A1237 York Outer Ring Road Study

Strategy Development and Initial Option Assessment - Executive Summary

STUDY OBJECTIVES

Halcrow was commissioned by the City of York Council to undertake a transport study of the A1237 York Outer Ring Road (ORR) from the A64 Hopgrove roundabout to Copmanthorpe roundabout. The overall objectives of the study are to investigate existing transport problems on the A1237 section of the ORR and identify an appropriate strategy and package of measures for improving the A1237 with a view to increasing accessibility for all transport modes and widening travel choice.

The study has been split into three phases:

- Phase 1: Baseline Assessment;
- Phase 2: Strategy Development and Initial Option Assessment; and,
- Phase 3: Selection and Appraisal of Preferred Strategy.

This document is the Executive Summary for the Strategy Development and Initial Option Assessment which reports on the first and second phases of the study.

THE A1237 OUTER RING ROAD

Constructed in the mid 1980's, the A1237 acted as a 'city distributor' and provided an important 'release valve' for orbital movements within the city. Since its original construction there have been a significant number of land use changes and new developments which have increased travel demand. Some of the principle developments include Clifton Moor, York Business Park, Northminster Business Park and more recently Monks Cross as well as Park and Ride sites at Rawcliffe Bar, Askham Bar and Monks Cross. With the advent of these new developments, the A1237 now performs a multi-functional role connecting communities to major business, employment and Park & Ride sites as well as retaining it's 'city distributor' role.

To address the increase in travel demand, facilitate access into new developments, and address accident blackspots the A1237 roundabouts have been remodelled on a number of occasions. Changes include a new roundabout at York Business Park, capacity improvements on the A19 roundabout including a fifth arm into Rawcliffe Bar Park and Ride and a fifth arm on the Wigginton Road roundabout into Clifton Moor. During the period March 2001 and February 2004, there were 172 recorded accidents, 21 of which were serious and 5 involved a fatality.

EXISTING DEMAND

A review of existing travel demand has shown that the ORR is predominately used for short trips of less than 5 minutes and less than 5 miles with no vehicles travel along the whole length between the two junctions with the A64.

The busiest section is during the morning peak (0800-0900 hours) between the A19 Shipton Road and York Business Park where the two way traffic flow is nearly 2,500 vehicles. The least trafficked section during peak times is in the evening peak (1700-1800) between Malton Road and Monks Cross Link, where the two-way traffic is almost 1,500 vehicles.

Although the A1237 is not as significant for freight movements as the A64 (T) there are a number of employment sites which generate HGV movements as part of their operations. One of the largest sites is the British Sugar factory on Millfield Lane which accepts over 500 deliveries per day during the processing campaign.

EXISTING PROBLEMS

Congestion

A review of the existing transport issues and problems along the study area was undertaken. This review showed that there are congestion problems at a number of key bottlenecks on the A1237 and that the existing junctions, rather than the links, are the main cause for the congestion problems on the ORR. Queuing and the associated delay are currently causing considerable problems at the following junctions:

Location	Queuing problems
A1237/Moor Lane/Askham Lane/Askham Bryan Lane	Delays to traffic joining A1237
A1237/Wetherby Road	Queues on Wetherby Road outbound approach
A1237/A59 Boroughbridge Road	Substantial queues at all of the four arms of the roundabout in peak times.
A1237/ Great North Way and Millfield lane	Anti-clockwise queues on the ORR in the PM peak extending to Shipton Road roundabout.
A1237/A19 Shipton Road	AM peak queues on Shipton Road inbound approach, PM peak queues on the ORR in the anti-clockwise direction extending back to Clifton Moorgate roundabout, and PM peak queues on the A19 outbound approach.
A1237/Wigginton Road	Queues on the A1237 clockwise exit due to queue spill back from Haxby Road roundabout.
A1237/Haxby Road	Queue spill back interfering with the operation of Wigginton Road and Strensall Road roundabouts.
A1237/A64 Hopgrove	AM peak queues on the A64 southern approach and PM peak queues on the western approach.

Due to congestion and slow journey times on the ORR, traffic diverts onto neighbouring roads and into York City Centre. It is estimated 40% of all traffic in the centre of York does not have an origin or destination in the city centre. This has a negative impact on air quality and the overall city centre environment.

