

South Wealden and Eastbourne Transport Study

Report by East Sussex County Council for
Wealden District Council and Eastbourne Borough
Council, based on technical reports by Transport
Planning (International) Ltd

**South Wealden and Eastbourne Transport Study (SWETS) November
2010**

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1.0 Introduction

Overview

1.1 The South Wealden and Eastbourne Transport Study (SWETS) is a study commissioned by Wealden District Council (WDC), Eastbourne Borough Council (EBC) and East Sussex County Council to assist in the preparation of the Wealden District and Eastbourne Borough Core Strategies as part of the respective Local Development Frameworks (LDF).

1.2 The study was carried out in three phases, reflecting changing circumstances nationally, due to the revocation of the South East Plan, the outcome of each phase of SWETS and the developing Core Strategies. SWETS therefore is part of the iterative process of the development of the Core Strategies.

1.3 The original study (SWETS phase I) also provides an evidence base to assist in identification in a range of packages of transport measures, which may include major and/ or minor infrastructure investment, and other wider measures, in the Polegate / Folkington area around the A22/A27 and A271 corridors. It also provides an evidence base and framework within which an updated Local Area Transport Strategy (LATS) for the area may be developed.

1.4 Transport modelling work was carried out by consultants Transport Planning (International) Ltd (TPI), managed on behalf of the commissioning authorities by East Sussex County Council (ESCC). The original brief (SWETS phase I) was overseen by a Steering Group comprising the three local authorities and representatives of the Highways Agency (HA) and the South East England Partnership Board (which has now recently been disbanded).

1.5 Two subsequent iterations of SWETS, Phase II and Phase III were commissioned by Wealden District Council, to further the development of the evidence base for the Core Strategy. The results of Phase II and III are incorporated in this report.

2.0 Phase I Study

Background to Phase I

2.1 The initial study required development of the existing Eastbourne multi-modal transport model sufficiently to:

- Inform the preparation of the Local Development Framework (LDF) Core Strategies for both Wealden District and Eastbourne Borough, enabling identification and testing of transport measures needed to deliver the respective Core Strategies;
- Provide an evidence base to assist in identification in a range of packages of transport measures, which may include major and / or minor

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- infrastructure investment, and other wider measures, in the Polegate/Folkington area around the A22/A27 and A271 corridors; and
- Provide an evidence base and framework within which an updated Local Area Transport Strategy (LATS) for the area may be developed

2.2 The initial study (phase I) was commissioned in January 2010 prior to the revocation of the Regional Spatial Strategy, the South East Plan, and whilst the respective Core Strategies were being developed. At this time a number of options were being considered by each authority and the purpose of the study was to assist in the determination, with other evidence, of the most appropriate spatial distribution.

2.3 The principal objectives for phase I SWETS were

- (from a WDC perspective) to advise whether the South East Plan requirements for growth (from 2006 to 2026) could be accommodated within existing transport networks, and whether additional deliverable infrastructure is necessary facilitate to growth required by the South East Plan;
- (particularly from an EBC perspective) to advise on the transport case for long standing new highways proposals in the Eastbourne Park area;
- to identify, if appropriate, preferred LDF housing and employment development allocation options for both EBC and WDC on the basis of a comparative transport appraisal; and
- to identify any causal linkages between the alternative LDF housing and employment development allocation options and improvement of the trunk road network to the west of Polegate (an intervention known as the Folkington Link or similar).

Scope of Phase I Study

2.4 The project entailed the following main stages:

- Achieve an accurate model representation of current highway and public transport (PT) conditions at base year 2009 AM and PM peaks, in the Eastbourne / South Wealden modelled area;
- Prepare future year demand forecasts in the study area at 2016 and 2026 for a reference case¹ and combinations of nine alternative LDF housing and employment development allocation options to for both WDC and EBC²;
- Assign the future year demand forecasts to the highway and public transport networks at 2016 and 2026, to determine the likely impact upon existing transport networks;
- Identify appropriate transport interventions to mitigate the effects of the different development scenarios; and
- Undertake a comparative appraisal of the transport impacts of combinations of alternative LDF housing and employment development

¹ Modelled using TEMPRO data (base case and usually lower traffic flows)

² Modelled using TRICS data (industry standard for LDF testing resulting in higher traffic flows than base case)

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allocation options for both WDC and EBC and identify, if appropriate, preferred options on that basis.

Modelling

2.5 The study is based upon a base model which takes into account completions and commitments³ as of June 2009 for the study area. The study area is shown in Appendix 1.

2.6 WDC and EBC provided three alternative distribution options for housing and employment development from this base date, showing the proposed additional development at 2016 and 2026. These alternative distributions are shown in Appendix 2. The WDC and EBC alternative options combined provided for nine scenarios.

2.7 WDC alternatives included one scenario meeting the South East Plan requirements for 7,000 dwellings in the part of Wealden within the Sussex Coast Sub Region⁴. The other two WDC alternatives resulted in housing numbers lower than the South East Plan requirement in the part of Wealden within the Sussex Coast Sub Region and provided two alternative spatial distribution, around the towns of Hailsham and Polegate. A windfall allowance, based on previous trends, was included in addition to the allocations being tested. It was considered at the stage of Core Strategy development reached at the initiation of phase 1 that testing these configurations would assist in providing evidence as to the most appropriate distribution, taking into account concerns raised regarding the deliverability of 7,000 homes in south Wealden and the pressure on transport infrastructure.

2.8 EBC alternatives included three alternative spatial distributions within Eastbourne, based on developing scenarios. Each distribution required windfalls to meet the South East Plan requirements, and these were taken into account in the modelling.

2.9 The work carried out for Phase I included demand forecasting and assignment work on forecasting the impacts on the existing transport networks of the alternative nine LDF housing and employment development allocation options to 2016 and 2026 for both WDC and EBC. From this initial stage it was agreed to test the Wealden South East Plan option with the three EBC alternative options with a range of appropriate packages of transport interventions. The packages of transport interventions are shown on page 9.

Base Model

2.10 The multi-modal transport model in existence prior to this study has been updated to 2009 weekday AM and PM peak conditions in an expanded study area extending west to east between East Dean and Pevensey and from south to north from the coast to Hailsham as shown in Appendix 1.

³ Extant Planning Permissions for both housing and employment as of June 2009

⁴ A region defined by the South East Plan including Hailsham and Polegate

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2.11 In order to create a model which is fit for purpose the base year trip origin to destination (O-D) matrices have been updated using Census data and matrix estimation, together with traffic count data from the last three years and new bus boarding and alighting counts from 2010. The resultant highway matrices contain three vehicle types: Car, Light Commercial Vehicle and Heavy Commercial Vehicle. The public transport matrices contain two passenger types: bus and rail.

2.12 Model calibration notes have been prepared by TPi (Technical Note 1, SATURN Model Calibration, and Technical Note 2, Public Transport Model Calibration). These are available on request from ESCC.

2.13 The SATURN highway model achieved a flow calibration in which 84% of assigned flows in the AM peak and 86% of flows in the PM peak are within an accuracy level ('GEH statistic') of 5.0 or less, compared with observed flows (The 'GEH statistic' target set by Department for Transport (DfT) is 85% within 5.0 or less). Similarly, the model achieved a journey time calibration in which 86% of routes in the AM peak and 92% of routes in the PM peak showed a modelled time within 15% of observed (the target set by DfT is 85% within 15% of observed).

2.14 In the public transport model, 85% of assigned passenger flows in the AM peak and 88% of flows in the PM peak are within an accuracy level ('GEH statistic') of 5.0 or less, compared with observed flows (the 'GEH statistic' target set by DfT is 85% within 5.0 or less).

2.15 The model therefore provides an acceptable overall level of calibration accuracy and is considered to be sufficiently robust to be used as the basis for the forecasting purposes of this study. There are, however, some aspects which will need to be considered and addressed, if appropriate, in any future use of the model which are outlined in Appendix 3.

