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**Decision Session**  
**- Executive Member for City Strategy**

7<sup>th</sup> December 2010

Report of the Director of City Strategy

**OPTIONS TO IMPROVE THE COMMON ROAD JUNCTION WITH THE  
A1079 (HULL ROAD) AT DUNNINGTON**

**Summary**

1. This report summarises the outcome of a feasibility study evaluating options to make it safer and easier to access the Common Road junction with the A1079 (Hull Road) at Dunnington by installing traffic signals.

**Recommendation**

2. The Executive Member for City Strategy is recommended to :-
  - (i) Note the contents of the report, which outlines the key issues, reviews potential solutions, estimates implementation costs, and evaluates a possible option.
  - (ii) Consider putting forward a traffic signal with road widening scheme at the A1079 Common Road junction at Dunnington for possible inclusion in the Transport Capital programme for funding in future years.

**Reason** : To make it safer and easier to access the Common Road junction with the A1079 at Dunnington.

**Background**

3. A Village Accessibility Review (VAR) carried out in 2009/10 examined road safety and access issues at eight junctions on radial routes around York. Some potential mitigation measures were reported to the July 2009 City Strategy Executive Member Decision Session, which subsequently approved a timetable for further development and possible implementation of certain schemes up to 2011/12.
4. As part of this review, a feasibility study has recently been carried out for improving the A1079 / Common Road junction at Dunnington, with a view to developing costed proposals for possible future implementation and inclusion in the Transport Capital programme.
5. The plan at **Annex A** shows the existing A1079 / Common Road junction layout, which is a 'T' arrangement with the main 'A' classified road having

priority over the side road. The proximity of the nearby Common Lane junction, together with a number of vehicle access crossings along this part of the A1079 should be noted.

6. Despite the introduction of a 40mph speed limit on this section of the A1079 in early 2009, drivers exiting Common Road can face particular difficulties at certain times of the day when turning right, due to volumes and speed of traffic on the A1079. For example, delay and frustration can result in some drivers pulling out of the side road when there are less than desirable gaps in the A1079 main road traffic flows.
7. Similarly, drivers on the A1079 westbound using the existing right turn lane when accessing Common Road, can also experience difficulty at peak times and sometimes take risks when turning off the A1079 into Common Road.
8. In addition, a weight restriction, introduced along the northern part of Common Road to deter goods vehicles from entering Dunnington village, means that commercial vehicles requiring access to and from the Dunnington Industrial Estate have to use the Common Road junction to access the A1079
9. Police records highlight 4 injury accidents at or in proximity to the Common Road junction between 2005 and April 2010, involving 2 serious and 2 slight casualties. 3 accidents involved vehicle turning manoeuvres, whilst the other involved a pedestrian with a cycle crossing the main road.

### **Junction improvement options**

10. In response to earlier road safety concerns some different types of measure have already previously been investigated. Namely by the Highways Agency before the A1079 was de-trunked in 2003, and by consultants in 2005/06 as part of a wider speed and safety study of the A1079 between Grimston Bar and Four Lane Ends (Common Road, Dunnington), with the latter leading to traffic signals being installed at the A1079 York Road junction in 2007.
11. **Upgrading the existing priority junction** - Although some minor improvements would be possible, there is thought to be no practical way of addressing the fundamental difficulties associated with turning right into and out of Common Road whilst maintaining a priority 'T' junction arrangement
12. **Creating a roundabout** - A roundabout would provide a degree of assistance for drivers exiting Common Road, by giving them priority over A1079 westbound traffic, but they would still have to give way to A1079 eastbound traffic
13. There are also some significant constraints associated with creating a roundabout. Firstly, there is insufficient space within the existing highway extents to construct a roundabout of suitable capacity capable of carrying the traffic flows experienced on the A1079. Given the need to purchase additional land, and anticipated impact on underground and overhead services, the construction costs would be extremely high
14. Secondly, the imbalance in low and high flows between Common Road and A1079 respectively would detract from a roundabout's safety performance, and could lead to congestion and delay on the main road approaches

15. **Introducing traffic signal control** – Investigation and analysis shows that traffic signals could address the current accident problem at the junction plus concerns about delays for side road traffic, by enabling vehicles on the A1079 to be stopped to allow drivers to exit or enter Common Road. Signal control would also provide opportunities to introduce pedestrian crossing facilities.
16. Therefore, on the basis that traffic signals offer the most effective way of addressing problems and concerns at the A1079 Common Road junction the remainder of this report focuses on this option.

