Decision Session - Executive Member for Transport and Planning **14 September 2017**

Report of the Corporate Director of Economy and Place

Junction Alterations – Lendal Arch Gyratory

Summary

1. Alterations to the following junctions are required to allow replacement of life-expired signalling assets:

- Station Road / Rougier Street
- Station Rise / Station Road

Together these junctions are commonly known as 'Lendal Arch Gyratory'. Annex A shows the location of the proposed works.

A decision is required to approve the proposed alterations.

Recommendations

2. The Executive Member is asked to:

1) Station Road / Rougier Street:

Approve the recommended design for this junction (Option1)

Reason: The recommended design offers the best solution to allow replacement of the asset in line with current design standards, whilst minimising the impact on pedestrians and vehicular traffic.

2) Station Rise / Station Road:

Approve the recommended design for this junction (Option 1)

Reason: The recommended design offers the best solution to allow replacement of the asset in line with current design

standards, whilst minimising the impact on pedestrians and vehicular traffic. It also takes advantage of the available opportunity to implement a new pedestrian crossing for the benefit of blind and partially sighted users.

Background

3. Approval was granted at the Executive Member for Transport and Planning Decision Session on 12 November 2015 to undertake the 5-year 'TSAR' (Traffic Signal Asset Renewal) project.

4. The TSAR project's main focus is the replacement of life expired traffic signal assets around York. However, the operation and need for the signals is reviewed at all proposed replacement locations and where 'easy wins' can be achieved at the same time as replacing obsolete equipment, these will be delivered where possible. Funding from other sources may be combined with the TSAR programme allocation to enhance schemes where considered advantageous.

5. To date, 13 sets of signals have been refurbished and a further 4 are programmed for delivery in the 17/18 financial year.

6. In addition to the replacement of life expired equipment at Lendal Arch gyratory there are the following additional objectives
   a. Improve facilities for pedestrians travelling to the city centre from the railway station.
   b. Review accident data and improve layout to resolve road safety concerns where possible.
   c. Minimise the impact on vehicular capacity and improve capacity if possible.

7. A comprehensive review of the gyratory was undertaken to establish whether any fundamental changes to the layout were appropriate. Unfortunately owing to the constrained nature of the site (City walls, Lendal Bridge, Memorial Gardens etc.) and conflicting demands from road users (bus stops, public transport routing, high pedestrian flows etc.) the review did not identify any options which were considered appropriate to take forward.

8. The following is a summary of the options that have been ruled out, and the reasons that they were seen to be not viable:

Station Road/Leeman Road Junction

9. Station Road left turn lane changed to left and ahead – This design option sought to achieve benefits by altering the permitted vehicular movements at the junction, thereby improving capacity. It was ruled out for further work when an analysis showed that the predicted benefits would actually be so small so as to be insignificant. In addition, for two straight ahead lanes to work effectively, the bus stop on Station Avenue would need to be removed but no suitable alternative location could be identified.

10. Station Road left turn lane removed – This design option had the benefits of enabling improvements to pedestrian and cycling provision because the carriageway could be repurposed as a pedestrian waiting area and cycle lane. It was not viable due to the significant impacts upon congestion and air quality. Queues were predicted to extend beyond the Station, incurring significant delays to public transport services.

Station Road/Rougier Street Junction

11. Allow a right turn out of Rougier Street on to Lendal Bridge – This option allowed a currently prohibited movement. Modelling showed that instead of providing capacity benefits, it significantly affected congestion for the worse. As such, it provided no benefits and was ruled out for further work.
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12. Prohibit left turn from Lendal Bridge to Rougier Street – This option prohibited an existing movement with the intention being that the junction would have fewer stages and would therefore be more efficient. Whilst this did turn out to be the case, the diverted traffic caused increased congestion on the gyratory and overall congestion in the area was worse. It was therefore ruled out for further work.

Realign Leeman Road to use existing coach stop as Highway

13. This option looked at sending vehicular traffic down the piece of highway that is currently the coach drop off area with a view to improve capacity and journey times in the area. This option was discontinued due to land ownership issues, the lack of suitable alternative coach drop of areas and impact on pedestrian and cycle routes.

