A65 QBC Scheme
Funding Submission

Metro and Leeds City Council
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A65 QBC Scheme

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Executive Summary

This report is prepared in support of the Leeds City Council funding application for the A65 Quality Bus Initiative major scheme. The DfT have previously granted Programme Entry to the scheme which has now reached a stage where the intention is to submit a combined Conditional / Full Approval funding application that fits within the previously agreed funding level of £20.746m. The scheme forms the second element in a comprehensive project to establish a Quality Bus Corridor on the A65 route extending from Leeds city centre to Rawdon. The first element of which was the inbound Abbey Road bus lane completed in 2006 with funding from the Integrated Transport block allocation.

The A65 corridor is a busy radial route into Leeds, with high traffic flows during the peak and inter-peak hours. It passes through some relatively deprived areas, consisting of a combination of residential housing, light industry, car show rooms, and discount food shops. It also passes through the busy Kirkstall district centre.

The scheme design incorporates bus lanes with gating and pre signal control. This maximises the bus priority along the corridor by improving the journey through Kirkstall centre where bus lanes cannot be provided.

Other vehicle using the A65 are not forecast to experience an adverse impact as the scheme is designed to be capacity neutral towards general traffic. The design benefits pedestrian and cycle users of the A65 corridor by providing improved facilities which will improve movement across and along the route respectively.

The key issues along the A65 can be summarised as follows:

- peak hour congestion on links in local centres and at many junctions;
- environmental effects of congestion and slow moving traffic;
- bus unreliability arising from severe delays to services using the corridor, compounded by a large variability in journey times; and
- limited or sub-standard pedestrian and cyclist facilities.

Without intervention, these problems are likely to worsen due to peak spreading and increased road user conflicts. Also, delays to bus services throughout the day are likely to become more pronounced as congestion increases, and importantly the variability in bus service in terms of arrival time and journey time will deteriorate. This will have negative impacts on the bus operators and passengers, and will not encourage the increased use of an efficient public transport system.

The scheme objectives are in accord with the strategy and all of the objectives set out in the West Yorkshire Local Transport Plan 2006-11. The proposed scheme will deliver a high quality, integrated system that is an attractive alternative to the private car, particularly for peak hour commuter journeys along the corridor.

Pedestrians and cyclists are placed high in the hierarchy of users within the LTP2, which includes strategies to improve the physical environment for both modes and make journeys by these modes more convenient and attractive. The scheme includes an increase in the number of pedestrian crossings as well as lengths of cycle lanes, and hence is fully compatible with these objectives and strategies.

The scheme specific objectives as endorsed by the Project Board and agreed by Metro and Leeds City Council with the principal bus operator, and are as follows:

- to reduce the delays to bus services currently experienced along the corridor;
- to reduce the variability in the delays to these services;
- to improve the level of service and attractiveness of public transport along the corridor;
- to promote modal shift by the provision of an attractive public transport alternative to the private car;
- to provide an integrated public transport system;

- to contribute to the LTP targets of reducing the rate of traffic growth and increasing the use of public transport;
- to minimise the impacts of the scheme on non-users;
- to provide enhanced access measures and facilities for pedestrians and cyclists;
- to promote equal opportunities; and,
- to reduce severance and accidents by the provision of additional crossing facilities.

These objectives can be seen to link directly to many of the problems identified along the corridor, and will form the basis against which to appraise the A65 Quality Bus Initiative proposals.

These objectives are consistent with those highlighted in the review of a number key policy documents, at both a local and regional level. Therefore, these objectives also correlate to the Government's five key objectives for the transport system, set out in the 1998 Transport White Paper.

The scheme is forecast to provide a 6-7 minute improvement in bus journey times in the AM peak (inbound direction) and PM peak (outbound direction) with improvements of 3-4 minutes expected at other times.

The assessment against the government's key objectives for transport shows that the scheme will have the following positive impacts: -

- a beneficial impact on local air quality and greenhouse gas emissions together with other small environmental benefits;
- a reduction of 93 accidents along the affected section of the corridor throughout the assessment period;
- a positive economic impact with the scheme generating overall benefits of over £46m and a benefit cost ratio of 1.92 together with reliability improvements;
- a small improvement to local accessibility; and
- a strong fit with local and national transport and related policy.

The scheme has already progressed significantly and will be delivered under an early contractor involvement (ECI) contract on the basis that it "maximises the potential for earlier start and shorter construction period…this is likely to result in lower costs, partly from reduced inflation effect and increased efficiency". This approach had already been used by Leeds City Council during the successful delivery of the Inner Ring Road Stage 7. The scheme Compulsory Purchase Order was confirmed in September 2009 and Traffic Orders have been advertised.

The scheme contractor has now confirmed the Final Target Costs (FTC) for the scheme as being £20.587m (£21.547m including LCC preparatory costs). This fits within the scheme funding envelope previously approved by the DfT. The use of the ECI route has resulted in considerable design and procurement efficiencies with the result that, subject to funding being approved, implementation of the scheme is planned to commence as soon as February 2010.

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Scheme Description

1 Scheme Description

1.1 Introduction

This chapter describes the Leeds A65 QBC scheme, and in particular aims to:

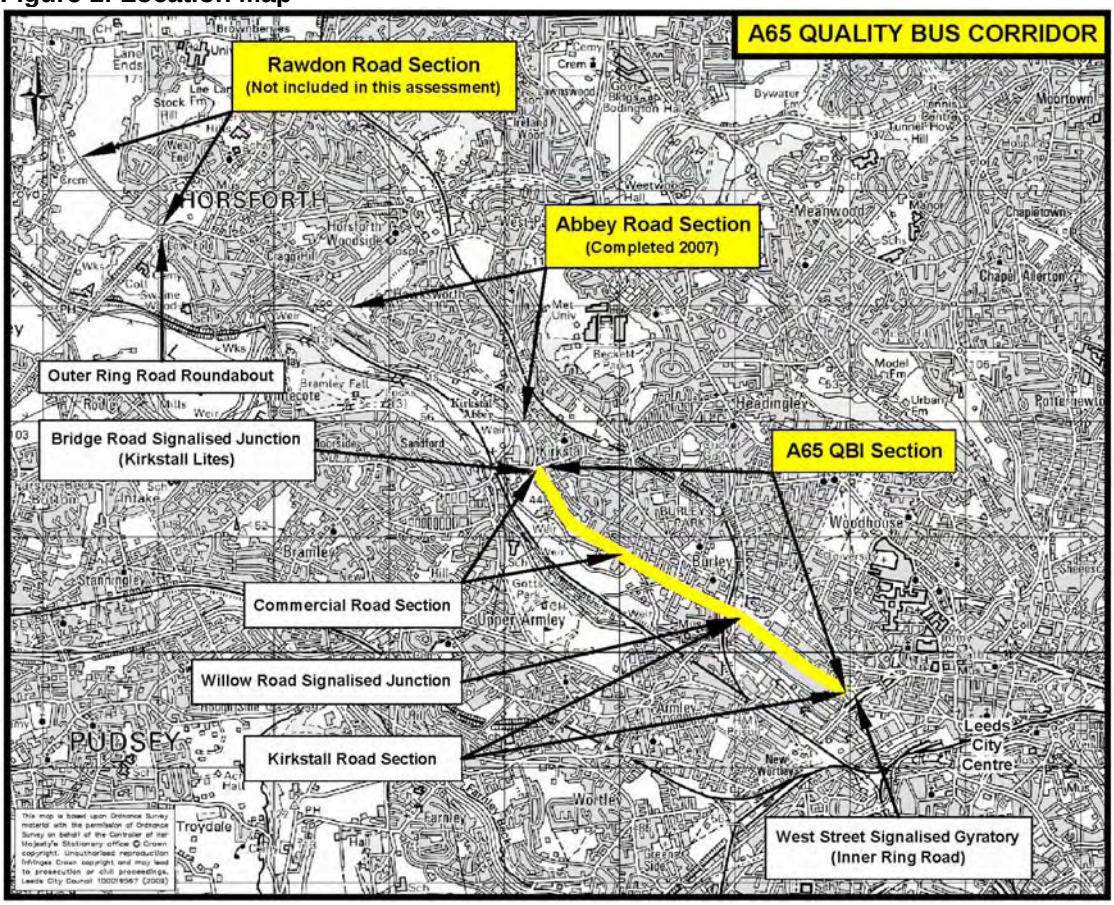
- Give details of the location and scope of the scheme;
- Highlight the characteristics of the junctions and routes affected; and
- Provide a detailed description of the scheme.

It is also worth noting that only one scheme is appraised in this document – the scheme between Bridge Road and the Inner Ring Road. Details of alternative schemes that were considered are included in the previous submissions. This is explained in the scheme history section of chapter 2.

1.2 Location and Scope

Figure 1 provides a brief illustration of the A65 corridor into Leeds. The corridor provides an important radial link for the large sub-regional urban area of Leeds, and is one of the busiest radial roads in Leeds. It runs NW to SE into Leeds, and is located just north of the River Aire. The location in relation to the river means the A65 has few feeder roads from the south, these being limited to the locations of the crossings over the river, such as Bridge Road.

Figure 1: Location Map



The neighboring corridor routes into Leeds are the A647 and A660, both running between the inner and outer ring roads.

This assessment only concerns the portion between the Kirkstall Lane/Bridge Road junction (known as Savins Mill Gyratory) and the Inner Ring Road (IRR), highlighted by the shaded area. The Abbey Road section is not included as part of this funding bid and hence is not considered within this report. However, from a bus user's perspective, the planned

improvements on the A65 between the Inner and Outer Ring Roads will appear to operate as one combined scheme.

The section between Bridge Road and the Inner Ring Road, which is considered in this submission, has a total length of approximately 3.5km. For assessment purposes, this section has been split into two sections: Kirkstall Road; and Commercial Road. The distance of each section is 1.25km and 2.5km respectively.

1.3 Details and Characteristics of Junctions and Routes Affected

1.3.1 Corridor Information

1.3.1.1 Traffic Characteristics

Appendix A provides a summary of traffic conditions across the corridor. This is primarily based on an analysis of ATC data along the wider corridor together with an analysis of "ITIS" data. The analysis is summarised below: -

- 24 hour 2-way traffic flows on the Kirkstall Road section of the route are in the region of 45,800 vehicles (2006). This has remained broadly consistent since 2000.
- Peak inbound flows (0800-0900) have risen slightly in this period to 1950 vehicles. However, there has been no increase since 2004 suggesting that the road is operating at capacity.
- Outbound flows have remained broadly constant at around 1850-1900 vehicles with interpeak (1000-1500) flows rising from 11,210 to 12,780.
- A more detailed analysis of data in 15 minute periods suggests that peak spreading is occurring with drivers retiming their journeys to before the main peak hour to avoid the worst of the congestion on the corridor.
- Overall peak period (0700-1000) inbound flows on the corridor are 5,600 vehicles. This is amongst the busiest roads approaching Leeds City Centre.
- 24 hour 2-way flows on the Kirkstall Road section are considerably higher than the Commercial Road section (45,800 compared with 27,850 vehicles). This is mirrored in the AM peak inbound and PM peak outbound figures.
- Flows on the side roads joining at the Willow Road junctions (Canal Road and Willow Road) are in the order of 500-750 vehicles per direction on both roads in the peak hours (0800-0900 and 1700-1800). Flows in the PM peak are 100-200 vehicles higher than in the AM peak.
- ITIS data suggests that, with the exception of the period after 1900 traffic speeds on the A65 corridor are considerably below the norm.

1.3.1.2 General Characteristics

The corridor as a whole displays different characteristics along its length from the outer lying suburbs such as Guiseley and Rawdon through to the heavily developed City Centre. The highway is almost exclusively single carriageway in nature.

Commercial Road

The road is single carriageway for its entire length, with footways on both sides (see **Photograph 1**). There are several minor junctions on its north side, and several access points to industrial property on the south side.

The industrial property to the south encompasses a mixture of uses, and includes the Kirkstall Wildflower Garden, a number of car showrooms (see **Photograph 2**), some light industrial premises set back from the road, and an office development (Waterside).

To the north of the A65, there is a mixture of types of residential property, including blocks of flats, and semi-detached properties raised above the level of the road.

Mandatory cycle lanes in both directions are provided to the west of the junction with Willow Road, and an outbound advisory cycle lane is provided on Kirkstall Road from the end of the dual carriageway section.

West of the junction with Willow Road, the A65 passes through the local centre of Kirkstall (Cardigan Fields), flanked on both sides by shops with terraced residential properties further north (see **Photograph 3**). To the south of the corridor on this section is a leisure facility incorporating a multiplex cinema and fast food outlets.

Information from the most recently completed national census in 2001 has been analysed to gain an overall picture of the area. This section of the A65 passes through 3 census "lower super output areas". The rank of total deprivation of these 3 areas in comparison to the total 32482 "lower super output areas" across England ranges from 4285 to 11844 (13% – 36%). In particular these areas score badly for the "living environment" and "crime" elements that make up the overall index of multiple deprivation. It can therefore be seen that the scheme serves areas that, in a national context, can be considered to be somewhat deprived.

1.3.2 *Willow Road junction*

This junction is signal controlled, and allows all turning movements to be made with the exception of U-turners. Its geometry is constrained by its close proximity to the viaduct, therefore dictating the number of approach lanes and length of flares on the A65 from the west. It also constrains the number of lanes on the exit of the junction heading west on the A65. The approach to and exit from the junction with Willow Road has a short section of dual carriageway. The junction currently operates at capacity during the AM peak period.

1.3.3 *Kirkstall Road*

The road is essentially single carriageway in nature, with a short section of dual carriageway, for approximately 400m, west of the Inner Ring Road.

East of Willow Road, the A65 is more commercial in nature, with some office and light industrial units on both sides of the road, those to the north generally being set some distance back from the road (see **Photograph 4**).

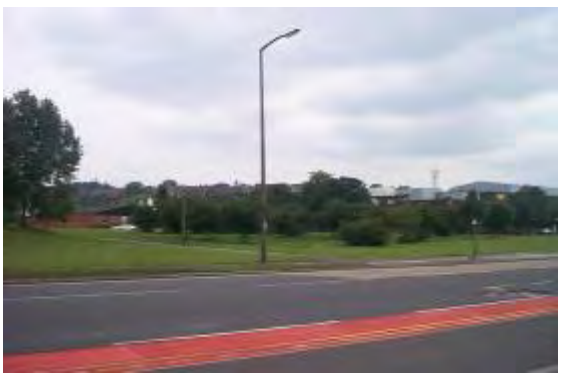
Photographs (from left to right, top to bottom):

Photograph 1: View West Along the A65

Photograph 2: View of the South Side of the A65

Photograph 3: Built Environment at Kirkstall Centre

Photograph 4: View of the north side of the A65



Nearer to the junction with the Inner Ring Road, Kirkstall Fire Station lies to the north of the corridor, and low cost hotels are located on both sides of the road.