Journey times

Congestion and delays on the A1237 impact on journey time reliability. The table below summarises observed journey times and predicted journey time at the year 2021 with no improvements.

		Year 2003			Year 2021		
		Av. journey time (min)	**Av. Time in Queue (min)**	**Av. Speed (mph)**	**Av. journey time (min)**	**Av. Time in Queue (min)**	**Av. Speed (mph)**
Clockwise	AM Peak	20.5	6.8	28.8	>60	>47.0	10.0
	Off Peak	14.8	1.3	39.6	-	-	-
	PM Peak	26.5	9.8	22.2	44.0	30.0	12.5
Anticlockwise	AM Peak	19.0	4.5	30.9	32.0	17.5	18.5
	Off Peak	16.4	2.0	35.7	-	-	-
	PM Peak	30.4	17.2	19.3	40.5	27.0	14.6

This table indicates that a journey in the clockwise direction currently takes slightly longer in the PM peak than in the AM peak, and nearly two times longer than an off-peak journey. In the anti-clockwise direction a PM peak journey is considerably longer than an AM journey, and nearly two times longer than an off-peak journey.

With current trends of growth in travel demand and a Development Plan as indicated in Local Plan Changes 4 document, journey times are expected to increase substantially in the future if mitigation measures to relieve congestion are not introduced. By 2021, an AM peak journey time in the clockwise direction is predicted to take almost an hour from Copmanthorpe Roundabout to Hopgrove Roundabout. A similar anti-clockwise journey in the opposite direction is forecast to take over 32 minutes, an increase of 13 minutes on current journey time.

Accident Record

On the A1237 there were 172 recorded accidents during the period March 2001 to February 2004, 21 of which were serious and 5 involved a fatality. Accident blackspots are summarised in the table below. Remedial measures proposed in the 2004/05 – 05/06 programme are also shown in the table.

Location	Fatal	Serious	Slight	Remedial Measures
A1237/Moor Lane and Askham Bryan Lane Junction	0	1	7	No
A1237/Askham Lane Junction	0	0	5	No
A1237/B1224 and surrounds	1	5	4	No
A1237/A59	0	0	14	(Linked to A59 Park and Ride)
A1237/Millfield Lane	1	1	9	(2004/05)
A1237/A19	0	1	13	(2004/05)
A1237/Clifton Moorgate	0	0	4	No
A1237/B1363	3	3	15	(2004/05)
A1237/Haxby Road	0	2	10	(2004/05)
A1237/Strensall Road	0	0	4	CYC currently developing a scheme
A1237/North Lane	0	1	6	No
A64/Hopgrove	0	2	26	(HA scheme)

Public Transport

York City Centre is the hub of the city's public transport network with high frequency radial bus services concentrated on the primary road network. Despite key trip attractors adjacent to the ring road, orbital bus services are extremely limited and the infrequent nature of these services does not encourage the use of public transport.

The poor bus service provision is highlighted in the 2001 Journey to Work Census data where access to the ring road employment sites is characterised by high car use and low public transport use. However, the data does identify a demand for any improved bus, cycle and walking networks. For example, between 13% and 16% of all trips to the ORR employment sites are from communities adjacent to the ring road.

The 2001 census data also indicates the City of York is a net importer of trips with 84% of work trips having destinations in York.

Radial and orbital Outer Ring Road bus services are summarised in the table.

Radial Bus Corridors across the A1237	Bus Services	BPH * (Mon – Fri daytime)
Copmanthorpe Junction	C1, 840-843	2
Moor Lane and Askham Bryan Lane Junction	87, C3	<1
Wetherby Road	412/413	1
Boroughbridge Road	10, 14, 17/17A,142, 146	6
Shipton Road	22, 30, 31, 58	2.5
Wigginton Road	20, 40	1.5
Haxby Road	1, 12, 20	9
Strensall Road	5	5
Malton Road	181	<1
Orbital Bus Movements on the A1237	**Bus Services**	**BPH (Mon – Fri daytime)**
Copmanthorpe to Moor Lane	C3	<1
Moor Lane to Askham Bryan Lane	87	<1
York Business Park to A19	17/17A	1
A19 to Clifton Moor	23	1

* BPH = Buses per Hour

Walking and Cycling

The A1237 constitutes a substantial physical barrier for pedestrian and cycle movements between the City of York and commuter settlements located to the north and west of the city. The volume of traffic on the A1237 impacts on the availability of suitable crossing gaps and this becomes more of a problem where a crossing has no island facility or where the crossing is in between junctions and links speeds are higher. There is also considerable variation in the types of facilities available, ranging from combined pedestrian and cycling underpasses to 'at grade' crossings.

