

Motion Consultants – Technical Note for Highways and Transport Issues raised at the Stage 3 Hearings in June and July

Site: TWBC Local Plan EIP
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1.0 Introduction

Context

- 1.1 This Transport Technical Note is prepared on behalf of Save Capel and Capel Parish Council ('SCPC'). It deals with substantial new evidence submitted during the course of the Examination in Public (EIP) of the Tunbridge Wells Borough Council (TWBC) submission Local Plan ('the Plan').
- 1.2 It is noted that the evidence submitted originally purported to be clarification / responses to the Inspector's questions regarding matters 4 and 7. To be clear: this was not the case. **The evidence submitted was new, very detailed and fundamental to the soundness of the Plan.** In particular it is noted that this new evidence was the first evidence submitted by TWBC that explains their approach taken by TWBC to forecasting modal choice in their assessment of the impacts of the submission Local Plan, which was submitted on 1st November 2021. Given that modal choice is a key input to the traffic modelling commissioned by TWBC, any misjudgement regarding the extent to which modal shift might occur will fundamentally change the outcomes of the traffic modelling and accordingly TWBC's conclusions regarding the extent of mitigation required.
- 1.3 In response, the Inspector requested TWBC to formally consult on the extensive additions to the evidence base in order to enable it to be scrutinised and comments made. This technical note considers the new transport evidence comprising:
 - a. PS_099-Introductory-Note-to-Highway-Modelling-Reports-September-2024.pdf (PDF File) 166.3 KB
 - b. PS_100-Modal-Shift-Analysis-Technical-Note-April-2024.pdf (PDF File) 1.5 MB
 - c. PS_101 A264 Pembury Road corridor – Junction capacity assessment (June 2024).pdf (PDF File) 7.4 MB
 - d. PS_102-Junction-Hotspot-Comparison-June-2024.pdf (PDF File) 3.6 MB
 - e. PS_103 Strategic Transport Assessment – Modelling Appraisal April 2024.pdf (PDF File) 4.6 MB
 - f. PS_104-Strategic-Transport-Assessment-Addendum-June-2024.pdf (PDF File) 1.1 MB
- 1.4 PS_099 is an overview document and contains no evidence and so is not considered further in this technical note.

2.0 PS_100 Modal Shift Analysis Technical Note

- 2.1 This document is entirely new evidence submitted to the EIP in July 2024.

Context

- 2.2 SCPC made oral representations on the 19th June 2024 during the EIP hearing that TWBC had failed to demonstrate that their assumed 10% modal shift would be deliverable or indeed if it even could be achieved. The oral representations reflected written responses provided to the Inspector dated 26th February 2024 (reference *PIFC_152 Save Capel response appendix 1*) and 31st May 2024 (responses to Matter 3).
- 2.3 In short, TWBC has never provided any evidence to support their claim that 10% of car journeys would shift to non-car modes. This is an input to the traffic modelling process. **Failure to provide any evidence to support the modal shift assumptions means that outputs cannot be relied upon.**

