TONBRIDGE & MALLING BOROUGH COUNCIL

JOINT TRANSPORTATION BOARD

14 June 2010

Report of the Head of County-wide Improvements

Part 1- Public

Matter for Recommendation to Borough Cabinet - Non-Key Decision (Decision may be taken by the Cabinet Member)

1 M20JUNCTION 4 AND A228 LEYBOURNE & WEST MALLING BYPASS – OPERATIONAL AND SAFETY REVIEW

Summary
An update on the final commissioning of the traffic signals at M20 Junction 4 and along the A228 Leybourne and West Malling Bypass and the results of an operational and safety study review carried out by Jacobs.

1.1 Background

1.1.1 In the late 1990's the A228 Leybourne and West Malling bypass was planned to be constructed as a rural standard dual carriageway with grade separated junctions that would facilitate free flowing traffic along its entire length. The scheme - known as the 'orange route' - also included the construction of a new roundabout junction over the M20 motorway to extend the existing Junction 4.

1.1.2 The grade separated scheme was expensive. The Highways Agency abandoned its proposals for widening the M20 motorway between Junctions 3 and 5 and in 1996 they became reluctant to publish the necessary statutory Orders for the new motorway junction because they were concerned about unrestrained traffic growth and the impact on the operation of the M20.

1.1.3 The Bypass scheme had to be totally redesigned to achieve an affordable scheme that would not require substantive changes to Junction 4 requiring the Highways Agency to publish Orders and against a background of evolving government policy on road building that required to be met in order to secure funding. These constraints led to the quasi-urban standard scheme with 'at-grade' traffic signal junctions known as the 'modified orange route' that was developed and then built in 2005/2006.

1.1.4 The route of the bypass and interface with the existing network led to some challenging junction designs particularly when trying to build in capacity for future growth to allow for the significant development along the A228 corridor. The introduction of traffic signals dictated the need for urban design standards and the

50 mph speed limit which is inherently difficult to enforce. There is clearly also far more potential for vehicle conflict with 'at grade' junctions and this must be taken into account in the context of the review discussed in this report.

1.1.5 Following the completion of the Bypass and M20 Junction 4, there were expressions of concern about the apparent expansiveness, the layout and operation of M20 Junction 4 and adjacent junctions. Typically there have been calls for more lane markings and the addition of 'yellow box' markings. In addition there has been an underlying concern by motorists turning right out of Castle Way because of the unusual layout requiring drivers to cross two lanes of bypass traffic.

1.1.6 As a direct result of the above concerns it was intended to carry out an operational and safety review and the Borough Council asked if this could extend to cover all of the Bypass and Junction 4. It was considered desirable to wait until the traffic signals at all the junctions had been fully validated and operating correctly before undertaking the review. The delay in resolving the complex technical problems with the traffic signals along the Bypass and at M20 junction 4 has been a source of considerable frustration over the past three years.

1.1.7 Jacobs were commissioned in March 2010 to undertake the operational and safety review and make recommendations on a pragmatic basis in the context of the limited funding available for any further work. The main aspects of the review are outlined and discussed below.

1.1.8 It is important that a sense of proportion is maintained. It is too easy to forget that Castle Way used to carry all of the A228 traffic and the Bypass has been hugely successful in providing a strategic highway improvement with considerable benefits to Leybourne residents. It is also an unfortunate and regrettable fact that all roads and junctions will have crashes and that driver behaviour is often a contributing factor.

1.2 Update on Traffic Signal Communication and Control

1.2.1 When the Bypass opened in October 2006 and the Junction 4 improvement in December 2006 the signal installations were not completely finished and most signalised junctions were using fixed time operation. The intention was to have their operation coordinated by computer control incorporating Urban Traffic Control and the use of Closed Circuit Television. For sound practical and cost reasons, the installation of this specialist equipment was kept separate from the main bypass construction works and due to its complexity, the installation could not be completed until July 2008.

1.2.2 A pioneering wireless communications strategy was adopted because of the lack of suitable communication links, with no BT infrastructure in close proximity. This strategy would also enable communications equipment to be compatible with new systems that Kent Highway Services was in the process of adopting.

