

# Basildon Local Plan Transport Assessment Review – Noak Bridge

## Introduction

1. This Technical Note has been prepared by Steer on behalf of Noak Bridge Parish Council (NBPC) to provide insight into the suitability of the highway mitigation measures proposed by Ringway Jacobs, within the Basildon Local Plan, Transport & Highway Impact Assessment(LPTA)<sup>1</sup> (March 2018), specifically around the A127 / A176 Noak Bridge Interchange North junction.
2. The Local Plan allocates a new residential development site of approximately 400 homes on the edge of Noak Bridge (referred to as site H10 within the Local Plan). Although some minor highway improvements are planned to enable access to the development site and mitigate to some extent the impacts derived from the site's anticipated vehicular trips, there are wider concerns that the subsequent year-on-year traffic increases coupled with the additional trips from the proposed development will cause unacceptable impacts and congestion within the village.
3. Residents of Noak Bridge raised concerns relating to traffic congestion in and around the village following consultation on the Basildon Local Plan. The key concerns of residents are as follows:
  - the underperformance of the A127 / A176 Noak Bridge Interchange North junction providing access to the strategic highway network, linking Noak Bridge with town centres such as Basildon and Billericay, even following mitigation; and
  - the lack of assessment of local junctions beyond the above within the village, with highway congestion already considered a key issue today by residents.
4. Similarly, the residents of Noak Bridge raised identical concerns upon review of the Noak Bridge Neighbourhood Plan, citing traffic congestion as a significant concern.
5. As such, this note seeks to identify the issues in the methodology, results and proposed mitigation detailed in the LPTA in relation to the highway infrastructure in Noak Bridge.

## Review of Ringway Jacobs Transport Assessment

6. A comparative assessment between a 2014 base-year and a 2034 future-year traffic generation was undertaken by Ringway Jacobs to identify future year constraints on the highway network.
7. To establish the 2014 base year, manual classified turning count surveys from 2011 were utilised to establish the pattern of traffic flow during peak periods. Additionally, if any further surveys were undertaken at the modelled junctions between 2011-2013, this data was used to reflect the more recent

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<sup>1</sup> [https://www.basildon.gov.uk/media/9222/EV069-Basildon-Council-Part-2-Publication-Local-Plan-Transport-and-Highway-Impact-AssessmentMain-Report-March-2018/pdf/EV069\\_Basildon\\_Council\\_-\\_Part\\_2\\_Publication\\_Local\\_Plan\\_Transport\\_and\\_Highway\\_Impact\\_Assessment\\_Main\\_.pdf?m=636899793213770000](https://www.basildon.gov.uk/media/9222/EV069-Basildon-Council-Part-2-Publication-Local-Plan-Transport-and-Highway-Impact-AssessmentMain-Report-March-2018/pdf/EV069_Basildon_Council_-_Part_2_Publication_Local_Plan_Transport_and_Highway_Impact_Assessment_Main_.pdf?m=636899793213770000)

traffic behaviours. TEMPro growth factors were then applied to uplift the survey data to the 2014 base year.

8. Establishing the 2034 'without development' scenario was also undertaken using TEMPro growth factors to uplift from the 2014 base year. This future year scenario is then combined with the VISUM-model derived trips from each of the proposed development sites across the local plan designation to create the 2034 'with development' scenario. The VISUM-model trips were initially derived using the TRICS database, applying appropriate vehicular trip-rates based on each sites location and then appropriately distributed on the network using 2011 Census journey to work data.
9. The overall distribution of vehicle trips is based on car-based journey to work census data. It was considered that this methodology did not account for a proportion of vehicle trips that travel to nearby railway stations completing the journey to work by rail as the 'main mode' within the journey to work data. As a result, the model was perceived to be underestimating vehicle trips heading to rail stations. The journey to work origin-destination census data was reviewed for car and rail trips and an adjustment factor was applied to each development site dependant on their location. This allowed the network origindestination matrix to be updated, taking into account multi-modal development trips travelling to nearby railway stations by car for the Final Growth scenario.
10. Finally, as the TRICS data provided an absolute number of vehicles, the derived trip forecasts were adjusted to Passenger Capacity Units (PCUs)<sup>2</sup> for modelling to obtain figures that realistically represent the composition of traffic attending each site.
11. Each of these demand scenarios were then modelled using the 'Junctions 9' software from TRL. Specifically, the A127 / A176 Noak Bridge Interchange North junction was modelled using the ARCADY programme within Junctions 9 which enables the modelling of roundabouts.
12. The results of the three modelled scenarios are presented in Table 1 below. It should be noted that a ratio of flow to capacity value of 0.85 or higher dictates a junction that is approaching its capacity and some congestion can be expected, where as a value of 1.00 denotes a junction as at capacity and congestion is expected. A value greater than 1.00 denotes a junction that is over-capacity and thus a cause of significant congestion.