TWBC Evidence

- 2.4 The evidence produced by TWBC to support their assertion that there will be a material modal shift from car to non-car modes serves only to demonstrate that their on-going assumption that this will be 10% is mis-judged. As an example, the Inspector is invited to look at Table 1 (page 12/19) which demonstrates that travelling by car is twice as fast as any other form of transport. Of further note are the following points:
- a. As demonstrated on Figure 3 (page 8/19) there is no direct cycle route proposed between Paddock Wood and Tonbridge. The inclusion of a time for cycling between the two towns must therefore rely on cyclists travelling mixed in vehicular traffic along the narrow B2017. Hardly conducive to encouraging anyone to attempt the journey by cycle.
 - b. As demonstrated on Figure 2 (page 7/19) there are no new bus services proposed directly connecting Paddock Wood and Tonbridge. The bus journey time quoted in Table 1 must therefore be for the existing bus service which operates once per hour. Again this is hardly conducive to encouraging people to travel by bus.
- 2.5 Indeed, there is a conclusion made by TWBC that it is in fact as quick to cycle to Tunbridge Wells as it is to use the bus service. The Inspector is further invited to look at the cycle route that is used to reach Tunbridge Wells (Figure 3 page 8/19) which includes a long stretch along the A228. SCPC has previously submitted representations regarding the safety of the A228 and does not repeat them here. Nonetheless, the Inspector is invited to consider the preposterous idea of new residents of paddock Wood / East Capel cycling along the busy A228.
- 2.6 Turning to other matters raised by the Modal Shift Analysis note, these include:
- a. Second paragraph from the bottom, page 5/19. TWBC proposes that the Paddock wood orbital bus would operate 07:00 – 19:00 to be most effective. Such a service would exclude residents seeking to travel in the evenings, perhaps for social or leisure purposes, especially in the darker months of the year.
 - b. 1st and 2nd bullets of final paragraph on page 8/19. Reference is made to new “turn up and go” local bus services. This statement is wrong and misleading. “Turn up and go” bus services are defined as having a frequency of 10-12 minutes or better¹. None of the services being proposed will operate at this level of frequency.
 - c. First paragraph on page 7/1. Reference is made to the RTW-Pembury-Paddock Wood corridor having a service with “Bus Rapid Transport” characteristics. Again this statement is factually wrong. There is a Bus Rapid Transport scheme operating in Kent which is known as the Dartford Fastrack². There are no such proposals contained within the draft Local Plan.
- 2.7 Turning to page 13/19 and the third bullet under the only paragraph, an additional consideration that is believed will contribute towards a mode shift is an assertion that journey costs by car can often be considerably higher than by bus when taking into account vehicle operating costs etc. There is no attempt by TWBC to justify the statement or indeed even reference to another source of evidence to justify the statement. For example, it is very well documented³ that once a person owns a car, the tendency is for that person to only consider the marginal costs of travel as the capital cost of the car, insurance and annual servicing are all incurred whether or not the car is used. In the case of Paddock Wood, evening and weekend bus services are poor and there is no evidence presented by TWBC that this situation will change. As a consequence, I would expect most households to choose to own and hence use a car, as 86% of households⁴ in Paddock Wood currently do.

¹ *Buses in Urban Development* (January 2018). Chartered Institute of Highways and Transport.

² Fastrack is an example of Bus Rapid Transit which is defined by the Institute for Transportation and Development Policy as “*Bus rapid transit (BRT) is a high-capacity bus-based transit system that delivers fast, reliable, high quality, safe, and cost-effective services at a relatively low cost.*”

³ The AA Driver Poll Survey 2020

⁴ 2021 Census, Table TS045

- 2.8 It is unclear whether the errors raised above are merely perfunctory or whether they come from a place of perfidy. In either case, the result is to suggest a much better cycle and public transport offer than is actually being proposed. But even with these errors, TWBC’s own conclusion is set out in Table 6, which is copied below:

Paddock Wood Analysis

Further analysis has been undertaken to understand the overall impact of the above car trip reductions related to the Paddock Wood strategic sites. The reductions are compared against the total car trip generation for these zones as set out in **Table 6**. The overall impact of applying the modal shift on the total car trip generation for the area sees a reduction for Paddock Wood of 9% in the High scenario. The Low and Medium scenarios result in 4% and 6% level of reduction respectively. The High reduction is in line with the previous 10% modal shift assumption for strategic sites as part of the Local Plan.

Table 6: Paddock Wood Strategic Sites Trip Reduction

	AM			PM		
	High	Medium	Low	High	Medium	Low
Total Car Trip Generation	1,369	1,369	1,369	1,376	1,376	1,376
Reduction	118	86	55	124	89	57
Reduction %	8.6%	6.3%	4.0%	9.0%	6.5%	4.1%

- 2.9 The above statement from TWBC confirms that, even in TWBC’s most optimistic scenario, modal shift from car to other modes, will be less than 10%. This confirms that the traffic modelling undertaken to date is wrong. **All the evidence submitted to the EIP to date relying on traffic modelling, according to the evidence now produced by TWBC, is wrong.** This was raised by SCPC orally on 19th June 2024. Indeed, SCPC considers it implausible that the optimistic case will ever transpire given that the Council itself concludes that the car is twice as attractive as any other mode of travel in terms of journey times.
- 2.10 Under these circumstances, the Inspector is respectfully requested to reject any conclusion submitted to this EIP to date which relies on the traffic modelling outcomes.
- 2.11 In the alternative, it is open to the Inspector to consider it acceptable to ask TWBC to correct what is, on the basis of their own evidence, wrong traffic modelling and resubmit this to the EIP with an appropriate re-consultation period.