1.2.3 The use of wireless communication for traffic signal control and operation relies on new cutting edge technology which has resulted in a multitude of ongoing technical challenges. This has delayed the traffic signal junctions at the M20 Junction 4, and along the Bypass, from operating in the way that was originally intended or indeed is necessary at this complex and busy junction.

1.2.4 Communications difficulties were finally resolved in February 2010 and the traffic signals were subsequently validated. The traffic signals will now self adjust to changes in demand traffic flow and are capable of manual remote adjustment from the Traffic Management Centre in Maidstone should the CCTV cameras identify a problem. This form of operation will maximise efficiency on the network and manage traffic flows more effectively.

Specific Areas of Operational and Safety Review

1.3 M20 Junction 4 – Annex 1

1.3.1 The majority (70%) of the 10 crashes in this location (2 serious and 8 slight) occurred during 2006/7 which coincided with the end of the construction period. At that time there would have been a high degree of unfamiliarity with the new layout.

1.3.2 The nature of the remaining 3 crashes in the last two years suggests that there is little that needs to be done to address crash issues. It is also noted that 50% of all crashes related to drivers not reacting to a red traffic signal.

1.3.3 Various minor signing and white lining amendments are recommended:

- Installation of worded destinations on two primary route direction signs
- Hatch markings influencing vehicle paths require amending
- There are badly worn lane markings that require attention
- Minor adjustments to lane marking for smoother path around junction and to mitigate problems caused by poor vertical alignment.
- Pedestrian signing to help clarify formal pedestrian routes across junction

1.3.4 It is suggested that road signs and destination markings are revised to provide consistency throughout the network.

1.3.5 Yellow box markings have been suggested in the past by some members of the public to assist operation of the junction. In many places they are useful but at Junction 4 they would be quite large making judgement by drivers difficult and they would prevent other lane guidance marking being proposed. In particular they are difficult to install and maintain in a busy traffic location such as Junction 4. With a low number of crashes and the traffic signals now fully optimised and under active management they will not be considered further for now.

1.4 Castle Way North/A228 – Annex 1

1.4.1 This junction was originally added to the proposals for the Bypass following public consultation in 2001. Its location is not ideal and with hindsight its provision might have been questioned more forcefully. Ever since the junction was first opened in 2006, it has been the subject of greatest concern and criticism of the entire Bypass.

1.4.2 Nonetheless, the junction does provide flexibility for movements on the local road network, thus avoiding lengthy diversions for Leybourne residents and preventing other local roads being burdened with additional traffic.

1.4.3 A traffic monitoring exercise of local roads in the area was carried out in 2009. It concluded that the distribution of traffic on the network was fairly well balanced and there is a view that reducing traffic further along Castle Way will only have an adverse impact on other roads.

1.4.4 There have been 9 crashes (1 serious, 8 slight) at this location, which are more than might be expected. All crashes relate to red light traffic signal contraventions with mainly left turns off Junction 4 into Castle Way, across the free flow slip, colliding with westbound A228 traffic (3 crashes) or the westbound A228 traffic itself passing through a red traffic signal colliding with vehicles turning out of Castle Way (3 crashes). Other red traffic signal contraventions account for a further 2 crashes.

1.4.5 With the traffic signals now operating as intended, this should have improved the efficiency and coordination at this junction. Additionally on advice from the police, tunnel hoods were added to the signals in October 2008 to address a particular problem.

1.4.6 The major conflicting movements at the junction are the right turn from Castle Way and the unusual left turn in, which crosses the two A228 ahead lanes from the free flow slip.

1.4.7 Drivers turning right out of Castle Way are required to cross both A228 south bound links and two reservation areas before being able to manoeuvre into the correct lane of the A228 northbound carriageway on the approach to Junction 4. During busy periods there is high potential for drivers to become ‘trapped’ in one of the reservation areas and not know what the traffic lights are doing in order to progress forward safely moments later. The potential for this problem is exacerbated by the number of vehicles using Castle Way as a route from the A20 rather than electing to use the Bypass. The high number of vehicles at peak times also increases the risk of red light contraventions.

1.4.8 Drivers wishing to turn left into Castle Way from Junction 4 experience reduced peripheral vision of A228 south bound vehicles, made more difficult by obstructions from some signs. There has to be a high reliance on the traffic signal operation and red traffic light compliance by drivers on the free flow westbound off

slip from the M20 because there is little opportunity for drivers to take preventative action.