Consultation

14. The TSAR project uses a 3-level consultation strategy, the details of which can be found in Annex B.

15. Level 2 consultation (Internal and external stakeholders) is complete for both junctions for the current design phase (preliminary design). The proposed design incorporates feedback from internal stakeholders.

16. External consultation has also been carried out and the outcome of this is summarised in Annex C. The proposed design incorporates feedback from relevant external stakeholders.

Options

17. The following options are available:

    1) Station Road / Rougier Street
    Option 1 – Approve the proposed junction design
    Option 2 – Do not approve the proposed junction design

    2) Station Rise / Station Road
    Option 1 – Approve the proposed junction design
    Option 2 – Approve the proposed junction design, **without** installing the new pedestrian crossing across Station Road (leave this crossing as is).
    Option 3 – Do not approve the proposed junction design

Analysis

Station Road / Rougier Street

18. *Description of changes* Refer to Annex D for a drawing comparing the existing layout to the proposed layout. The principal proposed elements of the scheme are:

    - Provision of straight across pedestrian crossings over Rougier Street and Lendal Bridge. Crossings will be widened and realigned to bring them to current guidelines and allow improved pedestrian facilities. Existing pedestrian islands will be removed.

    - Widening of the footways to allow a larger pedestrian area on the northern, eastern and southern sides of the junction.

- Changing in the staging of the junction to allow for an all round pedestrian stage.

- Full refurbishment of the traffic signal equipment and ducting network, including the introduction of Puffin style near side red / green man displays.

- Minor road marking alterations.

- Resurfacing of the area of the junction affected by the works.

- The budgetary estimate for this element of the scheme is £130k subject to the confirmation of the extent of surfacing.

- These works are currently scheduled for Early 2018

Reasoning

19. The existing junction equipment is in need of replacement due to its age. When replacing old equipment with new, designers must take into consideration current standards and comply with them where possible.

20. The existing pedestrian facilities are below standard with respect to their width, equipment type, and refuge islands. The proposed design changes the pedestrian facilities such that they are brought up to current standards.

21. These changes result in a safer, easier to use, more efficient pedestrian facility that is also less visually intrusive the local surroundings and complies with current design standards.

Impact on vehicular traffic

22. There is a small decrease in efficiency at the junction, although it remains within capacity and in effect will function very similar to existing.

LINSIG modelling outputs reflect this as follows:

Approach	AM Peak		Inter peak		PM Peak	
	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)
Lendal Bridge	79.9	10.2	66.9	7.9	80.0	10.6
Rougier Street	66.7	9.9	66.9	9.8	81.8	13.6
Station Rd Internal	79.8	8.1	67.4	6.6	71.2	7.1
Station Rise	57.4	9.0	37.7	5.1	42.7	6.1
Station Road	78.2	13.3	64.8	9.6	70.8	11.3
Station Rise Internal	32.7	1.5	30.1	1.1	39.9	2.5
PRC (%)	12.7		33.5		10.0	
Delay (s/pcu)	22.91		16.52		22.2	
Cycle Time (sec)	90		90		90	

DoS – Degree of Saturation (Measure of demand relative to capacity)
MMQ – Mean Maximum Queue (Measure of number of vehicles in queue)
PCUs - Passenger Car Unit (traffic modelling term addressing variation in vehicle type (approx. 6m length per PCU))

23. When compared with the existing figures, AM Peak delays will increase from 21.4s to 22.9s. Interpeak delays will increase from 13.5s to 16.5s. PM Peak delays will increase from 16.7s to 22.2s.

24. There are no proposed changes to the permitted vehicular movements.

Impact on Pedestrians

25. Replacement of both 2-stage islands with single straight across crossings will be an improvement for some users, and a disadvantage for others. Overall it is considered a net improvement for pedestrians.

26. Users most likely to find an improvement are those who would wait for a green man signal to cross, for example elderly persons, young persons, and those with mobility issues. It is an improvement for these individuals because they would only have one crossing to wait for, rather than two.