3.0 PS_101 A264 Pembury Road corridor – Junction capacity assessment

- 3.1 This document is entirely new evidence submitted to the EIP in July 2024. Indeed, since TWBC’s Consultations began in 2019 this is the first time that any reference to traffic issues in the Pembury Road Corridor, five years later, and almost three years after the Submission Local Plan.

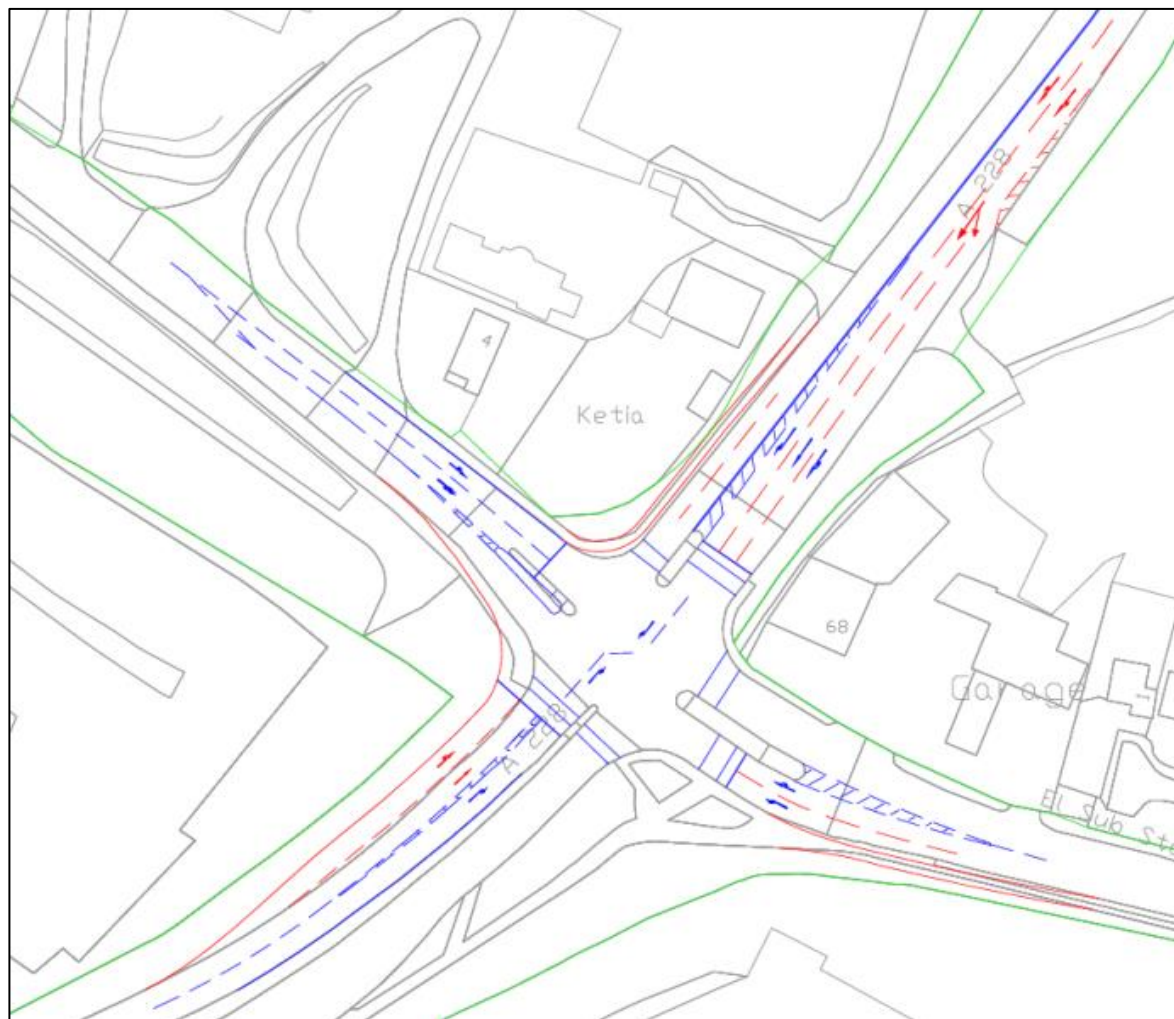
Modelling Approach

- 3.2 Two scenarios are modelled in SATURN referred to as Option 1 and Option 2 respectively, they are described as follows:
- Option 1 - Includes Colts Hill bypass and Kippings Cross improvements
 - Option 2 - Includes Colts Hill bypass and 10% saturation flow increase at the Pembury Road junctions, but no Kippings Cross improvements.

- 3.3 Flows are then extracted from SATURN for each junction which is modelled in detail using either LinSig or Junctions 10, the industry standard modelling packages for both signals and priority junctions/roundabout respectively.
- 3.4 The following text reviews each of the junctions in turn.

Woodgate Corner (A228/Tonbridge Road/High Street)

- 3.5 It is noted that demand flows are forecast to exceed actual flow at this junction, indicating that the junction provides insufficient capacity to cater for all traffic in either modelled scenario. Assuming excess demand does not route elsewhere, the result is that queuing would be expected throughout the peak hour at this junction.
- 3.6 Indeed, the outputs indicate that queues on the western arm could be as great as 54.2 vehicles (circa 312 metres) during a typical cycle unless mitigation can be secured. A queue of this magnitude would block back to the Pembury Interchange with knock on impacts on the A21, which would likely result in severe impacts in capacity terms and unacceptable road safety impacts. The note provides no assessment of the potential for blocking back at this junction or any other.