Forecast Model

2.16 Forecast AM and PM peak period travel demand O-D matrices were assembled for a 'Reference Case' and for all LDF scenarios at both 2016 and 2026. The reference case is in line with nationally recognised trip generating databases and the specific approach for forecasting the reference case and the LDF scenarios are shown in Appendix 4.

Assessment

2.17 *Development Options* are defined as alternative LDF housing and employment development spatial and quantum allocations to 2016 and 2026 prepared for the purposes of this study by both WDC and EBC for their respective areas.

2.18 *Development Scenarios* are defined as combinations of *Development Options*.

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2.19 The broad components of the *Development Options* as used in this study are summarised below. Specific locational allocations for testing purposes are shown in Appendix 2.

2.20 For both WDC and EBC, it was assumed that 'windfall' residential completions would occur evenly across all model zones within their respective parts of the combined study area.

2.21 Spatial allocations in the WDC *Development Options* were focussed upon Hailsham, Polegate and Stone Cross, with some additional development in Herstmonceux, Berwick, Ninfield, Magham Down and Upper Dicker. WDC Option 1 fully complies with the South East Plan (SE Plan) allocation for south Wealden and assumes that 1,000 more dwellings are allocated in the south of the District than in WDC Options 2 and 3 which only partly meet the SE Plan.

Table 1: South Wealden Development Options

Land Use	WDC Development Options		
	WDC Option 1	WDC Option 2	WDC Option 3
	'Hailsham Focus'	'North and East Hailsham Focus'	'East and South East Hailsham Focus'
2009-2016			
Residential	847 units	681 units	683 units
Employment & Retail	5,788 sqm	5,795 sqm	5,788 sqm
Residential Windfalls	140 units	140 units	140 units
2016-2026			
Residential	3,977 units	3,144 units	3,142 units
Employment & Retail	28,932 sqm	28,925 sqm	28,932 sqm
Residential Windfalls	200 units	200 units	200 units
2009-2026			
Residential	4,825 units	3,825 units	3,825 units
Employment & Retail	34,720 sqm	34,720 sqm	34,720 sqm
Residential Windfalls	340 units	340 units	340 units

Table 2: Eastbourne Development Options

Land Use	EBC Development Options		
	EBC Option 1	EBC Option 2	EBC Option 3
	'Creating	'Sustainable	'Greenfield

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	Sustainable Centres'	Neighbourhoods'	extensions'
2009-2016			
Residential	1,358 units	1,358 units	1,358 units
Employment & Retail	0 sqm	0 sqm	0 sqm
Residential Windfalls	0 units	0 units	0 units
2016-2026			
Residential	1,254 units	1,049 units	1,011 units
Employment & Retail	138,625 sqm	135,685 sqm	193,685 sqm
Residential Windfalls	1,154 units	1,359 units	1,397 units
2009-2026			
Residential	2,612 units	2,407 units	2,369 units
Employment & Retail	138,625 sqm	135,685 sqm	193,685 sqm
Residential Windfalls	1,154 units	1,359 units	1,397 units

Infrastructure Issues

2.22 *Infrastructure Issues* testing modelled the impacts of each *Development Scenario* on the existing transport networks at the longer term 2026 planning horizon. Initial *Infrastructure Issues* testing was carried out for all nine possible *Development Scenario* combinations at 2026.

2.23 Subsequently it was agreed that further model assessments should be carried out only for those *Development Scenarios* based on full compliance with the SE Plan. No further testing was therefore carried out using WDC Options 2 and 3. In addition, the employment forecast in EBC Option 3 was amended to be the same as in EBC Option 2 (the difference being the removal of new 'greenfield' development in the Eastbourne Park area which would be expected to be conditional on the Eastbourne Park road proposals).

2.24 Combined *Development Scenarios* subject to testing through transport intervention stage were therefore:

- 2016 *Scenario 1* (WDC Option 1 and EBC Option 1);
- 2026 *Scenario 1* (WDC Option 1 and EBC Option 1);
Scenario 6 (WDC Option 1 and EBC Option 2); and
Scenario 10 (WDC Option 1 and EBC Option 3a – as 3 but excluding additional Greenfield site employment allocations)

2.25 An additional scenario has been included, which is described as scenario 1 minus 10%. This scenario modifies scenario 1 and reduces traffic

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generation by 10% through the provision of 'smarter choices'. Smarter choices are a package of measures which seeks to change the behavior of motorists to more sustainable modes of transport. These measures have not yet been determined, but would require the behavior change of not just only residents in new developments but the existing workforce and resident population.

Transport Interventions

2.26 The assessment considered the transport impacts of growth under the test *Development Scenarios* without any complementary changes to the existing transport networks, and the impacts of a range of packages of *Transport Interventions*. *Transport Interventions* tested were based on strategic measures identified within the relevant Local Area Transport Strategy and appropriate variants and additions, and comprise:

- Public transport improvements
 - A2270 and A259 Quality Bus Corridors (QBCs); plus
 - Eastbourne – Hailsham express bus service
- A27 Folkington Link
- A22/A27 Cophall roundabout signals
- A22 junction improvements (signals) at
 - A27(Polegate bypass)/ A22/ A27(Pevensay bypass) roundabout; and
 - A22/Dittons Road roundabout
- Eastbourne Park highway proposals

2.27 Those individual measures have been combined into *Transport Intervention Packages (TIPs)* for testing. The packages tested are shown in table 3:

Table 3: Transport Intervention Package

Transport Intervention	1	2	3	4	5
Folkington Link	✓		✓		✓
A22 / A27 Cophall signals		✓		✓	
A22 junction improvements	✓	✓			✓
Public Transport improvements	✓	✓	✓	✓	✓
Eastbourne Park road Proposals			✓	✓	✓

Intervention Testing

2.27 *Intervention Testing* was carried out for range of combinations of *Development Scenario* and *Transport Intervention Package*. The range was selected and designed to provide sufficient evidence to support the objectives of the study without testing every combination possible. The Combinations tested are shown in the following table.

Table 4: Intervention Testing

Year	Development Scenario	Transport Intervention Package					
		None	TIP 1	TIP 2	TIP 3	TIP 4	TIP 5
2016	Reference Case	✓					
	Scenario 1	✓	✓				
2026	Reference Case	✓					
	Scenario 1	✓	✓	✓			
	Scenario 6	✓	✓				
	Scenario 10	✓			✓	✓	✓
	Scenario 1 - 10%		✓				

Assessment Results

Context

2.28 Growth in vehicle trips across the combined SWETS area from the 2009 base year to 2016 and 2026 forecast years has been estimated using two different methodologies. The TEMPRO/NTM model based approach is required by Department for Transport when considering transport schemes in competition for funding with others nationally and regionally. The alternative TRICS model is a standard approach to estimating the number of trips from new development, based on a database of observed data covering all types of development. It is an industry standard for use in the assessment of the transport impacts of individual developments. These two scenarios will provide for different figures for growth in vehicle trips due to the different methods used and provide a good comparison for determination of growth.

2.29 Comparison of the results from the two methodologies shows that the degree of variance in trip matrix growth is small in 2016 (about 7% to 8.5% difference), but is much larger, at about 18% to 38% difference, in 2026.

2.30 At 2026, the TEMPRO/NTM based approach provides the lower estimate. TEMPRO implied household trip rates are on the whole low compared to other sources (e.g. TRICS) and may be better suited to strategic studies where short distance trips are not significant and/or important. In an urban LDF development scenario testing context, this approach may tend to produce a lower estimate of total new trips. In applying the TEMPRO based growth across the area in proportion to existing trips, new development is assumed to be more widely and evenly spread than may be the case in any particular spatial development option under consideration.

2.31 The lower TEMPRO/NTM growth estimate provides a reference against which to judge the likely impacts of development scenarios and

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packages of transport interventions at the most favourable extreme of the possible range. Testing of the transport implications of growth at this level without transport intervention is represented by the 'Reference Case'.

2.32 The higher 2026 estimate results from application of TRICS derived trip rates for all proposed new development, with TEMPRO/NTM used only for through trips.

