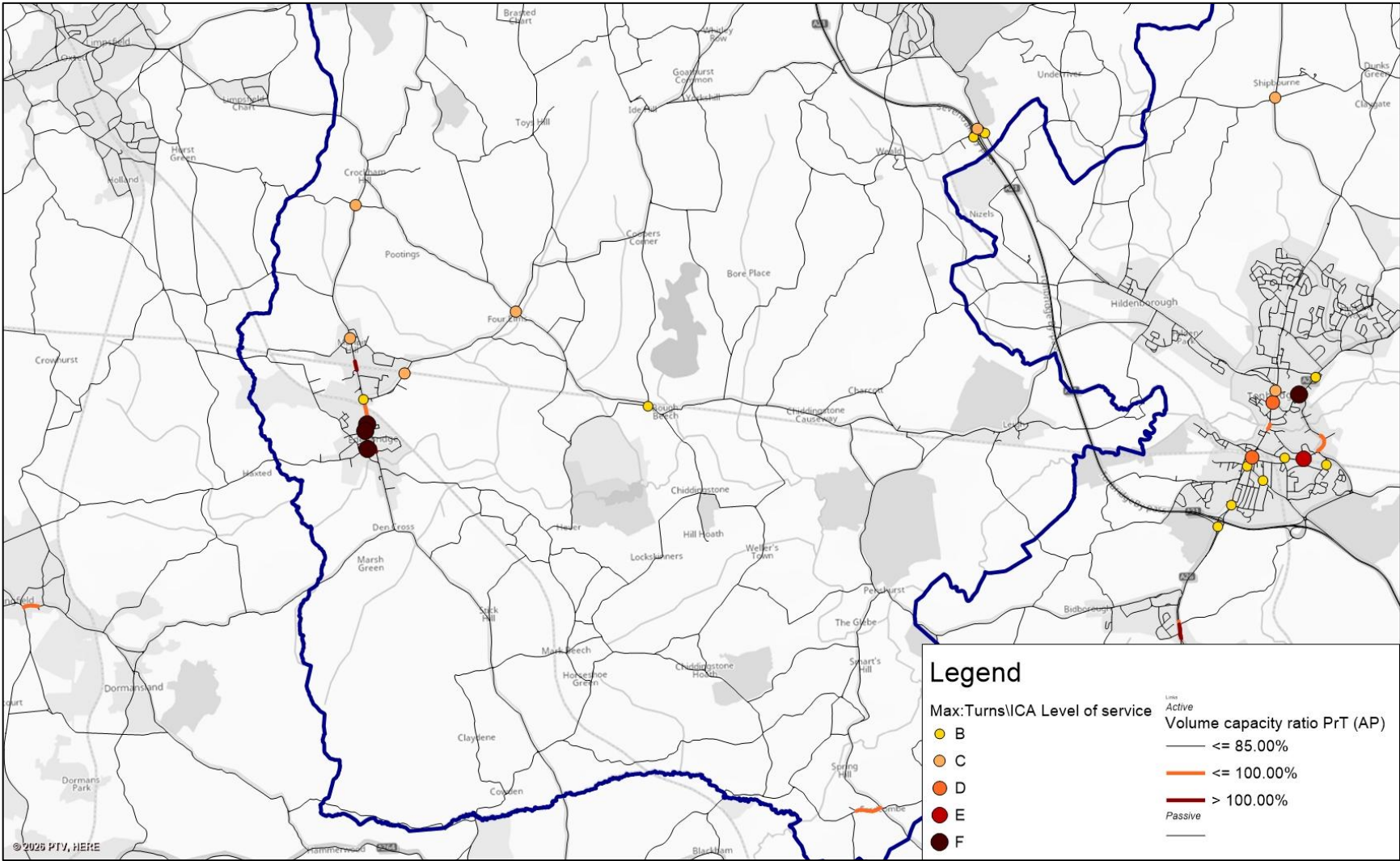


Figure 39 2042 LP Scenario with Modal Shift Junction LOS and Link Volume Capacity Ratio PM Peak – Edenbridge

4.3.3 Journey Time Comparison

Table 9 presents a comparison of journey times between the 2042 Local Plan scenarios with and without the inclusion of modal shift assumptions.

Consistent with the other performance indicators presented above, the results show no significant differences in journey times between the two scenarios. The limited variation reflects the relatively modest reductions in traffic demand associated with the applied modal shift assumptions.