Safety and security issues also need to be considered. Currently a significant number of crossings have no lighting, none have CCTV coverage and footfall is often low. This may deter usage amongst vulnerable users especially where this involves using a subway or underpass during the hours of darkness. Cycling facilities are of variable quality and suitability along the length of the A1237 ORR. Of the ten roundabouts on the A1237, those at the A19/A1237 and the Haxby Road/A1237 junctions provide entirely segregated facilities for cyclists in the form of underpasses. The A1237/A59 and A1237/Strensall Road roundabouts both lack sufficient crossing facilities for cyclists, and although some provision is made for pedestrians these are not adequate given the nature of the junctions.

FUTURE DEMAND

Forecast future demand for travel on the A1237 ORR is expected to out strip what is currently already over-saturated road supply. The following table gives the expected travel demand on the Outer Ring

Road during the AM and PM peak periods in vehicles per hour at the years 2011 and 2021. Figures between brackets are percentage growth compared to the travel demand in 2004.

AM Peak 2004	PM Peak 2004	AM Peak 2011	PM Peak 2011	AM Peak 2021	PM Peak 2021
16,828	18,210	18,559(10%)	19,801(9%)	20,576(22%)	21,532(18%)

The total travel demand in the above table accounts for any traffic making use of the ORR due to new employment and residential developments. This includes York Central beyond 2011, University of York Campus 2, Monks Cross and Northminster Business Park employment sites, residential sites proposed at Osbaldwick (500 houses), German Beck (700 houses) and York Central (3000 units), in addition to a number of sites which have been safeguarded within the Local Plan for release after 2011 including, Naburn Designer Outlet, a site in the vicinity of Strensall, area of land to the West of Grimston Bar; and land to the south of Northminster Business Park.

IMPROVEMENT OPTIONS CONSIDERED

The study considered a number of highway improvement options with complementary facilities for public transport, walking and cycling. All the options assumed North Lane is closed at its westerly end.

Highway Improvement Options

The following highway improvement options were considered:

Option 1: Do Nothing – This option considers the situation as is but with projected travel demand, in addition to the developments indicated in Local Plan Changes 4.

Option 2 Do Minimum – This option comprises localised improvements at key junctions including the A59/A1237, Hopgrove (Highways Agency proposed improvements), Wetherby Road/A1237 roundabout and Strensall Road/A1237. A segregated southbound left turn into the ORR is assumed at the Strensall Road/A1237 roundabout under this option. Access to the A59 Park and Ride is assumed to be provided from the A59/A1237 roundabout and access to Northminster Business Park is assumed to be provided via a northbound off-slip road from the ORR into Northfield Lane or a segregated left turn at the A59 roundabout, in addition to access from Boroughbridge Road to the north of the Park.

Option 3: Public Transport Plug – This option aims to encourage further the use of the Outer Ring Road as a local distributor by physically closing it at the bridge between the A59 and A19 for general traffic, except buses, taxis and slow modes of travel.

Option 4: Upgrade Roundabouts and Junctions – This option comprises localised junction improvements for relieving congestion at the existing junctions on the ORR including a new roundabout at the Moor Lane/A1237 junction.

Option 4a: Upgrade Roundabouts and dual carriageway with at grade junctions– This option comprises localised junction improvements at the existing junctions on the ORR as with Option 4, plus widening the existing single carriageway to a dual carriageway.

Option 5: Full dual and grade separation – This option considers the likely impact of grade separation and dual carriageway along the section of the ORR between the B1224 and the Hopgrove Roundabout.

Option 6: Traffic Signal Control – This option considers the feasibility of introducing traffic signal control at the key junctions and roundabouts along the ORR.

Option 7: Additional Link Road – This option was originally identified by the DfT where an additional link road is provided between the A19 and Hopgrove with access only permitted at the A19, Wigginton Road and A64 junctions.