## **Traffic Signal Proposals**

### **General design considerations**

17. Preliminary assessment ruled out some unsuitable traffic signal scenarios, and only those which appeared more feasible were developed for computer modeling to predict their effect on traffic in terms of vehicle delay, average queuing and other congestion related factors.
18. Modeling of the junction as a T-junction, with no signal controlled access provided for the properties south of the junction, provides some small theoretical benefits to capacity over a crossroads arrangement. However, for safety reasons all traffic signal options were modeled as full crossroads, including the south access as a separate signal phase, but only activated on demand.
19. In terms of overall junction capacity, not separately signalling the existing A1079 westbound right turn, and having vehicles entering Common Road by turning in gaps within opposing A1079 eastbound flows, would be more efficient. However, serious accidents often occur at traffic signals where right turns can be made across opposing traffic flows, especially where approach speeds can be relatively high. Therefore, a key design requirement is that the green phase for turning right from the A1079 into Common Road should only be permitted when opposing eastbound traffic is halted by a red signal. Although this arrangement increases the time through traffic is held at 'red', and thereby has an adverse effect on the overall capacity of the junction to deal with peak flows, it is felt to be an essential safety feature.
20. Another type of accident associated with traffic signals are 'shunt' collisions, where a driver fails to react early enough when a vehicle in front slows down to stop for the signals. Even more serious is the potential of a collision if a driver on the main road fails to observe a red signal and hits a vehicle emerging from the side road. Fortunately, on each A1079 approach to the Common Road junction there are speed management measures with a 40mph speed limit, together with street lighting. Therefore, the introduction of traffic signals would be highlighted by additional signs giving good early warning to further minimise the risks. Vehicle detectors would also be installed to automatically modify the signal phasing in response to queuing traffic or vehicle approach speeds.
21. The traffic signal evaluations also sought to provide 'on demand' pedestrian crossing phases across Common Road and the A1079. Pedestrian demand is anticipated to be low, but this in part makes it possible to incorporate safer

crossing facilities which would not adversely affect the overall performance of the traffic signal in terms of coping with vehicle flows.

### **Signalising within the existing road space.**

22. Initially, signalisation of the current junction layout was considered, with the existing A1079 westbound right turn into Common Road separately signaled to avoid conflict with opposing outbound flows. Already having separate A1079 westbound ahead and right lanes provides adequate capacity to deal with the predominantly westbound AM peak flows towards York with only reasonable delays. However, in the PM peak, with traffic flows predominantly A1079 eastbound from York, the existing single eastbound lane would be unable to accommodate the combined ahead and left turn demand on this approach, resulting in significant delays across all arms with the build up of queues on the eastbound approach extending to over 180m in length. This scenario would certainly fall short of the improvements most people would be expecting through signalization of the junction, and therefore additional capacity improvements are considered essential to achieve the desired outcomes.

### **Signalising with road widening**

23. Modelling shows that separately signalising the existing A1079 westbound right turn adds the desired safety benefit without adversely affecting the other junction approaches, and the maximum predicted queue length will be accommodated within the existing 50m long right-turn lane. Therefore there would be little to be gained from further road widening on the westbound approach.
24. It was thought that the Common Road southbound approach to the junction might benefit from separate left and right lanes. However, analysis shows that the present single lane should provide sufficient capacity to clear queuing traffic during each cycle of the signals. This is fortunate because there are a number of underground services within the adjoining highway verge which would be relatively expensive to relocate to provide the associated road widening.
25. As outlined in paragraph 22, the main problem to be addressed is the junction's inability to cope with the heavy flow of traffic heading away from York in the evening peak period. The most obvious solution would be to improve the traffic flow rate by providing a dual lane approach to the signals on the A1079 eastbound approach. Modeling indicates that the addition of a left turn lane to accommodate a 35m queue length on this approach would sufficiently increase the junction's overall capacity to deal with flows throughout all periods.
26. However, to provide the necessary additional eastbound lane would require carriageway widening, as shown at **Annex B**. It should be feasible to achieve this within the present Highway extents on the north side of the A1079, but this would require the diversion of both underground and overhead services.