2.33 This approach may produce an upper estimate when applied as it reflects current travel practices. Therefore the impact of any proposed new development designed to promote the use of alternative transport methods is not taken into account. In addition, it is unable to take into account of possible (downward) changes in trip rates over time in response to demographic, economic and attitudinal factors outside its scope. It does, however, enable more spatially exact forecasts of where growth in transport demands are actually likely to arise in response to any particular spatial development strategy.

2.34 The higher, worst case, growth estimate has been used in all comparative testing carried out in this study. All conclusions are therefore robust at the higher extreme of the possible range of growth outcomes, and is taken into account when undertaking analysis of results.

2.35 A further test was carried out at 2026 for *Development Scenario 1 + TIP 1* with the matrix reduced by 10% (i.e. the upper end of the possible range – approx +18 to +38% - reduced to approx +24%). This test was undertaken to assess the sensitivity of conclusions at the upper growth level to a more central estimate of growth (also allowing for about 3-4% reduction resulting from area-wide promotion of other non-infrastructure 'Smarter Choices' initiatives).

2.36 Transport impacts have been expressed using a range of transport network statistics, including:

- private / public transport modal share;
- highway network total travel time, distance and fuel consumption, and average vehicle speed;
- 'junction stress' – expressed as the percentage of key junctions on major routes that have one or more arm(s) approaching or at capacity (key junctions are those which are either important nodes in the network or those which are significant means of access to/from adjacent areas); and
- Increase / decrease in flow (compared to 2009 base year) on major routes.

2.37 Appendix 5 shows the summarised results.

2.38 Appendix 6 shows the detailed model outputs for junction traffic loadings, with those showing 'junction stress' being identified using a traffic-light colour coding system.

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2.39 Appendix 7 shows 'dot diagrams' of junctions under stress, mapped on an Ordnance Survey base of the study area.

2.40 Detailed reviews of the results and their implications for EBC and WDC separately are presented below.

Eastbourne (EBC)

2.41 In 2009 base year, 10-20% of junctions are stressed (depending on peak hour), and average network speed is about 38 kph (24 mph). Overall this is not unacceptable for such an urban area.

2.42 By 2016, in both *Reference Case* and *Development Scenario 1*, there is a slight deterioration but overall network average speeds, and the percentage of key junctions on major routes experiencing stress, are similar to 2009.

2.43 By 2026 (Low growth estimate – the *Reference Case*), the number of junctions that are stressed has broadly doubled to 20-35%, but average network speed is less changed at about 35 kph (22 mph).

2.44 By 2026 (High growth estimate), and with no transport interventions, the transport impacts of the three *Development Scenarios* are more substantial. Average network speeds reduce to about 25-28kph (16-18 mph) and the percentage of junctions showing stress increases to 40-50%. The overall network impacts of the three *Development Scenarios* are similar, although Scenario 1 performs slightly less well than both Scenarios 6 and 10 in the PM peak.

2.45 With a *Transport Interventions Package* (TIP 1) including the A2270 and A259 Quality Bus Corridors QBCs, junction improvements at the northern end of A22 Jubilee Way, and the A27 Folkington Link, average speeds can be improved to about 30kph (19 mph) and junctions at stress reduced to 35-40%. Inclusion of signals at Cophall roundabout (as in TIP 2) instead of the Folkington Link (as in TIP 1) would only give about half of this improvement. Scenario 6 remains slightly the better performer compared to Scenario 1.

2.46 Including the Eastbourne Park road proposals in Scenario 10 (+ TIP 5) improves its performance to equal or slightly better than Scenario 6 (+ TIP 1) depending on peak hour. Both Folkington Link and the A22 Jubilee Way junction improvements contribute to the improved Scenario 10 (TIP 5) performance compared to Scenario 10 alone.

2.47 Regardless of *Development Scenario* and *Transport Interventions Package*, outstanding highways issues at 2026 include traffic volumes on the town centre ring road, and the competing demands for capacity (public transport / private) on the identified QBC corridors.

2.48 A 10% matrix reduction at 2026 (equivalent to just under the mid-point of the low / high forecasting range) would have a roughly pro-rata effect on

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impacts (i.e. transport impacts lie just under halfway between those arising from low and high growth).

2.49 Key conclusions for Eastbourne are:

- In 2009 base year, 10-20% of junctions are stressed (depending on peak hour), and average network speed is about 38 kph (24 mph). Overall this is not unacceptable for such an urban area.
- Additional trips in both forecast years increase traffic pressures on the highway network. By 2016 there is a slight deterioration in overall network average speeds, and in the percentage of key junctions on major routes experiencing stress. By 2026 (high growth), average highway speeds drop to about 25 kph (from about 38 kph in 2009) with about half of all key junctions on major roads showing stress.
- The network performance indicators used suggest that, within the range of development tested, the highway network responds in a fairly consistent manner, i.e. there does not appear to be a development quantum 'tipping point' beyond which additional development gives rise to disproportionately large highway performance consequences.
- There is no clear front runner in the choice between the three Eastbourne *Development Options*. Option 1 performs least well overall and Option 3a slightly the best, but the differences are small and often limited to only one of the peak hours.
- All *Transport Intervention Packages* tested can partially address the issues arising in 2026.
- It is unlikely that the marginal transport impact advantages of Scenario 10 (EBC Option 3a) + TIP 5 compared to Scenario 6 (EBC Option 2) + TIP 1 would outweigh the considerably greater cost of the Eastbourne Park road proposals in TIP5 in a more comprehensive cost-benefit analysis.
- The preferred choice would therefore appear to lie between *Development Scenarios* 1 and 6 (i.e. EBC Development Options 1 and 2), together with *Transport Intervention Packages* 1 or 2. The assessment indicates that Scenario 6 has an overall network advantage, and that TIP 1 (which includes Folkington Link) is better than TIP 2 (which includes signals at Cophall roundabout instead). The preferred combination is therefore EBC Development Option 2 plus Transport Intervention Package 1.
- In the absence of the Folkington link, or equivalent, in any regional funding then Transport Intervention Package 2 would mitigate the impact on the transport network sufficient to allow development to progress.
- Regardless of *Development Scenario* and *Transport Intervention Package*, outstanding issues at 2026 include traffic volumes on the town centre ring road, and the competing (public / private transport) demands for available capacity on the identified QBC corridors.

South Wealden (WDC)

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2.50 In 2009 base year, only 7-15% of junctions are stressed, and average network speed is about 50-55 kph (31-34 mph). Overall this indicates a network generally able to accommodate current flows.

2.51 By 2016, in both *Reference Case (lower case scenario)* and *Development Scenario 1 (higher case scenario)*, there is a slight deterioration in overall network average speeds. The percentage of key junctions on major routes experiencing stress increases markedly, particularly in the PM peak, but often as a result of relatively small changes in performance around the threshold values of flow: capacity ratio adopted in the assessment.

2.52 These changes in 2016 PM peak network performance concentrate where the A27 and A22/A2270 corridors intersect. The major component of housing growth 2009-2016 in south Wealden is in Hailsham, but traffic growths on the A22N and A27 are not only higher than the average network growth 2009-2016, but are consistently higher in the *Reference Case* than in *Scenario 1*. This indicates that both strategic and local factors contribute to change at this critical part of the network with strategic growth the more important.

2.53 Inclusion of *Transport Interventions Package 1* at 2016 substantially improves overall network performance to as good as or better than (depending on peak hour) the 2009 base year. The main contributor in *TIP 1* being the Folkington Link, which resolves capacity issues in 2016 at the A22/A2070.

2.54 By 2026 (Low growth estimate – the *Reference Case*), the number of junctions that are stressed has substantially increased to 22-38%, but average network speed remains relatively high at about 45-50 kph (28-31 mph).

2.55 By 2026 (High growth estimate), and with no transport interventions, the transport impacts of the three *Development Scenarios* increase. Average network speeds reduce to about 40-44 kph (25-27 mph) and the percentage of junctions showing stress increases to 50-57%. The overall network impacts of the three *Development Scenarios*, with no *Transport Interventions*, are similar. Without *Transport Interventions*, nearly all major junctions in and around Hailsham and Polegate suffer stress.