- 3.7 The proposed mitigation comprises widening on all junction arms. The most significant modification is to the western arm where an extra lane is provided such that ahead movements are possible from two lanes. Correspondingly, the eastern exit is widened to allow the ahead movements to merge. The mitigation scheme can be seen below.



Proposed Mitigation

- 3.8 TWBC has failed to demonstrate if this mitigation could actually be delivered. Even the most cursory of glances on site would identify significant level differences. These are not accounted for in the sketch provided.
- 3.9 In particular, the widening on the eastern arm extends up to the highway boundary and across the verge. As can be seen in the image below, the verge is steeply banked meaning a retaining structure or reprofiling will be required, both of which would require additional land outside the highway boundary.



Eastern Exit

- 3.10 This additional land will need to be obtained either through negotiation, or more likely by compulsory purchase. In its absence, the western entry would need to be reduced to a single ahead lane. This will result in queuing extending back to the Pembury Interchange and impacting the operation of the A21.
- 3.11 **Whilst matters of detail regarding the exact layout of the junction within the area identified as available for use could be dealt with at the planning application stage, at this plan making stage, the Council's evidence is that the land expected to be available for this mitigation simply is not available.**

A21 East Dumbbell Roundabout

- 3.12 This junction is forecast to operate within capacity in all scenarios. It is however noted that the blocking effect of Woodgate Corner identified above is not considered because the Council has relied on their mitigation scheme to be deliverable, notwithstanding the obvious physical constraints preventing it being delivered. **The conclusions drawn in respect of this junction therefore cannot be relied upon.**

A21 West Dumbbell Roundabout

- 3.13 This junction is forecast to operate beyond capacity in all scenarios. A mitigation scheme has been developed to compensate for this which involves widening on the eastern and western arms as illustrated below.