27. Those users most likely to be disadvantaged by the new layout are those that do not wait for a green man and instead cross ‘in gaps’, using the island as a refuge.

28. The longer crossing distance is not considered a disadvantage as on-crossing technology will be used that will ensure an adequate and comfortable crossing period for users of all mobility.

29. An additional advantage of this design that will be seen by all users is the removal of the ‘pinch point’ on the existing islands that are too small to comfortably accommodate the number of pedestrians that regularly use this junction.

Safety Considerations

30. Refurbishment of the signals includes the introduction of ‘Puffin’ nearside pedestrian facilities, which are now a standard for new or replacement signals across York. National research shows that Puffin crossings are safer than the traditional ‘pelican’ crossings.

31. A safety review highlighted that the single stage crossing design is inherently safer than the existing layout as it removes waiting pedestrians from the middle of the carriageway.

32. The review highlighted that the widening of the footways also improves the safety of waiting pedestrians

33. The review highlighted that the detailed design should ensure that the proposed islands that house equipment should be implemented in a way to discourage pedestrians from using them as refuges. Kerb alignment should also be appropriately laid out to prevent vehicle overrun. The design team are confident these things can be achieved.

34. Overall, this proposal is seen as an improvement to the safety of the junction.

<u>Station Rise / Station Road</u>

35. *Description of changes*. Refer to Annex E for a drawing comparing the existing layout to the proposed layout. The principal proposed elements of the scheme are:

- Existing crossings will be widened and slightly realigned. This will

involve changes to the planters in the central triangular island.

- Full refurbishment of the traffic signal equipment and ducting network, including the introduction of Puffin style near side red / green man displays.

- Removal of the existing central cycle lane on Station Road Eastbound.

- Replacement of the existing uncontrolled pedestrian crossing over Station Road (by the burial grounds) with a signalised pedestrian crossing.

- The budgetary estimate for this element of the scheme is £130k

- These works are currently scheduled to follow on from the adjacent works and start in early 2018.

Reasoning

36. The existing junction equipment is in need of replacement due to its age. When replacing old equipment with new, designers must take into consideration current standards and comply with them where possible.

37. The existing pedestrian facilities are below standard with respect to their width and equipment type. There is also insufficient available waiting area.

38. The proposed design resolves the width and equipment issue, but does not resolve the issue of inadequate waiting area. A design that provides additional waiting area was discounted at an early stage due to the requirement to remove a traffic lane and therefore caused an extreme impact on congestion.

39. The proposed design also changes the alignment of the crossing on the Station Rise (Leeman Road) arm of the junction. This is seen as a disadvantage of the design, and is required to fit in the required signalling equipment.

40. The alignment change and width increase also impacts the existing planters, which will need to be reduced in size slightly. An area of planting will remain.

41. On balance, the design team believe there is a net improvement in the pedestrian facilities delivered by the changes to the existing crossings.

42. The removal of the existing central cycle lane is deemed necessary because it is below standard and has a history of accidents related to its substandard width.

43. Widening the carriageway to allow a wider cycle lane is not seen as feasible, as it would result in a narrower footpath that would in turn create safety issues for pedestrians.

44. The intention is that cyclists will take a dominant road position when required, such that motor vehicles will not overtake in a position where it is unsafe to do so.

45. This change is deemed necessary to both improve the safety of cyclists, and also to reduce the risk of liability for the Council should further accidents occur on this sub-standard facility.

46. The proposed design also includes the addition of a new signalised crossing over Station Road next to the burial grounds. This crossing is that which is referred to in Option 2.

47. At present, this crossing is uncontrolled, which presents an issue for blind and partially sighted users, as well as those with limited mobility. Signalising this crossing offers a facility for those users. Consultation with blind and partially sighted users shows a desire for this facility.

48. It should be noted that there are alternative routes for such users if they do not wish to cross at this location. It should also be noted that this crossing is not strictly within the scope of the TSAR project to ‘replace existing life expired assets’, however it can be seen as an ‘easy win’, to be achieved whilst working at this location.