**Table 1: A127 / A176 Noak Bridge Interchange North – Junction Modelling Results (Ratio of Flow to Capacity) by Development Scenario**

Time Period	2014 Base Year	2034 without Development	2034 with Development
AM Peak	0.80	0.95	1.31
PM Peak	1.06	1.17	1.38

13. The modelling results detailed in Table 1 show that in the AM Peak 2014 base scenario the junction is nearing a ratio of flow to capacity value of 0.85 but shows that the junction is operating just below its optimum capacity.
14. The 2034 without development scenario shows that the junction is nearing its capacity in the AM Peak, and in the 2034 with development scenario the junction is significantly over capacity, likely causing significant congestion on its approach roads.

<sup>2</sup> Passenger Car Unit (PCU) is a metric used in Transportation Engineering, to assess traffic-flow rate on a highway. A PCU is from Assam. essentially the impact that a mode of transport has on traffic variables (such as headway, speed, density) compared to a single car. For example, typical values of PCU are: private car (including taxis or pick-up) 1; motorcycle 0.75; bicycle 0.5; horse-drawn vehicle 4; bus, tractor, truck 3.

15. The PM Peak results for all three scenario's denotes that the junction operates over its intended capacity, likely causing significant congestion on its approach roads.
16. The results show that the junction is already operating significantly above capacity and that this worsen significantly in the future years, especially when new development is added.
17. Given the modelling results, mitigation measures were proposed for the junction to improve its throughput. The proposed mitigation sought to increase the circulatory capacity of the roundabout, as well as widening the carriageway entries into the junction and signalling. The junction was then remodelled to reflect the 2034 with development scenario including the amended junction layouts. The proposed junction layout can be found at the rear of this note at drawing at the rear of this document.
18. Table 2 details the modelling results of the A127 / A176 Noak Bridge Interchange North junction in the 2034 with development scenario - including the proposed junction amendments.

**Table 2: A127 / A176 Noak Bridge Interchange North – Junction Modelling Results (Ratio of Flow to Capacity) with Mitigation**

Time Period	2034 with Development + Mitigation
AM Peak	1.06
PM Peak	1.24

19. The modelling results presented in Table 2 show that even with mitigation measures implemented, the junction continues to operate over capacity, likely to cause significant congestion on approach roads. This figure remains constant even with further sensitivity tests undertaken by Ringway Jacobs. The mitigation measures proposed do not fully mitigate the impact of the proposed developments.
20. Ringway Jacobs state that if the junction was signalised, and if those signals utilised a microprocessor optimised vehicle actuation (MOVA) system, further efficiencies can be achieved at the junction, however this was not modelled. The report concludes that the modelling results and impacts are acceptable. **Identified Issues**
21. Following review of the methodology, results, and proposed mitigation, the following issues have been identified:

#### **Methodology**

22. The methodology applied seems reasonable an in line with industry standards, however, as the base data was derived in 2011 the data could be considered 'out-of-date' for an assessment undertaken in 2018, and that is meant to be representative of existing traffic today (2020), despite 2014 being the baseline year. Significant differences in the quanta of traffic, travel behaviour and likely destinations would have changed between 2011 and today, that may not be picked up by the TEMPro factors used as a proxy. This will therefore could reflect an unrealistic junction operation in comparison to that experienced today.
23. Moreover, the vehicle trips derived from each development are not detailed within the assessment. Therefore, further insight into the total number of trips estimated from the H10 site cannot be further interrogated at this point which prevents validation that the volumes of traffic from the site are representative.
24. Furthermore, since the Ringway Jacobs assessment was carried out, we have discovered that there are no plans to extend Noak Bridge Primary School, and that children in the new

development would be going to schools in Basildon. This would significantly increase traffic to/from the site more than what has been assessed.