This suggests that, while the modal shift measures provide some marginal relief in terms of traffic flows, the overall impact on network performance—particularly in relation to journey times—is minimal.

Table 5: 2042 Local Plan vs Local Plan with Modal Shift Scenario Journey Time Comparison

Route	Description	Direction	2042 Local Plan [min:sec]		2042 Local Plan with Modal Shift [min:sec]		Actual Difference [min:sec]		% Difference	
			AM	PM	AM	PM	AM	PM	AM	PM
1	B258 Swanley Lane	13_SB	07:15	07:21	07:15	07:20	00:00	00:01	0%	0%
	B258 Swanley Lane	13_NB	07:21	07:14	07:20	07:14	00:01	00:00	0%	0%
2	B2173 London Road / M25	14_EB	13:32	14:32	13:32	14:31	00:00	00:01	0%	0%
	B2173 London Road / M25	14_WB	17:06	17:45	17:02	17:43	00:04	00:02	0%	0%
3	A20-M20	15_EB	12:22	13:41	12:22	13:40	00:00	00:01	0%	0%
	A20-M20	15_WB	13:28	11:20	13:27	11:20	00:01	00:00	0%	0%
4	M25	16_SB	16:52	15:25	16:52	15:25	00:00	00:00	0%	0%
	M25	16_NB	14:30	15:46	14:29	15:46	00:01	00:00	0%	0%
5	M20 / A20 Main Road Gorse Hill	17_SB	16:17	17:47	16:13	17:43	00:04	00:04	0%	0%
	M20 / A20 Main Road Gorse Hill	17_NB	18:23	17:57	18:20	17:20	00:03	00:37	0%	-3%
6	M25-M26	19_EB	10:53	12:00	10:52	12:00	00:01	00:00	0%	0%
	M25-M26	19_WB	11:56	11:15	11:57	11:15	00:01	00:00	0%	0%
7	A224 London Road	22_SB	12:10	12:50	11:49	12:47	00:21	00:03	-3%	0%
	A224 London Road	22_NB	08:37	12:25	08:37	12:23	00:00	00:02	0%	0%
8	A224 Orpington By-Pass	24_NB	07:01	06:59	07:01	06:57	00:00	00:02	0%	0%
	A224 Orpington By-Pass	24_SB	06:40	06:58	06:39	06:57	00:01	00:01	0%	0%
9	A225 Sevenoaks Road / High Street	25_SB	09:10	09:21	09:09	09:19	00:01	00:02	0%	0%
	A225 Sevenoaks Road / High Street	25_NB	09:27	09:09	09:26	09:08	00:01	00:01	0%	0%
10	A224 Orpington By-Pass	26_NB	10:37	10:15	10:36	10:15	00:01	00:00	0%	0%
	A224 Orpington By-Pass	26_SB	10:25	10:56	10:25	10:55	00:00	00:01	0%	0%
11	Shoreham Road / A225 Sevenoaks Road	31_SB	23:09	22:01	23:08	22:01	00:01	00:00	0%	0%
	Shoreham Road / A225 Sevenoaks Road	31_NB	20:58	22:43	20:58	22:46	00:00	00:03	0%	0%
12	A25 Brasted Road / A25 Bradbourne Vale Road	32_EB	23:57	28:34	23:56	28:29	00:01	00:05	0%	0%
	A25 Brasted Road / A25 Bradbourne Vale Road	32_WB	27:28	25:18	27:35	25:17	00:07	00:01	0%	0%

Route	Description	Direction	2042 Local Plan [min:sec]		2042 Local Plan with Modal Shift [min:sec]		Actual Difference [min:sec]		% Difference	
			AM	PM	AM	PM	AM	PM	AM	PM
13	A225 Dartford Road / B262 Station Road / Hall Road	33_SB	18:30	15:01	18:30	14:59	00:00	00:02	0%	0%
	A225 Dartford Road / B262 Station Road / Hall Road	33_NB	17:57	16:39	17:57	16:39	00:00	00:00	0%	0%
14	Ash Road / B262 Station Road / Hall Road	34_SB	19:03	16:26	19:04	16:25	00:01	00:01	0%	0%
	Ash Road / B262 Station Road / Hall Road	34_NB	19:34	16:38	19:36	16:37	00:02	00:01	0%	0%

5. Summary and Recommendations

This report outlines the methodology adopted to develop the 2042 Local Plan scenario, along with the approach used to identify key junction and link “hot spots” across the Sevenoaks district.

