

Report of the Director of City Strategy

A19/A1237 Roundabout Improvements – Outline Design

Summary

1. This report sets out options for the outline design for the proposed improvements to the A19/A1237 roundabout to reduce delays at this location. The report also identifies the estimated cost, programme and consultation proposals to enable the scheme to be delivered in 2010/11.

Recommendations

2. The Executive Member is recommended to:
 - Approve the further development of the outline layout of the upgraded roundabout as indicated in Option B to address the road safety audit requirements and meet the concerns of local residents and users of the highway in the area,
 - Approve the proposed public consultation strategy on the outline layouts as detailed in the consultation section,
 - Approve the progression of the detailed design of the proposal incorporating amendments to address the comments raised during the public consultation period and to allow a further report to the Executive Member to be submitted early in 2010 prior to tendering the scheme.
 - Authorise the removal of the minimum amount of vegetation from the environmental bund at an appropriate period in the year, in advance of the main contract if necessary, to allow the works to proceed without affecting nesting birds.

Reason: To progress this upgrade scheme in accordance with the Local Transport Plan to increase the capacity of the roundabout and reduce journey times in the area.

Background

Overview

3. The Executive Member approved the delivery of improvements to the A19/A1237 roundabout using the additional funding from the Regional Funding Allocation at the 21 July 2009 City Strategy Decision Session.

4. The A19/A1237 roundabout was originally constructed in the late 1980s with the remainder of the A1237 outer ring road. A major upgrade increasing the size of the roundabout and adding the Rawcliffe Bar Park & Ride access and subway was completed in 2001. Daily traffic numbers approaching the roundabout from the south west have increased by approximately 8% since 2002 to nearly 17,000 with maximum am and pm peak hour flows increased to approximately 1300 vehicles per hour. Morning flows have increased by approximately 10% whilst afternoon and evening flows have increased by nearly 30% since 2002.
5. The section of the ring road over the river Ouse is the busiest link of the entire route with a two way flow of 33,000 vehicles per day (am peak hour 2,600, pm peak 2,500). Delays at the A19/A1237 roundabout are exacerbated by the high crossing/joining movements from the A19 from the north and south. There are substantial delays on all main arms of the roundabout with the delays on the A1237 eastbound in the am peak and westbound in the pm peak particularly severe. In the evening peak westbound tail backs over the bridge from the A59 and Millfield Lane roundabout direction extend as far as the A19 preventing the free flow of traffic leaving the A19 roundabout.
6. The level of queuing on the Outer Ring Road encourages travellers to use alternative routes through the adjacent residential areas to avoid delays at the A19/A1237 roundabout. Traffic modelling predicts that the level of delays at the roundabout and number of trips through adjacent areas will increase in future years.
7. The following tables indicate the projected level of queuing and journey times from adjacent roundabouts on the A1237 and points a few hundred metres from the roundabout on the A19. Note: the 2026 projections assume that the developments proposed to meet the Regional Spatial Strategy allocations have progressed (inc. York Northwest), schemes included in the Access York Phase 1 project (3 P&R sites and A59 roundabout upgrade) have been implemented and the York Business Park roundabout has been upgraded.

	Maximum Queue Lengths (Metres)			
	AM		PM	
	2009	2026	2009	2026
A19 North	440	890	60	120
A1237 West	420	1,240	330	320
A19 South	250	410	360	230
A1237 East	480	1,290	930	1,300

	Average Journey Times (Minutes)			
	AM		PM	
	2009	2026	2009	2026
A19 North to South	1.7	3.7	0.5	0.7
A19 South to North	1.2	1.8	1.5	0.8
A1237 East to West	3.5	8.3	5.2	14.0
A1237 West to East	1.8	4.5	1.7	1.5