2.56 With a *Transport Interventions Package (TIP 1)* including the A2270 (and in Eastbourne the A259) Quality Bus Corridors, junction improvements at the northern end of A22 Jubilee Way, and the A27 Folkington Link, average speeds for *Development Scenarios 1* and 6 can be improved to about 45-50 kph (28-31 mph) and junctions at stress reduced to 32-35%. Junctions within Polegate no longer suffer stress and the number in Hailsham town is halved. Inclusion of signals at Cophall roundabout (as in *TIP 2*) instead of the Folkington Link (as in *TIP 1*) would only give about half of this improvement.

2.57 Including the Eastbourne Park road proposals in *Development Scenario 10* (and *TIP 5*) improves its performance in the south Wealden area

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to equal that of *Development Scenarios 1 or 6 (with TPI 1)*. Both Folkington Link and the A22 improvements contribute to the improved Scenario 10 performance.

2.58 Regardless of *Development Scenario* and *Transport Interventions Package*, outstanding issues include traffic volumes on the A271 and A22 around Hailsham, and on Ersham Road.

2.59 A 10% matrix reduction at 2026 (equivalent to just under the mid-point of the low/high forecasting range) would have a roughly pro-rata effect on impacts (i.e. transport impacts lie just under halfway between those arising from low and high growth).

2.60 Key conclusions for south Wealden are:

- In 2009 base year, only 7-15% of junctions are stressed, and average network speed is about 50-55 kph (31-34 mph). Overall this indicates a network generally able to accommodate current flows;
- Additional trips in both forecast years increases traffic pressures on the highway network. However, the range of network performance indicators used suggests that, within the range of development tested, the highway network responds in a fairly consistent manner, i.e. there does not appear to be a 'tipping point' beyond which additional development gives rise to disproportionately large highway performance consequences.
- Without any *Transport Interventions*, transport issues in 2016 concentrate where the A27 and A22/A2270 corridors intersect, principally in the PM peak and largely as a result of relatively small changes in performance around the threshold values of flow: capacity ratio adopted in the assessment. Both strategic and local factors contribute to change at this critical part of the network. The full *Transport Intervention Package 1 (TIP 1)* resolves those issues. Whilst, on the basis of this work, delivery of the *WDC 2016 Development Option* cannot be said to be contingent on delivery of *TIP 1*, the travel demands of those developments contribute significantly to the need to provide a range of transport interventions, including an improvement at Polegate, within the 2009-2026 period;
- Without any *Transport Interventions*, transport capacity issues in 2026 would be widespread throughout Hailsham and Polegate. As far as can be determined from this work, the full SE Plan housing allocation to 2026 can be accommodated within south Wealden with an appropriate *Transport Interventions Package* including an improvement at the A27/A22 crossing. Signals at Cophall roundabout (as in *TIP 2*) would only give about half of the potential mitigation of the Folkington Link (as in *TIP 1*). Folkington Link (or something similar) is desirable not only to respond to increasing strategic transport demands and to ensure delivery of the *WDC 2026 Development Option*, but also to maximise opportunities for reallocation of highway network capacity to buses along the intended Quality Bus Corridor. If Folkington Link is not able to be provided, a less effective alternative such as signals at Cophall roundabout may allow delivery of the *WDC 2026 Development Option*, albeit with more residual transport issues (such as at the signalised

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junctions of A27/A22/A2270 and, important for Quality Bus Corridor delivery, A2270 / Wannock Road / Polegate High Street).

- In respect of their impacts on south Wealden, there is no clear preference in the choice between the three Eastbourne *Development Scenarios*. The differences are small and often limited to only one of the peak hours.
- Regardless of *Development Scenario* and *Transport Interventions Package*, outstanding issues at 2026 include traffic pressures on the A271 and A22 around Hailsham, on B2104 Ersham Road and its junction with B2247 Dittons Road, and the junction of A259 / Pevensey High Street.

Issues relating to Phase I SWETS

2.61 The work undertaken for the Phase I study does not provide for:

- Identification of all the transport implications of individual developments.

The exercise looks at the aggregate impacts of a particular *Development Scenario* and best represents those impacts in a strategic network-wide sense. The specific contributions of an individual development site allocation to the need for particular transport improvements cannot generally be identified. Other more local impacts, and consequential needs for more local transport network improvements, including improvements to pedestrian and cycle networks cannot be identified.

Identification of transport issues and programming of *Transport Interventions* other than within the two broad assessment periods of 2009-2016 and 2016-2026. More detailed timescale advice would be dependent on the modelling process being repeated for other forecast years, i.e. 2021 if 3 broad assessment / programming periods (2009-2016, 2016-2021 and 2021-2026) was sufficient. If required, for each such new forecast year the whole modelling process would have to be replicated, from and including the preparation of suitable planning data by both WDC and EBC for that forecast year.

Advising on the transport impacts of new development spatial distributions representing significant changes to those included in the *Development Options* tested as part of this work. Any such changes would require re-testing as a new *Development Option*. If required, for each such new development option the whole modelling process would have to be replicated, from and including the preparation of suitable planning data by both WDC and EBC for each required forecast year.

Other transport related costs and benefits, including safety, environmental, economic and social. Other than the extent to which such aspects have a proportional relationship with differences in transport network performance impacts, this is outside the scope of the exercise undertaken.

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- Full Business Case support for promotion or rejection of identified highway schemes (e.g. Folkington Link and Eastbourne Park road proposals).

The work undertaken provides part of the evidence base for any such Business Case, but further work would be necessary to provide an appropriate level of support for detailed scheme assessment.

3.0 Phase II Study

Background to Phase II

3.1 Between January 2010 and August 2010 WDC developed the spatial distribution of growth based upon the outcome of SWETS Phase I, the completion of the Wealden Strategic Housing Land Availability Assessment (SHLAA), the sustainability appraisal of broad locations and the revocation of the Regional Spatial Strategy the South East Plan (in July 2010).

3.2 As a result, the overall housing and employment provision was reduced, and the preferred locations for development were refined. In addition it was also necessary to increase the plan period by one year to 2027, in order to provide a plan period of 15 years from anticipated adoption.

3.3 EBC had also undertaken further work by refining employment options, extending the plan period by one year and agreeing an approach to proposed housing distribution.

3.4 As a result of the change in strategy, especially with particular regard to the revocation of the South East Plan, WDC commissioned further work by TPI to test the new emerging proposed spatial strategy. In addition, WDC sought to build upon Phase I and sought to resolve concerns raised at Hailsham Town Centre and the A271. East Sussex County Council assisted in the management and the interpretation of the modelling, and EBC supplied a further iteration of their spatial distribution.

Scope of Phase II Study

3.5 The study was solely required to inform the preparation of, and to provide an appropriate evidence base for, the LDF Core Strategy for Wealden District. The study was commissioned in order to:

1. Provide advice, based on modelling, of the ability of the highway network, with prescribed interventions, to accommodate the levels and distributions of development being considered for the Core Strategy taking into account the proposed development in the emerging Eastbourne Core Strategy; and
2. Provide advice on the opportunities that may exist for mitigating any particular adverse transport impacts that are highlighted by the modelling, and their likely effectiveness.

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3.6 The brief specifically required advice on the transport impacts of development, and potential transport interventions necessary to support growth, in the following parts of the study area highway network:

1. Hailsham town centre;
2. The A271 to the north of Hailsham (Boship roundabout to Battle Road);
3. The A22 to the west of Hailsham, including Hempstead Lane junction;
4. North/south routes between Hailsham and the Polegate / Eastbourne area (A22 and B2104 Hailsham Road)
5. The crossing of the north/south A22 and the east/west A27.

Scope of the Study

3.7 The WDC and EBC scenarios were required to be tested for two time scenarios one medium term and one long term with:

- No transport interventions; and
- A standard package of transport interventions (*to be agreed*)

3.8 For the longer term assessment year, work was also required to provide advice on:

- the individual transport impacts of disaggregated elements of the development data (north Hailsham, east Hailsham and Polegate);
- associations between those impacts and elements of the standard transport interventions package;
- transport impacts, and consequences for delivering the longer term development scenario, of a range of additional potential highway transport interventions.