Proposed Mitigation

- 3.14 The design sketched out above is poor. It does not meet the design requirements of the Design Manual for Road and Bridges (DMRB) which are mandatory at this junction because it connects to the strategic road network. Not least section 3.12 of CD 116 of DMRB states that on "a *single carriageway approach to a normal roundabout, the entry width shall not exceed 10.5 metres*". The reference to the word "shall" is noted. This means a mandatory requirement and not guidance. The existing southwestern approach is currently two lanes and so does not exceed this. The sketch above, which simply bolts an extra lane on, does exceed this. **The outcome, were this design taken forward, would be an unacceptable impact on road safety.**
- 3.15 This is such an elementary design error that it questions the competence of TWBC to identify even the simplest of mitigation schemes.
- 3.16 Turning to topography, again the most cursory of glances on site would have identified that significant level differences exist to the northwest of the junction. This is not recognised by TWBC. The widening indicated by TWBC would require either retaining structures or reprofiling of embankments. This has physical deliverability constraints as well as financial implications.
- 3.17 The sketch put forward by TWBC as mitigation would, in short, require several of departures from DMRB standards which will adversely impact in road safety. It is accepted that at this level in plan making exact details of mitigation are not necessary. However, what is necessary is comfort that a safe and suitable solution could be arrived at. In the case of this junction, it is obvious to any competent highway engineer that the design will fail mandatory design standards because it has:
- a. Excessive entry widths; and,
 - b. Substandard entry path deflection.

3.18 These are matters which affect the safety of road users. Any future detailed design would need to demonstrate to both NH and KCC that departures from mandatory design requirements, that deal with the safety of road users, are acceptable.

3.19 For information, Departures from Standard in the SRN are a formal process required for the variation of design elements considered to be safety critical and is **designed to produce a decision making record that could be defended before a Coroner’s Court in the event of an incident leading to the death of a road user**. Providing additional capacity to the road network is not a defence against the death of road users in the Coroner’s Court.

Halls Road Junction

3.20 The existing signal junction is forecast to operate beyond capacity, as is the committed roundabout improvement scheme. A further junction improvement scheme has been identified which would provide marginally improved performance. **Both of these schemes require land which is identified as being outside land which is maintained at the public expense.**

3.21 A further option of improving the existing signal layout is investigated in the note, with a practical reserve capacity expected to be in the region of negative 70-75%. However, this is presented without any supporting evidence in delivery and so should carry no weight in determining this Plan.

3.22 **On the basis of the above it is considered that no realistically deliverable mitigation strategy has been identified in this location that would actually be effective in accommodating the forecast traffic flows.**

Sandhurst Road Junction

3.23 The existing priority junction is forecast to operate beyond capacity in all scenarios, leading to the development of the signalised mitigation scheme illustrated below.



Proposed Mitigation

- 3.24 The junction intervisibility zone cannot be achieved within the current highway boundary. **This requires a departure from standard which, as outlined above, is unlikely to be justifiable in the context of delivering additional capacity to serve new development alone given the unacceptable impacts on road safety.**
- 3.25 Notwithstanding the design issues identified above, the mitigation scheme is forecast to operate with negative PRC values of up to 50%. A negative PRC value means that more traffic is arriving at the junction than the junction can cope with. **The consequence is that the "mitigation" results in cumulative residual queues in excess of one kilometre long on both Pembury Road arms, which would lead to blocking back across other junctions. No assessment of the road safety or other impacts arising from the junction failure is attempted.**

A264 Pembury Road/Maidstone Road

- 3.26 It is unclear what junction is referred to in this section given that no junction exists between these roads. This may be a new junction that the documentation has failed, to date, to refer to as being part of the mitigation. In the alternative, based on the description of the layout provided and the image included in the modelling outputs, it could be that it refers to the A228 Pembury northern Bypass/Maidstone Road junction.
- 3.27 Curiously the modelling has no vehicles turning right from the A228 into Maidstone Road. Most drivers with a destination within Pembury may well access it via the Woodgate Corner junction. However, it is fantastical to believe that no vehicles will make this manoeuvre.
- 3.28 It is unclear from the information provided if this is simply an error in putting data into the detailed junction models or a failure within the SATURN model to allocate any flow. **Irrespective of the cause, the modelling of this junction cannot be relied upon in its current state.**