8. The projections suggest that delays will increase substantially on most arms of the roundabout with the already congested A1237 approaches being the most severely affected. Average pm east to west A1237 journey times across the roundabout are projected to increase from the current 5 minutes to nearly 15 minutes in 2026 (3.5 minutes to 8.3 minutes in am peak). West to east journey times on the A1237 are projected to more than double from 1.8 minutes to 4.5 minutes in the am peak.
9. A number of design options for the roundabout upgrade were reviewed in the Outer Ring Road (ORR) study in 2007. This work indicated that a grade separated ('fly over') option with dualling would result in the least delays in the area but it would represent poor value for money as the roundabout alone would cost in the region of £17m with the provision of dual carriageway approaches including new bridges over the river Ouse and East Coast Main Line costing substantially more. Similar substantial upgrades to the adjacent roundabouts would need to be undertaken to prevent these being overloaded. The environmental impact of a grade separated junction at this location would be substantial with the additional car trips likely to be generated by the improvement.
10. The ORR study identified that the best value for money, in terms of journey time reductions against the cost of improvements, was provided by maximising the capacity of the existing roundabout with the provision of additional approach and exit lanes. However the full benefit of the improvements will only be realised once the capacity of all of the roundabouts on the ring road has been increased. In particular the full benefit of the improvements at the A19 will not be realised until the A59 roundabout is upgraded currently programmed to be delivered in 2011/12 as part of the Access York Phase 1 project.
11. The most effective layout for the roundabout was determined and refined using a VISSIM micro simulation package of a section of the ring road from the Wetherby Road through to Clifton Moor. The modelling of the proposed changes to the roundabout suggest that significant improvements to journey times can be achieved. The layout which was modelled in detail is indicated in Annex A. The modelling assumes that Access York Phase 1 has been delivered in 2011. A check without the A59 roundabout upgraded was also undertaken. The 2011 modelling includes all of the committed development in the city (i.e. planning consent granted but not yet delivered)

	2011 Maximum Queue Lengths (Metres)			
	AM		PM	
	Without A19 Upgrade	With A19 Upgrade	Without A19 Upgrade	With A19 Upgrade
A19 North	620	100	100	70
A1237 West	1150	70	250	80
A19 South	490	60	180	50
A1237 East	970	60	1,270	120

	2011 Journey Times (Minutes)			
	AM		PM	
	Without A19 Upgrade	With A19 Upgrade	Without A19 Upgrade	With A19 Upgrade
A19 North to South	2.2	0.5	0.5	0.5
A19 South to North	2.0	0.5	0.8	0.5
A1237 East to West	4.8	1.3	9.8	1.7
A1237 West to East	4.0	1.2	1.5	1.2

12. With the proposed scheme in place in 2011 and the A59 roundabout upgraded journey times and queue lengths are projected to be substantially reduced. In particular the eastbound queue length on the A1237 is projected to be reduced from 1,270m (i.e. to Clifton Moor roundabout) to 120m and the corresponding journey time reduced by 7 minutes.
13. The current and proposed layout was modelled again with projected 2026 traffic flows. The modelling was progressed on the assumption that the A59 and Millfield Lane roundabouts had been upgraded by 2026.

	2026 Maximum Queue Lengths (Metres)			
	AM		PM	
	Without A19 Upgrade	With A19 Upgrade	Without A19 Upgrade	With A19 Upgrade
A19 North	890	470	120	60
A1237 West	1,240	100	320	80
A19 South	410	90	230	510
A1237 East	1,290	80	1,300	1,040

	2026 Journey Times (Minutes)			
	AM		PM	
	Without A19 Upgrade	With A19 Upgrade	Without A19 Upgrade	With A19 Upgrade
A19 North to South	3.7	1.3	0.7	0.5
A19 South to North	1.8	0.5	0.8	1.0
A1237 East to West	8.3	1.5	14.0	4.7
A1237 West to East	4.5	1.3	1.5	1.2