With the inclusion of additional demand associated with Local Plan developments, the model forecasts notable increases in traffic flows along several key corridors. These increases are particularly evident in Swanley, Eynsford, New Ash Green, Halstead, Sevenoaks Town, Otford, and Edenbridge.

Many of the junction and link “hot spots” identified in the 2042 Forecast Baseline persist under the 2042 Local Plan scenario. However, the additional growth generated by the proposed development sites further exacerbates capacity pressures, leading to a deterioration in performance at a number of junctions and along several corridors across the district.

The results of this assessment are summarised in the table below.

Area	Road /Junction	2019 Base	2042 Forecast Baseline	2042 Local Plan	2042 Local Plan + Modal Shift
Swanley, Eynsford, New Ash Green and Halstead	Bartholomew Way	>85%	>100%	>100%	>100%
	High Street	>85%	>100%	>100%	>100%
	M25 between J3 and J4 Southbound	-	>85%	>100%	>100%
	A20 Main Road	-	>85%	>100%	>100%
	High Street/St Georges Road	E	E	F	F
	M25 J3	F	E	F	F
	Hewitts Roundabout	F	F	F	F
Sevenoaks Town, and Otford	A25 / Bradbourne Road	E	F	F	F
	Seal Road/Filmer Lane/ Seal Hollow Road	E	F	F	F
	Westerham Road/Larkfield Road	E	F	F	F
	A25 / Otford Road / St Johns Hill	F	A	A	A
	High Street/Pembroke Road	F	F	F	F
	Westerham Road/ A21 Onslip SB	F	F	F	F
	Station Road / Shoreham Road / Pilgrims Way E	E	E	F	F
	Westerham Road / Cold Arbor Road	-	E	E	E
	Worship Road / Witches Lane	-	E	E	E
	A25 London Road / Maidstone Road	-	E	E	E
	Morleys Roundabout	-	E	E	E
	Mont St Aignan Way/Lingfield Road	F	F	F	F
	Mont St Aignan Way/Stangrove Road	F	F	F	F

Area		Road /Junction	2019 Base	2042 Forecast Baseline	2042 Local Plan	2042 Local Plan + Modal Shift
		B2026 Station Road/High Street	E	E	E	E
		B2026Main Road / Hilders Lane / Hillcrest Road	-	-	F	F