Conclusion

- 3.29 TWBC's approach to delivering the infrastructure necessary to make the submission Local Plan allocations acceptable is to focus on the A228 / A264 Pembury Road corridor. This focussed approach is welcome. However at this stage, TWBC has failed to demonstrate that:
- a. Improvements to junctions have a reasonable prospect of being delivered; and that
 - b. The competing demands for road space between general vehicular traffic, public transport improvements and active travel safety have a reasonable prospect of being delivered.
- 3.30 The consequence of failing to achieve the above will be:
- a. Diversion of significant volumes of traffic onto less suitable routes including, but limited to, the B2160 through Matfield with associated adverse impacts on air quality, noise and road safety; and
 - b. Failure to deliver anything close to TWBC's aspirational modal choice leading to higher traffic volumes than currently predicted leading to an even greater volume of traffic diverting.
- 3.31 Under these circumstances, the Inspector is respectfully requested to ask TWBC to demonstrate that there is a reasonable prospect of infrastructure improvements being **delivered** along the corridor that would mitigate the impacts arising from the submission Local Plan and submit this to the EIP with an appropriate re-consultation period. In the absence of this information and on the basis of the evidence submitted to date, it can only be concluded that there is no reasonable prospect of the necessary vehicular, public transport and active travel infrastructure being deliverable and hence the submission Local Plan as currently submitted is unsound.

4.0 PS_102 Junction Hotspot Comparison

- 4.1 PS_102 was submitted at the request of the Inspector to provide a direct comparison of how the revised submission Local Plan impacts on traffic conditions compared to the submission Local Plan. The information contained within PS_102 had previously been submitted to the EIP across a variety of technical notes.
- 4.2 Given the concerns raised above regarding the strategic modelling undertaken and the deliverability of mitigation relied on in the modelling, SCPC challenges the veracity of the conclusions made in PS_102. Nonetheless the Inspector's attention is drawn to the performance of junctions 8 (A26 / B2017) and 88 (B2017 / Hartlake Road). In both the submission and revised submission Local Plan scenarios these junctions are identified as "Hotspots". One major difference between the submission and revised submission Local Plans is the deletion of 2,750 homes at Tudeley accessed directly from the B2017. In this respect PS_102 clearly demonstrates that:
- a. the traffic impact on the B2017 corridor arising from the revised submission Local Plan will be severe and requires a mitigation strategy that TWBC has yet to suggest; and
 - b. there is no reasonable prospect of the B2017 corridor accommodating the traffic arising from a further 2,750 dwellings.
- 4.3 Indeed, the fact that there remains traffic hotspots in the absence of the traffic that would arise from TWBC's originally proposed 2,750 dwellings (solely accessed from the B2017) supports SCPC's previous concerns that TWBC had failed to accurately model the traffic impacts arising from the submission Local Plan.

5.0 PS_103 Strategic Transport Assessment – Modelling Appraisal

- 5.1 PS_103 is the identical document also referenced as TWLP_123-Appendix 1. The Inspector's attention is drawn to the written representations made by SCPC to Matters 4 and 7.
- 5.2 However SCPC would reiterate that TWBC continues to fail to demonstrate that their suggested improvement to the A26 / B2017 roundabout junction can reasonably be delivered.

6.0 PS_104 Strategic Transport Assessment Addendum

- 6.1 PS_104 appears to focus solely on the trigger point for when the Colts Hill Bypass is required. Again given the concerns raised above regarding the strategic modelling undertaken and the deliverability of mitigation relied on in the modelling, SCPC challenges the veracity of the conclusions made in PS_104.
- 6.2 SCPC has previously submitted written representations raising concerns regarding TWBC's approach to determining hotspots and the Inspector's attention is drawn to SCPC's written submissions on Matters 4 and 7 in this regard.
- 6.3 Considering specifically Tables 2 and 3 of PS_104 it is noted that the Badsell Roundabout is shown to be failing in 2018 (a V/C value of 99) and having failed in 2024 (V/C value of 104). Despite this, TWBC concludes that it will be acceptable to add development traffic (on top of background growth arising from, inter alia, allocated developments in neighbouring authorities that the A228 leads through) for a further 7 years before ANY mitigation is required. This conclusion appears to be based on a calculation of the net development impact in addition to an already failed situation. This clearly does not align with the NPPF at paragraph 115 which identifies residual **cumulative** impacts as the metric to determine if a development is acceptable or not.

7.0 Summary and Conclusion

Summary

- 7.1 This Transport Technical Note, prepared on behalf of SCPC, has considered the very detailed new evidence submitted for consultation by TWBC in September 2024. The new evidence is fundamental to the soundness

of the Plan. The Plan was submitted for examination in November 2021, some three years ago, with TWBC's Plan consultations commencing some two years previously. This new and very detailed evidence therefore arrives some 5 years after consultations began.