This section of the A65 passes through 2 lower super output areas. The rank of total deprivation of each of these areas in comparison to the 32482 neighbourhood areas in England is 5175 and 12467. In terms of percentiles, this worst rank of total deprivation equates to 16%. In particular, the areas that rank highly in terms of multiple deprivation are the living environment, health and crime criteria.

1.3.4 *West Street Gyratory*

The gyratory is a grade separated junction with the A58 (M) Inner Ring Road intersecting with the A65 to the west and Wellington Street to the east. From both directions, entry to the gyratory from the A58 is signal controlled. The traffic from Wellington Street is also signal controlled. The remaining conflicts are priority controlled or merge and diverge areas.

1.4 Scheme description

The scheme is shown in detail on the Leeds City Council Drawings included in **Appendix B.**

1.4.1 *General Scheme Information*

1.4.1.1 Corridor Capacity Philosophy

The scheme has been designed such that there would be no reduction in highway capacity resulting from implementation. Queue relocation would, however, be applied at some key locations. All new road space created as part of the scheme is to be utilised by buses, pedestrians and cyclists only. Hence, the impact of the scheme on residual road capacity is negligible.

Note that a reduction in road space at some locations is not indicative of a reduction in capacity. This is because the capacity of the section is dictated by the capacity of junctions rather than the links.

1.4.1.2 Bus Lane Operational Hours

Two of the four proposed bus lanes terminate at a pre-signal, therefore it is proposed to

Photographs (from left to right, top to bottom):

Photograph 5: View east along the A65 of Beecroft Street (Start of inbound bus lane)

Photograph 6: View west along the A65 of Woodside View (Location of inbound pre signals)

Photograph 7: View west along the A65 (Start of outbound Bus Lane)

Photograph 8: View east towards Savins Mill Gyratory (Location of outbound pre Signals)

implement the bus lanes to operate 24 hours a day, in line with common practice. In addition, none of the bus lanes run through areas where on-street parking is required as existing verge parking will be relocated.

1.4.2 *The A65 QBC Scheme*

1.4.2.1 Commercial Road

The proposals for this section include for a new inbound bus and cycle lane from the junction with Beecroft Street to the junction with Woodside View (see **Photograph 5**).

Pre-signals are proposed at the extremity of the bus lane (near the junction with Woodside View), with dedicated pedestrian facilities included here, and additional controlled crossing facilities provided adjacent to Gilbert Mount. (See **Photograph 6**).

An outbound bus and cycle lane is also proposed from the junction with Burley Wood Mount (see **Photograph 7**) to a point opposite Beecroft Street near to the Bridge Road junction. Pre-signals are also proposed at the extremity of this bus lane just prior to the Bridge Road junction. (See **Photograph 8**).

In both cases, significant road widening is required, most of which is protected by an existing highway improvement scheme which dates, with subsequent modifications as the scheme has developed, from a Highway Improvement Line, which was the subject of public consultation and designation in 1992 – 1993.

No measures are proposed at the local centre of Kirkstall (see **Photograph 9**), where there is existing cycle lanes and limited highway width.

1.4.2.2 Willow Road Junction

Enhancements to the Willow Road junction will provide a u-turn facility immediately north of Kirkstall Road. This would have a low capacity and hence may not accommodate future development traffic. Therefore, funding for further upgrades to the gyratory would then probably be sought during negotiations with developers, if a single point of access onto Kirkstall Road for all development sites is not possible. Bus priority inbound approaching the junction, will be provided by the signal control strategy.

No measures are proposed immediately west of the viaduct (see **Photograph 10**), where traffic queues in two lanes along the existing wide single outbound lane.

1.4.2.3 Kirkstall Road

In general, the scheme will provide an upgrade to the Kirkstall Road section in the form of a dual carriageway providing two lanes plus a bus lane in each direction between the Willow Road junction and the West Street Gyratory.

Immediately east of Willow Road junction, Kirkstall Road is marked as a wide single lane in each direction, but at peak times traffic does sometimes form two lanes (inbound in the am peak and outbound in the pm peak). An upgrade to provide dual carriageway east of Willow Road junction would provide two lanes plus a bus lane in the inbound direction.

The inbound bus lane would start soon after the Willow Road junction and would terminate short of the Inner Ring Road. The bus lane setback would be set to the minimum required to get one platoon of vehicles through each green phase at the traffic signals, thus ensuring that buses never have to stop at more than one red light before they can progress through the signals.

In the outbound direction, the bus lane terminates immediately before the Willow Road junction, where a short set-back is provided purely to enable left-turners to enter Viaduct Road. Buses would then continue through the junction in bus lane to a stop, from where they would rejoin the general traffic flow.

New pedestrian crossings are planned to assist pedestrians getting to and from bus stops, in addition to those crossing the corridor.

The scheme largely retains the form of the current service lay-by on the south side of Kirkstall Road near to the Inner Ring Road, but reduces the width of it to provide the bus lane. Observations indicate that the service area is larger than it needs to be and so the proposals are not expected to have any adverse impacts.

U-turn facilities for both directions would be provided in two locations – in the vicinity of Studio Road and adjacent to the existing bus depot.

Photographs (from left to right, top to bottom):

Photograph 9: View east along the A65 of Kirkstall Centre

Photograph 10: View west along the A65 on the approach to Kirkstall Centre

Photograph 11: View west along the A65 from near to the IRR (Location of inbound and outbound bus lanes)

Photograph 12: View of West Street gyratory

1.4.2.4 West Street Gyratory

On the West Street gyratory, only minor changes are proposed to the gyratory itself to help accommodate the bus priority and pedestrian facilities on Kirkstall Road (see **Photograph 12**).

1.4.3 Traffic Control Strategy

1.4.3.1 General

The traffic control strategy objective can be summarized as aiming to get buses through the highway system with minimum delay, while maintaining traffic capacity on the A65 and other routes. This aim is consistent with the fact that junctions either side of the area being improved do not have spare capacity.

The traffic signals on the A65 are managed and controlled centrally by Leeds City Council's Urban Traffic Management & Control (UTMC) section. Bus priority will be provided using Selective Vehicle Detection, where buses fitted with GPS equipment will request a priority at the following traffic lights. This message is relayed to the central computer where signal control logic will be used to determine the optimal safe changes to signal timings to enable buses to proceed with minimal delay. This approach is, therefore, flexible, so when a bus approaches a traffic signal it is detected and appropriate action taken to prioritise it through the signals. This may entail holding off a pedestrian crossing, extending the green at a signalled junction, or sophisticated queue management. The reduction in green time to other traffic can be compensated for in subsequent cycles, so that no (or limited) net loss of capacity is realized. Similar real time queue balancing techniques have proved reliable and effective elsewhere in the country. Note that virtually all buses in West Yorkshire have GPS, as part of the RTPI programme.

The key to maximising the time savings benefits for buses is to use traffic signals to ensure that traffic flows are controlled and queues located in appropriate places within the corridor. Ideally, any traffic queues are stacked alongside bus lanes, with sections without bus lane being free-flowing.

In general, the introduction of such a strategy will aim to provide an uncongested two-lane section through the lengths where bus lanes are not proposed to be provided. Buses will have priority in terms of being at the head of the traffic when they pass the gating points.

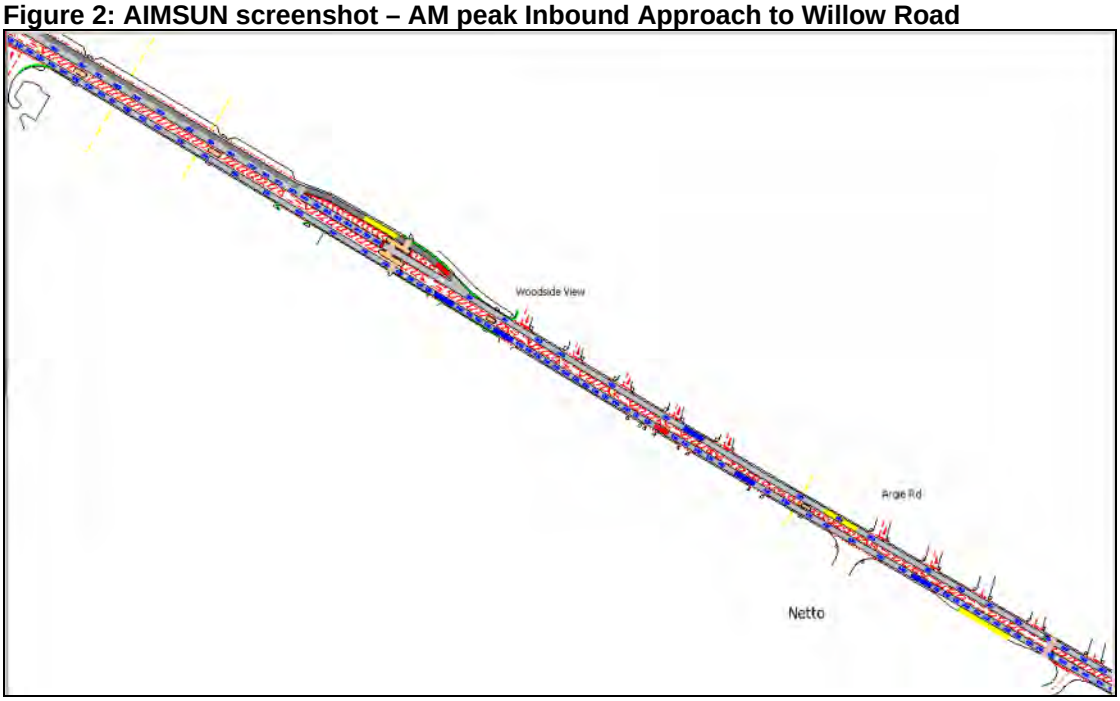
An annotated scheme drawing, explaining the signalling strategy to be used along the corridor in both directions is included in **Appendix C**.

In addition to this, Leeds City Council has developed an AIMSUN micro-simulation model to demonstrate how critical sections of the scheme will work. Both the AM and PM peaks have been modelled. The operation of the critical sections of the scheme in the relevant peak periods is considered in the following sections.

1.4.3.2 AM Peak

In the AM peak period the most critical section of the route in terms of managing traffic to minimize bus delay is the inbound section between Savins Mill Gyratory and Willow Road. [IT MIGHT BE HELPFUL IF THIS WAS CLEARER ON FIGURE 1 WHICH NAMES IT KIRKSTALL LITES] A bus lane is provided from the Gyratory to Woodside View with a bus gate included at the end of the bus lane to provide the necessary priority into the restricted section from Woodside View to Willow Road. Gating and balancing of capacities at this bus gate using queue detection downstream will ensure minimum delay for buses through the single lane section towards the Willow Road junction. This is described in blue boxes 6-27 of the traffic control strategy figure in Appendix C and shown in the AIMSUN screenshot in **Figure 2.**

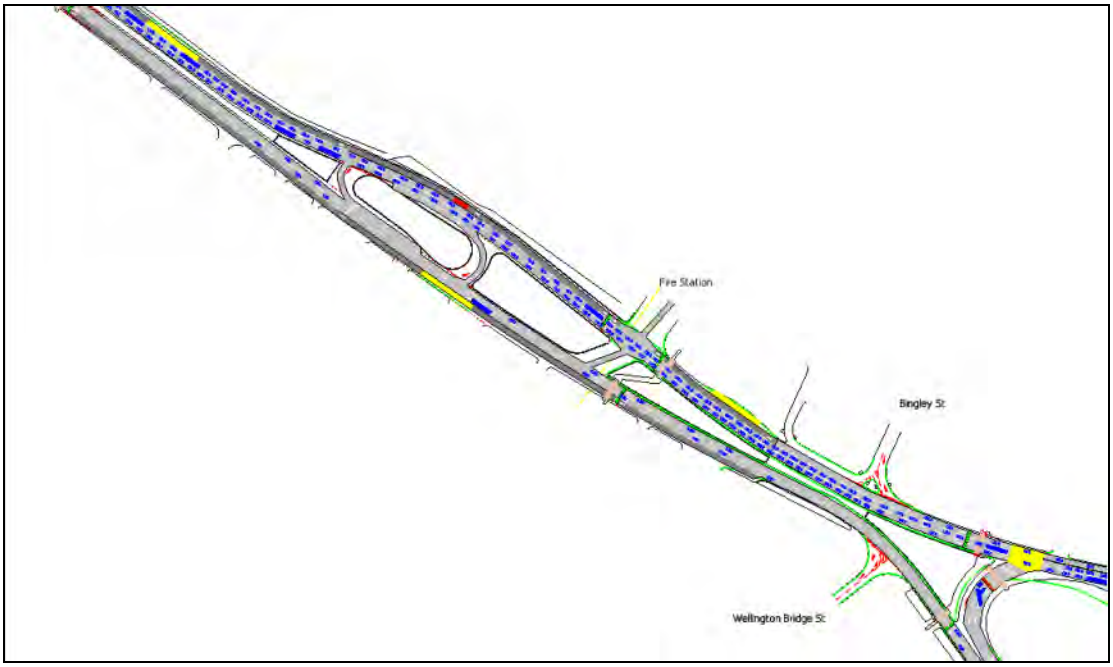
Figure 2: AIMSUN screenshot – AM peak Inbound Approach to Willow Road



Continuing inbound, coordinated signals will minimize delay at the Willow Road junction with buses then getting the benefit of a bus lane all the way to the Inner Ring Road/West Street Gyratory.

Whilst capacity for general traffic is considerably increased on the link between Willow Road and the Inner Ring Road it is still forecast that similar levels of queuing to the current situation will be experienced by general traffic. This is because of limited capacity of certain traffic signals on the gyratory itself leading to internal blocking back of traffic within the gyratory and preventing general traffic making full use of the green time it is offered as it enters the gyratory from Kirkstall Road. Similarly Wellington Road has limited capacity. The result is that the bus lane allows buses to bypass the queue and gain considerable benefit as shown in **Figure 3.**

Figure 3: AIMSUN screenshot – AM Peak Inbound Approach to Inner Ring Road



1.4.3.3 PM Peak

In the PM peak outbound direction the critical point is, again, the restricted section between Willow Road and Burley Wood Mount. This would be managed using a similar methodology to the AM peak period with traffic gated and stacked on the two-lane outbound section approaching Willow Road in order to maintain free flow on the restricted section.