14. The modelling indicates that the upgrade will provide queue and journey time reductions compared to the situation without the upgrade even with the substantial increases in traffic projected by 2026. With the Regional Spatial Strategy proposed development levels (inc. York Northwest) in place queue

lengths and journey times are reduced substantially in the am peak but the impact on the pm peak traffic queues is less marked as the volume of traffic again starts to exceed the capacity of the roundabout. Journey times in the area in 2026 are projected to be lower than 2009 for all arms with queue lengths similar to those in 2009 for the A19 South and A1237 East. An option to provide signals on the A1237 West approach has been investigated to reduce the am peak queues on the A19 North. However this has been excluded from the proposed scheme as the queue lengths are still lower than the existing levels and the upgrade could be introduced at a later date if required.

15. The current number of vehicles which enter the roundabout is approximately 4,000 in the am peak and 3,850 in the pm peak. In 2026 with the measures in place the number entering the roundabout will have increased by approximately 16%. The number of vehicles flowing through the A1237 arms of the roundabout will have increased by between 5% and 40% with the largest increases being on the most congested arms.
16. The base design proposal was adjusted through the modelling process to determine the most appropriate entry lane arrangement and the length of the two and three lane sections. Sensitivity tests have also been undertaken on the proposal to determine the effect of the upgrading of all of the roundabouts on the ring road as proposed in the Access York Phase 2 project. This scheme will enable more traffic to flow to the A19 roundabout putting additional pressure on the junction. It is projected that all of the arms of the roundabout will be able to accommodate the additional traffic although pm queue lengths on the A1237 East approach will increase back to current levels.
17. With the proposed improvement in place it is projected that there will be a redistribution of trips in the Rawcliffe and Clifton Moor areas as the Outer Ring Road will offer more of a time advantage over the roads within the urban area. An additional 400 eastbound and westbound trips, some of which would have been through the adjacent urban area, are projected to use the A19 to Clifton Moor section of the ring road with the upgrade in place in 2026.
18. Summary
 - The existing roundabout is currently operating over capacity at peak times with extensive queuing on all arms leading travellers to use alternative routes through residential areas.
 - Existing queue lengths and long journey times in the A19/A1237 roundabout area are projected to increase substantially over the next 15 years.
 - A grade separated ('fly over') option could remove delays in the area but would be unaffordable, represent poor value for money, rely on similar substantial upgrades to adjacent roundabouts, increase the number of car trips in the area and have significant environmental impact.
 - It is anticipated that the proposed upgrade will reduce queue lengths and journey times in the area substantially but the full benefit will only be achieved when adjacent roundabouts are upgraded.

Outline Design

19. The outline designs for the roundabout improvements have been prepared by the Council's framework consultant Halcrow to:
 - Deliver the maximum level of improvement to the A19 ORR roundabout to reduce delays for all users within the available budget (opening year of 2011 and design year of 2026 to be modelled).
 - Be delivered by March 2011 at latest.
 - Be progressed within the current Highway Boundary
 - Provide safe routes for non-motorised users
20. The modelling results indicate that the upgraded roundabout will provide significant journey time savings for travellers on the A1237 (am and pm) in the opening year. Journey time savings will be less pronounced on the A19 but still significant where there are existing queues. With the increased traffic from developments in the city up to 2026 it is projected that the traffic queues on the A1237 eastbound approach and A19 northbound approach are likely to increase back up to current levels. The proposed approach and exit lane layout at the roundabout is considered to be the maximum that can be accommodated with the existing roundabout diameter giving the maximum capacity possible. Further capacity improvements at the roundabout could be delivered if grade separation was introduced but this would only be beneficial if the remainder of the ring road was upgraded to a similar level. Queuing on specific arms could be reduced with the introduction of traffic signals but there would be consequential increases on other arms.
21. The delivery of the A19 improvements will assist in enabling the full potential of the proposed A59 roundabout improvements, planned as part of the Access York project, to be realised.
22. The Outer Ring Road is a barrier to pedestrians and cyclists seeking to travel north and south on the A19 and the roundabout itself deters cyclists from travelling on the A1237. A subway was incorporated into the roundabout improvements in 2001 to reduce severance of the adjacent communities. In addition surface level crossing positions were provided with the upgrade. The majority of crossing movements use the subway with the surface level movements very low – A pedestrian/cycling survey is being undertaken to determine the numbers who cross at this location.
23. To keep the proposed works within the public highway and reduce need for amendments to the subway alterations to the environmental bund on the south side of the A1237, east of the A19, will be required. The disruption to the existing vegetation and bunding can be minimised by the provision of retaining structure (or similar support) at the toe of the embankment but at a higher cost. Noise calculations will be undertaken to determine the effect on adjacent properties and design appropriate mitigation measures where necessary. It is anticipated that the construction period will be at a time of the year when the removal of trees and other vegetation will not impact on the bird nesting season. However it may be necessary to undertake advance site clearance works to minimize the impact on the overall programme if there is anticipated to be significant slippage in delivery.