49. This crossing can be included in the scheme, or omitted, without affecting the design of the main junction in any way. Although close in proximity, the two sets of signals would not need to be linked and would not affect each other. As such, there is an Option presented to either include or omit this crossing as desired. It could be forwarded at a later date as part of a separate scheme covering pedestrian crossing provision in the city.

Impact on vehicular traffic

50. There is no change proposed to the permitted vehicle movements.

51. There is no change on the efficiency or capacity of the junction.

52. The removal of the central cycle lane will affect cyclists, who will have to use the full traffic lane instead. All other cycling provision is unaffected.

53. The introduction of the new additional signalised pedestrian crossing on Station Road would create delays to vehicles where no delays are currently present. These delays would be equal to the time that the pedestrian facility stops traffic to allow pedestrians to cross, approximately 15-20 seconds. The regularity of the crossings appearance would be set such that queues at the crossing would always clear before the pedestrian stage appeared again.

Impact on pedestrians

54. The proposed design is deemed to be an improvement for pedestrians as it brings the facility up to modern design standards, however it is noted that the facility is still less than desirable in some respects.

55. The introduction of the new pedestrian crossing on Station Road is an improvement for blind and partially sighted users. It is not seen as a significant improvement for other users, who do not have difficulty crossing at this location.

Safety Considerations

56. Refurbishment of the signals includes the introduction of ‘Puffin’ nearside pedestrian facilities, which are now a standard across York. National research shows that Puffin crossings are safer than the traditional ‘pelican’ crossings.

57. A safety review has highlighted that the design does not fully resolve the conflict between cyclists and motorists approaching the junction from the Station. This is accepted and the design is considered an improvement in cyclists safety, if not a 100% mitigation of the risks.

58. The safety review also highlighted the aforementioned issue of the pedestrian crossing alignment on the Station Rise arm of the junction. Pedestrians may choose to use the desire line rather than fall within the

constraints of the crossing. This is again accepted and the design is still seen as an overall improvement in safety terms.

59. The safety review also highlighted how the proposed scheme does not make improvements to the available waiting space at the pedestrian crossings.

Council Plan

60. Replacing life-expired traffic signalling assets allows the Authority to continue to manage the traffic on its highway network, minimising congestion and ensuring user safety. Therefore carrying out these works fulfils the ‘A focus on frontline services’ priority of the Council Plan.

Implications

61. **Financial**
The TSAR project is funded from the Transport Capital Programme and sufficient funds have already been assigned and approved.

62. **Human Resources**
There are no HR implications

63. **One Planet Council / Equalities**
All junctions are designed with equalities in mind. The recommended designs follow the most up to date guidance with respect to disability access. The technology included in all designs includes aids to persons with visual and mobility impairment.

64. **Legal**
There are no legal implications.

65. **Crime and Disorder**
There are no Crime and Disorder implications.

66. **Information Technology**
The Information Technology implications of constructing the proposed designs has been considered and are included in the Project Plan. No issues are envisaged.

67. **Property**
There are no property implications

68. **Other**

Disruption during construction – Constructing the TSAR schemes inevitably means a certain level of work on the Highway, with an associated level of delay and disruption to pedestrians and vehicular traffic. Such works will be scheduled and planned to minimise this disruption, and sufficient information and notice will be give to affected parties.

Risk Management

69. There are no known significant risks associated with any option presented in this report.

Project Risks are recorded in the Project Risk Register and are handled by the Project Team and monitored by the Transport Board.

Contact Details

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Wards Affected: List wards or tick box to indicate all **All** ☐

Guildhall Ward

For further information please contact the author of the report

Background Papers:

Cabinet Report - 'Traffic Systems Asset Renewals and Detection Equipment Plan' – 12 November 2015

Annexes

Annex A – Lendal Arch Gyratory extents of works
Annex B – TSAR Consultation Strategy
Annex C – Summary of External Consultation
Annex D – Station Road Rougier Street Comparison Drawing
Annex E – Station Rise Station Road Comparison Drawing

List of Abbreviations Used in this Report

DoS – Degree of Saturation
PCU - Passenger Car Unit
MMQ – Mean Maximum Queue
TSAR – Traffic Signal Asset Renewal