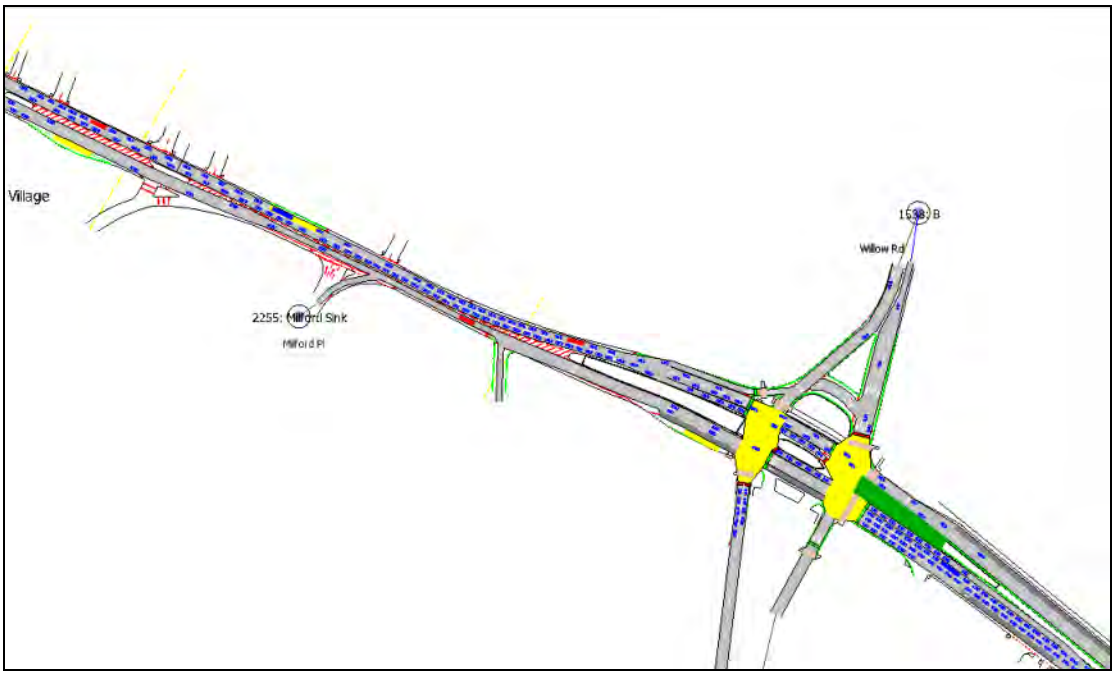
This would be controlled by queue detectors placed on the A65 leading up to Haddon Road. In the event of a queue forming the outbound green time would be reduced at the upstream Willow Road junction until the queue dissipates. Cycle by cycle this will match the traffic input to the capacity of the link using the two lane outbound section on the approach to the Willow Road junction to stack queuing traffic.

Manual queue gating/balancing has been trialled on the existing road layout, and shown to be effective. Traffic was gated by reducing the outbound green time at Willow Road, and it was shown that it is possible to keep the critical stretch of Kirkstall Road clear of queues. However, this technique is not responsive enough to minimize any impacts of traffic upstream and hence the automated queue detection methodology is proposed to maximize network efficiency.

The Willow Road junction provides the ideal opportunity to alter the traffic signal timings for this gating the outbound traffic. This is because there are no other uncontrolled side roads in the uncongested section between Willow Road and Burley Wood Mount, which allow traffic to turn left off the A65 and feed through to by-pass queues.

The principals of this technique are demonstrated in **Figure 4.**

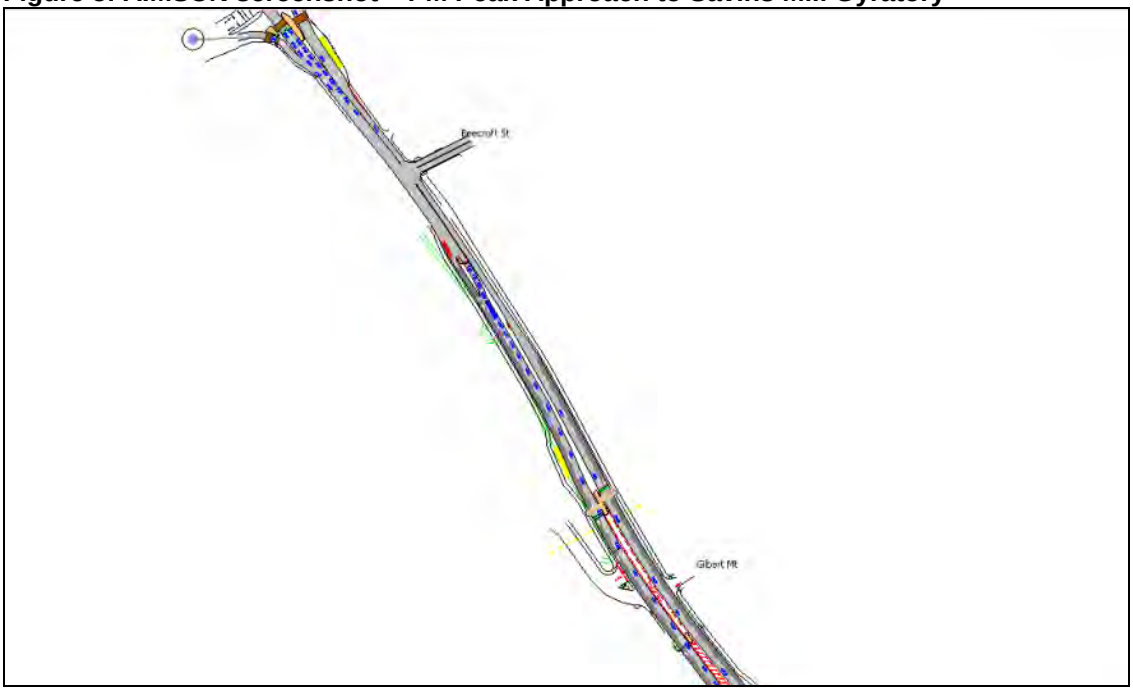
Figure 4: AIMSUN Screenshot – PM Peak Willow Road Gating Strategy



Continuing outbound, buses have the benefit of a bus lane from Burley Wood Mount towards Savins Mill Gyratory, with the lane terminating on the approach to the Gyratory. At this point, a bus gate is used to afford the necessary bus priority closely coordinated with the downstream signal to ensure that buses move from the bus lane to the front of the queue at the Savins Mill Way signals, and are then coordinated through the gyratory

Once more, AIMSUN has been used to demonstrate the operation of this technique as shown in **Figure 5.**

Figure 5: AIMSUN screenshot – PM Peak Approach to Savins Mill Gyratory



1.5 Variation Between Schemes and Impact on Assessment

Previous submissions have been based on the premise that the scheme has a negligible impact on flows and journey times for non-bus traffic. It is important to clarify that the scheme proposed here has a fundamentally similar impact on wider and local traffic patterns and can, thus, be viewed and assessed in a similar manner.

This is considered in the following sections.

1.5.1 *Wider Traffic Impact*

Analysis of the scheme has been undertaken using the Leeds SATURN model with the key points as follows: -

- The analysis makes use of the 2016 Leeds NW SATURN model.
- The analysis takes account of wider A65 QBC measures and the Kirkstall Forge development.
- Developments to the south side of the Kirkstall Road section are not included.
- Journey times from the SATURN model with and without the proposed scheme in place have been compared and show negligible changes in journey times (less than +/- 3 seconds) for both directions and all time periods apart from inbound in the AM peak period where a reduction in journey times in the SATURN model from 607 seconds to 505 seconds is seen. This is primarily as a result of the improvements to the section between Willow Road and the Inner Ring Road.
- Traffic flows along the corridor have been compared with and without the scheme in place and show a similar overall pattern with no change in hourly mainline A65 flow greater than 82 PCUs (or 6%). In the peak periods no change greater than 66 PCUs (or 3.2%) is seen.
- This shows that the scheme generally has a minimal impact on wider traffic patterns. This is in common with the previously submitted versions of the scheme.

1.5.2 *Detailed Local Issues*

The DfT have highlighted two key areas of the scheme that may have an impact on the way it should be assessed. These are at the western end of the scheme, where the bus lane terminates earlier in an outbound direction and, as a result, may have an impact on the priority offered through Savins Mill gyratory and, on the inbound approach to the Inner Ring Road where the extra link capacity may have an impact on the delay experienced by inbound A65 traffic when compared with the previously submitted schemes.

Section 1.4.3.3, above, demonstrates the operation of the former of these two sections and shows that the proposed arrangements can be expected to provide a level of bus priority consistent with the previously submitted scheme.

Further to this, it should be noted that section 1.4.3.2, above, points out that capacity constraints on the West Street Gyratory (A58 (M) Inner Ring Road), at the eastern end of the scheme, mean that queuing and delay levels on the inbound section between Willow Road and the Inner Ring Road are expected to remain similar to those currently experienced.

1.5.3 *Conclusion*

In conclusion, it can be shown that the alteration of the scheme compared with that previously submitted do not significantly alter the impact of the scheme on general traffic and, therefore, the scheme should be assessed in the same overall manner as that previously agreed by the DfT.

1.6 Summary and Conclusions

This chapter has provided details of the location for the scheme, and highlighted how the A65 has been divided for assessment purposes.

The A65 corridor is a busy radial route into Leeds, with high traffic flows during the peak and inter-peak hours. Adjacent to the A65 are some relatively deprived areas, consisting of a combination of residential housing, light industry, car show rooms, and discount food shops. It also passes through Kirkstall centre.

The scheme design incorporates bus lanes with gating and pre signal control. This maximises the bus priority along the corridor by improving the journey through Kirkstall centre where bus lanes cannot be provided.

Other vehicle using the A65 should not experience a negative impact as the scheme is designed to be capacity neutral towards general traffic. The design benefits pedestrian and cycle users of the A65 corridor by providing improved facilities.

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Strategic Case

2 Strategic Case

2.1 Introduction

This section provides the strategic case for the A65 QBC scheme, presented in the required format for the new guidance. The following information is provided:

- The problems the scheme addresses;
- Scheme objectives;
- The history and development of the scheme; and
- The fit with local and regional objectives.

The strategic case for the A65 scheme remains unchanged from that presented in the Annex E Submission in July 2004. In fact, many of the problems highlighted below have been exacerbated due to an increase in traffic along the corridor. The proposed scheme is identical to that proposed in the previous submission.

2.2 Problems

Consultation with local authorities, transport providers and the general public has been undertaken to establish the existing conditions and determine the key problems along the route. This has been supported by site visits and analysis of the available data.

Essentially, the problems fall into six categories:

- Peak hour congestion;
- Bus Service Unreliability;
- Pedestrian and cyclist amenity;
- Environmental degradation;
- Road safety; and
- Socio-economic.

The extent to which the proposed scheme mitigates these problems can be mainly seen through an assessment against both central government and local government criteria, which are described in more detail in the chapter 4. However, a brief discussion of each of the categories is provided below.

2.2.1 Peak Hour Congestion

2.2.1.1 General Analysis

Bus journey times along the A65 corridor are often slow and unreliable due to congested conditions. AVL Bus data from May 2008 AVL has been provided by METRO in order to obtain a weighted average of all trips taken from the 33 and 33a bus services. For each direction and time period, **Table 1)** shows the average speed along the corridor (between Savins Mill Gyratory and IRR), calculated from average bus journey times and a scheme length of 3.5 km. During the morning peak, the average inbound and outbound speed is 14 kph and 19kph respectively. The evening peak experiences similar speeds, with inbound and outbound speeds at 21kph and 14 kph.

Table 1: Average Speed (Savins Mill Gyratory to IRR)

	Average Speed (km/h)					
Month/Year	**Inbound**			**Outbound**		
Time Period	**Avg**	**Min**	**Max**	**Avg**	**Min**	**Max**
AM Peak	14	4	31	19	11	33
Off Peak	22	10	41	20	9	35
PM Peak	21	11	38	14	8	27

2.2.1.2 Commercial road

There is slow moving eastbound traffic in the morning peak hour due to general traffic congestion within the adjoining local centre of Kirkstall and the large number of side road accesses from the streets running perpendicular to the A65 (see **Photograph 13**). There are

also delays on the westbound approach to Savins Mill Gyratory in the evening peak period (see **Photograph 14**).

2.2.1.3 Kirstall Road

Traffic congestion occurs on the inbound approach to the IRR during the morning peak hour (see **Photograph 15**), and there is often slow moving traffic all along this section. Although only one wide lane is marked, it is common for traffic to progress along Kirkstall Road in two lanes (see **Photograph 16**).

Delays also occur on the outbound approach to the Willow Road junction in the evening peak period (see **Photograph 17**). Again, it is common for outbound traffic to queue in two lanes although only one wide lane is marked on the carriageway.

2.2.2 Bus Service Unreliability

A significant problem with bus services running along the A65 corridor is the variability in running time, and hence the perceived service unreliability. To demonstrate the problem,

Table 2 shows the existing journey time for bus services on the route between Savins Mill Gyratory and the IRR. The variation between the maximum and minimum journey times highlights the unreliability of services experienced by passengers. The measures appraised within this report are designed to achieve actual journey time savings and reduce the variability in these journey times, a benefit that is not necessarily taken into account in the method of cost benefit analysis.

The scheme has been designed to accommodate the optimal lengths of bus lanes needed operationally to deliver reliability improvements and journey time savings, whilst being commensurate with local development and community land uses. Sections where bus lanes cannot be provided are intended to be controlled using traffic signals at or near the termination of the bus lane, creating a 'virtual bus lane' and hence still providing reliability improvements. A traffic management strategy for the route will therefore tie together the separate bus lane elements and will balance the needs of car and bus users. Isolated sections of bus lane, without this control

Photographs (from left to right, top to bottom):

Photograph 13: View east along the A65 (Eastbound congestion)

Photograph 14: View east of Savins Mill Gyratory (Westbound congestion)

Photograph 15: View west along the A65 approaching the IRR (Eastbound congestion)

Photograph 16: View west along the A65 (Inbound queuing behaviour)

Photograph 17: View east along the A65 (Eastbound congestion)

philosophy will not result in the improvement in reliability and journey times, which are mitigated with this coherent scheme.

Table 2: Existing Journey Times (Savins Mill Gyratory to IRR)

	Recorded Journey Time (mins)					
Month/Year	**Inbound**			**Outbound**		
Time Period	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**
AM Peak	14.8	49.5	6.7	11.0	19.3	6.4
Off Peak	9.7	20.7	5.1	10.7	23.9	6.0
PM Peak	9.8	19.3	5.5	15.5	27.4	7.8

2.2.3 *Pedestrian and Cyclist Amenity*

Survey results presented in chapter 4 demonstrate public perception of pedestrian and cycle facilities along the A65. The results highlight that the existing conditions are not adequate. There are too few pedestrian crossing facilities, many of which are uncontrolled crossing points. This results in a degree of severance, and also poses safety issues. The scheme includes for a number of additional pedestrian crossings, dropped kerbs, tactile paving and improved footways.

There are also safety issues for cyclists along the A65 corridor, where cycle lanes are not provided and there is insufficient protection at junctions. The scheme will provide combined bus and cycle lanes and advance cycle stop lines at some junctions. Almost all of the route would have provision for cyclists to further encourage the use of this mode as an alternative to the private car.

2.2.4 *Environmental Degradation*

2.2.4.1 High traffic flow along the corridor

The high traffic flow along the A65 corridor and the associated congestion causes localized environmental issues in terms of air quality, emissions and noise. The proposals are forecast to marginally reduce traffic flows and congestion, and therefore provide overall benefits to the environment.