Apart from the Do-Nothing option, each of the do-something options incorporates the Do-Minimum option with complementary facilities for public transport, walking and cycling.

Walking and Cycling

Walking and cycling improvements focus on developing the northern cycling network and completing the 'missing links' which are apparent when crossing the A1237. These include provision of:

1. Haxby roundabout to Clifton Moor roundabout cycle link: Journey to work data identified 7.5% (210 trips) of all employment related trips to Clifton Moor are from Haxby and Wigginton. A 3 metre shared use facility and 0.5 metre margin can be accommodated within the existing highway boundary between the two roundabouts apart from where the A1237 crosses the York to Scarborough Railway Line Bridge. A short section of narrow path would have to be accepted or the construction of a cantilever structure for cyclists on one side of the bridge.
2. A cycle link on Boroughbridge Road between Low Poppleton Lane and the A1237: At present Low Poppleton Lane marks the extent of the A59 Boroughbridge Road on road cycle route with cyclists accessing Poppleton directed via Low Poppleton Lane and Millfield Lane. Whilst this offers a safe access route into Poppleton, completing the missing link between Low Poppleton Lane and the A1237 would promote access to employment opportunities at Northminster Business Park, Poppleton Rail Station and the proposed A59 Park and Ride site.
3. A combined pedestrian and cycling subway on the eastern side of the A1237/Strensall Roundabout.
4. Strensall roundabout to Haxby Roundabout cycle link: The route would also widen travel choice for pupils attending the Joseph Rowntree School on Haxby Road. A 3 metre cycle lane can be constructed within the highway boundary apart from the bridge over the River Foss. At this location the verge on the southern side of the carriageway is reduced to 1.4m. A short section of narrow path would have to be accepted or the construction of a cantilever structure on the side of the bridge. To tie into the proposed Haxby to Clifton Moor cycle link and the crossings proposed at the A1237/ Strensall Road roundabout, two Toucan Crossing facilities are required on Haxby Road at the A1237/ Haxby Road Junction.
5. Wetherby Road cycle link to connect the village of Rufforth to Acomb and York City Centre.

Public Transport

In addition to the proposed A59 Park and Ride site and Haxby Rail Station the following public transport measures have been considered.

1. Low Poppleton Road and Millfield Lane: Reopening Low Poppleton Road and Millfield Lane for priority vehicles only and diverting service 10 via Millfield Lane to access Poppleton.

2. Provision of a frequent (20 minute) orbital bus service connecting residential areas to trip attractors adjacent to the Outer Ring Road. Mini public transport interchange sites are created where orbital and radial services connect.

3. A 10 minute frequency shuttle bus service connecting the proposed A59 Park and Ride site to Rawcliffe Bar, Clifton Moor and Monks Cross.

OPTION ASSESSMENT

Impact of the Highway Improvement Schemes

The impact of the various highway improvement schemes considered has been examined using a Paramics micro-simulation model developed for the A1237 ORR. This model uses travel demand data from the York SATURN Model and has been validated to 2004 traffic flows and journey time information. The Paramics model encompasses the A1237 ORR between the A64 Hopgrove and the A64 Copmanthorpe roundabouts, including the ORR side roads and a short section of the A64 at either end of the ORR to ensure trips loading occurs at appropriate points in the model.

Three measures of performance were used to assess the impact of each scheme and compare the schemes against each other. These are:

- the total journey time between the A64 Copmanthorpe roundabout and the A64 Hopgrove roundabout in the clockwise and anti-clockwise direction,

- the total travel time for all vehicles making use of the ORR, and,

- the total bus travel time.

The second measure includes side road traffic joining or leaving the ORR, as well as bus travel time. The third measure assesses the impact of each of the highway option on bus travel time.

Journey times

The following two tables give predicted journey time in minutes along the ORR at the years 2011 and 2021, and the base year journey time of 2004.