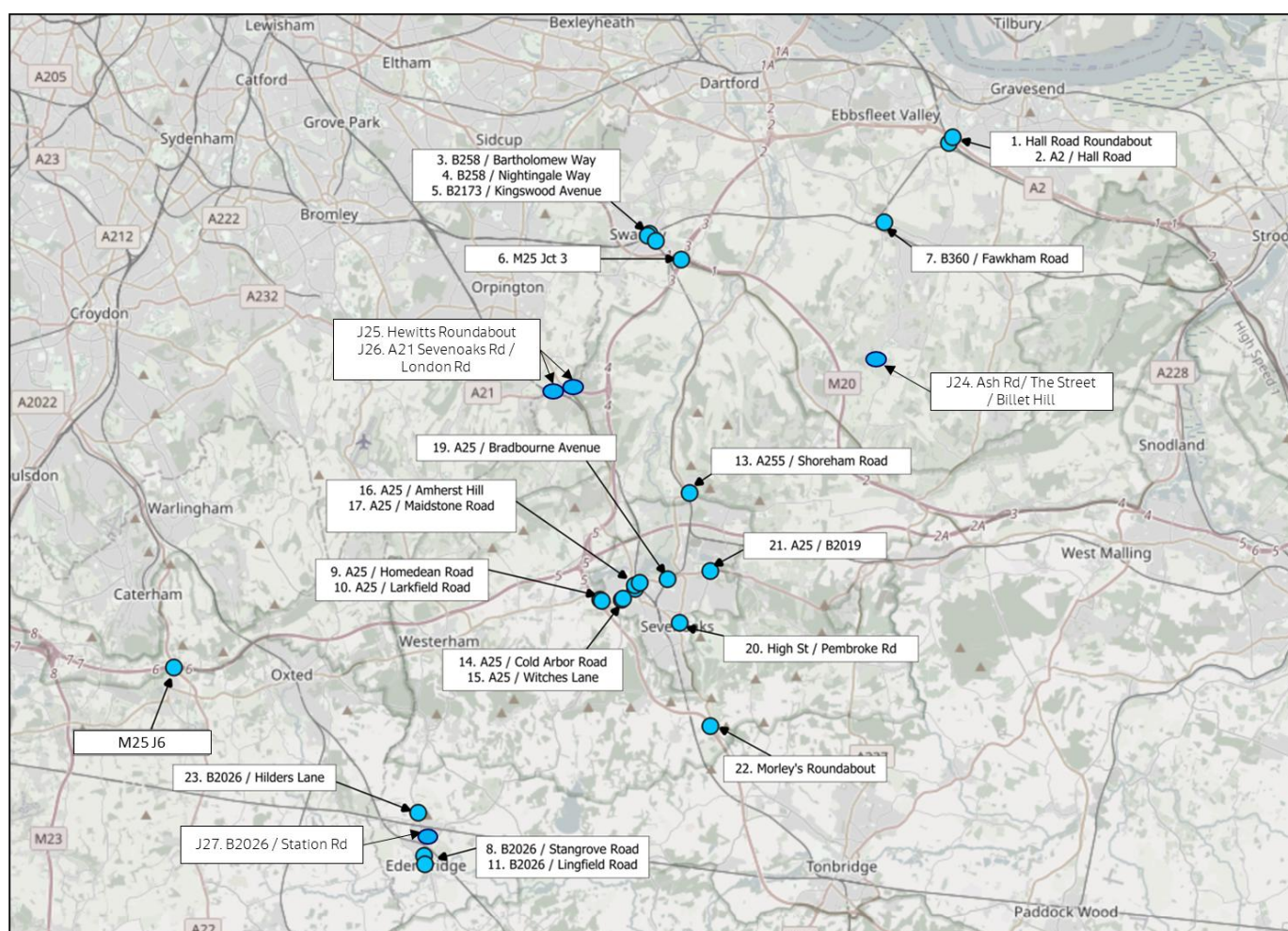
Table 5-1: 2042 Local Plan List of Junction and Link “Hot Spots”

The comparison of travel times between the 2042 Local Plan scenario and the 2042 Forecast Baseline indicates only marginal differences overall. This may, in part, be attributable to the network already operating under congested conditions in the Forecast Baseline, thereby limiting the extent to which further increases in delay are reflected in journey time metrics.

Route 7 (A224 London Road) and Route 2 (B2173 London Road / M25) experience the highest increases in journey times, ranging from 11% to 20% during the PM peak. This is likely attributable to additional traffic associated with the proposed Land North of Sevenoaks and Pedham Place developments, as both developments are located in close proximity to these routes.

The introduction of modal shift assumptions (5–10%) results in only modest reductions in traffic flows, with limited impact on junction performance or journey times. While these assumptions are considered appropriate at this stage, they do not materially change overall network performance, and key congestion issues remain

In light of these findings, a number of junctions have been identified for further assessment through detailed local junction modelling. This subsequent stage of analysis will provide a more robust evaluation of operational performance, enabling confirmation of potential capacity constraints and the identification of any mitigation measures that may be required.



As mentioned earlier, the junction and link “hot spots” identified in this assessment, based on the strategic model, provide only a high-level indication of potential capacity constraints. Strategic modelling is inherently less detailed and is primarily intended to highlight locations where further, more detailed analysis may be required.

Accordingly, local junction modelling was undertaken as the next step to confirm whether capacity issues are likely to arise and to determine the extent of any impacts. This more detailed level of modelling incorporates refined network coding, including junction geometry, lane allocation, signal staging, and operational characteristics, which cannot be fully represented within the strategic model framework.

As a result, it is possible that not all junctions identified in Figure 24 will ultimately be shown to experience significant operational issues or require mitigation once assessed using local junction models. The outcomes of the detailed modelling may therefore differ from the initial high-level findings presented here.

The undertaking of local junction modelling forms part of the Sevenoaks Local Plan evidence base and the results of this are documented in a separate report.

The assumptions guiding this analysis are based on the available information at the time of modelling. Should new or additional information come to light that could significantly affect the results presented in this report, further review should be considered.

Finally, as mentioned in the earlier section, this report has been submitted in draft form and is subject to review by Kent County Council (KCC) and National Highways (NH). Further revisions may be required in the final version, depending on feedback received from both parties.

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