2.2.4.2 Rat running

Due to the high congestion levels along the A65 corridor, there is some rat running using the perpendicular and parallel roads to the north of the A65, in particular Burley Road. The forecast reduction in traffic flows along the route would reduce the relative time benefits of rat running.

However, it is recognised that it is desirable within the context of this scheme to consider additional traffic calming measures to ensure that existing rat-running is addressed. Leeds City Council has already implemented local traffic management measures including a 20 mph zone.

2.2.4.3 Physical environment

The physical environment can be considered in terms of the quality and extent of the built highway environment. Currently, the quality of the highway is inconsistent along the corridor, with areas in need of updating. There is limited provision of good streetscape.

The scheme allows for a significant improvement in the streetscape thus providing an overall benefit to the corridor despite some land take. Measures will be taken to reduce any detrimental effects, such as on the north side of Kirkstall Road near Willow Road.

2.2.5 *Road Safety*

The scheme is not in itself an accident remedial scheme, although safety benefits should accrue due to the opportunity to revise and implement safer road layouts. This is especially true

at pedestrian crossing points. Safety should be built into good design, and the Leeds City Council safety audit procedure should minimize any residual risks of a localised increase in accidents due to a change in design.

2.2.5.1 Commercial Road

Over the last five years (2003 - 2007), there have been a total of 143 personal injury accidents on this section of the A65 (24 serious and 119 slight), with a total of 227 casualties. The equivalent accident rate for this section is 0.892 accidents per million vehicle kilometres, compared to the national average for this type of road of 0.844. The accident rate along this section of the A65 is worse than the national average for the type of road.

2.2.5.2 Kirkstall Road

Over the last five years, there have been a total of 45 personal injury accidents on this section of the A65 (2 fatal, 9 serious and 34 slight), with a total of 69.84 casualties. The equivalent accident rate for this section is 0.388 accidents per million vehicle kilometres, compared to the national average for this type of road of 1.004.

2.2.6 Socio-economic

The residential areas along the A65 corridor have poor accessibility levels to services and shops. There is also a relatively high unemployment rate. The shops along the corridor are generally discount food shops and low end retail outlets, with a number of small scale new business start ups. Also along the A65, there is also a multi function development site with leisure facilities. The traffic and transport related problems along the A65 contribute to the deprivation of the area. The existing bus service is perceived as unreliable, and the slow journey times contribute to poor accessibility levels. This environment does not encourage bus operators to provide an efficient public transport system, and hence has negative impacts on existing and potential passengers

The reduced bus journey time and improved service reliability that will result from the scheme will improve accessibility to Leeds City centre and associated commerce. The investment along the corridor should have a positive impact on the shops and other services at the immediate edge of the carriageway, and the aesthetic improvements may increase the links within the community and reduce crime.

2.3 Scheme Objectives

Traffic-related problems dominate the route, with poor conditions for cyclists and pedestrians. This is an issue common to other areas of West Yorkshire and, as such, the focus within the West Yorkshire LTP2 is on improving conditions for public transport with better access/pedestrian links, providing new facilities for cyclists and using traffic calming to reduce the impact on adjacent residential areas. The A65 is also seen as an appropriate corridor for the development of a Quality Partnership, following such examples as the A61 Scott Hall Road guided bus scheme and the East Leeds Quality Bus Initiative Project Agreement.

The scheme specific objectives are in accord with all of the objectives set out in the LTP2 Transport Strategy. The proposed scheme will deliver a high quality, integrated system that is an attractive alternative to the private car, particularly for peak hour commuter journeys along the corridor.

Pedestrians and cyclists are placed high in the hierarchy of users within the LTP2, which includes strategies to improve the physical environment for both modes, and make journeys by these modes more convenient and attractive. The scheme includes an increase in the number of pedestrian crossings as well as lengths of cycle lanes, and hence is fully compatible with these objectives and strategies.

The scheme specific objectives as endorsed by the Project Board and agreed by Metro and Leeds City Council with the principal bus operator, and are as follows:

- to reduce the delays to bus services currently experienced along the corridor;
- to reduce the variability in the delays to these services;
- to improve the level of service and attractiveness of public transport along the corridor;
- to promote modal shift by the provision of an attractive public transport alternative to the private car;
- to provide an integrated public transport system;

- to contribute to the LTP targets of reducing the rate of traffic growth and increasing the use of public transport;
- to minimise the impacts of the scheme on non-users;
- to provide enhanced access measures and facilities for pedestrians and cyclists;
- to promote equal opportunities; and,
- to reduce severance and accidents by the provision of additional crossing facilities.

These objectives can be seen to link directly to many of the problems identified along the corridor, and will form the basis against which to appraise the A65 Quality Bus Initiative proposals.

2.4 Scheme History

This scheme has been considered by the promoter and the DfT for several years and it is not the intention here to fully record every detail. However, the overall process has been:-

2.4.1 Initial Scheme Feasibility

Metro and LCC considered options for enhancing public transport on the A65 corridor to the north west of Leeds city centre after the corridor was identified as a key route to the north and west in the Leeds Transport Strategy. Developed in the early 1990s, the Strategy noted the requirement for substantial improvements in bus based priorities.

The route ran parallel to, but away from, the proposed Leeds Supertram North Line through Headingley. Light rail was therefore discounted and therefore bus based measures were favoured and the potential of guided busways, or as an alternative, extensive bus priority were considered.

However, guided bus presented problems because of the large number of pedestrian and vehicle crossing points required, plus issues about land take through areas without sufficient highway land and the local neighbourhood impact of affecting valued local businesses and employment. The guided bus option was therefore dropped because of its complexities and difficulties in delivery and hence poor value for money. A comprehensive bus priority scheme was therefore considered as the favoured mode on the basis of its improved deliverability and more favourable value for money.

2.4.2 Scheme Development

Leeds City Council developed the A65 QBI scheme for inclusion in the LTP. The resulting scheme comprised an off-line bus only road along Kirkstall Road near the Inner Ring Road, bus lanes on Rawdon Road, Abbey Road, Commercial Road and Kirkstall Road, with demolition of properties in the Kirkstall area. Consultation was undertaken about improvements along the corridor.

2.4.3 Initial Annexe E Submission July 2000

Following dialogue between officers of the then DETR and GOYH, an Annex E submission was prepared and submitted to the DETR during July 2000.

2.4.4 Supplementary Report October 2000

A number of questions were raised by the DETR following the above submission, and as a consequence a supplementary report was produced and submitted in October 2000. A statement from the DETR in December 2000 indicated that the scheme had not been accepted for funding at that time, but that further analysis was required prior to an acceptance being granted. The DETR's requirements were clarified in a letter and at a meeting with Tom Killick and Gareth Arthur, held on 5 March 2001.

2.4.5 Revised Annexe E Submission July 2001

Subsequently, a revised Annex E document was submitted, taking into account revised DETR guidance, but for the same scheme as per the original Annex E submission. The DETR provisionally granted approval for funding for this scheme.

2.4.6 Responses to Additional Queries November 2001

Through an exchange of correspondence during October and November, additional queries from the DfT were addressed. Of significance here, in relation to the current submission, was the further explanation that a low cost alternative, comprising bus lanes within the existing road space, was not (and is not) a practical proposition in terms of bringing about a step change in the quality and reliability of bus services on this route. This was because only limited lengths can be provided, and not necessarily in locations where they will be beneficial, as well as the

fact that introduction would reduce road space for general traffic, remove right turning lanes (increasing vehicle delays) and require pedestrian refuges to be removed (increasing severance and bus access time.

2.4.7 *Revised Scheme*

Following further consultation on the provisionally accepted scheme, a number of modifications were proposed to overcome planning issues as follows:

- a conventional dual carriageway on Kirkstall Road with bus lanes rather than a separate 2-way bus link alongside Kirkstall Road;
- reduced requirement for property demolition in the Kirkstall area. This necessitates more positive signal control for the revised scheme but makes it more deliverable than the previous options considered;
- future redevelopment plans.

Leeds City Council therefore revised the scheme to arrive at an option considered to be more deliverable, more acceptable to the public and likely to offer better value for money.

2.4.8 *Summary Submission, Revised Scheme, September 2003*

Thus, with significant changes to the scheme definition, discussions were again held with the DfT, culminating in a summary submission during September 2003. Although the scope of the scheme had reduced, the estimated costs had risen, due principally to an increase in statutory undertaker's diversion works costs and a change in the opening year, affecting outturn costs.

Note that this submission related only to the sections of Commercial Road and Kirkstall Road. The Abbey Road section is to be progressed separately by the promoters.

2.4.9 *Revised Scheme Annexe E Submission 2004*

Following submission, the DfT confirmed the need for a more formal, fuller Annex E submission covering the Revised Scheme in more detail, and also proposing a Lower Cost Alternative ('the LCA'), which could be delivered for a similar amount of funding as the original scheme. Leeds City Council therefore produced the Low Cost Alternative (LCA), which retained all the core features of the Revised Scheme apart from the following differences:-

- A reduction in the specification for upgrading the Willow Road junction;
- Removal of the Kirkstall Road inbound bus gate;
- Reduction in the Kirkstall Road inbound carriageway width from 2 lanes plus a bus lane to 1 lane plus a bus lane;
- Removal of the minor road widening west of the Willow Road gyratory; and
- Minor curtailments of bus lane lengths.

2.4.10 *MSBC 2009 (this document)*

Programme Entry status was granted in 2006 for the revised LCA scheme. Following this, a robust governance structure was established which followed the successful model used to deliver the Leeds Inner Ring Road Stage 7 viaduct in Hunslet. A Project Board was established to oversee the project. In addition to this, a Communications Task Group was formed as part of the Steering Group in order to develop a Communication Strategy and Plan.

Preliminary detailed design work was progressed to develop the scheme into a position where tenders could be invited. During this period, the contract strategy was revised to use the New Engineering Contract (NEC), Engineering and Construction Contract (ECC) with Early Contractor Involvement (ECI).

In October 2008, Carillion were awarded the Contract to build the A65 QBI. The Contract is in two phases, Phase 1 involves ECI on a professional services basis whereby Carillion utilise their expertise and advise on the design, in areas such as buildability, traffic management and dealing with public utilities. As part of the professional services identified in Phase 1 of the Contract, a Liaison Officer role has been identified to be provided by Carillion. This person will form an integral member of the Communication Task Group to contribute and feed into the consultation and engagement process. The above list is only an outline indication of the main consultation that has taken place and the Design Team is committed to continuing with the consultation process. Levels of consultation are well in excess of normal levels of consultation for a highway scheme, and much of the scheme success will rely on continuing public engagement.

Since October 2008, the final detailed design has been ongoing with the LCC design team working with Carillion to complete the detailed design of the scheme proposals and planning for the construction phase.

The finalised scheme proposal, for Full Approval, differs from the scheme granted Programme Entry in 2006 in the following respects.

The first change arises following confirmation of the Secretary of State's decision on the proposed CPO. This confirmed a modified order for a reduced area of land in line with the Planning Inspectors recommendations, the western bus gate exit from the scheme has been modified. This modification reduces the overall length of outbound bus lane by some 50 metres (or circa2% of the scheme's entire bus lane provision) and substitutes give way control of the bus gate against a signal controlled general traffic lane (this arrangement is successfully used on the existing inbound A65 Abbey Road facility). As noted in Section 2.4.3 this variation has been assessed by LCC UTMC section including the use of an Aimsun micros-simulation model and shown to be of no detriment to the flow of buses compared with the previous proposals.

The second change relates to the proposed dual carriageway and bus lane on Kirkstall Road. When originally submitted for Programme Entry in 2004 LCC submitted two scheme options: (1) Revised Scheme incorporating a dual carriageway with 2 traffic lanes and bus lane in either direction which was the Council's preferred scheme; and (2) a Lower Cost Alternative (LCA) incorporating a dual carriageway comprising 2 x traffic and 1 x bus lanes outbound and 1 x traffic and 1 x bus lane inbound. This latter scheme met the DfT requirements for a scheme option within the funding envelope of the original scheme authorised in 2001 and as subsequently modified.

This latter option was preferred by DfT and was the scheme granted Programme Entry status in 2006. At the time, after careful evaluation, the LCA scheme was feasible because plans were being developed by developers for a series of redevelopments. These were expected to modify land uses to the south of the road and which were ultimately expected to deliver revisions to the traffic management and junctions on the main route to meet the revised traffic patterns through the relevant planning and highways agreements.

Due to the recession and adverse property market all planned developments have been put on hold and the landowners are seeking to maximise the present permitted use from the existing sites and facilities. The land owners have therefore made representations to the Council concerning the proposed scheme and its suitability for the present uses, without the prospect of any new planning applications and highway changes. In view of these circumstances and the need to safeguard the existing sites and their potential for employment uses a decision has been agreed by the Project Board to modify the scheme in three respects.

- The provision of an additional priority right turn and "U" turn facility to allow full access egress from the proposed dual carriageway to the existing developments. Under the approved scheme and within the scenario described in (2) above (and being planned in 2004) it was envisaged that this would ultimately have been modified under development proposals being advanced. When future development plans are progressed this facility has been design to be capable of modification as part of any future planning and highway requirements.
- In conjunction with the above, to ensure the effective operation of the turning facilities it is proposed that the inbound carriageway should be widened to 2 x traffic and 1 x bus lanes. This is an extra single lane length of 700 metres compared with the approved scheme. Apart from the additional carriageway construction, no other additional works or costs arise from this change since the public utility diversions are required irrespective of this modification.
- The third change does not change the physical construction, but relates to the traffic signal control provided at the Eastern terminal point of the scheme at the Kirkstall Road / West Street junction where under the approved scheme signaled pedestrian facilities are proposed. It is now proposed that these facilities should operate as full time traffic signals to better manage the flow of traffic at this point.

With respect to the first two changes described above, these elements were identified within the Council's preferred Revised Scheme proposal submitted in 2004 and were subsequently omitted in the reduced LCA scheme. Notwithstanding the reasons outlined for requesting this change it has been possible, through the efficiencies arising from the Early Contractor

Involvement Phase 1 stage, to successfully modify the scheme to include these facilities without exceeding the Programme Entry and Regional Funding Allocation endorsed funding envelope.

On the basis of the changes described above and their antecedents included within the original 2004 MSBC submission, the Council would wish to submit that the planned modifications to the scheme should not be regarded as a material change to the scope of the scheme.

Support for the scheme has been reconfirmed by the Yorkshire and Humber Regional Transport Board and Yorkshire Forward with copies of letters received included in **Appendix D.**

2.5 Local objectives

2.5.1 *Local Transport Plan (2006 -2011)*

The LTP addresses the Department for Transport's (DfT) and the Local Government Association's (LGA) shared priorities for transport. These 5 priorities, and their associated objectives, are as follows:

- **To maintain and improve access to jobs, education and other key services for everyone**; and
- To improve accessibility for those people, services and facilities which have poor accessibility
- To broaden travel horizons and improve access to information
- To encourage planning for accessibility

- **To reduce delays to the movement of people and goods;** and
- To encourage more journeys by public transport, walking and cycling, particularly in congested parts of the network
- To improve journey time reliability
- To make better use of highway capacity
- To reduce the demand for travel by car as a proportion of overall trips

- **To improve safety for all highway users** and
- To reduce the number and severity of road casualties;
- To tackle problems facing vulnerable road users (including those in deprived areas).