Journey times in minutes along the ORR in 2011 for all Highway Options				
Option	**AM Peak Clockwise**	**PM Peak Clockwise**	**AM Peak Anti-clockwise**	**PM Peak Anti-clockwise**
Base year	20.0	29.5	21.0	29.5
Option 1: Do-Nothing	27.0	40.0	28.2	31.0
Option 2: Do-Minimum	19.6	20.8	19.4	19.2
Option 3: Public Transport Plug	N/A	N/A	N/A	N/A
Option 4: Upgrade Roundabouts and Links	12.2	12.3	12.7	12.2
Option 4a: Upgrade Roundabouts and Links plus dual carriageway	11.5	11.5	11.9	11.6
Option 5: Full Dual plus Grade Separation	9.1	9.1	9.3	9.5
Option 6: Traffic Signal Control	Not tested	Not tested	Not tested	Not tested
Option 7: Additional Link Road	11.3	12.8	26.0	22.8

Journey times in minutes along the ORR in 2021 for all Highway Options				
Option	**AM Peak Clockwise**	**PM Peak Clockwise**	**AM Peak Anti-clockwise**	**PM Peak Anti-clockwise**
Base year	20.0	29.5	21.0	29.5
Option 1: Do-Nothing	>60	44.0	32.0	40.5
Option 2: Do-Minimum	19.9	21.2	27.4	32.2
Option 3: Public Transport Plug	N/A	N/A	N/A	N/A
Option 4: Upgrade Roundabouts and Links	13.4	12.6	12.2	12.3
Option 4a: Upgrade Roundabouts and Links plus dual carriageway	11.8	11.5	11.9	11.8
Option 5: Full Dual plus Grade Separation	9.2	9.3	9.6	9.8
Option 6: Traffic Signal Control	Not tested	Not tested	Not tested	Not tested
Option 7: Additional Link Road	12.5	12.9	26.0	29.6

These two tables show that the Do-Nothing option results in much longer journey times along the Outer Ring Road in 2011 and 2021 than that of the base year. AM peak ORR journey time is expected to triple to reach over 60 minutes in the clockwise direction.

Option 2, the Do-Minimum, brings about some relief to congestion problems on the ORR. In 2011 and 2021 clockwise journey times travel times are reduced. Anti-clockwise journey times are however increased. This is due to Northfield Lane off-slip access to Northminster Business Park, which effectively renders the A59 Boroughbridge Road inbound approach un-opposed, and which in turn opposes ORR anti-clockwise traffic at the A59, causing this to queue for longer.

With Option 3, traffic flows on the A59, the A19 and Wetherby Road are forecast to increase in both directions of travel. The greatest increase in radial flow is on the A59 inbound in both the AM and PM peak. Water Lane flows tend to also increase as a result. Park and Ride patronage at Monks Cross and McArthur Glen is expected to increase due to the PT Plug Option. On the other hand, the A59 Park and Ride patronage is predicted to decrease with the PT Plug in the AM peak, as some of the traffic finds it cheaper to park in city centre car parks or complete the whole journey by car. The PT Plug Option is further expected to increase the traffic demand on the A64 in both direction of travel and in both the AM and PM peak. York SATURN modelling indicates that total travel time across the whole of York is predicted to increase by 8% with this option as compared to the Do-Nothing. This will cause congestion within the city and increase air pollution.

Option 4, upgrade roundabout and links, results in considerably shorter journey times than the base year, Do-Nothing and Do-Minimum in both direction of travel, both peaks of travel and at both years 2011 and 2021. In 2011, clockwise AM peak ORR journey time is expected to drop from 27 minutes with the Do-Nothing to 12.2 minutes with this option, and PM peak journey time is expected to drop from 40 minutes to 12.3 minutes. Similar significant reductions in journey times are expected in the anti-clockwise direction. AM peak ORR anti-clockwise journey time is forecast to reduce by almost 16 minutes in 2011 and by 20 minutes in 2021. PM peak journey times are expected to be 18 minutes shorter in 2011 and over 20 minutes in 2021, as compared to the Do-Nothing at the same future years.

Option 4a, upgrade roundabout and links plus dual carriageway, provides similar operational conditions at 2011 and 2021 to that of Option 4, and can provide additional benefits beyond 2021, in particular in the area around the A59/A1237 roundabout, where congestion starts to build at 2021. Travel times as the above journey time tables are further improved.

Option 5, full dual plus grade separation, reduces ORR journey times the most amongst all options tested, thus outperforming Option 4 and Option 4a insofar as travelling on the ORR is concerned. This option, however, encourages more traffic onto the ORR, as this takes advantage of substantially reduced travel times on the ORR, to the extent that it increases overall travel time in the road network.