1.4.9 High approach speeds from the motorway, along the free flow slip, may also be a contributory factor to some of the crashes. This factor combined with the physical arrangement of road markings and street furniture may reduce the visibility and awareness of the 40 mph speed limit signs.

1.4.10 The provision of an interactive sign would help to reduce vehicle speeds but, due to stringent criteria, they are only likely to be accepted as a 'last resort' when all other measures have been exhausted.

1.4.11 Suggested options to address various problems are:

- Reconfiguring traffic signals.
- Road sign and road marking modifications.
- Increase awareness of 40 mph signs with yellow backing boards.
- Modification of road destination markings.
- Introduction of 2 yellow boxes in the live areas across the A228.
- Banning the right turn movement out of Castle Way.
- Removing the left turn into Castle Way.
- Remove the free flow westbound lane to the A228.

1.4.12 With this junction being the main concern, and because of the more than expected number of crashes, Jacobs recommend consideration of banning the right turn out from Castle Way. While this could have a positive reduction in the number of crashes it has the potential for causing crashes at Park Road Roundabout by the additional 'U' turning movements.

1.4.13 Banning the right turn is likely to discourage a lot of drivers from using Castle Way in a northbound direction, however it is not known whether they will consequently choose to use the Bypass or other routes.

1.4.14 However, this is only part of the solution to address the number of crashes that are occurring at this junction and Jacobs recommend that banning the left turn into Castle Way for vehicles from the north and west should also be investigated. This is the more contentious because despite providing the potential to simplify the junction and improve network coordination and efficiency, the alternative diversion for Leybourne residents via the A228 and the A20 Link may prove to be very unpopular.

1.4.15 To ban the left turn in (not the left turn from the free flow slip) would inconvenience those coming from the west and from the north that want to access Leybourne. This would also impact adversely on the Castle Lake Brewers Fayre and bound to be met with strong resistance.

1.4.16 The underlying source of crashes is closely associated with traffic speed and red light contravention of traffic on the free flow westbound lane to the A228. However, to remodel the junction is beyond the scope of the funding available and perhaps something that should be considered when development pressures and funding require the Junction 4 eastern bridge to be widened.

1.4.17 Should the junction remain fully operational as at present, then at the very least it is considered that reinforcing the 'live' traffic areas with yellow box markings will help with clarity of the road layout. Similarly, the road markings and signing should be modified to improve consistency and visibility for drivers, as with the suggested improvements to traffic signals.

1.4.18 The substantive ideas that involve banning turning movements will be contentious, difficult and beyond the funding likely to be available and the Board are invited to comment prior to any further investigation.

1.5 A228/Park Road Roundabout – Annex 2

1.5.1 There have been 6 crashes south of the roundabout, all slight. The main issue is that of goods vehicles changing lanes and colliding with vehicles in the offside lane. With no identifiable reason for the accidents described, it is not possible to suggest a form of remedial measure that could be implemented at this location.

1.5.2 Although there are no significant issues identified on the approaches or roundabout, the white lining is worn, there is incorrect lining and an absence of destination lane marking on the approaches. Spiral lines would be beneficial.

1.5.3 Replacing worn white lining is worth doing and it is best to make modifications now while the worn lining is easier to remove. With other white lining being proposed along the route it makes good economic sense to take forward all of the white lining improvements during the same visit.

1.6 A228/A20 Link Road – Annex 3

1.6.1 The 13 crashes at this location (1 serious, 12 slight), are higher than expected for this type of junction. Ten of the crashes involve right turning vehicles, to and from the A228 and the A20 Link colliding with A228 vehicles as a result of red traffic signal contraventions.

1.6.2 There is evidence that this junction has been confusing to some drivers and this is not helped by limited visibility for A228 northbound traffic. Unclear or inconsistent signing and road markings layout adds to the apparent uncertainty for drivers approaching and negotiating the junction. There is also the possibility of traffic

signal heads being obscured by other vehicles that can contribute to drivers moving off on a red light.