- **To limit transport emissions of air pollution, greenhouse gases and noise,** and
- To mitigate and adapt to the effects of climate change

- **To improve the condition of the transport infrastructure;** and
- To manage the infrastructure more effectively
- To meet the needs of current and future transport users
- To mitigate and adapt to the effects of climate change

Referring back to the description of the scheme presented in chapter 2, it is clear that the A65 scheme sits firmly within the strategy for the area. For example, the bus priority reduces delays to bus services running along the A65, hence improving accessibility, particularly for those within the relatively deprived areas adjacent to the scheme. The scheme has also been designed in such a way to address the safety and environment objectives.

Prior to the current LTP, the LTP (2001 – 2006) identified the potential for a significant increase in demand along the A65 corridor as a result of economic growth in Leeds. In response, the A65 Quality Bus Initiative proposal was presented. This has also been recognised within the LTP2, which identifies the QBC as a programme action for the area North West of Leeds.

Of particular relevance, the LTP2 highlights that where Quality Bus Corridors (QBCs) have been provided, there is a mode shift away from the car to bus. In particular, the East Leeds Quality Bus Initiative now has 7% of passengers that formerly made their journey by car. Therefore, similar results are expected for the A65 with the introduction of the scheme, thus targeting the mode shift objective highlighted above.

2.5.2 *Leeds Unitary Development Plan (Review 2006)*

In line with national policy the Local Development framework is being developed and, when adopted, will replace the UDP. However, until this time, the policies within the UDP are appropriate to reference.

Within the context of the UDP's overall goals, transport forms one of the 9 key strategic aims, focusing on promoting the use of public transport and other sustainable modes. Public transport is also identified in one of the UDP strategy principles in terms of "Priority in the introduction of new transport infrastructure is given to supporting public transport (including new forms) with some limited new road building" (Chapter 3.4, page 28).

The strategic aim and strategy principle highlighted above should provide good support for the A65 scheme – a scheme which aims to encourage the use of public transport and mode shift towards sustainable travel. This includes pedestrian and cycle travel modes.

The scheme is also in accord with the main transport policies set out in the UDP. The most relevant of these are as follows:

- Targeted transport investment towards sustainable travel modes, and promoting social inclusion;
- Satisfactory safe and secure access and provision for the disables, pedestrians and cyclists to be incorporated within new highway schemes;
- Promotion of social inclusion;
- Encouragement and support for an effective public transport service; and
- The A65 QBC to be developed as one of the city council major highway schemes to form part of the strategic highway network.

Indeed, the scheme is identified as a transport policy itself. Also, the nature of the adjacent housing area is such that the scheme will address social exclusion by the provision of a better quality, more reliable, low floor bus service.

Other policy areas also make reference to transport and will be addressed by the A65 scheme. For example: the environment policy N30 gives priority for environmental improvements along transport corridors; the UDP highlights the importance of transport in ensuring people have access to health facilities; and transport is identified as one of the principle producers of emissions and as such a fundamental aspect of the plan is to reduce private car travel and extend the availability of alternatives. Also, "the City Centre is also the transport hub of the City, and continued good accessibility into and around the City Centre is fundamental to the functioning of the District as a whole" (page 261)

2.6 Regional objectives

2.6.1 *Regional Spatial Strategy (RSS)*

The Yorkshire and Humber Plan: Regional Spatial Strategy to 2026 (2008) sets out a hierarchy of policy types: a core approach; sub area policies; and topic based policies for the area.

2.6.1.1 Core Approach

The core approach sets a strategic direction for change. One of the outcomes is that of improved accessibility to opportunities and facilities, increased walking, cycling and public transport use, and for traffic congestion and transport related emissions to have been addressed. The A65 scheme is clearly complementary to the core approach.

The delivery of the transport related elements of the core approach over the next 15 to 20 years has been set out in terms of early, mid and later years. Significant improvements to urban bus services, guided bus and QBC's are identified as one of the focuses for the early years.

In order to address the problems of congestion, pollution, isolation and urban disinvestments caused by recent patterns of growth, policy YH1 identifies the role of transport management and investment in supporting the delivery of the spatial strategy. Efficient and environmentally friendly movement patterns will be required to support a competitive economy, healthier lifestyles and a quality environment. This policy correlates with the A65 scheme objectives in terms of encouraging mode shift towards sustainable travel.

As in other policy documentation, transportation plays a key role in other policy areas. Improvements to public transport systems and services were included in the climate change and resource policy (YH2), and in the regional cities and sub regional cities and towns policy (YH4).

2.6.1.2 Sub Area Policies

The sub area policy relevant to the A65 scheme is that of the Leeds City Region. Two policies within this section are:

- LCR1: Leeds City Region sub area policy. Identifies the need for change to be supported by policy interventions and investment. Specifically, the policy sets out the importance of improved public transport within and between the Regional and Sub Regional Cities and Towns in the city region, particularly to Leeds city centre. The A65 scheme fits within this policy.
- Policy LCR2: Regionally significant investment priorities for Leeds City Region. Identifies the need to improve public transport, particularly to Leeds city centre, to enhance the ease of movement and improve access to jobs within the City Region particularly for disadvantaged communities. Again, the relatively deprived area adjacent to the A65 corridor will experience increased accessibility to the Leeds City Centre, and hence to jobs and services.

The strength of the scheme design is such that it stretches to provide benefits across a range of objectives both within and outside of the transportation policies. For example, other overarching objectives in the RSS which are addressed by the A65 scheme are as follows:

- Support the roles of Leeds as a major engine of the regional economy and help to connect disadvantaged communities to job opportunities
- Protect and enhance the environment
- Encourage strategic growth
- Work collaboratively across administrative boundaries

2.6.1.3 Topic Based Policies

The Regional Transport Strategy is incorporated within the RSS as topic based policies. There are 9 policies included within this section, the most relevant to the scheme being T1, T3 and T9. These policies and associated objectives are as follows:

Policy T1: personal travel reduction and modal shift

- Reduce travel demand
- Make best use of existing highway network
- Positive measures should be used to address congestion, such as priority to public transport, travel plans, improved facilities for cyclists and pedestrians
- Manage car use

Policy T3: public transport

- The public transport accessibility criteria guides the allocation of sites for the provision of new transport services and infrastructure
- Priorities for improved public transport
- Protect sites and routes for public transport, walking and cycling.

Policy T9: transport investment and management priorities

- Priority should be given to stronger demand management, improving public transport in and to Leeds
- Fully explore opportunities to make the best use of existing infrastructure by improving management and maintenance before recommending investment in new infrastructure
- Adopt a general presumption against increasing highway capacity except where it is a specific regional priority or a localised improvement essential to regeneration or delivering environmental enhancement

The combination of bus lanes and traffic signal control incorporated within the ‘capacity neutral’ A65 scheme ensures the best use of the existing highway. It also protects the route for public transport thus managing car use and addressing congestion. Therefore, the A65 scheme can be seen to integrate well with the policies set out in the Regional Transport Plan.

2.6.2 *Regional Economic Strategy (RES)*

The importance of transport is recognised within the Regional Economic Strategy 2006 – 2015, a document that joins up with the Regional Transport Strategy, the role of Local Transport Plans and the Northern Way. In particular, the following key points are made:

- Investment in transport is a regional driver of productivity contributing to sustainable economic growth.
- Enhanced transport, infrastructure and the environment is one of 6 objectives of the RES, however all objectives are strongly linked, such as the role transport plays in the connecting of people to good jobs.

- Transport affects business success, quality of life and the environment, and is therefore a critical issue for the region.
- Transport is a major – and growing contributor – to greenhouse gas emissions, and produces other pollutants that affect health. To combat this problem, one of the suggested approaches is to prioritise public transport improvements.

The information presented above demonstrates the importance of the A65 scheme, and the potential benefits it offers in terms of sustainable economic growth, quality life and environment.

2.6.3 *Moving Forward: The Northern Way. First Growth Strategy Report (Sept 2004).*
The Northern Way is a partnership between Yorkshire Forward, Northwest Regional Development Agency and One NorthEast, and aims to improve the sustainable economic development in the North. The Growth Strategy is based on four key principles:

- to identify pan-northern investments which will add value;
- to build up the North's strengths;
- to complement the three Regional Economic Strategies; and
- to define actions at the most appropriate scale.

To achieve these aims, it outlines ten priorities in the strategy. The A65 scheme contributes to many of these priorities, for example:

- Bring more people into work;
- Create better integrated public transport services within and between city regions; and
- Create truly sustainable communities;

The proposed A65 scheme is in accord with the principles and priorities highlighted above. The scheme objectives will ensure the proposal addresses accessibility issues and mode shift at a local level, which will in turn have wider impacts in line with the RES and in building the North's strengths. Also, the assessments completed in chapter 4 demonstrate the expected value to be added by investment in the proposed scheme.

2.6.4 *Prioritisation Advice*
The Yorkshire and Humberside Regional Transport Board meeting in January 2009 reconfirmed the scheme's status in the Regional Funding Allocation process as a scheme to be progressed pre 2014.

2.7 Conclusions

This chapter has identified the key problems along the A65 corridor. The problems can be summarised as follows:

- peak hour congestion on links in local centres and at many junctions;
- environmental effects of congestion and slow moving traffic;
- bus unreliability arising from severe delays to services using the corridor, compounded by a large variability in journey times; and
- limited or sub-standard pedestrian and cyclist facilities.

Without intervention, these problems are likely to worsen due to peak spreading and increased road user conflicts. Also, delays to bus services throughout the day are likely to become more pronounced as congestion increases, and importantly the variability in bus service in terms of arrival time and journey time will deteriorate. This will have negative impacts on the bus operators and passengers, and will not encourage the increased use of an efficient public transport system.

The scheme objectives are consistent with those highlighted in the review of a number key policy documents, at both a local and regional level. Therefore, these objectives also correlate to the Government's five key objectives for the transport system, set out in the 1998 Transport White Paper. These are:

- Environmental Impact – to protect the natural and built environment;
- Safety – to improve safety;
- Economy – to support sustainable economic development and get good value for money;
- Accessibility – to improve access to facilities for those without a car and to reduce severance; and
- Integration – to ensure that all decisions are taken in the context of the Government's integrated transport policy.

Assessment against most of the transport policy objectives from the above review are addressed in the Appraisal Summary Table (AST) presented in chapter 3. In addition, there are a limited number of transport objectives that are not fully covered by the national criteria; these will be also be highlighted in chapter 3.

AECOM

Value for Money Case

3 Value for Money Case – Assessment Against Central Government Objectives

3.1 Introduction

All major transport schemes are to be assessed against Central Government's five objectives for transport:

- Environmental impact – to protect the built and natural environment;
- Safety – to improve safety;
- Economy – to support sustainable economic activity and get good value for money;
- Accessibility – to improve access to facilities for those without a car and to reduce severance; and
- Integration **–** to ensure that all decisions are taken in the context of the Government's integrated transport policy and other relevant policies.

The extent to which the Scheme achieves the above objectives is demonstrated in the Appraisal Summary Table (AST), which is included in **Appendix E.** The supporting information is set out in a number of AST Worksheets, also included in Appendix E. A summary of the information included in the AST Worksheets is included below.

The scheme is fundamentally unchanged from the 2004 submitted scheme so its assessment against the five objectives will remain broadly unchanged. However, where appropriate the quantitative elements of the appraisal have been updated to reflect the use of up-to-date data in the modelling assessment.

3.2 Environment

There are a number of positive environmental benefits such that the overall assessment is positive with respect to the Environment. This is shown within the AST. Each of the environmental sub headings within the AST is considered below, giving an indication of the location and extent of the scheme impacts. The AST Worksheets in Appendix E should be referred to for further detail.

All of the environmental assessment worksheets were reviewed by Leeds City Council Environment and Leisure Services Departments prior to submission, who themselves have consulted the range of statutory consultees required by the DfT guidance.

3.2.1 Noise

Following the Transport Analysis Guidance and assessing the traffic modelling results, it can be demonstrated there is an insignificant change in traffic flow on a corridor wide basis as a result of the scheme. Therefore, any changes in noise levels can be scoped out.

3.2.2 Local air quality and greenhouse gases

In accordance with the Transport Analysis Guidance, it is demonstrated in the relevant AST worksheets that on a corridor-wide basis, changes in air quality can be scoped out due to the insignificant changes in traffic flows and speeds. In some cases, the change in will have positive impact on air quality. However, there may also be some localised negative changes in air quality, particularly where road widening is proposed and properties may be closer to the traffic.

It can also be shown that the scheme results in a reduction of 4,613 tonnes of carbon emissions over the appraisal period (equivalent to a reduction of 9.6%) due to the reduction in vehicle demand and improvement in bus journey times.

3.2.3 Landscape

The scheme has limited impacts on the surrounding landscape; most road widening only requires limited narrow strips of land take. However, the mode shift from cars to public transport or other sustainable modes of travel should reduce peak hour congestion, providing a slight benefit in terms of the tranquillity of the surrounding land and townscape.

3.2.4 *Townscape*

A small number of properties are proposed for demolition on the Commercial Road and Kirkstall Road sections. However, these properties are generally of low quality compared to the surrounding properties. The expected reduction in levels of congestion along the corridor as a result of the scheme should prevent the adverse effects associated with congestion. The riverside and parkland existing adjacent to the corridor are untypical for a commuter corridor, and will also benefit from the scheme.

3.2.5 *Heritage and historic resources*

The scheme passes close to several listed buildings, although none are directly affected. Consultations with relevant parties will take place during the detailed design stage to ensure that any adverse effects on these buildings are mitigated or minimised.

Although the scheme does not immediately affect Kirkstall Abbey, the scheme may provide a slight benefit in terms of reduced traffic flow along the corridor.

3.2.6 *Biodiversity*

The scheme has been designed such that the impact on habitats, landscaped areas, and other such areas has been kept to a minimum. Therefore there will be a limited amount of isolated biodiversity issues, such as on the inner sections where the corridor runs close to the River Aire. Some of these issues will require more detailed investigation as the scheme progresses to detailed design.

3.2.7 *Water resources*

The scheme should provide benefits in terms of reduced traffic pollution in the adjacent riverside area, and improved pedestrian access. There will be slightly adverse impacts where road widening will reduce the amount of riverside area enclosed between the A65 and the River Aire. This issue may require more detailed investigation as the scheme progresses to detailed design.

3.2.8 *Physical fitness*

Additional controlled and uncontrolled crossing points will be provided as part of the scheme. This will improve access, safety and physical exercise opportunities along the corridor. The existing cycle lane provision will be significantly improved by the provision of cycle/bus lanes, offering increased safety.