Option 6, traffic signal control, has not been evaluated, as there are issues associated with this option regarding implementation.

With Option 7, additional link road, ORR journey times in the clockwise direction are generally congestion free. However, substantial delays are expected to be experienced in the anti-clockwise direction, particularly at the A59 and Wetherby Road roundabouts.

Total Vehicle Travel Time

Total vehicle travel time is given in the following table. This shows that the Do-Nothing results in the highest total travel time, due to excessive delays on the ORR if mitigation measures to relieve congestion are not introduced. The Do-Minimum reduces total travel time compared to the Do-Nothing. The public transport plug option achieves more reduction in total travel time on the ORR as compared to both the Do-Nothing and Do-Minimum, but increases delays on the main radials into and out of York.

Option 4 and likewise Option 4a reduce total travel time the most, as compared to all other options. This option outperforms even Option 5 full dual option plus grade separation. Option 5 reduces the journey time on the ORR further than Option 4, but results in higher total travel time than Option 4 or 4a. This is due to a combination of two factors. The first of these is that the traffic demand is higher with Option 5 than with Option 4 or 4a, as the full dual option encourages and generates more ORR traffic. This consequently results in a longer queue at the A59 inbound approach to the A59 roundabout during the AM peak. Second, the A59 roundabout, with grade separation, loses the balance in flow required to provide adequate gaps for the A59 Park and Ride traffic leaving the Park and Ride site in the PM. With the A59 inbound traffic almost unopposed with the grade separation, and the ORR traffic into the A59 inbound taking precedence over A59 Park and Ride departing traffic, these two movements combine together to oppose the A59 Park and Ride departing traffic.

Total travel time in vehicle-hours over the whole of the modelled area within the Paramics model for all Highway Option

Option	AM Peak 2004	PM Peak 2004	AM Peak 2011	PM Peak 2011	AM Peak 2021	PM Peak 2021
Base year	2203	2937	-	-	-	-
Option 1: Do-Nothing	-	-	4137	5004	8996	8187
Option 2: Do-Minimum	-	-	2858	3103	6358	5014
Option 3: Public Transport Plug	-	-	2556	2755	4109	4778
Option 4 : Upgrade Roundabouts and Links	-	-	1689	1581	2059	2224
Option 4a: Upgrade Roundabouts and Links	-	-	1688	1580	1193	2216
Option 5: Full Dual plus Grade Separation	-	-	1559	1600	2104	2311
Option 6: Traffic Signal Control	-	-	Not tested	Not tested	Not tested	Not tested
Option 7: Additional Link Road	-	-	2586	3405	4780	4288

Moor Lane / Askham Bryan Lane Junction

The modelling work has assumed that the right turns into and out of Moor Lane and Askham Bryan Lane are banned for traffic on safety grounds. Separate analysis was carried out to assess the impacts of introducing a roundabout on the A1237 at Moor Lane. This has been found to increase the volume of

traffic on Moor Lane and could cause congestion to the clockwise ORR traffic due to this having to give way to traffic leaving Moor Lane.

Total Bus Travel Time

Total bus travel time due to each of the highway improvement options is given in the following table. This shows that bus travel time is lowest with Option 6, full dual plus grade separation, and followed by Option 5, upgrade roundabouts and links. Both options substantially reduce total bus travel time as compared to that of 2004. Both options marginally increase total bus journey times if Copmanthorpe roundabout is upgraded, as upgrading the roundabout will increase the A64 westbound ORR volume of traffic at Manor Heath, causing Yorkshire Coastliner buses to wait slightly longer for a gap. Compared to the existing total bus travel time, both options substantially reduce total bus travel time. This indicates that the improvements to ORR reduce bus journey times now and in the future, even with increased car use.

