To: Swale Joint Transportation Board

By: Head of Transportation, Kent County Council

Date: 9 September 2013

Subject: A2 / A251 Junction, Faversham

Classification: Decision

Summary: Proposals have been developed for the A2 / A251 junction, to tackle congestion and improve safety. Subject to Members' approval, the proposals are ready for wider public consultation.

Introduction

1. For a number of years, improvements to the A2 / A251 junction in Faversham have been put forward as a proposed scheme for Local Transport Plan (LTP) funding, to tackle two of Kent County Council's main priorities, namely congestion and safety. At present, the junction forms a T-junction, with the A251 from Ashford giving way to the A2. Nearby is another significant T-junction, where The Mall leads off the A2 into Faversham; the primary signed route into Faversham from the M2, A2 and A251.

2. A budget of £245,000 has been set aside to progress improvements. It is envisaged that exploratory work and consultation would take place in 2013/14, with scheme implementation in 2014/15.

Investigation work to date

3. In December 2010, KCC launched a transport delivery plan entitled "Growth Without Gridlock". This document identified that if Kent is to accommodate future growth, its transport network must have sufficient capacity and resilience to provide for efficient and reliable journeys. However the county's highway network is already overloaded at critical points. The A2 / A251 junction is one such point, and has previously been identified as a 'crash cluster' location, highlighting highway safety concerns. In the light of this, the possibility of improvements for this junction has been promoted for a number of years.

4. KCC Highways & Transportation subsequently prepared an initial feasibility study to develop the most appropriate method for improving traffic flow and safety. This involved assessing current flows, the performance of the existing priority junction arrangement, and computer modelling of alternative options.

5. Concurrent work was carried out by Bancroft Consulting, as a part of a Transport Assessment (TA) for a potential mixed use development on land between Ashford Road and Salters Lane. The TA looked at projected vehicle trips and concluded that significant improvements were required for the A2 / A251 junction to facilitate this development.

6. The TA considered a roundabout option. In order to accommodate the predicted traffic flow, the required roundabout design was developed in accordance with the Department for Transport's "Design Manual for Roads and Bridges" (DMRB). It would require a significantly large amount of third party land on the south-east corner of the junction (Annex 1). As such, not only would it be difficult to provide a roundabout design that operates safely; it would also be very onerous in terms of land acquisition and associated costs. The TA concluded that traffic signal control was the only viable option for the junction.

7. In view of this outcome, the KCC feasibility study primarily considered the various options for signalisation. An initial study concluded the following:-

   - Signalising both junctions (A251, The Mall) with the A2 will not work in a satisfactory manner; the demand for right turns and predicted queue lengths far exceeds the storage space available.
   - The A2 / The Mall junction is problematic for a safe and efficient traffic signal layout, due to an established tree and stone horse trough.
   - The A2 / A251 Ashford Road junction lends itself more to signal control, although slightly complicated by a minor side road (Preston Grove).
   - However, the traffic modelling work showed that a workable design was not possible within the current highway boundary; the junction still operated over capacity at peak times.

8. A second study explored the possibilities further, with the intention of identifying a workable design that required the least amount of third party land. The design was also required to be robust in terms of being able to accommodate predicted flows for 2017, both with and without the proposed Ashford Road / Salters Lane mixed use development.

9. An outline design that meets the criteria was subsequently identified, and is shown in Annex 2. The main facets are as follows:-

   - Widening of the A251 Ashford Road approach, to provide additional stacking space for 12 right turning vehicles on to the A2.
   - Widening of the A2 Canterbury Road to the west of the junction, to provide a two lane approach at the stop line, and two straight ahead

lanes for traffic heading west towards the town centre and Sittingbourne.

- A controlled pedestrian crossing on the eastern arm of the junction (A2 from Canterbury).
- Banned manoeuvres for turning right into and out of, Preston Grove.
- Yellow box markings at The Mall and the entrance to the fire station.
- A 'hurry call' for the fire brigade, so that if they are to attend an emergency call, they can turn the lights green in their favour.
- A four stage traffic signal operation that would be reduced to three if no pedestrians call the demand to cross the road.

10. The following table indicates the relative performance of the current arrangement and the proposed new traffic signals for the A2 / A251:-

Scenario	Junction capacity		Maximum queue lengths (vehicles)	
	AM Peak	PM Peak	AM Peak	PM Peak
Existing priority junction	RFC 1.838	RFC 1.242	A2 w/b = 0 A2 e/b = 38 A251 = 78	A2 w/b = 0 A2 e/b = 5 A251 = 47
New signals (2012 flows)	PRC 16.9%	PRC 7.6%	A2 w/b = 7 A2 e/b = 13 A251 = 9	A2 w/b = 7 A2 e/b = 21 A251 = 11
New signals (2017 flows)	PRC 8.7%	PRC 6.9%	A2 w/b = 7 A2 e/b = 15 A251 = 9	A2 w/b = 9 A2 e/b = 24 A251 = 13
New signals (2017 + development)	PRC 5.0%	PRC 4.6%	A2 w/b = 8 A2 e/b = 17 A251 = 9	A2 w/b = 11 A2 e/b = 26 A251 = 14

NB: For an explanation of RFC and PRC see paragraphs 11 & 12 below. The abbreviations e/b and w/b refer to 'eastbound' and 'westbound'.