24. Alterations to the exit lanes of the roundabout towards the West will have an effect on the operation of the existing layby. The westbound layby may need to be closed to minimize the risk to drivers who are merging into the single carriageway section at this location. Options for the provision of an alternative parking area are being investigated however the merging traffic and bridge approach embankments severely restricts the number of possible sites adjacent to the side of the carriageway.
25. There have been a total of 40 personal injury accidents within the study area during the last five years (March 2004 to February 2009). One accident resulted in a fatality, 4 led to serious injury and the remaining 35 were classified as slight. The proportion of accidents that occurred during the hours of darkness is consistent with national statistics, as is the proportion that occurred when the road surface was wet. 9 of the 40 accidents involved motorcycles, 2 involved pedal cycles and there were no pedestrian accidents.
26. The main accident cluster is situated on the A1237 westbound approach to the roundabout, with a total of 14 accidents recorded in the last five years. Of these 14 accidents, 2 were serious and 12 were slight. 8 accidents were rear end shunts (57.1%), 3 were due to overtaking manoeuvres, 2 were due to failure to give way to traffic on the circulatory carriageway and 1 was due to loss of control. Of these 14 accidents, 5 involved a motorcycle (35.7%).

Options

27. A number of options have been investigated with varying approach and exit lane layouts to address the capacity and safety concerns. It is planned to progress the detailed design based upon either (or a combination) of the following two options, which are considered to have very similar traffic flow capacity. The proposed layouts are provided in Annexes 1 & 2. The actual lane markings indicating right turns may need to be adjusted to meet national standards.

	A1237 (East & West)	A19 North	A19 South	Pedestrian/Cycling Facilities
Option A	3 Lane Entry, 2 Lane Exit	3 Lane Entry, 1 Lane Exit	2 Lane Entry, 1 Lane Exit	A1237 crossing movements via subway. Improvements to A19 crossing at riverside Farm
Option B	3 Lane Entry, 2 Lane Exit	3 Lane Entry, 1 Lane Exit	2 Lane Entry, 1 Lane Exit	Additional pedestrian crossing islands provided on the A1237 West and A19 North Improvements to A19 crossing at riverside Farm

28. A stage 1 Road Safety Audit has been undertaken on both of the proposals which has highlighted a number of issues which need to be addressed during the detailed design stage including:
- Merge arrangements,

- Exit lane widths
- Lane widths on circulatory carriageway
- Circulatory lane markings
- Right Turn arrow road markings
- Roundabout entry markings
- Lane destination markings on A19 southbound approach
- Length of additional lanes on A1237 approaches
- Affect of Layby closure
- At grade crossing facilities
- Layout of Riverside farm crossing improvements

29. The key difference between the two options presented is the provision of additional crossing points on the A1237 West and A19 North arms. There are number of benefits of providing the islands across the three lane section as they would tend to slow traffic down approaching the roundabout and increase segregation between traffic lanes. However they would not improve the crossing of the twin exit lanes where traffic will be accelerating away from the roundabout before merging. In Option A all pedestrians and cyclists would be encouraged to make use of the existing cycle and pedestrian subway to cross the A1237 and to use the existing crossings of the A19 (north and south of the roundabout) enhanced at the Riverside Farm to allow safer crossing at that location. The pedestrian/cyclist crossing movements at this location are low but the inclusion of the surface level crossings will assist cyclists travelling on the A1237 and provide an alternative crossing method for people to use if the subway is not available.