Total bus travel time in bus-minutes over the whole of the modelled area within the Paramics model for all Highway Options

Option	AM Peak 2004	PM Peak 2004	AM Peak 2011	PM Peak 2011	AM Peak 2021	PM Peak 2021
Base year	352	511	-	-	-	-
Option 1: Do-Nothing	-	-	435	810	999	1436
Option 2: Do-Minimum	-	-	550	591	1088	743
Option 3: Public Transport Plug	-	-	398	608	1176	725
Option 4 and 4a: Upgrade Roundabouts and Links	-	-	261	418	280	425
Option 5: Full Dual plus Grade Separation	-	-	250	401	205	353
Option 6: Traffic Signal Control	-	-	Not tested	Not tested	Not tested	Not tested
Option 7: Additional Link Road	-	-	423	613	733	679

Widening Travel Choice

Government advice on transport highlights the importance of promoting access to health, education, employment, leisure and retail land uses. To provide a comparison of the A1237 improvement options against widening travel choices a simple matrix table has been devised. The matrix score is based on three factors:

1) Trip Purpose: have been weighted according to their importance:

- Health = 4;
- Education = 3;
- Employment = 2; and,
- Leisure and Retail = 1.

2) Transport Mode: *d*ifferent modes of transport have been weighted according to York's LTP hierarchy of road users:

- Walk/Cycle = 3;
- Public transport = 2; and,
- Car = 1.

3) Scheme Impact: the impact of the proposed measure has been scored on a simple five point scale. With -2 having a large negative impact, 0 have a neutral impact and +2 a large positive impact. The scoring has been based on a combination of factors including the highway modelling outputs, bus service frequencies and current walking and cycling provision.

The matrix summarises typical journey purposes for the settlements to the north and west of the Outer Ring Road. The journey purposes have been derived from the journey to work data and proximity to the land uses.

Key findings of the Highway Option assessment:

- Option 1: increasing congestion levels impact on bus service reliability and car/bus journey times;
- Option 2: the do-something options widens travel choices for car and bus users in Strensall, Nether and Upper Poppleton;
- Option 3: for the public transport plug traffic diverting onto radial routes has a negative impact on public transport and other road users;
- Option 4: Upgrading the roundabouts and links has a positive impact on all the settlements;
- Option 5: the dual carriageway option decreases travel choices for residents of Askham Bryan and Askham Richard due to the impact of road closures. The benefits to vehicles and radial bus services are cancelled out by the increase in severance between communities.
- Option 6: the benefits of at grade crossing facilities for pedestrians and cyclists are cancelled out by an increase in congestion for bus services and other vehicles; and,
- Option 7: the additional link road only benefits car users and increases pedestrian and cycle severance between the A19 and A64.

Key findings of the Public Transport Measures:

- The A59 Park and Ride, Haxby Station and reopening Low Poppleton Road widens travel choice for all the settlements outside the Outer Ring Road;
- The orbital bus service widens travel choice for residents of Poppleton, Haxby, Wigginton, Earswick, and Strensall; and,
- The shuttle bus service widens travel choice between Rawcliffe Bar and the proposed A59 Park and Ride site.

Key findings of the Walking and Cycling Measures:

- The Haxby to Clifton Moor cycle link widens travel choice for residents of Haxby;

- The Boroughbridge Road cycle link and subway under the A1237 widens travel choice for residents of Poppleton but the existing cycle link on Millfield Lane means the benefits are not too significant;
- The Strensall Roundabout subway widens travel choices for walking and cycling users and has no disbenefits to other road users;
- The Strensall to Haxby cycle link widens travel choices for residents of Strensall; and,
- The Wetherby Road cycle link and subway widens travel choices for residents of Rufforth although the distance between Rufforth and the trip attractors means the option is not too appealing for some cyclists and pedestrians

COSTINGS

Scheme costings are currently broad estimates of scheme cost, and are mainly indicative for option sifting at this stage of the appraisal. The following table provides the estimated cost of each scheme.

Highway, Public Transport and Cycling and Pedestrian Infrastructure costs (£m)				
Option	**Highway Schemes**	**Public Transport Infrastructure**	**Cycling and Pedestrian Schemes**	**Total Cost**
Option 2: Do-Minimum	6.2	0.6	£3.5	10.3
Option 3: Public Transport Plug	6.2	0.6	£3.5	10.3
Option 4: Upgrade Roundabouts and Links	18.5	0.6	£3.5	22.6
Option 4a: Upgrade Roundabouts and Links plus Dual Carriageway	50.3	0.6	£3.9	54.8
Option 5: Full Dual plus Grade Separation	114.8	0.6	Included in highway costs	115.4
Option 6: Traffic Signal Control	Not costed			
Option 7: Additional Link Road	44.2	0.6	Not costed	44.8