3.2.9 *Journey ambience*

The A65 is one of the most congested of the radial routes into Leeds, with traffic congestion imposing severe delays and unreliability on bus services. It is expected that the A65 QBC scheme developed by Leeds City Council in conjunction with Metro and bus operators will have a significant positive impact on bus speeds and bus service reliability.

The contribution of First Group is being finalised but is likely to include a commitment to a new fleet of low floor buses, additional driver training and higher bus cleanliness standards, provided the traffic management and highway elements of the scheme deliver a real step change in quality. A letter of support from First is included in **Appendix F.**

The overall philosophy is to ensure the entire journey from start to finish is as pleasant and coherent as possible, and this opportunity is maximised by:-

- Providing information before and during the journey;
- Making walking to and from bus stops a more pleasant and safer experience, by providing better quality and an increased number of pedestrian crossings, improved streetscape, wider footways, better surfacing and (where necessary) improved street lighting and security;
- Reducing the inconvenience of waiting at a stop by improving existing shelters, providing seating, up-to-date timetable and route information, and (where applicable) real time information;
- Enhancing the reliability and speed of bus journeys through better traffic management on the route, especially by the provision of bus lanes and co-ordinated signal control; and
- Enhancing the bus journey experience through a smoother ride (driver training and road surfacing/maintenance), better quality vehicles and interiors, step-free boarding and alighting.

3.3 Safety

The appraisal considers the likely impact the scheme will have on safety along the corridor. The analysis is divided into a quantitative assessment of the change in the accident rate, and a qualitative assessment of the impact on security.

Overall, the scheme is expected to have a marginal positive impact on the accident rate along the corridor, saving 93 accidents throughout the appraisal period. These are split 17% serious and 83% slight accidents.

3.3.1 Accident Benefits Calculations

The TUBA process does not calculate accident benefits. Therefore, the methodology used to calculate these benefits is provided below.

- The accident rate for each section of the corridor physically affected by the scheme was calculated using data from the five years up to the end of 2007. Base data is provided in **Appendix G.**
- This was compared against the standard accident rate for this class of road (extracted from DMRB Volume 13 – "The COBA Manual"). Where the existing accident rate was greater than the standard accident rate, the scheme benefits would be equivalent to the difference.
- Casualty data was used to find the number of casualties per accident.
- The severity split and casualties per accident were both assumed to remain the same with the scheme in place. Benefits were calculated using standard valuations of casualties from the COBA manual.

The accident rate on the Kirkstall Road section of the scheme was below the standard rate so no benefits were claimed for this section, even though some of the measures proposed are capable of bringing about local accident reduction benefits.

The reduced traffic flow along the corridor as a result of the scheme may also provide benefits to the accident rate at other locations along the A65. These have not been included for in the assessment.

3.3.2 Security

The improvements brought about by the scheme should contribute to reduced fear felt by members of the public using the corridor, whether that be for physical fitness or for public transport. The improved landscaping, provision for pedestrians, and increased mode shift towards sustainable travel, will increase informal surveillance along the corridor. Also as part of the scheme, all bus shelters will be upgraded to include improved lighting.

3.4 Economy

This section covers the economic appraisal of the scheme. This has primarily been assessed using a spreadsheet based multi model transport model, the outputs of this feeding into TUBA for formal economic assessment. Subsidiary costs and benefits have been identified and assessed separately and are combined with the TUBA results to provide an overall economic assessment. This section covers the modeling approach used and summarises the appraisal results.

3.4.1 Summary of Modelling Approach

The performance of the proposed scheme was assessed using a spreadsheet based mode-choice model. This model takes account of the relative generalized costs of the various modes available for each of the journeys made along the A65 corridor and allocates them to the appropriate mode. Separate models for the "base" and "with scheme" scenarios are developed and the change in bus patronage with the scheme in place calculated. Following this the results of the mode choice model are passed through the DfT's approved TUBA (Transport User Benefit Appraisal) program where detailed economic costs and benefits are calculated.

This Cost Benefit Analysis (CBA) follows the advice set out in DfT's Transport Analysis Guidance. The CBA broadly identifies: -

- benefits based on transport model outputs and patronage forecasts; and
- the forecast risk adjusted costs, including any optimism bias and relative price factor adjustments.

This section includes an explanation of the modelling that underlies the forecast travel demand, and the assumptions adopted. The CBA is accompanied by the completed transport economic efficiency (TEE) tables, included in Appendix E.

For this Submission, the demand model has been audited and inputs have been thoroughly reviewed to update it to a current base year of 2008. The model outputs are tailored such that they can readily be input into TUBA.

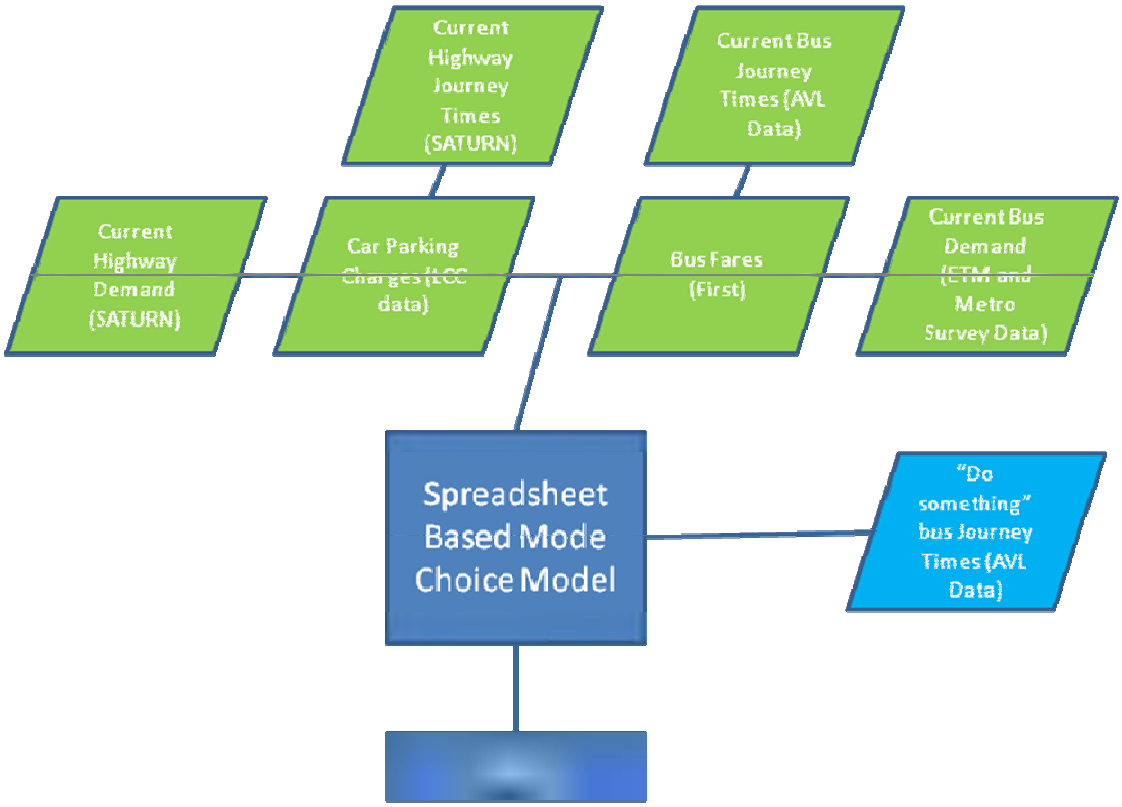
Section 4.4.2 below covers the modelling approach in detail and is structured as follows: -

- Overall Model Framework
- Input Data;
- Mode-Choice Model Details; and
- Forecasting.

3.4.2 *Overall Model Framework*

The overall model framework is illustrated in **Figure 6.**

Figure 6: Overall Model Framework



At the heart of the modeling process is the Spreadsheet Based Mode Choice Model. This considers the relative generalized costs of travel between all points along the A65 corridor by either private car or public transport and forecasts how changes in these costs will impact on demand for travel on each of these modes.

The key model inputs are shown in Figure 2 in green. These are the main items of data that have been used to construct the model and are considered in Section 4.4.2.1. The Mode Choice Model is considered in detail in Section 4.4.2.2.

3.4.2.1 Input Data

Figure 2 identifies the following main model data inputs. These are described below.

- Current Highway Demand;
- Current Highway Journey Times;
- Current Bus Journey Times;
- Current Bus Demand;
- Current Bus Fares;

- Current Car Parking Charges.

The data was taken from the following sources.

- Leeds SATURN model – the SATURN model was used to provide up-to-date information on **Highway Demand** and **Journey Times** along the corridor. The model has been recently updated and is validated for a base year of 2007. This data applies to private non-bus transport only.
- AVL Data – Metro provided AVL data for the route for the month of May 2008 which provided the necessary information on **Bus Journey Times**. This dataset is derived using on-board transmitters to provide statistics on bus journey times both along the entire corridor and between all stops along the route. Data for services 33 and 33A was used.
- ETM Data – Metro provided ETM data for the month of May 2008. This data is derived from analysis of tickets sold from on board ticket machines. Services 5, 14, 15, 33, 33a, 67, 670, 757, 760, all of which travel along the A65, were analysed to provide a detailed picture of **Bus Demand** on the corridor.
- Metro Survey Data – This dataset is derived from on-board passenger surveys and was used to validate the results of the ETM **Bus Demand** analysis. This is because ETM data for public transport trips paid for by travel cards etc. only record origin data so the destinations of these trips were determined using the percentage splits derived from the bus survey results. The surveys were carried out in from January – March 2008.
- Other data was obtained from bus timetables and, in the case of **Car Parking Charges**, from Leeds City Council. **Bus Fares** were derived from information provided on the "First" website.

Section 2.3.1 discusses existing conditions on the corridor including an analysis of the data described above.

3.4.2.2 Mode-Choice Model Details

This section covers the detail of the mode-choice model as follows: -

- Application of Data;
- Calibration and Mode Split Calculations.

Application of Data

Zoning – The movements between zones that have the potential for switching from car use to bus use have been defined around the various bus fare stages along Kirkstall Road and where bus priority is proposed.

Application of Bus Data – For bus use, only movements that would start or terminate within the corridor between Rawdon and the City centre were considered. Thus for the inbound journey this includes:

- Movements which started before Rawdon, but ended between Rawdon and the City centre;
- Movements which started and ended between Rawdon and the City centre; and,
- Movements which started between Rawdon and the City centre, but ended in the City centre.

For the outbound journey the same principle was applied, but in the opposite direction.

Application of Highway Data – For car journeys, a SATURN cordoned network including the subject corridor was used. The origin and destination movements which were considered were those which are within a walking distance from the bus stops along the bus route on Kirkstall Road (broadly defined as those zones within 400m walk of the corridor).

A car trip matrix, which is similar to the above bus trip matrix, was built using the same bus fare structure of the bus trip matrix as a zoning system. Thus both the car trip matrix and bus/public transport trip matrix had a common zoning system.

Access and Egress – For zones within the modelled area, the average access time to the nearest bus stop was a 6-minute walk. This equates to a distance of approximately 250m. Each zone was 'linked' to the nearest bus stop location. In some zones there were more than one bus stop, and, in these instances, a weighted access time was assumed. Similarly, for car travel, access and egress times, with parking charges were assumed.

Parking charges – Parking charges were allocated to trips with a destination in the city centre. Allowance was made within the model for the proportion of car drivers who would be subject to

a car parking charge, using data from the City Centre Car Parking database maintained by Leeds City Council.

Calibration and Mode Split Calculations

The model uses a standard logit formulation for calculating mode split values. The generalised cost of making a journey is calculated using the relevant attributes for each mode (access/egress, in-vehicle-time, fare, parking charge) together with various scaling factors for each attribute and the relevant values of time and distance and fed into the logit formulation to arrive at the proportion of users choosing to travel by each mode.

Calibration is the process of determining a modal constant for each origin to destination pair in order for the model to replicate as close as possible the existing travel patterns by bus and car modes. Therefore, for each origin-destination pair an appropriate mode constant to equalise modelled and observed bus demand values is calculated.

3.4.2.3 Forecasting

The second stage of the model, forecasting, serves the purpose of predicting future demand by the bus and car modes in light of the changes to bus travel times, using the modal constant determined at the calibration stage. In this case the model predicts the modal split for given new travel times by bus.

Definition of Do-Minimum and Do-Something Schemes

There are no committed schemes in the LTP along this section of the A65 which are likely to influence the assessment. The Do Minimum scheme is therefore the same as a Do Nothing scenario.

The principal bus operator has stated that fleet replacement would not be expected on this corridor within the timeframe of this scheme being implemented, given the existing levels of congestion and the current variability in journey times. Therefore any investment in new vehicles is to be taken as a direct cost to the scheme.

Given that the A65 corridor is already highly congested at peak times, and to provide robustness of appraisal, in the central case no future increase in transport demand on the corridor has been assumed

The description of the 'Do Something' scheme is set out in Chapter 2 of this report. The Scheme, as currently designed, has been assessed, although it is recognised that details of the final form of the scheme may be changed through more detailed public consultation and changes required at detailed design stage.

Bus Travel Times Improvement Assumptions

The main benefits of the scheme derive from improvements in bus service reliability and reductions in bus journey times. These time savings have been derived making use of the AVL data mentioned above – time savings have been derived by comparing average and 5th percentile vehicle speeds along the corridor and applying the difference between the two to the spreadsheet model. The time savings used are shown in **Table 3**.

It should be noted that with the scheme in place, some journey times may actually be quicker than the 5th percentile speeds achieved in the peak periods at present due to the level of bus priority afforded over private vehicles.

Table 3: Forecast Time Savings (minutes)

Outbound			
	Morning Peak	**Off Peak**	**Evening Peak**
Commercial Road	1.85	1.66	2.75
Kirkstall Road	1.80	2.12	3.89
TOTAL	3.65	3.78	6.64
Inbound			
	Morning Peak	**Off Peak**	**Evening Peak**
Commercial Road	4.38	1.74	1.41
Kirkstall Road	2.84	2.03	2.08
TOTAL	7.22	3.77	3.49

3.4.3 *Appraisal*

The overall economic appraisal of the scheme has been carried out using the Department for Transport's approved TUBA program. TUBA analyses travel costs, times and patronage across all modes in the do-minimum and do-something scenarios and compares benefits to transport users and providers as a whole with scheme costs to determine the overall value for money of a transport improvement scheme. This section provides a detailed overview of the TUBA process.