### Scheme Costs and Value for Money Rating

27. Current estimates of the costs involved to widen the A1079 and install traffic signals are as follows :-

Traffic signal installation / road widening..... £ 220K  
 Diversion of underground and overhead services ..... £ 170K  
*(based on initial estimates from the Utility companies)*

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**TOTAL £ 390K**

28. Given the high estimates cost, it is considered important to assess how a traffic signal scheme might contribute towards achieving the Council’s overall Local Transport Plan (LTP) objectives. A full LTP2 ‘Capital Programme Prioritisation Methodology’ appraisal against competing schemes is available, but was considered to be excessive for the scheme in question. Therefore, only an evaluation of points scores against recognised value for money criteria was undertaken, to produce a useful indication of the potential benefits or otherwise of these specific proposals, as highlighted in the table below :-

A1079 Common Rd	Accessibility	Congestion	Safer Roads	Air Quality	Other Quality or Life Issues	TOTAL
Range	-10 to +10	-10 to +10	-10 to +10	-10 to +10	-14 to +14	-54 to +54
Points score against LTP objectives	+ 4	+ 2	+ 5		+ 2	+ 12
				- 1		

The scheme rating given against each key objective is briefly discussed below :-

- 29. The main purpose of the scheme is to improve vehicular access to the village, therefore, it scores positively on **accessibility**, especially on the rural indicator. However, despite the provision of pedestrian crossing facilities it is adjudged to have limited effect on some other accessibility areas such as disabled access or social exclusion.
- 30. In terms of **congestion**, there should be a positive benefit for Common Road, but this has to be balanced with an increase in congestion on the A1079. The signals may also enable traffic queues to be managed to discourage vehicles diverting off the A1079 and travelling through Dunnington. However, in the City wide context the proposed measures are unlikely to have a significant effect on congestion.

31. The issue of **road safety** is discussed elsewhere within the report, acknowledging that whilst the existing pattern of injury accidents should be addressed by the proposed signalisation, new accident patterns may develop. However, these are likely to have a lower casualty severity potential due to lower speed and the separation of opposing vehicle movements.
32. **Air quality** is likely to be worse, because of the increase in stop / start traffic and idling vehicles.
33. The other **quality of life** issues achieve some positive scoring through the benefits to personal safety and economy.
34. The **overall total** is a low positive score of +12, which suggests the proposed scheme has some merit and is worthy of consideration. However, the high estimated scheme cost (£390K) raises questions about its value for money. Indeed, it is likely that other schemes which could provide wider benefits or benefit more people, would produce higher scores, and represent better value for money when implementation costs are taken into account. It is important that LTP money is spent on schemes that can be demonstrated to offer high value for money, as future LTP funding from central government is being reduced.
35. If a scheme is to be considered for future implementation then a more robust and detailed appraisal for allocating funding on transport schemes would be undertaken, to reflect the objectives and, as yet undetermined, targets to be set in LTP3.

## **Road Safety Audit**

36. A preliminary Road Safety Audit Risk Assessment of the scheme has been carried out. This concluded that the introduction of traffic signals could have a number of potential road safety issues which warrant closer examination to ensure the safest possible solution would be implemented. Therefore, should the scheme be progressed, the full Road Safety Audit process is recommended, involving independent road safety checks at key stages during the design and as the scheme is built.

## **Consultation**

37. At this feasibility stage no formal external consultation on the traffic signal scheme proposals has taken place.
38. The Police have reviewed the outline proposals, and stated they would not support the introduction of traffic signals, because they feel there could be an increase in rear end shunt accidents, difficulty for drivers entering or exiting business premises near to the junction, and 'rat running' through the village might be encouraged.
39. A preliminary meeting was held with Dunnington Parish Council and the Derwent Ward member to discuss the various constraints and implications relating to the installation of traffic signals, and gauge the likely level of local support for such a scheme. The PC and Ward member confirmed their desire for the junction to be controlled by traffic signals.

40. At a further meeting the Ward and Parish councillors were informed of the need for expensive road widening to enable an effective traffic signal arrangement to be put in place. Although disappointed that signalisation of the existing junction has not proved to be feasible, they still fully support the introduction of traffic signals, but acknowledge that increased costs are likely to result in a possible scheme being ranked as a lower priority.

## Options

41. Therefore, the options for the Executive Member to consider are :-

**Option 1** – Approve in principle a road widening and traffic signal scheme for the A1079 Common Road junction at Dunnington, to be put forward for possible inclusion in the Transport Capital programme for funding in future years.