Development Proposals

3.9 The revised south Wealden area development proposals tested are shown in Table 5. The spatial distribution and quantum of growth for both Eastbourne and Wealden are shown in Appendix 8.

Table 5: South Wealden Development Proposals (post April 2010)

Location	Type	2009-2019	2009-2027
Housing			
Hailsham	Dwellings	700	1550
Polegate	Dwellings	270	700
Stone Cross	Dwellings	250	650
Herstmonceux	Dwellings	50	150
Berwick	Dwellings	50	50
Ninfield	Dwellings	100	100
Upper Dicker	Dwellings	10	10
Windfalls	Dwellings	140	340
Total		1570	3550

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Location	Type	2009-2019	2009-2027
Employment			
East Hailsham	Office	4000 sqm	4000 sqm
	School, Library and GP Services	7600 sqm	7600 sqm
North Hailsham	General Industrial and Warehousing	-	8650 sqm
	Retail	300 sqm	300 sqm
	Primary School	-	4000 sqm
Central Hailsham	Retail	2500 sqm	6500 sqm
South Polgate	General Industrial and Warehousing	-	8300 sqm
West Polegate	Office, General Industrial and Warehousing	8600 sqm	8600 sqm
Total		23000 sqm	47950 sqm

3.10 Earlier work had concluded that across a wide range of scale of development options, the highway network responds in a fairly consistent manner, i.e. there does not appear to be a 'tipping point' beyond which additional development gives rise to disproportionately large highway performance consequences.

3.11 The current development assumptions lie within that range. The appraisal has therefore concentrated on the longer term 2027 planning horizon.

3.12 The SWETS model also covers development within Eastbourne borough. Development assumptions for Eastbourne over the same periods were based on information supplied by EBC relating to their preferred option. Earlier SWETS (Phase I) work had concluded that in respect of their impacts on south Wealden, there was no clear preference in the choice between the three Eastbourne development options under consideration.

Methodology

3.13 The earlier Phase I work had concluded that the standard transport interventions package excluding the major scheme A27 improvement (Folkington Link or similar) would not have substantial overall impacts on the south Wealden highway network. Inclusion of signals at Cophall roundabout would give some limited improvements to north/south connectivity but no material overall highway network benefits. Otherwise, highway network performance in south Wealden was relatively insensitive to the remainder of the standard area-wide transport interventions package, which was largely based around the promotion of the two Quality bus Corridors which were centered on access to Eastbourne town centre and would give most traffic

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benefits to those corridors within Eastbourne. Unresolved issues in the south Wealden area included traffic pressures on the A271 and A22 around Hailsham, on B2104 Ersham Road and its junction with B2247 Dittons Road, and the junction of A259 / Pevensey High Street.

3.14 In light of earlier Phase I work, the assessment of impacts and the contributions of development proposals and more local highway proposals in this study have been carried out by comparison to forecasts assuming no other transport interventions in place, with associated commentary where necessary on the potential effects of the latter.

3.15 Using the model, development related transport impacts are measurable as changes in network performance for a given forecast year plus development option compared to the base year (or to a different development option for the same forecast year). Network performance indicators can reflect overall levels of service through to specific impacts at individual locations. The mitigation afforded by transport enhancements / improvements can be assessed by comparing network performance with and without those measures.

3.16 In this report, network performance has principally been demonstrated by considering:

- General highway network summary statistics, including overall network total travel time, distance and fuel consumption, and average vehicle speed;
- Route statistics, including journey times and levels of traffic flow on important routes in the highway network; and
- Junction statistics, measuring the levels of 'junction stress' – expressed as the percentage of key junctions on major routes that have one or more arm(s) approaching or at capacity (key junctions are those which are either important nodes in the network or those which are significant means of access to/from adjacent areas).

3.17 The model can also broadly estimate the extent to which individual development areas contribute to traffic increases at identified junctions – the 'attributable effects'. This has been carried out for this report, the junctions used being those included in the above 'junction statistics' assessment.

3.18 In Phase II, the modelling has been based on the TRICS model (high estimates of traffic), as opposed to the TEMPRO or indeed using the scenario of a 10% reduction due to smarter choices. This relies upon previous trends and is not modified to take into account any behavioural change created by sustainable development, and provides the worst case scenario of traffic impact, which needs to be considered when undertaking analysis and drawing conclusions. Therefore any behavioural change in use of transport, including by the implementation of the Quality Bus Corridor will have a positive contribution of the transport network.

Appraisal Results

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Network summary statistics

3.19 Summary overall highway network statistics are shown in Table 6 for base year 2009 and forecast year 2027 for both AM peak and PM peaks.

Table 6: Network Summary Statistics (South Wealden)

Criteria	2009 Base Year		2027	
	AM	PM	AM	PM
Total time (pcu hrs per hr)	1972	2340	3160	3456
Total distance (pcu kms per hr)	105659	109106	136400	134147
Queuing Delay (pcu hrs per hr)	303	312	577	496
Av. Speed (kph)	54	47	43	39
Total fuel consumption (ltrs per hr)	8211	8863	11628	11711

Review

3.20 Through the assessment period, general network performance will degrade with more than 30% growth in the number of trips between the 2009 base year and the 2027 forecast year. Forecast South East regional growth in car trips is about one half of that, indicating that the more major contributor to traffic growth in the south Wealden area is growth in south Wealden itself. Overall average network speeds will reduce as a result of increases in travel time being about twice the increase in travel distance, reflecting a continuing decline in performance on both local and strategic routes in south Wealden. Locally focussed transport mitigation measures may address particular 'hot-spot' issues but it is inevitable that a measure of overall decline in level of service would result from future traffic growth.

Route statistics

3.21 Journey time comparisons were extracted for the following important routes in south Wealden, with the results shown in Table 7:

- **A267** *Horam to Lower Horsebridge;*
- **A22** *Golden Cross to Polegate;*
- **A27(T)** *Wilmington to Pevensy;*
- **A271** *Lower Horsebridge to Herstmonceux;*
- **A295** *A271 to A22;*
- **A2270** *Polegate to Gildredge Park;*
- **B2104** *Upper Horsebridge to Langney Bridge; and*
- **B2247** *Polegate to Stone Cross.*

Table 7: Journey Times (routes in south Wealden)

Route	Direction	Model Outputs (Seconds)				Change from 2009 Base Year (Seconds)	
		Base Year 2009		2027		2027	
		AM	PM	AM	PM	AM	PM
A267	SB	92	90	93	91	1	1
	NB	91	92	94	94	3	2
A22	SB	535	864	718	1685	183	821
	NB	581	465	849	478	268	13
A27 (T)	SB	831	1508	1375	2006	544	498
	NB	737	704	810	732	73	28
A271	EB	787	806	855	825	68	19
	WB	807	783	872	805	65	22
A295	SB	370	375	571	426	201	51
	NB	354	366	400	483	46	117
B2104	SB	845	793	1129	885	284	92
	NB	735	727	918	847	183	120
B2247	EB	351	352	360	364	9	12
	WB	359	356	621	361	262	5

3.22 Percentage changes in flow relative to 2009 are shown in Table 8, the results being highlighted in accordance with identified ranges, as follows;

- -4.9% to 4.9% - no highlighting;
- -5.0% to -100% - Green;
- 5% to 50% - Amber; and
- > 50% - Red.

Table 8: Percentage Increase/Reduction in Traffic by Route (south Wealden)

Route	2027	
	AM	PM
A22 N	16%	25%
A267	26%	19%
A27	26%	22%
A271	40%	50%
A295	80%	51%
B2104	66%	53%
B2247	32%	34%

Review

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3.23 Links with the highest percentage difference in flow compared with the base year scenario include A271, A295 and B2104, reflecting increased pressures on the network serving Hailsham during the plan period. The analysis highlights that by 2027, the majority of A class roads within the study area will contain significantly more traffic compared with the base year and substantially greater travel times. The analysis has also indicated that the B road network will also witness a considerable increase in traffic volumes. This would suggest that capacities on parts of the major routes would be approached or exceeded within the plan period, encouraging traffic to re-route and use alternative more minor links.