Programme

30. The aim of the project is to deliver the improvements by the end of 2010. The following milestones are envisaged.

Activity	Programme
Outline Design	July - October 2009
Consultation	November - December 2009
Detailed Design	December 2009 - February 2010
Tender Process	March – July 2010
Construction	September – November 2010

31. It is anticipated that the majority of the works could be undertaken whilst maintaining all existing traffic lanes (speed restrictions and lane narrowing may be required) although some of the work, such as resurfacing, may need to be undertaken at night to minimize traffic disruption.

Estimated Costs

32. The estimated costs of the options have been prepared which include an allowance for contingencies, design, supervision, service diversions, traffic management and risk. The cost estimates also include an allowance for the resurfacing of the entire roundabout which is subject to further investigation before confirmation:

Option	Cost Estimate £000s
Option A	1,250
Option B	1,400

Member Views

33. Officers consulted with Skelton, Rawcliffe and Clifton Without Ward Councillors Waudby, Moore and Watt, plus Councillors D'Agorne, Gillies and Potter on the proposals. Their responses are summarised below.

Ward Member Views

34. Councillor Watt has the following comments:
- It would be disappointing if the Westbound Lay-by were removed - it is a popular parking place for people wanting access to the lngs for recreation.
 - A major bottle-neck is caused by the island on the A19 at the end of Manor Lane - can this not be altered to permit 2 lanes Northbound?
35. Councillor Waudby has the following comments:
- Preference for Option A.
 - Concerned about the effect on the existing footpath/cycle path over the bridge, particularly in relation to the number of young people going from Rawcliffe to Manor School.
36. Councillor Moore has the following comments:
- Opposes the closure of the westbound layby
 - Raises concerns about the maintenance of the environmental bunds.
 - Raises concerns about the need for enforcement of traffic regulations at the roundabout
 - Raises design issues relating to the possibility of introducing traffic signals and alterations to the lane designation on the A19 northbound approach.
 - Raises the issue of the capacity of the A59 roundabout restricting flows in the A19 roundabout area.

Other Member Views

37. Councillor D'Agorne raised concerns about the provision of cycling and pedestrian facilities.
38. Councillor Gillies has the following comments
- Supports Option B on the basis that traffic turning left from the A1237 eastbound approach would be dispersed more quickly.
 - Concerned about the possible closure of the westbound layby
 - Raises concerns about traffic speeds and cyclists using the Skelton cycle route.

39. Councillor Potter has the following comments
- Supports option B owing to the provision of the additional cycling and pedestrian crossing facilities. Appropriate safety information for people using the crossings to be provided.
 - Concerned about the possible closure of the westbound layby and suggests that an alternative parking area with access to the river bank should be provided if the layby is closed.

Response to Member Views

40. The majority of the comments have been addressed in the main part of the report. Other items are addressed in the following paragraphs.
41. The traffic island close to the end of Manor Lane provides a dual function of a pedestrian/cycling crossing and protection to the right turn movement into Manor Lane. Alterations would require significant widening of the road into the south verge to allow the facility to be maintained.
42. Cycling movements over Ouse Bridge will continue to be possible from the A19 area throughout the construction works and in the permanent layout.
43. Maintenance of the environmental bunds will remain with the Council.
44. It is proposed to provide a CCTV camera at the roundabout to enable traffic movements in the area to be monitored and allow improved management of the network.
45. It is considered unlikely that signalling the roundabout would provide additional capacity unless the roundabout was substantially increased in size to allow the provision of storage capacity in the circulatory area.
46. The lane designations will be designed to minimise overall queuing however it may not be possible to allocate lanes to suit all conditions due to variations in the turning movements during different times of the day and week. Lane designations may be amended throughout the life of the roundabout to accommodate changes to the turning movements which may occur in future years.