3.4.3.1 TUBA Assumptions

In order to run the TUBA program successfully a number of assumptions need to be made. These are as follows: **-**

- Journey Purpose Splits - The mode choice model contains a peak model, representing an average AM and PM hour, and an off peak model, representing an average off peak hour. The standard TUBA economics file (which contains the assumptions to be used on values of time, journey purpose splits, standard vehicle operating costs etc.) contains standard journey purpose splits for each time period; either work, commuter or other. The standard TUBA "inter peak" period journey purpose splits have been adopted for the A65 off peak model, as this provides the best match for the time period that the off peak model reflects. However, the standard economic file contains separate journey purpose splits for the AM and PM peak periods so in order to determine the splits for a generic peak period, the standard AM and PM journey purpose splits have been averaged, as shown in **Table 4.** These purpose splits have been applied manually to the input demand matrices using the matrix factor facility in TUBA.

Table 4: **Journey purpose proportions for the Peak modelled period**

Mode	Purpose	AM Period	PM Period	Average
Bus	Work	3.9	3.9	3.9
	Commuting	30.0	36.6	33.3
	Other	66.1	59.5	62.8
Car	Work	18.1	13.0	15.55
	Commuting	46.0	40.8	43.4
	Other	35.9	46.2	41.05

- User Charges – user charges are paid by some car users, in the form of parking charges, and by bus users, in the form of bus fares. The values used for these charges in the TUBA model are assumed to be the same values as those used in the mode choice model. The distribution of car parking revenues assumed is assumed to be 11% Local Authority on-street parking, 26% Local Authority off-street parking and 62% Private parking. The Leeds car parking inventory collated from surveys conducted in 2007 has been used to derive this information.
- It should be noted that there is also a significant proportion of Private non-residential parking in the centre of Leeds for which no parking charge is assumed in the TUBA assessment.
- No changes have been assumed for bus fares in the 'do something' case relative to the 'do minimum'. This is in line with other corridors in Leeds where the implementation of new highway infrastructure and/or modernised bus fleets have not been accompanied by premium fare pricing policies.
- Patronage build up **-** beyond the opening year, no growth in both bus patronage and traffic has been assumed. This is consistent with the assumptions made in the submission for provisional scheme approval in 2004. From the opening year, a profile of bus patronage build-up has been assumed as follows:
  - 50%
  - 80%
  - 100% (full scheme patronage)

- This reflects the fact that although journey time benefits to existing bus users will be effective immediately from completion of a particular phase of the scheme, existing private vehicle users on the corridor may not switch immediately. This ramp-up of car – bus transfer is in line with experience elsewhere. Suitability for application to the corridor was agreed with the bus operator First Leeds.

- Hourly demand forecasts for both bus and private road vehicles have been converted to annual figures on the following basis:
  - Peak - 1000 (2 hours in the morning and evening for 250 days of the year)
  - Off-peak - 3624 (12 hours weekdays for 250 days plus 12 hours on a Saturday)
- The appraisal has taken no account of induced trips resulting from the scheme and therefore additional bus patronage is assumed to be wholly brought about through car transfer. The non-inclusion of induced traffic benefits as part of this assessment will ensure a robust analysis of scheme benefits.

TUBA requires two text files as inputs: -

- An economics file which contains the definitions of variables and parameters for the programme – a standard version is provided with the programme and is usually used to maintain a consistent assessment with the DfT's guidance and this has been adopted in this assessment; and
- A scheme file which the user produces in order to programme into TUBA the specific characteristics of the scheme.

3.4.3.2 Scheme Costs

The costs of the scheme are grouped into two main areas – investment costs and operating/maintenance costs. These have been collated and included in the TUBA scheme input file.

Capital Costs

The estimated capital costs are £20.668m (current prices including risk). Optimism bias, at a rate of 15% (consistent with Webtag guidance for the current stage of the scheme) is applied to take the total to £23.791m. This value is included in the TUBA scheme input file with the appropriate alterations for discounting and taxation.

Operating Costs – Local Authorities

A number of further operating costs need to be considered as part of the scheme. These are as follows (all at current prices): -

- Costs of additional bus shelter maintenance – this is assumed to be £36,333 annually with a cycle of full shelter replacement at 15, 30 and 45 years post scheme opening at a cost of £908,342 in each of these years.
- Maintenance of additional carriageway area – this is broken down into three main areas as follows: -
  - Resurfacing 20 and 60 years after scheme opening (£135,531 each year) with full carriageway reconstruction in year 40 (£241,054).
  - Replacement of red surfacing in years 15, 30, 45 and 60 (£171,375 in each of these years).
  - Winter maintenance - £2,802 annually.
- Maintenance of additional signal installations – this is assumed to be £3,633 annually.

Investment and Operating Costs – Bus Operator

As shown in Appendix F, the principal bus operator on the corridor, First, would be expected to invest in a new fleet of buses with the scheme in place. The cost of this investment together with the other driver, fuel and maintenance benefits derived from the improved bus journey times offered are therefore assumed to form part of the costs and benefits of the scheme as a whole as follows: -

- Investment in an up-to-date, DDA compliant, low floor bus fleet - £3.007m.
- Maintenance savings associated with new bus fleet - £169,166 in the first year of operation declining to zero after 10 years of operation.
- Driver and fuel savings from improved journey times - £25,062 annually.

Summary

Table 5 provides a summary of the cost elements included in the TUBA input file item by item.

Table 5: TUBA Costs Input Details

Item	Applicable Mode	Organisation	Amount (£000s)
Construction	Road	Central Government	£19156.6
Preparation	Road	Central Government	£666.0
Supervision	Road	Central Government	£1379.9
Land	Road	Central Government	£2547.5
Maintenance	Road	Local Government	£6488.8
Operating Costs	Bus	Private Sector	-£2434.1
Bus Investment	Bus	Private Sector	£3000

It will be seen that the total costs of the scheme input into the TUBA program is £30.818m. It should be noted that this includes all subsidiary maintenance and operating costs and benefits and the necessary adjustments to incorporate taxation where necessary and a 15% allowance for optimism bias on central government investment elements of the cost. The sum in the table is, therefore, considerably in excess of the sum requested for the scheme from central government (for details of this see section 7).

3.4.4 *Appraisal Results*

This section analyses the results of the mode choice model and TUBA appraisal process. It considers the change in patronage associated with the scheme and how the time savings and modal shift associated with the scheme impact on transport users as a whole as well as private and public providers.

3.4.4.1 Patronage Forecasts

The mode choice model produces the following results (**Table 6** below). It can be seen that this shift towards bus use as a result of the time-savings provided by the scheme generates an extra 276,000 bus trips annually. This represents an increase of 13% compared with the existing level of bus use across the corridor as a whole. In terms of the change to the overall bus market, the scheme would bring about an additional 27% of passengers in peak periods, and 9% in the off-peak.

Table 6: Scheme Patronage Results

Time Period	DM Trips	DS Trips	Increase	Percentage
AM Peak	0.531m	0.676m	0.145m	27%
Interpeak	1.541m	1.672m	0.131m	9%
All Day	2.072m	2.348m	0.276m	13%

3.4.5 *Analysis of TUBA Results*

3.4.5.1 Headline Results

The TUBA results are included in Appendix E as the Transport Economic Efficiency (TEE), Public Accounts (PA) and Analysis of Monetized Costs and Benefits (AMCB) tables. The key results of the assessment are contained in the AMCB tables and are as follows: -

Net present Value of Benefits (PVB)	£46.338m
Net present Value Costs (PVC)	£24.078m
Net present Value (NPV)	£22.260m
Benefit to Cost Ratio (BCR)	1.92

It can be seen that the Net Present Value of the scheme is **£22.260 million**. The corresponding Benefit to Cost Ratios is **1.92**.

The sources of benefits are discussed below. In addition, a discounted profile of benefits and revenues can be found in the TUBA output files contained in **Appendix H.**

3.4.5.2 User Benefits

The TEE table registers a benefit in the appropriate cell if, for a user group (Road or Bus), there is a cost change between the do minimum and the do something.

The travel time benefits for both Road and Bus users are a result of the decrease in journey times for both modes of transport between the do minimum and do something scenarios.

Road user vehicle operating cost benefits are derived from the increase in average speeds in the do something scenario relative to the do minimum. No vehicle operating cost benefits have been calculated for bus as part of the direct TUBA process. Operating cost savings for the bus operator have been calculated and are reported in the TEE table under Private Sector Operating Costs.

There are no benefits registered against user charges for both Road and Bus users. This is because there is no change in parking charges and bus fares between the do minimum and do something. There are also no During Construction & Maintenance user benefits due to the assumed minimal impact of the construction on traffic flow.

3.4.5.3 Private Sector Provider Impacts

Private sector providers for the Road mode are private parking providers and bus operators. The impacts are as follows: -

Car park providers

- Revenue – negative impact due to reduction in vehicles accessing central Leeds.

Bus Operators

- Revenue – positive impact due to more bus patronage (and no change in fare);
- Operating Costs – positive impact due to lower maintenance/ running costs for the new bus fleet relative to the current fleet; and
- Investment costs – negative impact due to purchase of new bus fleet.

3.4.5.4 Public Accounts

Local government is affected by the scheme in the following ways:

- Loss of revenue from car parking in Leeds City Centre; and
- Increased maintenance of highway (Road mode) and bus shelters (Bus mode);

Central government is affected by the scheme in the following ways:

- Investment in the highway infrastructure; and
- Reduction in indirect taxation revenues for both modes.

3.4.6 Sensitivity Analysis

In the case of the A65 proposals, the key area where a range of different outcomes may occur is the forecast time savings and the strength of the modal shift impact. Hence, the sensitivity analysis for the scheme is concentrated in this area initially. In addition, a range of different values of optimism bias have also been considered alongside a conservative base bus demand reduction scenario. This analysis is summarised below.

3.4.6.1 Scenario Details

The following scenarios have been tested as part of the sensitivity analysis: -

- Reduction in timesavings of 25%;
- Reduction in assumed timesavings of 50%;
- Removal of impact of modal shift from private to public transport; and
- Reduction in base bus demand of 5%.

In addition, the results with alternative optimism bias assumptions of 0% and 44% are also reported.

Table 7 summarises the results of the sensitivity analysis. It can be seen that the scheme benefits remain sufficiently robust to maintain a BCR of 1.04 even with a reduction of 50% in the assumed timesavings. The removal of the mode shift element returns a BCR of 1.75, again demonstrating the robustness of the scheme's benefits. The reduction in base bus demand (5%) returns a BCR of 1.31.

Overall, the sensitivity tests present a robust case and show that, even with considerable alterations to background parameter assumptions, the scheme maintains a positive value for money case.

Table 7: Summary of Sensitivity Tests

Scenario	Present Value of Benefits	Present Value of Costs	BCR
Timesaving Reduction 25%	£34.583m	£23.095m	1.50
Timesaving Reduction 50%	£23.025m	£22.048m	1.04
Removal of mode shift impact	£34.737m	£19.813m	1.75
Reduction in base bus demand	£31.046m	£23.613m	1.31
Optimism Bias – 0%	£46.338m	£21.739m	2.13
Optimism Bias – 44%	£46.338m	£28.601m	1.62
Reference Case – 15% OB, full timesavings	**£46.338m**	**£24.086m**	**1.92**

3.4.6.2 Further Discussion

Leeds City Council has developed an AIMSUN micro-simulation modelling tool for part of the A65 corridor. The purpose of this model is to demonstrate how signal strategies would work to provide priority for buses. While the model has not been robustly validated against existing journey time information, the existing situation has been modelled and the model has proved a useful tool to test the sensitivity of different measures. Using AIMSUN, Leeds City Council has undertaken an assessment of the effect of rat-running traffic on the journey time savings on Commercial Road inbound. This has been undertaken because of the chosen gating strategy, which will relocate queues on the inbound section. Any rat-running induced by the measures would be prevented by road closures or banned turns (to be decided at a more detailed stage) and/or controlled by traffic calming measures. However, to demonstrate the case for journey time savings on this section, the AIMSUN model was run, feeding in levels of rat running traffic to see what effect it would have on bus journey times through Kirkstall.

The model indicated that over the short section through Kirkstall, that if the existing side road traffic of 849 vehicles per hour was increased by 20% due to rat-running traffic (an extra 170 vehicles / hour), this would reduce bus journey time savings on this section by only 6% in the AM peak.

It must be borne in mind that this level of rat-running traffic is not anticipated because of the proposed measures to control and/or eliminate it. It has been useful though in determining that the scheme is operationally robust in this respect.

A further factor to consider in relation to journey time savings is the potential future introduction of corridor-wide smartcards. Their introduction would result in reduced dwell times at bus stops with subsequent end to end journey time savings. Future introduction of off-bus ticket machines would also yield benefits in this respect.

3.4.6.3 Traffic Congestion During Construction

The construction impacts congestion and patronage has not been assessed explicitly. However, an assessment has been undertaken in the past to determine the impact construction on traffic congestion and delays. Journey times and patronage were assessed before, during, and after the construction works at Savins Mill Gyratory junction associated with the new retail access. As such, November 1999, March 2000 and March 2001 bus data was compared.

The data showed there to be little difference in journey times along the corridor, indicating that the main source of congestion and delay is due to traffic demand as opposed to isolated sections of reduced capacity. Indeed, the analysis showed that during construction, whilst delay was greater on the approach to the Savins Mill Gyratory junction, the delay downstream was reduced. This queue relocation is likely to be repeated during the construction of the A65 QBC proposals.

The data also highlighted that there did not appear to be a significant difference in patronage between the data, suggesting that patronage may be linked to overall corridor journey times. Therefore, if planned and managed efficiently, the impacts of construction will not result in any major disbenefits to existing corridor users.

3.4.7 Reliability and Wider Economic Impacts

3.4.7.1 Reliability

It is anticipated that, as well as the impact of reduced bus journey times on bus ridership, there will be an improvement in bus journey time reliability. Due to the difficulties in accessing data at the required level of detail it is not possible to follow the formal guidance set out in Unit 3.5.7 of the Webtag guidance for this scheme. Instead, a qualitative approach is offered which relies on a comparison of bus times on the A65 with those seen on the A64 York Road corridor in Leeds. The A64 corridor has similar bus priority measures applied to those proposed for the A65, in the form of bus lanes, bus gates and bus priority at signals.

