M2 Junction 5/5a Studies

Briefing Note

Introduction

In 2008, English Partnerships and CLG provided funding to undertake a study that would examine options for the improvement of M2 junction 5. The need for the study arose as the Highways Agency was becoming increasingly concerned about the effects of the regeneration programme within Swale on M2 junction 5. This junction suffers from severe congestion in the morning peak as a result of trips leaving Swale. The junction also acts as a key node on the sub-regional network as it is the first point at which access to the M20 can be made by traffic from East Kent. Without improvement to the junction, the Highways Agency would have difficulty in approving development that would bring additional trips to the network.

A brief was agreed between the Highways Agency, Kent County Council and Swale Borough Council, with initial work undertaken by Highways Agency consultants. In July 2008, due to difficulties with the consultant the work was picked up by Jacobs, Kent County Council's Highways partnership consultant.

The Study

The study had two distinct areas of focus. Firstly, the study examined options for the short term improvements of the existing junction. Secondly, the impacts of a new junction on the M2 to the east of the existing junction were considered.

The short term improvements looked at schemes that would increase capacity with the aim of reducing congestion. The key issues identified were:

i. Junction 5 forms the only access to the strategic road network from Sittingbourne and Sheppey – this is a network issue and can not be resolved through improvement of the junction
ii. Southbound approach is two lanes wide, which restricts the number of vehicles that can pass through the junction
iii. Improvements undertaken to date have tried to maximise capacity within the existing layout
iv. Geometry and capacity of slip roads will become a problem in the future.

Five options for an improvement scheme were identified. The option that was chosen for further development is an enhancement of the existing layout which provides a greater number of traffic lanes on the approaches and through the junction. This will enable a greater number of vehicles to pass through the junction.

The performance of the junction was assessed using a Visim traffic model, with the following results:

- Vehicle flows increase substantially to 2016 – and therefore the queuing also
- Introduction of the chosen option would provide an increase in capacity and reduce the queuing – at first
- Traffic that currently uses rural routes to avoid the congestion would be attracted back to the trunk road as a result of reduced congestion
- Over time, queues and delays would return to pre-improvement levels

- The improvement would provide headroom for around 450 new homes without any changes to trip rates. Development of sustainable transport modes that reduce car trips would increase this amount

The Junction suffers from a high accident rate. However, none of the options identified would be able to address this issue with a high degree of success. Indeed, the chosen option builds upon the current layout and so the accident rate is not likely to change.

Appraisal of the scheme was undertaken using the Highways Agency's standard Project Appraisal Report template. This is used to consider the costs, benefits and other factors of a particular scheme or option and to guide decision making around what action to take. The appraisal comes up with a score for the project. A score of 4 would indicate that the scheme is worthwhile, and so any score above this further reinforces benefits – a score of 10 deems a scheme unavoidable. The project proposed for Junction 5 scored 3.

Turning to a proposed junction 5a, its introduction would have a real impact on travel patterns. The modelling of the junction also assumed the completion of the northern relief road to Bapchild and a new link from Bapchild to the new junction 5a. Using the same traffic model that was used to assess the options for junction 5, overall performance of junction 5 improves and results in considerable journey time savings.

However, the critical AM southbound queue on the A249 approach sees very little change in terms of queue length, but there are still benefits in terms of reduced journey times. The duration of the time that the maximum queue lengths would be reached would also be reduced, so this could help with journey time reliability.

The effect of a new junction would also transfer some trips from junction 5, increasing pressure on the M2 between the existing and new junctions. With current development flows, there is an increase of traffic – most notably 33% in the AM peak on the coast-bound carriageway. But, reduced queuing on the slip road would offset this.

When the employment aspirations of Kent Science Park are considered, the sensitivity of junction 5 to increased flows as a result of development is low – provided junction 5a is in place. Employment space only was considered, with no housing development included within the development tested because of uncertainties over quantity.

Conclusions

The main conclusions are that:

- Interim improvements at junction 5 only serve to maintain the current situation in the longer term
- Junction 5a could defer the need for major improvement works at junction 5 – but the interim improvements are still necessary
- Major development of KSP relies on junction 5a being provided
- Further testing of the implications of junction 5a are still needed

Next Steps

The Highways Agency has committed to developing the scheme at junction 5 with the potential for inclusion within their improvements programme. However, its inclusion is not a certainty and will be reliant upon further scheme design and appraisal. The timing for the further development of this scheme is needed from the Highways Agency. However, work on this has yet to start.

A clear understanding of the development aspirations of Kent Science Park, and an outline delivery programme, is needed. Further sensitivity tests of overall development assumptions will need to be undertaken as part of the Borough Council's LDF process.

In terms of improvements to junction 5, it is clear that interim improvement options do not provide any real lasting benefit. Further work will need to be undertaken in the future that considers a more radical improvement such as further grade separation or completely remodelling the junction. The project that results form this process is likely to be very costly.

The North Kent MAA is delivering a transport strategy for North Kent. This will take a strategic view of transport infrastructure across the area, and develop a programme for the delivery of key infrastructure. A key strand of the strategy is to vastly enhance the role of public transport, both within urban areas and between them. A key project that will be promoted as part of this strategy will be to improve the provision of public transport within the Borough. Increased take up of public transport will contribute to reduced car trips, and therefore pressure on congested points – such as junction 5.

The scheme list that will form part of the North Kent Transport Strategy includes Junction 5a, the A2-M2 link and an entry for improvements to junction 5.

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