25. The report also states that “reasonable assumptions” have been made that improvements to public transport and cycling provision in the future, but this isn’t quantified or justified, therefore we can only assume traffic generation has been discounted to allow for a shift to public and sustainable transport which is not quantified or justified in the report.
26. The methodology does not detail what the traffic composition of the base data is. Therefore, it is unclear as to the number of larger vehicles utilising the junction across each scenario. It would be prudent to detail the traffic composition to enable identification of potential softer mitigation than junction amendments such as re-routing HGVs to avoid the junction.
27. Overall there is not enough detail in the methodology to validate that the traffic generation in the future year scenarios is robust. It would seem that assumptions have been made that may under-estimate future traffic generation.
28. Finally, no other roads or junctions have been assessed. Whilst we appreciate this is a strategic document covering a wide area, the impact of the development at the A127 / A176 Noak Bridge Interchange North junction will likely cause major knock-on effects to junctions up and downstream which have not yet been assessed.

### **Results and Mitigation**

29. The results clearly show that despite concerns that traffic generation may be under-estimated as stated above, the mitigation proposed does not fully address the impacts of the proposed development in the future year and that already congested roads will become a lot more congested.
30. The proposed mitigation of increasing the circulatory and approach capacities through carriageway widening is also not within keeping of the National Planning Policy Framework (NPPF), which seeks to encourage sustainable forms of transport away from the private vehicle. The scheme suggested enables further car-use and continues to increase the car dominance of local areas which is not in-keeping with National Policy. As such the development and the surrounding infrastructure should be reviewed to consider sustainable and active transport measures to encourage travel away from the private car, thus improving junction operation. These mitigation measures should be clearly set out and committed to as part of the Local Plan to ensure future developers provide the facilities and opportunities to reduce car dominant travel and this is enshrined firmly in planning policy from the outset that is in-keeping with the NPPF.
31. Moreover, the suggestion by Ringway Jacobs that the signalisation of the junction with MOVA will improve the junction’s operation is unfounded and needs to be tested. Therefore, the conclusions made by Ringway Jacobs regarding the A127 / A176 Noak Bridge Interchange North are considered unsatisfactory.

## **Next Steps**

32. In order to resolve the issues identified the following steps are recommended:
  - Request that collection of more recent traffic survey data for the A127 / A176 Noak Bridge Interchange North junction is undertaken to better reflect existing junction demand and travel patterns before then predicting future impacts;
  - Request further information from Ringway Jacobs on the trips derived from the H10 site to enable validation of the forecast number of vehicles;

- Request further information from Ringway Jacobs on the traffic composition of the base-data to enable identification of specific measures that could improve the junction's functionality, such as rerouting HGVs;
- Request further information Ringway Jacobs on the assumptions made regarding increased public transport and sustainable modes in the future and how this will be secured;
- Request that at junctions assessed such as the A127 / A176 Noak Bridge Interchange North where the junction is already operating close to capacity, and is forecast to be significantly over-capacity in the future even without development, the mitigation proposed fully mitigates the development to ensure no worsening of congestion for local residents as a result of the proposed developments;
- As part of a wider package of measures to ensure impacts are fully mitigated, consider sustainable transport measures, such as the introduction of a new bus route to serve the local area and new development, or the introduction of safe cycling routes – both lending themselves to reducing the number of vehicles using the junction as a whole, and identify the propensity to travel without a car of residents of Noak Bridge and the future development site. This would then align more with the NPPF which seeks a shift in travel away from the private car;
- Clarifying with Ringway Jacobs whether the modelling results for the mitigated 2034 with development scenario is a signalised or non-signalised junction; and

## Conclusions

The above points should be considered, and the assessment undertaken again to ensure that the concerns are addressed and that impacts are properly mitigated at this crucial stage of the planning process