**Option 2** – Abandon the current A1079 Common Road junction improvement proposals

## Analysis

42. Installing traffic signals at the A1079 Common Road junction would address the access issues raised by the earlier village accessibility review, by making it safer and easier to turn into and out of the Common Road junction. Nevertheless, it should also be recognised that the introduction of traffic signals has the potential to result in shunt or collision type accidents, as referred to above.
43. However, in order to achieve a workable traffic signal solution relatively expensive road widening and utility diversions are required, which would reduce the cost effectiveness of the scheme.
44. As noted above, Ward and Parish Councillors would welcome signalisation of the junction, but the Police have reservations about some potential disbenefits of the proposals.
45. At £390k and a points score of +12, the value for money rating of the scheme is considered low. However, because it does have some merits, it would appear reasonable to put it forward for consideration as part of future capital programmes, accepting that due to other priorities and reduced funding it is unlikely to be progressed for the foreseeable future. Hence, **Option 1** is recommended.

## Corporate Priorities

46. In general, the traffic signal proposals support the Council's corporate 'Sustainable City', 'Thriving City', 'Safer City' and 'Inclusive City' priorities, by improving safety and getting around for people accessing facilities and opportunities, plus potentially increasing the use of public transport.

## **Implications**

Specific implications relating to the proposals are itemised below :-

### **Financial/Programme Implications**

47. The estimated cost of installing traffic signals together with the associated road widening is around £390K. For this scheme to be implemented it would need to be put forward as a spending option within the normal process for allocating Transport Capital Programme expenditure in 2011/12 or beyond.

### **Human Resources**

48. If traffic signals were subsequently installed there would be some HR implications in terms of manpower and resources for future maintenance and to monitor the effectiveness of the junction alterations. However, although these activities involve extra work, this should be readily accommodated within available staffing levels.

### **Equalities**

49. Introducing traffic signals at the junction should make it easier and safer for people to access opportunities and facilities in Dunnington and elsewhere.

### **Legal**

50. The Council, as Highway Authority for the area, has powers under the Acts and Regulations listed below to implement the proposals in this report :-

The Highways Act 1980

The Road Traffic Regulations Act 1984

The Traffic Signs Regulations and General Directions 2002

### **Crime and Disorder**

51. There are not thought to be any significant crime and disorder implications.

### **Information Technology**

52. Due to the rural location, a broadband link would be required to provide Network Management with remote fault monitoring.

### **Property**

53. The proposals can be introduced within the Highway, therefore, no property implications are anticipated.

## Risk Management

54. In compliance with the Council's Risk Management Strategy the main risks identified in relation to the proposals outlined in this report are those which could lead to an inability to meet long term objectives (Strategic) and specifically the delivery of safer roads (Physical) possibly leading to a failure to meet expectations (Operational).
55. **Strategic** – If it is decided not to implement the traffic signal proposals there is a risk that this could lead to an inability to meet the council's 'thriving city' and 'inclusive city' priorities, and the council may not meet some of the accessibility, road safety and congestion easing aims of the Local Transport Plan
56. **Physical** – Although queuing should be reduced on Common Road, the proposed measures would reduce flow capacity along the A1079 resulting in delay with queuing at certain periods. Therefore, there is a risk of complaints and adverse comment from road users and local residents as a result of the likely reduction in flow rate along the A1079 and the associated consequences.
57. **Operational** - Traffic signals are being proposed with the aim of increasing safety at the junction, and to make it easier to exit Common Road onto the A1079. It should be appreciated that one consequence of this might be an increase in drivers choosing to use the Common Road junction in preference to other routes where there can be more congestion. If this were to happen it could lead to some criticism from current users of the junction.

RISK	Strategic	Physical	Operational
Likelihood	Possible	Possible	Possible
Impact	medium	medium	medium
SCORE	9	9	9

58. Measured in terms of impact and likelihood, the above risk scores for the recommendation are each less than 16, therefore, at this stage the risks only need to be monitored, as they do not provide a real threat to achieving key objectives or priorities.

## Monitoring

59. If implemented the scheme would be monitored to evaluate its effectiveness in terms of improving road safety and traffic management. This would include on-site observations, speed surveys, and the assessment of feedback from road users and local residents. In addition, an independent road safety audit would be carried out following construction.

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Report Approved



Date 11 November 2010

## Specialist Implications Officer(s)

Wards Affected: Derwent

All

For further information please contact the author of the report.

## Annexes:

**ANNEX A** : Plan showing the existing A1079 Common Road junction layout

**ANNEX B** : Plan showing the proposed junction layout with road widening

## Background Papers:

'**Village Accessibility Review**' report of the Director of City Strategy, to the Executive Member for City Strategy Decision Session on 7<sup>th</sup> July 2010.

'**A1079 Grimston Bar – Four Lane Ends Study**' technical note by Halcrow consultants presented to officers January 2006

'**City of York Local Transport Plan 2006-2011**'

Annex V : Draft Capital Programme Prioritisation Methodology