Junction statistics

3.24 Table 9 shows the junction capacity results. Figures quoted are the ratio of flow to capacity (RFC) for the worst arm of the junction. These RFC percentages are highlighted in the table depending on identified ranges, as follows;

- 0% to – 84.9% - Green;
- 85% to 99% - Amber; and
- >100% - Red

3.25 Conventionally, an RFC of >85% is taken as an indication of a junction operating at its practical maximum without excessive queues and delays. An RFC of >100% would indicate a junction under severe stress.

Table 9: Junction Capacity Analysis (RFC%) (South Wealden)

Junction Route/Description	Base Year 2009		2027	
	AM	PM	AM	PM
A22 N/Diplocks Way	100	105	109	111
A22 N/Hempstead Lane	62	33	94	76
A22 N/South Road	85	102	102	109
A27(T)/A22 N	91	87	108	100
A22 S/Dittons Road	60	53	110	91
A259/Pevensy Bay	63	58	77	66
A259/Pevensy High Street	88	83	99	108
A22 N/A267/A271	103	113	117	141
A27(T)/A22 S	59	70	51	84
A27(T)/A2270	60	58	64	62
A27(T)/A259	60	52	88	68
A27(T)/Thornwell Road	58	76	74	90
A2270/Wannock Road	68	78	103	86
A271/Battle Road	27	30	55	32
A271/Hawks Road	33	36	104	95
A271/London Road	66	60	97	84
A271/New Road	29	33	63	36
A271/North Street	75	42	100	81
A295/Diplocks Way	85	78	91	73

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A295/Ersham Road	56	51	93	76
A295/Harebeating Drive	74	27	105	33
A295/Harmers Hay Road	96	37	89	38
A295/Hawthylands Road	28	23	51	30
A295/High Street	93	82	104	92
A295/London Road	86	94	109	103
A295/North Street	67	54	88	63
A295/Station Road	47	42	81	76
A295/Tesco	63	92	94	113
A295/Western Road	101	87	112	101
B2104/A267	35	29	65	35
B2104/Church Road	18	10	101	18
B2104/Dittons Road	92	81	105	106
B2104/Hawks Road	64	65	111	87
B2104/London Road	45	62	36	102
B2191/Rattle Road	18	16	38	24
B2247/High Street	26	26	102	43
A2270/Broad Road	53	66	101	102
A2270/Church Street	73	59	81	73
A2270/Huggetts Lane	97	96	109	102
A2270/The Triangle	81	72	82	92
South Wealden Number of Junctions RFC >= 85%	12	8	27	19
South Wealden %age of Junctions RFC >=85%	30%	20%	67%	47%

Review

3.26 The number of junctions approaching, at, or over capacity increases significantly between 2009 and 2027. Worst affected routes are A22, A295, A2270 and B2104.

Attributable Effects

3.27 Table 10 shows the proportion of total junction inflow attributable to each broad development area for key junctions within South Wealden. The results are colour coded to coincide with the junction capacity analysis in Table 9, namely:

- RFC 0% to – 84.9% - Green;
- RFC 85% to 99% - Amber; and
- RFC >100% - Red

Review

3.28 Generally, the attributable impacts are predictably larger the closer to the development area in question. All development areas in Hailsham also contribute to a significant extent to increasing traffic problems in the town centre, and to varying extents to problems elsewhere in and around the town.

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Table 10: Attributable Impact of Development Sites (South Wealden)

Junction Route/Description	North Hailsham		Central Hailsham (retail)		South Polegate		West Polgate		Stone Cross		East Hailsham North of Harebeating Drive		East Hailsham South of Harebeating Drive		East Hailsham South of Harmers Hay Road	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A22 N/Diplocks way	6.8%	5.2%	0.0%	0.0%	1.5%	1.3%	0.1%	0.1%	0.3%	0.2%	0.6%	1.4%	0.2%	0.5%	0.2%	0.1%
A22 N/Hempstead Lane	5.6%	6.1%	0.2%	0.3%	1.4%	1.2%	0.1%	0.1%	0.3%	0.2%	1.1%	1.3%	0.5%	0.7%	0.3%	0.2%
A22 N/South Road	5.2%	3.9%	1.7%	1.8%	1.6%	1.2%	0.1%	0.1%	0.2%	0.2%	2.5%	1.5%	2.0%	1.0%	2.1%	1.3%
A27(T)/A22 N	4.3%	3.0%	1.4%	1.4%	2.1%	2.8%	0.1%	0.0%	0.2%	0.2%	2.1%	1.1%	1.6%	0.8%	1.7%	1.0%
A22 S/Dittons Road	2.6%	2.1%	0.4%	0.4%	1.9%	0.8%	1.0%	0.8%	0.5%	0.4%	1.1%	0.9%	0.8%	0.5%	0.7%	0.5%
A259/Pevensey Bay	0.2%	0.1%	0.2%	0.2%	0.5%	0.6%	0.1%	0.2%	0.3%	0.1%	0.6%	0.2%	0.2%	0.1%	0.2%	0.1%
A259/Pevensey High Street	0.2%	0.1%	0.2%	0.2%	0.7%	0.6%	0.1%	0.2%	2.3%	2.5%	0.5%	0.2%	0.2%	0.1%	0.2%	0.1%
A22 N/A267/A271	3.8%	5.3%	0.3%	0.5%	1.0%	0.7%	0.0%	0.0%	0.3%	0.2%	1.8%	1.5%	0.7%	0.8%	0.6%	0.5%
A27(T)/A22 S	2.6%	2.1%	0.9%	0.5%	1.6%	2.4%	0.3%	0.2%	0.3%	0.3%	1.3%	0.9%	0.8%	0.6%	0.8%	0.6%
A27(T)/A2270	2.3%	1.4%	0.7%	1.2%	3.7%	4.2%	0.1%	0.0%	0.1%	0.1%	1.3%	0.6%	1.2%	0.4%	1.1%	0.7%
A27(T)/A259	0.2%	0.1%	0.7%	0.2%	2.1%	2.1%	0.3%	0.2%	0.9%	1.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%
A27(T)/Thornwell Road	2.6%	1.7%	0.5%	0.9%	1.4%	0.9%	0.1%	0.1%	0.1%	0.1%	1.6%	1.1%	1.0%	0.7%	1.0%	0.7%
A2270/Wannock Road	2.2%	1.7%	0.5%	0.9%	8.3%	6.6%	0.2%	0.2%	0.2%	0.1%	0.8%	0.5%	0.5%	0.3%	0.5%	0.3%
A271/Battle Road	4.2%	1.4%	3.0%	5.1%	0.6%	0.6%	0.0%	0.0%	0.4%	0.0%	12.6%	12.3%	6.2%	6.0%	5.3%	4.8%
A271/Hawks Road	21.0%	23.6%	0.8%	0.0%	0.1%	0.4%	0.0%	0.0%	1.3%	0.3%	8.6%	8.1%	3.8%	3.5%	3.0%	2.5%
A271/London Road	13.5%	12.7%	1.1%	2.4%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	6.8%	5.5%	2.8%	3.2%	2.3%	2.3%
A271/New Road	10.7%	7.0%	2.3%	5.8%	0.7%	0.5%	0.0%	0.0%	0.3%	0.0%	4.4%	4.0%	2.6%	2.5%	2.5%	2.4%
A271/North Street	2.1%	11.4%	1.5%	2.6%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	6.8%	5.6%	3.4%	3.3%	3.1%	2.5%
A295/Diplocks Way	0.6%	0.3%	4.2%	6.1%	1.1%	0.7%	0.0%	0.0%	0.1%	0.1%	5.3%	3.2%	4.9%	2.4%	5.3%	4.3%
A295/Ersham Road	1.9%	0.9%	4.4%	6.4%	0.9%	0.5%	0.0%	0.0%	1.8%	0.6%	5.9%	5.3%	5.0%	3.7%	5.4%	5.1%
A295/Harebeating Drive	5.2%	2.1%	4.0%	8.2%	1.0%	0.5%	0.0%	0.0%	0.5%	0.0%	13.3%	14.3%	8.1%	9.5%	6.9%	7.6%
A295/Harmers Hay Road	4.6%	1.7%	4.1%	8.8%	1.0%	0.3%	0.0%	0.0%	0.4%	0.0%	11.9%	13.9%	9.7%	9.5%	7.2%	8.7%
A295/Hawthylands Road	4.9%	1.9%	4.2%	9.2%	1.0%	0.3%	0.0%	0.0%	0.5%	0.0%	13.0%	15.4%	10.9%	12.8%	7.5%	9.3%