11. The 'footprint' of the improvements shown in Annex 2 will most likely require a small amount of land acquisition from "The Kent and Medway Towns Fire Authority", i.e. part of the frontage for the fire station, to facilitate the proposed widening of the A251 Ashford Road. Further land may be required along the A2 on the frontage to The Abbey School, although early indications are that it could be possible to achieve road widening within the current highway boundary.

12. The budget cost of the proposed improvements is £220,000. This estimate currently does not include the cost of relocating the diversion of statutory undertakers' equipment e.g. electricity supply or phone cables; or the cost of obtaining third party land.

13. The capacity of priority junctions is assessed using the "Ratio to Flow Capacity" (RFC). It is desirable for the RFC to be less than 1.0 (i.e. 100%); a figure of 0.85 would indicate 15% reserve capacity. Results above 1.0 indicate that the junction is over capacity, with numbers far

exceeding 1.0 demonstrating significant issues with junction performance. It can therefore be seen that there are serious issues with the current road layout at peak times, particularly in the morning and on the western (A2 from Sittingbourne) and southern (A251) arms of the junction.

14. The capacity of the proposed traffic signals has been assessed relating to "Practical Reserve Capacity" (PRC). It is desirable for PRC to be between 10-15%. Results tending towards zero and negative numbers indicate that the junction is over capacity. It can therefore be seen that although the available capacity is not within 'desirable' parameters, there is still reserve capacity, even when modelled using the current worst case scenario (2017 traffic flow, plus development flow).

15. Furthermore, it is also envisaged that the proposed signals would operate under MOVA (Microprocessor Optimised Vehicle Actuation); in simple terms this means that the lights would be 'smart' and adjust themselves in real time, depending upon where the queues of traffic has been detected. Previous studies indicate that MOVA can reduce delays by an average of 13%, and can also contribute towards road safety by minimising hold-ups and the ensuing driver frustration.

Part time traffic signals

16. Where problems occur at junctions only under certain conditions, primarily at peak hours, it has been common to implement traffic signal control on a part-time basis. A study undertaken by the County Surveyors' Society in 1997 was based on a survey of signalised roundabouts (CSS, 1997). Although identifying the benefits of signalling, the study also identified an increase in accidents during the time. Largely as a result of this study there has been a move away from using part-time traffic signals, and many formerly part-time traffic signal junctions have been converted to full-time operation. Although a more recent study was not able to confirm the findings of the 1997 study, there is sufficient doubt over the relative safety of part-time signals to discourage their use.

17. In respect of this specific site, the main issue with part-time signal operation would be that there is no way to provide safe pedestrian crossing facilities for visually impaired pedestrians, as there is no effective way of indicating in a non-visual way that the signals are not operational. Consequently, signalised pedestrian facilities cannot be recommended for part-time signals. Therefore any junction which includes such facilities would have to be switched on permanently, as is the case here – pedestrian crossing facilities are proposed for the eastern (A2 from Canterbury) arm of the junction.

Conclusion

18. Widening the A2 Canterbury Road to allow for two straight ahead lanes towards Faversham will help improve capacity; however the limited space available for right turns into The Mall is not sufficient to cater for the

demand and this will impact upon the traffic signals' performance – the will be some exit blockages during peak periods.

19. There is also potential for increased traffic flows on the A251 Ashford Road, as right turning vehicles will find it safer to exit on to the A2 towards Brenley Corner. Conversely, there may be less traffic flow along Salters Lane, which can be used as an alternative.

20. The proposed traffic signal junction would operate more efficiently under MOVA control, which would allow more 'green' time when queuing demand increases. Although there will still be issues with right turning vehicles into The Mall, the delays are likely to be lower and more balanced across all arms, compared with the existing problems associated with the current priority T-junction.

21. The traffic signals will remove conflicts associated with current turning manoeuvres, and improve safety for more vulnerable road users, particularly for pedestrians wishing to cross the A2 Canterbury Road.

22. It is therefore considered that the proposed traffic signals would improve conditions in terms of capacity, pedestrian movement and road safety. Although there could be some delays at peak times caused by exit blocking from right turning vehicles into The Mall, these delays would occur under more controlled conditions, and so would be unlikely to cause additional safety issues, as is currently the case.

Recommendation

23. It is recommended that the proposed traffic signal improvements shown in Annex 2 are approved for the purposes of a wider public consultation; and that the results of this consultation are brought back to this Board at a later date.

Background documents: None

Annexes

Annex 1 – Indicative roundabout design
Annex 2 – Proposed traffic signals for the A2 / A251 junction, Faversham

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