1.6.3 Suggestions for improvement are:-

- Amendments to road marking destinations for clarity and consistency.
- Realignment of carriageway for left turn from A20 Link Road.
- Signal modification with hoods to minimise 'see through' from adjacent traffic lanes.
- Realignment and extension of right turn flare to Hermitage Farm.
- Additional direction signs.
- Revise lane arrow markings on Link Road.
- Revise lane destination markings on Link Road.

1.6.4 It is proposed that road signs and destination markings are revised to provide consistency throughout the network. Also for tunnel and louvered signal hoods to be utilised on A228 south bound ahead and right turn to reduce see through.

1.6.5 The realignment proposals are significant in cost terms and as there is no evidence of crashes being caused by this aspect, no action is proposed. It could also be argued that, by 'tightening up' the left turn from the A20 Link Road, it will not stop drivers from performing a potentially risky manoeuvre but merely make it more difficult and hence more dangerous.

1.7 A228/Station Access – Annex 4

1.7.1 There have been 4 crashes at this location (1 fatal, 1 serious and 2 slight). Two crashes relate to the conflict between right turning vehicles and northbound traffic on the A228, as a result of red light traffic signal contravention by A228 vehicles. A further crash was a nose to tail shunt involving four vehicles stopped at the northbound traffic signals. The fatality was a tragic incident where a young pedal cyclist failed to wait for a green signal at the controlled crossing and was hit by a bus.

1.7.2 It is thought that a combination of vehicles exceeding the speed limit, and limited forward visibility for northbound traffic, may have been contributory factors. Visibility at the junction itself is not helped by additional temporary signs that remain.

1.7.3 The only suggested improvement is to remove or relocate the yellow/black temporary signs.

1.7.4 The temporary signs should be removed but the concern with vehicle speeds along this road should not be ignored. Speed is also an issue at other locations but other than seeking approval and support for speed enforcement there is little that realistically can be done.

1.7.5 With much of the northbound carriageway being on a gentle left hand bend, and with forward visibility being a potential issue, this highlights the special need for regular cutting back of vegetation along this section of carriageway. This also applies to the approaches to other signalised junctions along the bypass and KHS operations officers will be advised.

1.8 A228 Tower View Roundabout – Annex 5

1.8.1 There have been 4 crashes (I serious and 3 slight) at this location.

1.8.2 The main issue related to too fast an approach speed to the roundabout from the north, leading to late lane changes, shunts and losses of control on the roundabout.

1.8.3 There are no warning signs that advise drivers of roundabout exit layouts. This may induce inappropriate use of the roundabout. Alignment of signal heads to give better visibility of signals from a greater distance could also prove beneficial.

1.8.4 Suggested improvements are as follows:-

- Improve conspicuousness of signals by realigning and refitting signal heads
- Install warning signs and arrow markings highlighting the ‘two-way’ and ‘dual carriageway’ roundabout approaches.

1.8.5 Although beneficial and low cost, there is no overriding justification for these modifications to be provided. It is therefore suggested that this work is classified as low priority and subject to affordability.

1.9 A20/Castle Way South – Annex 3

1.9.1 The original intention was for the traffic signals at this location to be upgraded to allow Urban Traffic Control with new loop detectors and widening. The junction was also to be coordinated with the new A228/A20 Link Road junction. There were also aspirations to scale down the size of the junction with carriageway modifications being carried out. However, for financial and engineering reasons it was decided that the carriageway alterations would prove to be too expensive and not best value for money given the financial constraints at that time.

1.9.2 The situation is that the traffic signals remain in a partial state of completeness, with the junction operating to fixed time green plans.

1.9.3 Although there is no reported crash record for this junction, there are concerns about some of the approach markings and signing from the A20 Link Road being

inconsistent and confusing. As discussed under the A228/A20 Link Road junction, it is proposed that road signs and destination markings are revised to provide consistency throughout the network.

1.9.4 Remaining concerns focus upon the number of traffic lanes entering and exiting Castle Way and the desire to reduce them. With the number of other valid safety issues to address and the limited funding available it is considered that there is insufficient priority to undertake physical works. However, if a debate established a higher priority, then a 'white lining' narrowing solution could be developed in conjunction with completion of the traffic signal installation work.