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A295/High Street	3.5%	2.0%	3.4%	7.6%	0.7%	0.2%	0.0%	0.0%	0.5%	0.1%	7.7%	6.1%	6.6%	4.1%	7.1%	6.0%
A295/London Road	3.9%	2.0%	3.7%	7.7%	0.8%	0.2%	0.0%	0.0%	0.4%	0.0%	10.1%	8.4%	8.3%	5.8%	9.0%	7.9%
A295/North Street	1.6%	0.7%	6.0%	13.1%	0.8%	0.4%	0.0%	0.0%	0.8%	0.3%	5.8%	5.0%	5.2%	3.4%	5.6%	5.1%
A295/Station Road	1.3%	0.0%	6.5%	10.8%	0.9%	0.5%	0.0%	0.0%	0.9%	0.4%	6.1%	5.5%	5.5%	3.7%	6.0%	5.8%

Table 10: (Continued) Attributable Impact of Development Sites (South Wealden)

Junction Route/Description	North Hailsham		Central Hailsham (retail)		South Polegate		West Polgate		Stone Cross		East Hailsham North of Harebeating Drive		East Hailsham South of Harebeating Drive		East Hailsham South Harmers of Hay Road	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A295/Tesco	2.5%	1.4%	8.2%	9.2%	0.7%	0.3%	0.0%	0.0%	0.8%	0.3%	6.4%	5.4%	5.6%	3.7%	6.0%	5.4%
A295/Western Road	2.0%	0.9%	5.3%	7.8%	0.9%	0.5%	0.0%	0.0%	1.8%	0.5%	6.1%	5.5%	5.2%	3.9%	5.7%	5.4%
B2104/A267	9.9%	4.5%	0.9%	2.1%	0.6%	0.3%	0.0%	0.0%	0.0%	0.3%	2.7%	2.7%	1.8%	1.7%	1.7%	1.7%
B2104/Church Road	16.0%	9.5%	1.4%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	4.2%	5.8%	2.8%	3.7%	2.7%	3.7%
B2104/Dittons Road	0.7%	0.4%	1.1%	1.8%	1.4%	1.6%	0.2%	0.2%	4.4%	2.1%	1.2%	3.0%	0.9%	1.9%	1.0%	2.0%
B2104/Hawks Road	12.9%	8.7%	1.1%	3.7%	0.2%	0.6%	0.1%	0.0%	1.3%	0.3%	2.2%	2.4%	0.6%	1.5%	0.4%	0.6%
B2104/London Road	3.1%	3.0%	2.5%	5.0%	0.4%	0.1%	0.0%	0.0%	3.4%	0.4%	4.0%	3.3%	2.5%	2.4%	3.0%	2.7%
B2191/Rattle Road	0.1%	0.0%	0.3%	0.0%	0.6%	0.3%	0.2%	0.1%	4.1%	5.3%	0.4%	0.0%	0.3%	0.0%	0.3%	0.0%
B2247/High Street	0.9%	0.7%	0.1%	0.1%	9.9%	2.6%	1.1%	0.7%	0.8%	0.6%	0.3%	0.1%	0.2%	0.1%	0.2%	0.1%
A2270/Broad Road	2.6%	1.8%	0.5%	0.9%	6.9%	6.2%	0.0%	0.0%	0.0%	0.0%	1.0%	0.6%	0.6%	0.4%	0.6%	0.4%
A2270/Church Street	1.9%	1.6%	0.4%	0.8%	3.7%	4.2%	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%	0.5%	0.3%	0.5%	0.3%
A2270/Huggetts Lane	1.9%	1.5%	0.4%	0.7%	5.3%	5.2%	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%	0.5%	0.3%	0.5%	0.3%
A2270/The Triangle	2.1%	1.7%	0.4%	0.8%	5.9%	5.6%	0.0%	0.0%	0.0%	0.0%	0.8%	0.5%	0.5%	0.3%	0.5%	0.3%

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Highway Network Issues

A271 / A22

3.29 The development option tested includes major housing allocations in north and east Hailsham that would place increased traffic pressure on A271 from Battle Road to the Boship roundabout. Without any additional measures to increase traffic flows on A271 or elsewhere, capacity would become an issue at the junctions of A271 with Hawks Road, London Road and North Street, and the existing queuing problems at A22/A267/A271 Boship roundabout (particularly on the A271 in the PM peak) would be exacerbated. Whilst new on-site highway provision may be a mitigating feature of development in north Hailsham, the issues arising on the western part of A271 would remain unresolved. Other junctions on the A22 at Diplocks Way and South Road would increasingly suffer congestion. The possibility of opening up the junction of A22 with Hempstead Lane has been considered. Currently a restricted 'left in / left out' junction, its conversion to 'all moves' by construction of a roundabout has been tested. The results indicate that this would have widespread benefits without significant area or local disbenefits. By providing an additional connection between the town and the A22 corridor, traffic redistributions would reduce the incidence of queuing on A271 at Boship (the worst performing arm), reduce pressures on Diplocks Way and South Road junctions with the A22, and improve the accessibility of development proposals in north and east Hailsham. The implications of such a solution would require further consideration, in order to test physical and financial deliverability. If the reconfiguration of the junction at Hempstead Lane could not be achieved it would be necessary to consider an alternative, but less effective solution, involving the reconfiguration of the Boship roundabout itself. Different design solutions would need to be tested and the most appropriate solution sought. However, it is critical that the potential future incidence of queuing on the A271 created by additional development is resolved. Notwithstanding any solution modelled queuing on A22 south into the junction in the AM peak would remain a problem at Boship roundabout. No solution implementable within the highway boundary is apparent, including one or more slip lanes.

Hailsham Town Centre

3.30 Given the amount of development proposed for Hailsham, some intensification of traffic pressures on the town centre highway network is inevitable. The principal capacity issues now and in the future would arise at the London Road / Battle Road and High Street / North Street junctions. A small measure of relief would result from the previous proposal to open up Hempstead Lane / A22 junction. Further relief could only stem from lower traffic demands, either a general reduction of town traffic through, as yet unidentified, demand management measures, and by increasing use of the existing B2104 via Summerheath Road. Initial testing of a scheme including traffic signals at the northern and southern ends of Summerheath Road, encouraging its use by north / south traffic avoiding the town centre and providing an alternative means of accessing the southern part of the town centre from the north, suggest that this could help to resolve the capacity

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issues at London Road / Battle Road and High Street / North Street junctions. Further consideration will be required with respect to the impact of measures on the Battle Road and North Road Junctions within the Town Centre and the need to improve the High Street. The overall movement of traffic would benefit from demand management measures, as demonstrated through the 10% matrix reduction in SWETS 1, and would be part of the package to resolve town centre capacity issues.

A2270

3.31 Commencing south of the A22/A27 signalised junction, this is an important access corridor from the north (including Hailsham) and west to Eastbourne. Previous work has identified that substantial traffic benefits could arise only from provision of a new A27 link west of Polegate to Cophall roundabout which would encourage a greater proportion of traffic between the west and central Eastbourne to use Polegate bypass and Jubilee Way. An alternative of signalling Cophall roundabout would only give more limited benefits overall and delivers significantly less traffic reduction on A2270. The A2270 is identified as top priority Quality Bus Corridor. Importantly for this SWETS investigation, the current work has made no specific provision for the inevitable impacts of capacity reduction for general traffic as a consequence of roadspace reallocation to achieve bus priority. Taking this into account, in the forecast year junction capacity would become an increasingly important issue not only at A2270 / Polegate High Street / Wannock Road and at Huggets Lane / A2270, but also at intermediate junctions providing access to adjacent areas (e.g. Broad Road and The Triangle).

