Tandridge Lane Action Group

RESPONSE TO HIGHWAYS ENGLAND/TANDRIDGE DC STATEMENT OF COMMON GROUND

GDB/5128/RTHE.2
December 2019

Partners:
GD Bellamy BSc CEng MICE
IT Roberts MCIHT

Bellamy Roberts LLP (trading as Bellamy Roberts) is a Limited Liability Partnership registered in England.
Reg No OC303725. Registered Office: Clover House, Western Lane, Odiham, Hampshire RG29 1TU
## CONTENTS

1.0 INTRODUCTION ................................................................. 1  
2.0 HE/TDC STATEMENT OF COMMON GROUND ............................... 1  
3.0 DHA TRANSPORT TECHNICAL NOTE ....................................... 2
**1.0 INTRODUCTION**

1.1 Bellamy Roberts Ltd has been asked by the Tandridge Lane Action Group (TLAG) to make a high level assessment of the following documents:
- The Statement of Common Ground (SoCG) between Highways England (HE) and Tandridge District Council regarding improvements to M25 Junction 6.
- The associated Transport Technical Note prepared by DHA to identify a scheme of capacity mitigation at M25 Junction 6.

**2.0 HE/TDC STATEMENT OF COMMON GROUND**

2.1 This document sets out the regulatory background in relation to the Duty to Cooperate, the responsibility of HE for the Strategic Road Network (including M25) and TDC in producing Local Plan objectives and infrastructure plans to reflect the need for highway improvements as a result of the Local Plan proposals.

2.2 The SoCG identifies HE’s recognition that there is a need for improvements to M25 Junction 6 to accommodate traffic growth arising from the development proposed in the Plan (para 3.4). It further identifies HE’s advice that the evidence shows that the impact of the Local Plan development proposals, as a whole, on the Strategic Road Network are NPPF “severe”, and that mitigation is required at M25 Junction 6 by 2024/25 (para 3.5). Para 3.7 of the SoCG states that HE are content that the design work for a proposed improvement to the junction, as suggested by DHA, demonstrates an improvement scheme that will mitigate the traffic impact of the Local Plan proposals on the junction.

2.3 Para 4.2 of the SoCG identifies that HE and TDC recognise that identifying sufficient funding to deliver the highway improvement schemes is necessary to support the Local Plan aspirations of TDC, and that HE and TDC will work together on detailed implementation plans for the M25 Junction 6 improvements as soon as sufficient funding sources are identified and confirmed. We therefore assume that funding is not yet identified, let alone confirmed, at present.
2.4 The early date identified for implementation of the proposed improvements could, at best, be described as extremely challenging. Firstly, the funding has to be identified and confirmed, and then detailed design of the improvements commenced. That design then has to reach a sufficiently advanced stage to allow for a Development Consent Order to be applied for. The statutory and other procedures involved will take a number of years to complete, the actual timescale depending upon funding sources, and then there is the construction period. There is only just over 5 years available from now to complete that whole process before 2024/25, the date when HE have identified that the mitigation works need to be available to avoid ‘severe’ impacts on the Strategic Road Network.

2.5 The associated cost estimate for the improvements, not referred to in the SoCG but contained in the DHA Technical Note, is £46,130,000. We comment further on that later in this document.

3.0 DHA TRANSPORT TECHNICAL NOTE

3.1 The DHA Transport Technical Note includes a plan showing the proposed improvements which the associated technical analysis is said to demonstrate as being required in order to mitigate the impact of the additional traffic generated by the Local Plan proposals. The Technical Note contains a description of how the traffic growth figures have been derived and sets these alongside a detailed, one day, turning count at the M25 Junction 6 roundabout carried out in 2018.

3.2 The improved junction is to be fully controlled by traffic signals and the Technical Note contains details of the capacity modelling using the industry standard LinSig software.

3.3 Finally, the Technical Note contains a cost plan prepared by Quantity Surveyors Sawyer and Fisher, and it is that which gives the estimated out-turn cost of £46,130,000.
3.4 This report contains commentary on the validity of the technical analysis detailed in the DHA report as well as in relation to the cost estimate.

**Junction Capacity**

3.5 The DHA report sets out an assessment of the junction capacity based on the traffic survey data from 2018. For reasons set out below, it is important to note that the traffic survey recorded traffic flows entering the junction from each arm, at the respective stop lines. The subsequent LinSig modelling was “adjusted” such that no arm was shown to be operating significantly above 100% of its capacity, because by definition, the traffic which was counted did get through the junction in that peak hour and, therefore, that measured flow must have been within (or at) the capacity of that arm at that time.

3.6 Adjusting modelling to broadly validate the survey results is normal practice, and it is important that this is done so as to ensure that the LinSig model reasonably reflects the way in which the junction currently operates.

3.7 The outcome of the modelling of the existing 2018 situation is that the junction is shown to be operating with practical reserve capacities of -15.7% (am peak hour) and -24.8% (pm peak hour). Average delays per PCU are 108 seconds in the morning peak and 143 seconds in the evening peak.