A59 Park and Ride site and bus priority corridor not included.
Haxby Rail Station costs not included.
Public transport costings do not include operational costs for the new services

USER TIME BENEFITS AND BENEFIT TO COST RATIO

To carry out a preliminary cost benefit analysis for the various schemes, user time benefits based on reduction in delays and journey times have been considered. This excludes public transport user benefits, which cannot be evaluated in the absence of a public transport model. User time benefits are annualised assuming a 1-hour peak for each of the AM and PM peak and 240 working days a year, and monetised using a value of time of £4.52 per hour savings. The Do-Nothing option is used as a basis for calculating the time savings for each option.

The table below gives the discounted user time benefits and the benefit to cost ratio (BCR) to a base year of 2004 assuming a scheme life time of 35 years, a discount rate of 3.5%, and a scheme opening year of 2007.

Estimated user time benefits (2004 prices) and benefit to cost ratio (BCR)	
Option	**Estimated time benefits at year 2004 (£m) and (BCR)**
Option 2: Do-Minimum	102.0 (**9.9**)
Option 3: Public Transport Plug	-85.0 (**negative**)
Option 4: Upgrade Roundabouts and Links	207.1 (**9.1)**
Option 4a: Upgrade Roundabouts and Links plus Dual Carriageway	207.9 (**1.9**)
Option 5: Full Dual plus Grade Separation	213.7 (**1.0**)
Option 6: Traffic Signal Control	Not evaluated
Option 7: Additional Link Road	134.4 (**1.8**)

CONCLUSIONS AND RECOMMENDATIONS

The study indicates that the A1237 Outer Ring Road predominately operates as a local distributor for traffic coming to and leaving from the greater York area. However nearly 20% of the traffic from outside the York area uses the ring road to access the A64 (East and West) for through journeys. Provision of orbital Public Transport is poor and the lack of pedestrian and cycling facilities suppresses these modes. There is a history of accidents along the full length of the ring road, principally at the junctions, with a number of fatalities recorded.

The modelling work suggests that the junctions are the restricting factor on the ORR and the sections between the roundabouts would have capacity to accommodate the predicted 2021 traffic levels.

Options have been investigated which cover the full range of possibilities from do nothing through to the provision of a grade separated dual carriageway with complementary public transport, walking and cycling measures.

It has been found that the option of upgrading roundabouts and links delivers the highest user time benefits amongst all the options tested. The Do-Minimum option delivers modest user time benefits, but yields the highest benefit to cost ratio. The full dual option results in similar time user benefits to that of upgrading roundabouts and links but, due to the high capital cost and land taking involved, has a much lower benefit to cost ratio than the upgrading option.

As the city council have a long term aspiration to improve access to the south west of the City by upgrading the Moor Lane/Askham Lane/Askham Bryan Lane junctions, a further analysis was undertaken to assess the benefits of introducing a new junction at Moor Lane/Askham Lane/Askham Bryan Lane. This has shown that such a roundabout could reduce city-wide peak travel time.

Based on the modelling and cost benefit analysis carried out, the study recommends that the option of upgrading the roundabouts and links should be taken forward. This option has the advantage that the proposed improvements can be built upon, should further improvements be required beyond 2021, such as dualing with at grade junctions or full dual carriageway with grade separated junctions. The

upgrading option has also the advantage that the proposed improvements can be phased so as to match a funding streams which would consider first upgrading the A59/A1237 roundabout, Hopgrove roundabout and Wetherby Road roundabout (as in the Do-Minimum) and Moor Lane junction, and then the other roundabouts. This staged improvement approach would not eliminate all queuing until all the proposed improvements are in place, but can offer value for money.

Proposed phasing of improvements:

Block 1: Hopgrove (Highways Agency Scheme), A59, Moor Lane/Askham Lane, Wetherby Rd;
Block 2: Haxby Rd, A19, York Business Park, Strensall Rd; and
Block 3: Wigginton Rd, Clifton Moor, Copmanthorpe.

The study recommends as well that the complementary public transport, walking and cycling measures should be introduced as part of the overall improvements to the Outer Ring Road.