

Kingsway Signal Junction Investigation

Sept 2016

Summary

A new signalized roundabout junction has been constructed on the A5111 to provide access for the development of 700 new homes on the Kingsway Hospital site.

The junction has been constructed by Kier Living under a S278 agreement with Derby City Council. The total cost, paid for by the developer, is approximately £1m.

The junction was brought into full operation on Wednesday, July 13th.

A decision to switch of the traffic signals was made on Monday, July 25th. The actual switch-off took place in the evening of Thursday, July 28th.

The day-by-day events from the 13th to 28th are set out in detail in Appendix C.

Several processes have now been triggered:

1. Engagement with all stakeholders
2. Liaison with Kier Living and the Homes and Communities Agency
3. Engagement of a third party expert to re-examine the signal operation options and the physical layout to the junction
4. Solution development
5. Investigation of the history and processes to explain what has gone wrong and what we need to learn

This document is to 5 (above).

Outline Process for Developing the Junction Design

The requirement of the junction to provide access for the Kingsway Development was established during the planning process.

The development of the design was an iterative process, which is normal for a development and junction of this scale. In these situations the developer tends to seek guidance on the requirements for planning and highways; then

produces a design or series of designs. In the case of Kingsway, the Traffic and Transportation team (T&T) provided a schematic junction design (previously prepared by a consultant) to the developer as a guide, not a fully developed design or a minimum requirement for highway approval.

The developer eventually produced a more compact design with a Traffic Assessment (TA) for approval.

The basic requirement for the developer is to provide a design and evidence base to demonstrate that their proposal will be fit for purpose; in this case, providing safe access suitable for the scale of the development. The developer is required only to prove that the proposal will not be detrimental to the existing highway operation. There is no binding requirement to mitigate existing congestion.

The TA for Kingsway junction was based on data collected in 2011-12, based on morning and evening peak time traffic flows.

The T&T team tested the developer's proposal; including signal design, physical layout, and the TA. The standard model assessments were interpreted as showing the junction as a general improvement in capacity for vehicles; although any benefit would be constrained by the capacity of nearby junctions. The impact on the retail park was predicted to be nil, or probable minor benefit.

The Council approved the detailed junction design in 2014 (minor revision in 2015). Construction of the junction started in February 2016.

Why has the junction not performed as the modelling suggested?

Two key factors appear to be most relevant:

(1) The TA and testing carried by the Council did not adequately identify the patterns and trends of vehicle movements to and from the retail park.

The general assumption in TA's is that the critical periods are assumed to be the daily morning and evening peaks. In the case of Kingsway, the peak periods of demand for the retail park were assumed to be outside of the daily peak periods, so the spikes in demand for the retail park would not be

expected to conflict with daily peak time demand. The assumption has proved to be broadly acceptable, as congestion within the retail park has not been as a consequence of congestion on the highway network during morning and evening peak times.

It has been suggested that if the Council had asked for the TA to include weekends then it is likely that the developer would have resisted, as this is not standard industry practice. However, the questions were not asked by the Council and the design was not tested in terms of the performance at peak demand for the retail park.

The Council should have at least asked the question and stimulated the discussion with the developer. The cost of obtaining simple hourly traffic volume data, entering and leaving the retail park was not prohibitive. Revised data was gathered in 2015, which included weekends, to determine the temporary road layout during the construction period. The junction design was not re-tested using the 2015 data. If a re-test had been applied then the patterns and levels of demand may have provided enough of an alert to inform the design and approval process. Although not re-testing the junction may look like an omission, it would have been an extraordinary step.

With hindsight it is clear that the Council should have insisted that the original TA included periods outside of the normal standard requirements. It is likely that future intensification of development within, and on the fringes of the city, will place increasing stress on the existing highway network. It is critical that the testing of developments acknowledges the patterns of usage outside of traditional peaks and recognises the unusual peak flows of 'destinations'.

Experience gained from Westfield/Intu provides ample evidence that retail sites are now expanding their 'offer' to include related leisure facilities. The assessment models need to reflect the changing patterns of traffic flows spread over different days of the week and times of day.

It is **recommended** that all future development proposals are tested to provide more detail regarding precise mitigation in the morning and evening peak periods, and outside of traditional peaks, recognising the changed demands of urban environments.

It is also **recommended** that mitigation or benefits of highway changes are tested to expose circumstances which would result in failure, and assess the risk of failure.

It is also **recommended** that a change is made to the S278 agreement with a condition added that if more than a set time (to be established) elapses between the design date and construction, then a revised TA and a re-testing of the proposal will be required.

It needs to be recognised that this may be a significant change to custom and practice; involving wider area assessments and additional justification, and may lead to protracted negotiations with developers, who have an interest in 'do minimum' solutions.

(2) The retail park has undergone significant changes since the design date of new junction.

It is clear that there was a gap of approximately 6 years from the original design date of the new junction to construction. The retail park has changed significantly during this period. Research into the recent planning history shows the change of use and sub-division of units has replaced 'low-turnover' stores with 'higher turn-over stores'. For example, a tile warehouse is now M&S food. The total floor area of the site has changed very little. The amount of car parking has not been expanded. The full detail is contained in Appendix A and Appendix B. Appendix A shows where Highways Development Control had an opportunity to comment on changes.

Three café style food outlets have been added on land that was previously B&Q garden centre. These food outlets would traditionally have been viewed as being services to existing visitors to the retail park. There is some evidence that they have generated specific trips and changed the demand at lunchtime and early afternoon periods.

The cumulative impact of all of the individual changes was not identified by the Council over the period between the design date and construction; consequently the TA and the constructed junction does not reflect the current demand on the junction.

Could the Council have insisted on a revised TA given the period of time that elapsed between approval and construction? The basic principle is that the design is approved for the lifetime of the approval. Only if the application expires or a formal extension is granted can the Council ask for a revised TA and potentially a design revision. In the case of Kingsway; construction began within the time allowed following approval. However it is believed that there is scope to alter the conditions of the S278 agreement (see recommendation above) to ensure contemporary assessments are made prior to construction.

There is apparent lack of a holistic assessment of the cumulative impact of the 'minor' changes to the retail park. Most of the applications listed in Appendix A and B were made after the date of the base data in the TA, but before design approval. The opportunity existed to re-examine the proposed design in 2014. This would have provided a more contemporary assessment of the retail park and probably highlighted the changes in demands and patterns; providing a stimulus for a reappraisal of the design.

It is **recommended** that a mechanism is developed to improve the coordination between planning officers and Traffic and Transportation Officers.

It is also **recommended** that major retail and leisure sites are reviewed every three years, to ensure that minor changes are fully assessed and the contemporary usage understood.

The retail park road network

This is an important and directly relevant issue that needs to be considered. It is substantially outside of the direct control of the Council. The retail site road network is privately owned. Approximately 5 metres of the access road (where it joins the Kingsway roundabout) is public highway. Developers are not required to include an assessment of private roads in their proposals.

Congestion within the retail park is something that has occurred from time-to-time, at weekends and in the pre-Christmas periods. The circulation of traffic within the site is severely limited by the capacity of the single entry/exit road and the roundabout near the petrol station, and entry points in to the parking areas are poor. The internal site road network has not developed to reflect the

changes in demand and patterns. It is important to recognise that these capacity and circulation issues existed prior to the development of the new Kingsway junction.

The above is not a denial of the additional congestion that occurred following the completion of the new Kingsway junction. But it is important to recognise that the solution to extreme congestion events within the retail park does require significant changes within the retail park.

It is **recommended** that the Council explores how it can influence the improvement of the retail park road network.