B2104 / B2247 Stone Cross crossroads

3.32 This junction appears in Table 10 as a junction currently approaching capacity and over-capacity in the forecast year. The arm least effectively working, in both cases is the B2104 towards Hailsham. The junction appears to be able to satisfactorily accommodate present and future flows on other arms. The capacity issue on B2104 north would tend to inhibit its use as an alternative route (to the A22) for traffic between Hailsham and parts of Eastbourne, and therefore increase trips on the A22.

Development Consequences

3.33 From the work carried out to date, the following observations can be made about the suitability, from a transport perspective, of individual major development proposals tested. References to particular transport measures investigated in this stage of SWETS should not be taken to preclude any potential other(s) not yet identified or tested.

Hailsham

3.34 Development to the scale and location proposed in north and east Hailsham could be accommodated subject to improvement to the town centre network as identified and to the A22 / Hempstead Lane junction. Without the

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latter, the consequences of development at north Hailsham for the satisfactory operation of the Boship roundabout would be severe.

South Polegate and East Willingdon

3.35 This site would access directly onto the A2270 south of the Wannock Road / Polegate High Street junction. It would be a major contributor to traffic flows at that junction, and at the junction of A2270 with Huggets Lane to the south. Junction capacity will be an increasingly important issue at both sites in the future, particularly in light of the need to accommodate bus priority measures in support of the QBC proposal for this highway corridor. Concern is therefore raised with respect to residential development at the scale envisaged.

Stone Cross

3.36 The assessment has not identified any transport issues of consequence associated with this development proposal.

4.0 Phase III SWETS

Context

4.1 The significant difference between the distribution of spatial options in Phase I and Phase II SWETS is in Polegate. Scenario 1 in Phase I was focussed upon land north of Dittons Road, whereas Phase II focussed on an alternative location on land south of Polegate and east of Willingdon. The results of Phase II was in conclusive in relation to development in this area. Therefore, based on the Phase I approach, that development of 700 dwellings could be accommodated in north of Dittons Road, Phase III seeks to clarify how much development can be accommodated in south of Polegate and East of Willingdon.

4.2 A further iteration of the development option increased the time scale for delivery at Wealden District from 2027 to 2030 and made some minor amendments to the quantum of development in outlying villages, with an overall reduction in development to that tested. For the purpose of SWETS this is not considered to be a material factor in the assessment of results.

Methodology

4.3 The principal highways concern relating to the potential allocation on land south of Polegate and east of Willingdon is the ability of that part of the A2270, which would form the access to/from the main highway network, to accommodate the traffic demands of the site. The principal issue was accommodating those demands on a major route which will remain heavily trafficked in the future, and within which it is intended to provide capacity-allocation measures consistent with its intended role as part of the QBC.

4.4 The approach adopted for Phase III was therefore to compare assignment results with and without the allocation on this site, to determine

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whether the site allocation was capable of being accommodated in full or, if not, to what extent.

Results

4.5 This section of the A2270 serves as part of the principal accesses between Hailsham and Eastbourne, and between areas served by the A27 west of Polegate and Eastbourne. Both have a choice of routes (A2270 or A22 Jubilee Way) influenced by trip end location in Eastbourne and by the overall cost of using either route. The cost difference is greater for traffic to/from the A27 west of Polegate and this contributes to the observation that, in the base year, whilst about 60% of traffic on the A27 west of Polegate has an origin or destination in Eastbourne, of that, about three quarters uses the A2270.

4.6 This part of the A2270 is heavily trafficked in base year. As traffic demands grow over the assessment period, the 'natural' demand to use this route will also increase, and the ability of the route to accommodate growth will decrease. The usual network response would be for traffic to reassign to other parts of the network, spreading the impact. Without a major improvement to the A27 west of Polegate (e.g. Folkington Link), the time and cost penalty associated with the use of A22 instead of A2270 by traffic to/from the west is substantial.

4.7 The assignments comparison nonetheless showed that the degree and extent of traffic capacity problems on this section of the A2270 are similar with or without the allocation on this site. Other traffic is therefore reassigning to second choice routes as a result of this allocation. As traffic flows on the section are broadly similar, the scale of reassignment appears to be directly related to the scale of the development in this location. Not only would total network time, distance and fuel consumption increase, so would the need for improvements at critical junctions on both first and alternative route choices, including parts of the standard intervention package.

Conclusion of SWETS Phase III

4.8 On the basis of this work it can be concluded that any allocation at this site will intensify traffic demands on the A2270, which is already under pressure, and which must be capable of accommodating capacity-allocation measures consistent with its intended role as part of the QBC. Consequences are likely to be experienced not only locally but also elsewhere on the highway network due to reassignment of other traffic.

4.9 The extent to which the allocation can be partially or fully accommodated is dependent on the acceptability of those network-wide impacts and is contingent upon mitigation including:

- Junction improvements at A2270 / Polegate High Street / Wannock Road;
- Junction improvements at A22/ A27 / A2270 intersection;
- Traffic signals at Cophall roundabout;

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- Improvements at junctions between A22 Jubilee Way and A27 and Dittons Road;
- Access junction(s) onto A2270 providing adequate capacity, and consistent in design with overall corridor QBC requirements; and
- Incorporation of strong, effective demand management measures and proposals.

5.0 Conclusion

Eastbourne

5.1 On the basis of the SWETS1 work undertaken, there is no clear front runner in the choice between the three Eastbourne *Development Options*. All *Transport Intervention Packages* tested can partially address the issues arising in 2026, although it is unlikely that their marginal transport impact advantages would outweigh the considerably greater cost of the Eastbourne Park road proposals in TIP5 in a more comprehensive cost-benefit analysis.

5.2 The preferred choice would appear to lie between *Development Scenarios* 1 and 6 (i.e. EBC Development Options 1 and 2), together with *Transport Intervention Packages* 1 or 2. The assessment indicates that Scenario 6 has an overall network advantage, and that TIP 1 (which includes Folkington Link) is better than TIP 2 (which includes signals at Cophall roundabout instead). The preferred combination is therefore EBC Development Option 2 plus Transport Intervention Package 1. Regardless of *Development Scenario* and *Transport Intervention Package*, outstanding issues at 2026 would include traffic volumes on the town centre ring road, and the competing (public / private transport) demands for available capacity on the identified QBC corridors.

Wealden

5.3 SWETS has shown that a number of traffic issues are predicted through development proposals in south Wealden from 2009 to 2030. In order to deliver growth it is considered that a range of mitigation measures will be required which could include:

- Addressing capacity, safety and severance issues along the A271 including improvements at Boship roundabout and/or at the junction of A22 and Hempstead Lane;
- Adoption of demand management (e.g. Smarter Choices) approaches for new and existing development in the south Wealden area, to help mitigate Hailsham town centre issues and the impacts of traffic on the wider town and strategic road networks;
- Promotion and inclusion of Summerheath Road, Hailsham in a wider town centre network, including new signalised junctions;
- Signal improvements at Battle Road / London Road and North Road / High Street junctions;
- Junction improvements at A2270 / Polegate High Street / Wannock Road junction;

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- Junction improvements at A22/ A27 / A2270 junction;
- Traffic signals at Cophall roundabout;
- Improvement at roundabout junctions of A22 Jubilee Way with the A27 and Dittons Road;
- Incorporation of measures on sites adjacent to the A22/A2270, or otherwise directly or significantly affecting the corridor, to manage and accommodate demands by car and other means so as not to prejudice the delivery or effective operation of the QBC.

5.4 On the basis of the proposed mitigation measures it is considered that the development proposed in south Wealden could be delivered.