- 7.2 With regards to modal shift, a review of the new evidence identifies the following key points:
- a. The modal shift assumptions used by TWBC to date in relation to assessing the impacts of the Paddock Wood allocations are unachievable. This is TWBC's own conclusion. The traffic impacts presented to date by TWBC therefore necessarily underestimate the severity of impact because they are based on an unachievable mode shift away from car.
 - b. TWBC's own conclusion is that travel by the car is twice as attractive as any other mode of travel in terms of journey times.
 - c. TWBC's analysis of journey times by different modes includes journeys by sustainable modes for which there is no infrastructure proposed.
 - d. TWBC states that Paddock Wood bus services would not operate weekday evenings. Weekend services are not referred to.
 - e. TWBC erroneously suggest that bus services would be "turn-up-and-go" and that they would have "Bus Rapid Transport" characteristics.
- 7.3 Having regard to the above, it is concluded that the modal shift from car to other modes, will be less than the 10% that TWBC has based their traffic assessment work on. This confirms that the traffic modelling undertaken to date is wrong with the outcome that the assessment work underestimates the impact of Plan traffic on the road network.
- 7.4 With regards to highway infrastructure interventions, a review of the new evidence identifies that mitigation is to be focussed on the A228 / A264 Pembury Road corridor. This mitigation will include:
- a. Additional highway capacity.
 - b. Public transport improvements.
 - c. Active travel infrastructure.
- 7.5 However, having regard to the physical constraints along the corridor, the evidence provided by TWBC fails to demonstrate, even in principle:
- a. That there is a reasonable prospect of highway improvements being delivered.
 - b. How public transport services along the corridor could be improved.
 - c. What the nature of the active travel infrastructure to be provided would be and that there is a reasonable prospect of this being delivered having regard to land constraints.
- 7.6 Failure to deliver mitigation along the corridor that encourages sustainable travel choices will result in more journeys being made by car than is currently predicted with little reasonable prospect of highway capacity improvements being deliverable to accommodate it.
- 7.7 With regards to the timing of infrastructure delivery, TWBC's approach is to arbitrarily set a change in percentile points of a single traffic modelling metric as the trigger at which infrastructure interventions are required. However this approach fails to take into consideration if a highway element is already operating beyond acceptable performance. It therefore clearly does not align with the NPPF at paragraph 115 which identifies residual **cumulative** impacts as the metric to determine if a development is acceptable or not: not a relative change in a single, arbitrary traffic model metric.

Conclusion

- 7.8 Based on the analysis set out above, it is concluded that the traffic modelling undertaken to date is wrong because:
- a. even in TWBC's most optimistic scenario, modal shift from car to other modes, will be less than the 10% assumed in the assessment work undertaken.
 - b. There is no evidence provided to support the aspiration that the most optimistic modal shift scenario could reasonably be achieved. Indeed the evidence provided fails to demonstrate how sustainable travel modes could be materially improved above the existing level of provision.
 - c. The evidence fails to demonstrate that highway capacity improvements could reasonably be delivered.
- 7.9 The consequence of the above is that traffic impacts arising from the Paddock Wood allocations would be materially greater than those claimed by TWBC.
- 7.10 Under these circumstances, the Inspector is respectfully requested to:
- a. reject any conclusion submitted to this EIP to date which relies on the traffic modelling outcomes and to ask TWBC to correct what is, on the basis of their own evidence, wrong traffic modelling.
 - b. ask TWBC to provide evidence regarding the deliverability of sustainable travel improvements.
 - c. ask TWBC for further evidence regarding the deliverability of highway mitigation.
 - d. ask TWBC for evidence supporting the acceptability of the arbitrarily contrived, single traffic modelling metric applied to determine when the NPPF paragraph 115 requirement for infrastructure mitigation is triggered.
- and have this further evidence submitted to the EIP with an appropriate re-consultation period.
- 7.11 In the absence of this information and on the basis of the evidence submitted to date, it can only be concluded that the submission Local Plan as currently submitted is unsound.