1.10 Castle Way Traffic Calming

1.10.1 The key concern of the local community is the junction of Castle Way North with the A228. Of lesser concern is the junction of Castle Way South with the A20. Both these junctions are covered in Sections 3.2 and 3.7 respectively.

1.10.2 Traffic calming issues generally relate to perceived vehicle speeds and driver behaviour along Castle Way. This is not helped by the chicanes that according to standards for a 20 mph zone do not require priority signing.

1.10.3 Some of the local concern may be influenced by those who would still like to see Castle Way closed to through traffic but the decision to keep Castle Way connected was confirmed after extensive debate during the traffic calming consultation.

1.10.4 Some time ago discussions were sought with the parish council for the introduction of further speed cushions. However, those discussions were complicated by a long 'desire list' of hindsight amendments and modifications to the traffic calming that were unaffordable. Action to address any of those items was subsequently put on hold pending this review.

1.10.5 The review suggests the following:-

- More vertical traffic calming features
- Modify chicanes and install priority signs
- Further lane narrowing with white lining
- Raise level of grassed areas
- Ban right turn out of Castle Way north (refer 3.5 above)
- Reduce number of traffic lanes at Castle Way south (refer 3.7 above).

1.10.6 The review recommends that no further action is taken with any of the traffic calming modifications until after the completion of any works deemed necessary at the north and south Castle Way junctions. This is because such works could

reduce traffic flows along Castle Way and hence influence driver behaviour. A further review of the traffic calming is therefore recommended at that time.

1.11 Funding

1.11.1 There is no residual fund remaining from the original bypass budget although the County Council has identified limited funding from its own resources in the order of £100,000. However, this funding is also required to cover the cost of this review work by Jacobs and any subsequent design fee and this will limit the available funding for actual works.

1.11.2 The concern in allocating such funding specifically for a completed Major Project means that any proposals will have not been assessed under the stringent criteria used when prioritising schemes competing for funding on a County wide basis. It is therefore important that funding is directed to addressing key aspects and where tangible benefits could be expected. Inevitably this does impose a severe constraint on what can be reasonably and fairly achieved.

1.12 Summary

1.12.1 The substantive difficulties with the communications aspects of the traffic signals have been resolved and are working in an optimised way and capable of reactive management from the KHS Traffic Management Centre.

1.12.2 This is an interim report which outlines operational and safety issues along the area of study together with suggestions and recommendation contained within a review commissioned from Jacobs.

1.12.3 It is concluded that there are no real 'hot spots' for crashes in the area of study and this is consistent with the absence of 'pink peril' Police reports being received.

1.12.4 The two areas of greatest concern from a safety perspective are the Castle Way North/A228 junction and the A20 Link Road/A228 junction because of the greater number of crashes than might normally be expected.

1.12.5 Castle Way North is the potentially more serious and unfortunately more difficult and expensive to resolve satisfactorily. Nonetheless, it is recommended that this takes priority for further consideration.

1.12.6 Along the A228 bypass and at M20 Junction 4 there are numerous signing, lining and signalling proposals, the aim of which is to avoid the apparent confusion for motorists travelling along the route. Improved visibility and signing consistency is considered to be a relatively low cost improvement. Much of this work would help to improve the perceived problems at the A20 Link Road/A228 junction.

1.12.7 Anything beyond the above work cannot be prioritised at this stage due to the funding limitations.

1.12.8 Vehicle speeds contribute towards problems at the junctions but in most cases there is no practical solution to deal with excess speeds that are partly a consequence of the design standards imposed on the Bypass, other than enforcement and changes in driver behaviour.

1.13 Recommendations

1.13.1 That the Board note the content of this report and the review report.

1.13.2 That the views of the Board are invited, particularly on the areas of greatest concern at the Castle Way North junction with A228 and suggestions for banning turning movements.

1.13.3 That Jacobs work up a firm list of costed proposals and priorities within the available funding and a report submitted to the September 2010 meeting of this Board for approval prior to any works commencing.

1.14 Legal Implications

1.14.1 None applicable.

1.15 Financial and Value for Money Considerations

1.15.1 As dealt with in the report.

1.16 Risk Assessment

1.16.1 None applicable.

Background papers:

M20 Junction 4 and A228 Leybourne and West Malling Bypass – Operational and Safety Review

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