Consultation

47. Following the decision on the delivery of the scheme it is proposed to consult travellers and residents in the area affected by the project using the following methodologies
- an exhibition through the day at the Rawcliffe Bar Park & Ride site on one day in Nov/Dec
 - a special evening ward committee meeting in Nov/Dec
 - Road signs directing existing users of the roundabout and pedestrian facilities to a website providing further details and an opportunity to comment.

48. In addition, to ensure those people most directly affected by the works have the opportunity to raise concerns, the residents and businesses in the area shown on the drawing in Annex 3 will be directly contacted for their views. This will include Skelton and Rawcliffe Parish Councils, the residents and businesses in the village of Skelton, Eccles Close, Harewood Close, Kensington Road, South side of Manor Road (Shipton Rd to Manor Park Road), Shipton Rd (Manor Lane to Howard Drive) Riverside Farm, Ings House and Ings Cottages.

Corporate Priorities

49. The improvements to the capacity of the A19 roundabout will contribute to the following corporate priorities:
50. Thriving City – Additional traffic capacity will reduce journey times in the area enabling trips to the adjacent business and retail areas to be undertaken more efficiently. The upgrading of the capacity of the Outer Ring Road is one of the key strategies within the council's Local Transport Plan.
51. Sustainable City – The improved capacity will contribute to enabling the delivery of developments on the brownfield sites in York Northwest.
52. Safer City – The projected reduction in traffic travelling along adjacent roads is anticipated to reduce the level of accident risk in residential areas.

Implications

53. The following implications have been reviewed.
 - **Financial** In July 2009 the Executive Member approved the use of a proportion of the £2,777k additional funding from the Regional Funding Allocation, which is due to be received over the two year period (2009/10 to 2010/11), to fund the A19 improvements. In addition £350k was also allocated to the Access York Phase 2 project and preliminary design of the Haxby Station scheme leaving £2,427k for the delivery of an upgrade scheme at the A19 roundabout. The maximum cost estimate for the A19 scheme based upon the outline design for Option B is approximately £1,400k. Therefore, subject to revised cost estimates based upon the detailed design, it is anticipated that approximately £1,000k of funding from the Regional Funding Allocation would be available to support other projects in the Integrated Transport Capital Programme. Further reports will be presented to the Executive Member providing details of the proposed use of this funding.
 - **Human Resources (HR)** – There are no Human Resource implications.
 - **Equalities** – There are no equalities implications
 - **Legal** – There are no legal implications
 - **Crime and Disorder** – There are no crime and disorder implications
 - **Information Technology (IT)** – There are no IT implications
 - **Property** – There are no property implications
 - **Other** – There are no other implications

Risk Management

54. A full risk register for the delivery of the project has been prepared and mitigation measures applied where necessary. In compliance with the Council's risk management strategy measured in terms of impact and likelihood, the risk score has been assessed at less than 16. This means that at this point the risks need only to be monitored as they do not provide a real threat to the achievement of the objectives of this report.

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Report Approved



Date 8 October 2009

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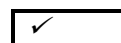
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Wards Affected: *List wards or tick box to indicate all*

All



For further information please contact the author of the report

Background Papers

Executive Member for City Strategy Decision Session 21 July 2009: Regional Funding Allocation Proposal

Annexes

Annex 1: Option A - A19/A1237 Roundabout Improvements

Annex 2: Option B - A19/A1237 Roundabout Improvements with Additional Pedestrian Crossing Islands

Annex 3: A19/A1237 Roundabout Improvements: Proposed Detailed Consultation Area.