3.8 The 2018 traffic survey with the junction at capacity, effectively counted the maximum volume of traffic which the current layout of the junction (and its associated signal timings) can accommodate. What the survey did not do was measure the true demand of traffic. It is well known to regular users of this junction that long queues extend back from the junction on all of the main entry arms, with variations in the queue lengths and delays according to morning or evening peak hour conditions on any particular arm. Long queues develop on the A22 approaches both north and south of the junction and the exit slip roads in both directions from the M25 also queue back, often to the main carriageway. Those queues represent additional unmet demand, for use of the junction over and above the flows which were recorded in the 2018 survey. This is a fundamental error which totally undermines the conclusions drawn from the ensuing analysis.
3.9 DHA then tested the existing junction layout with the 2018 traffic flows growthed forward to 2040 to reflect the anticipated completion year of the Garden Village Development, and all of the other current Local Plan proposed developments. Allowance was also made for background traffic growth irrespective of the Local Plan development traffic. Unsurprisingly, the existing layout was shown to be overwhelmed by the increases in traffic, with average delays rising to 424 seconds per PCU in the morning peak and 406 seconds per PCU in the evening peak. This is not surprising given that the additional traffic volumes between 2018 and 2040, modelled as entering the junction, were 2025 PCU per hour in the morning peak and 1591 PCU per hour in the evening peak, increases of 25.7% and 27.0% respectively.

3.10 Given those results, DHA examined two options for improvement to the junction and Option 2 is the chosen scheme, illustrated on the plan attached to their Technical Note.

3.11 The LinSig modelling of the proposed junction improvement is considered to be somewhat optimistic for two reasons. Firstly, the design has multiple traffic lanes which appear to be only 3.5m wide, even around the curved parts of the gyratory. This means that articulated HGVs would have difficulty in remaining within their own lane, and where two HGVs are running in close proximity this will have a deleterious impact on capacity. It is normal to increase lane widths to 4m at such junctions.

3.12 Secondly, the saturation flows embodied in the modelling are higher than normal, and do not reflect the lane width constraints identified above, or the effects of curvature on multi-lane traffic behaviour. (Saturation flow is the maximum sustained flow obtainable across a traffic signal stop line during a green signal. It has a proportionate effect on capacity).

3.13 The LinSig analysis of the 2040 traffic flows and the selected improvement scheme shows the junction operating with only small reserves of practical capacity (+4.6% am peak and +3.9% pm peak). Taking into account the defects in the scheme design and the modelling, we conclude that the proposed improvement will not provide the requisite capacity.
3.14 However, there is the major flaw in this analysis identified in para 3.8 above. That relates to the existing unmet demand for traffic to use the junction at the time of the 2018 baseline surveys, which causes the known queuing on the approaches to the junction.

3.15 What the DHA analysis has effectively done, is to take the additional traffic generated by the Local Plan proposals and background growth and “leap frog” it over the 2018 queuing traffic into the improved new layout of the junction. The DHA analysis demonstrates that this additional traffic can be accommodated within the junction, but with only very small reserves of capacity, a conclusion which we challenge in any event. The existing queuing traffic, which will itself increase as a result of background traffic growth, remains in place.

3.16 Para 1.5.9 of the DHA Technical Note concludes that the proposed improvement will “provide sufficient capacity benefit to allow the junction to operate within capacity during both the am and pm peak hours ……..” We have emphasised the words (within capacity) because the analysis does not demonstrate this. What the submitted analysis purports to show flawed as it is, is that the proposed improvement provides additional capacity over and above the 2018 capacity sufficient to accommodate the increased traffic generated by background growth and the TDC Local Plan proposals. The existing substantial unmet demand on all of the main approaches is simply not accounted for in the 2018 analysis and the existing shortfall in capacity of the junction at 2018 is much greater than modelling suggests. The small improvement in net capacity within the junction as a result of the proposed improvement is not sufficient to accommodate the additional Local Plan traffic and that existing excess demand over capacity.

3.17 In summary, therefore, the £46 million improvement scheme will simply not provide capacity sufficient to accommodate anticipated 2040 traffic flows. The base survey work is flawed and the capacity analysis is overly optimistic.
Cost Estimate

3.18 The cost estimate has been based on what is simply an illustrative layout plan for the proposed improvement, and given the absence of any more detailed design development, the cost element necessarily contains a substantial number of budget allowances. There are some potentially significant further costs identified in the risk analysis section of the cost plan, some of which are almost certain to come through into final costings.

3.19 In addition, others have identified the need for significant improvements to some of the merge and diverge designs to and from the M25 main line, in order to comply with HE design standards (as set out in the DMRB), given the substantial increase in traffic flows, a conclusion with which we concur. It is likely that those improvements would require land acquisition, with its associated costs (and time delays).

3.20 There are a few points of detail in the cost plan breakdown where the figures appear to be under-estimated (for instance, the allowance for traffic signage does not appear to allow for the 9 gantries required to support the lane allocation signing, and the highway construction detail looks to be inadequate for the volumes of traffic involved and contains no allowance for any relatively poor ground conditions). However, these are points of relatively minor detail in what is necessarily a “broad brush” cost plan and in relation to the overall cost, such details make relatively small difference.

3.21 Overall, however, taking such matters into account and, in particular, potential additional costs arising out of the failure of the suggested design to meet the capacity requirements, items highlighted in the risk assessment, and the merge/diverge improvements, it is likely that the out-turn cost will be significantly higher than the figure currently indicated.