Figure 7: Reliability Comparisons

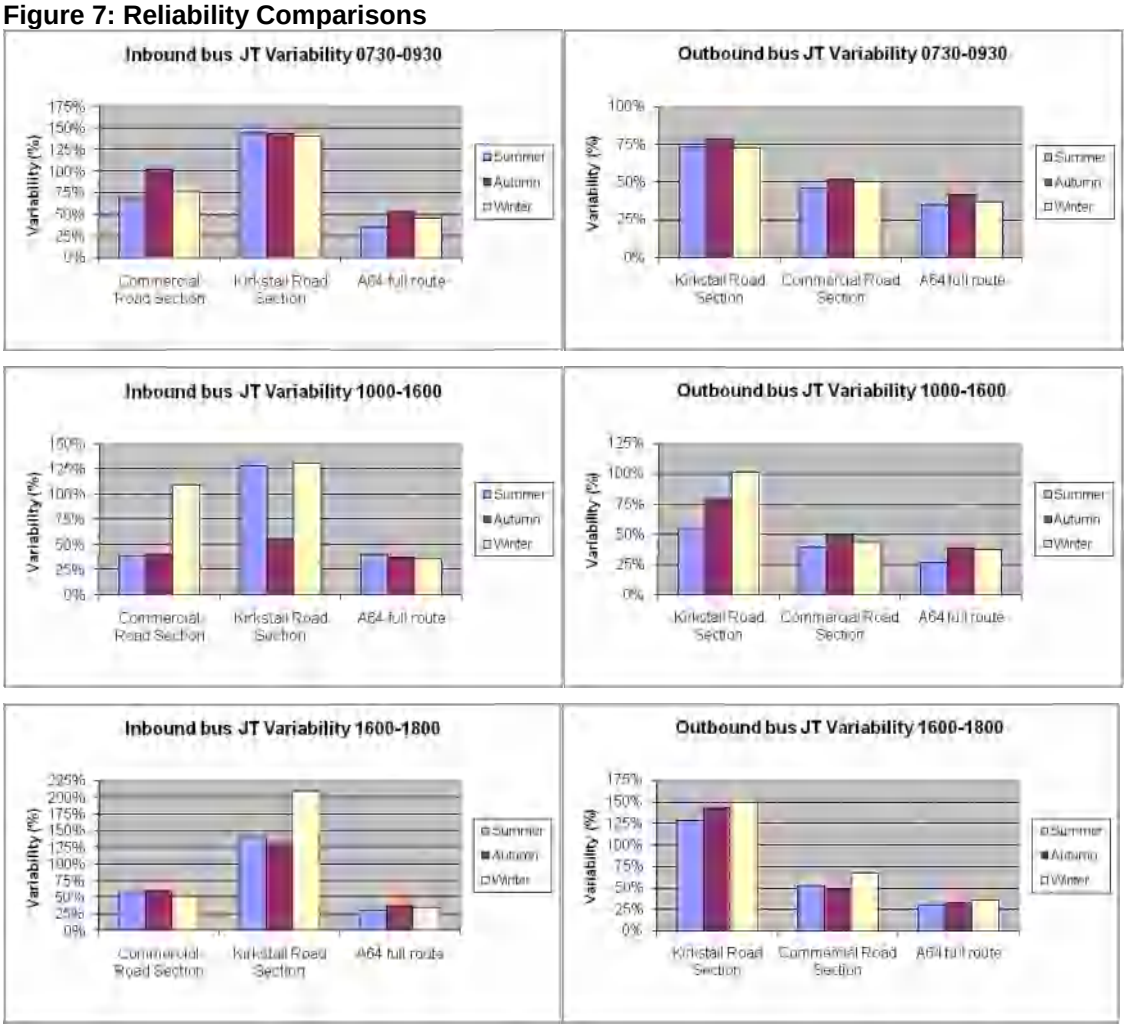


Figure 7, above, provides a comparison of journey time variability on the relevant sections of the A65 corridor and the full A64 corridor where variability is calculated as:

Variability = 100 * (95%ile JT - 5%ile JT) / Avg JT

Once more, AVL data has been used as the source for this information. This was extracted for all time periods across the years of 2007 and 2008.

It can be seen that the A64 corridor generally sees better reliability than the A65 corridor. The difference between the Kirkstall Road and A64 sections, both inbound and outbound is particularly marked with variability on the A64 being between 25% and 50% compared with values of up to 200% on the A65.

As noted above, the necessary data to forecast reliability improvements is not available so no attempt is made to monetise potential reliability benefits. However, it is reasonable to suggest that bus journey time reliability will improve with the proposed scheme in place and the information in Figure 3 provides an indication of the differences in the journey time reliability characteristics of the two corridors and the potential improvements that may result from the implementation of the A65 scheme.

3.4.7.2 Wider Economic Impacts

With respect to the wider economic impacts the scheme does not lie in or directly serve a Regeneration Area so no detailed assessment of wider economic impacts has been undertaken.

3.5 Accessibility

3.5.1 Option Values

No alterations to service levels or frequencies are expected as part of the scheme so no impact on option values is likely.

3.5.2 Severance

The increased number of pedestrian crossings specified within the QBC scheme will reduce community severance, particularly in the local centre of Kirkstall. They will also improve pedestrian access to bus stops.

3.5.3 Access to the Transport System

Table 8 shows the proportion of households without access to a car for the area of A65 corridor and the wider area.

Table 8: Proportion of Households without Access to a Car

Area	Percentage of households with no car/van
Kirkstall (ward)	43%
Leeds	34%
Yorkshire and The Humber	30%
England	27%

Source: 2001 Census

However, the scheme will not have any direct impact on the level of car ownership or on proximity to transport services so there is not expected to be any significant impact on access to the transport system. The overall quality of the service will improve and enhanced and more reliable journey times will improve access to other parts of the city by bus but these impacts are covered within other areas of the assessment.

3.6 Integration

3.6.1 Transport Interchange

The scheme does not involve any alterations to passenger facilities at areas of intermodal change so the overall assessment for this objective is neutral. It should be noted, however, that the possible introduction of a new rail station at Kirkstall would provide the opportunity to promote integration between bus and rail in the local area.

3.6.2 Policy Fit

The scheme is complementary to the policy objectives set out in chapter 3, in terms of both land-use policy and wider government policies.

3.7 Supporting Analysis

There are a number of additional issues that do not fit into the AST, but that are important in terms of assessing the benefits of the scheme. Therefore, this section considers:

- Affordability and financial sustainability;
- Distribution and equality; and
- Practicality and public acceptability.

3.7.1 Affordability and Financial Sustainability

The capital cost of the scheme would be funded from Central Government, with additional maintenance costs accruing to Leeds City Council and Metro. At this stage no developer contributions have been sought as major development proposals are in a state of flux due to the present economic and property climate. However, such contributions may be required at a later date to modify the scheme as developments are brought forward to provide any further measures required to accommodate future traffic growth and ensure the continued reliability of bus services and journey times.

The Affordability and Financial Sustainability worksheet in included in Appendix E. All values are provided in 1000 and, as required by the guidance, exclude the impacts of discounting and deflating to 2002 values. In brief, the AFS table shows that the scheme results in: -

- An increase in local government operating costs of £154,000 in the 10th year due to the increased maintenance burden of the scheme. This will be absorbed into existing maintenance arrangements.
- A total central government contribution of over £61m. This value is considerable inflated by the impact of reductions in indirect taxation revenues, due mainly to reductions in fuel duty and taxation associated with car parking charges.
- Significant private sector benefits of £857,000 in the 10th year due to reductions in operational and maintenance costs borne by the bus operator.

3.7.2 *Distribution and Equity*

This section highlights the distribution of the overall impacts summarised in the AST, enabling a judgement to be made about the fairness of the impacts on those affected by the scheme. Overall, the scheme directly affects many of the areas adjacent to the A65 where the scheme works are proposed, and indirectly affects most users along the entire length of the A65 corridor. However, spatial assessments are difficult to undertake due to the coarseness of relevant data compared to the relatively narrow area along the A65 affected by the scheme.

The following assessments have been made:

- Traffic flows along the corridor are expected to drop slightly, producing noise and local air quality benefits across the corridor as a whole.
- In terms of distribution, there may be some relocation of inbound traffic queues from the narrow section west of Woodside View, to Commercial Road. This area may therefore experience some minor impact on air quality and noise.
- Public and private transport users will also benefit from the reduced journey times and journey time reliability afforded by the change in traffic flow.
- Pedestrians and cyclists that use the A65 corridor will benefit from the improved noise and air quality brought about by the scheme.
- Specifically between Savins Mill Gyratory and the Inner Ring Road, pedestrians and cyclists will also benefit from the improved crossing facilities and landscaping.
- The improved bus service will help to improve accessibility to areas along the corridor with low car ownership. Therefore, the scheme should reduce the difference in accessibility to the centre of Leeds between these areas and some of the more affluent areas to the northwest of Leeds around the A65 corridor.

3.7.3 *Practicality and Public Acceptability*

3.7.3.1 Overview

The standard Transport Appraisal Guidance provides a list of headings that may be useful when assessing practicality. This list has been drawn on in the following section.

3.7.3.2 Feasibility and Phasing

Feasibility and phasing issues have been addressed during the development of the scheme. Phasing is also discussed in more detail in Chapter 5 of this report. All of the partners are committed to the implementation of the scheme as it forms one of the designated Quality Corridors. All of the partners have also been involved in the preparation and approval of the scheme and inputs to this Submission.

3.7.3.3 Timescale

The timescale associated with the scheme is discussed in more detail in Chapter 5. The time allocation to each of the identified tasks and the coordination of tasks is such that it is considered to be reasonable for the scheme to be completed and opened by February 2012 provided a funding decision from the DfT is favourable and received by December 2009.

3.7.3.4 Enforcement

The measures proposed as part of the scheme have been developed to be as self-enforcing as possible. Experience in West Yorkshire suggests that the use of full length coloured surfacing significantly reduces bus lane abuse to a point where it is virtually abuse free. Also, the pre-signal arrangements are designed to discourage motorists from using the bus lane, which is

proposed to be in operation for 24 hours per day - further reducing the likelihood of the bus lane being abused.

In addition, it should be recognised that the proposals require only a limited amount of existing carriageway to be removed from use for the general motorist - The existing short section of inbound dual carriageway on Kirkstall Road affords the motorist 2 lanes. Under the scheme proposals, this will be reduced to a single lane with the addition of a bus lane. However, this is to be mitigated by traffic signalling west of Willow Road.

Prior to the July 2001 submission, a survey was also conducted to establish the number of parked cars along the proposed route and thus the level of enforcement likely to be required. The results of this were validated on site prior to this submission to ensure that the site conditions had not significantly altered.

From an analysis of the surveys it was found that:

- The only area of residential parking was on the large grass verge, and the bus lay-by, both between Woodside View and Gilbert Mount. Replacement parking facilities will be available as an integral part of the scheme.
- There were a number of sites along the corridor where temporary parking occurred, nearly all commercially related. Most of this was in the centre of Kirkstall, where no bus lane is proposed, and this would represent no change from the existing situation.

Overall, enforcement issues are not seen as a significant threat to realising the full benefits of the scheme. However, utlising Traffic Management Act powers the City Council are planning to introduce bus lane cameras on to key bus corridors in the city from early 2010. Once the A65 scheme is commissioned and initial monitoring has been undertaken it will therefore be an option to introduce cameras to the route should this prove to be necessary.

3.7.3.5 Complexity

The A65 QBC scheme does not impact significantly on the existing route for private car users or public transport users. Also, the existing bus services will remain the same with the implementation of the scheme. In terms of policy, the A65 QBC provides positive impacts when measuring against a range of objectives, from transportation and other themes such as the economy or health. Therefore, it can be considered as a relatively simple scheme to deliver.

3.7.3.6 Conflicts

The A65 QBC scheme does not conflict with other existing or planned schemes along the corridor, and is consistent with the content included in the relevant policy documents. The proposed bus priority measures are also compatible with the management of the adjacent A660 radial route into Leeds and the proposals for the Leeds New Generation Transport scheme currently being developed.

3.7.3.7 Complementarity

The traffic control strategy element of the scheme combined with the provision of bus lanes will create a synergistic relationship and hence maximise the benefits along the corridor. Specifically, there are benefits from the gating of traffic on both Kirkstall road and Commercial road in order to provide a ‘virtual’ bus lane through the areas where bus lanes could not be provided.

The UTC signal timings at the Willow Road junction also contribute to the efficient management of traffic through the corridor, ensuring queues are held at the desired locations in order to aid the priority for buses and the management of air quality.

3.7.3.8 Public Acceptability

The successful public involvement process employed in East Leeds and Manchester Road, Bradford, will be used as a model for consulting with and informing the public about the scheme during the detailed design stage.

There has been public consultation conducted for the previous A65 QBC submissions. However, the scheme proposal in this submission is less far-less reaching than previously, therefore only the relevant results of the consultation process are highlighted below:

- The Vision for Leeds document indicated that 90% of the people who responded via the summary questionnaire supported the development of a transport system that encouraged greater use of public transport. A large number of comments were made about the reliability,

frequency, quality, cost and accessibility of current transport provision. Those responding suggested that, until these issues were addressed, public transport would not be seen as a viable alternative to the car.

- There was strong support for measures to improve the quality of public transport and provide better facilities for pedestrians and cyclists. Research undertaken by Metro demonstrated that the public place high priority upon the reliability of bus services.
- Responses showed user dissatisfaction with reliability, punctuality and journey times - all reflecting the level of congestion and its impact on bus services. Improvements to reliability and punctuality were the highest priorities for users.
- Around one third of the respondents indicated that improvements to bus services on the corridor would "significantly increase" the frequency with which they used the bus. Less than one third indicated that there would be no change in their frequency of usage. The majority of this latter group were regular users, with 85% of them already using the route for 7 journeys or more per week.
- Over 80% of replies also rated traffic congestion on Kirkstall Road as a "serious problem" during peak times, whilst over 60% also felt that congestion was a "slight problem" at other times.
- Over 80% of all respondents agreed with Leeds City Council's advertised strategies in relation to dedicated bus lanes and giving priority to buses, and 82% still agreed with this strategy even if it resulted in delays for other road users.
- **Table 9** shows a summary of the results of the consultation exercise.

Table 9: Summary Results of A65 Consultations

Summary of Result					
Issue		**Serious problem**	**Slight Problem**	**No problem**	**Don't Know**
Number believing various issues are either a serious, slight, or no problem	Traffic congestion	74 (86%)	10 (12%)	1 (1%)	1 (1%)
	Unreliability of bus services	49 (57%)	30 (34%)	4 (5%)	3 (4%)
	Conditions for pedestrians	38 (44%)	29 (34%)	14 (16%)	5 (6%)
	Condition for cyclists	32 (37%)	32 (37%)	17 (20%)	5 (6%)
	Pollution and traffic noise	63 (73%)	21 (25%)	0 (0%)	2 (2%)
	Safety and security at bus stops	26 (30%)	40 (46%)	17 (20%)	3 (4%)
Issue			**Strongly Support**	**Strongly Object**	**Don't Know**
Number (strongly) supporting or (strongly) objecting to measures to improve	Bus services		76 (88%)	7 (8%)	3 (4%)
	Conditions for cyclists		68 (79%)	11 (13%)	7 (8%)
	Conditions for pedestrians		81 (94%)	3 (4%)	2 (2%)
	Conditions for elderly/disabled people		80 (93%)	2 (2%)	4 (5%)

In general, there was quite a strong local feeling that improvements were required to improve public transport and walking and cycling facilities. The main issues raised were: -

- Bus reliability and punctuality;
- Environmental impacts of traffic congestion;
- Environmental concerns for pedestrians and cyclists; and
- Widespread public support for measures to improve sustainable transport

However, there were some objections relating to the effects on frontages along the route. These can be summarised as follows:

- 6 people objected to landtake.
- 1 person objected to traffic being closer to their property.
- 1 Councillor and 1 Community Group objected to landtake in general terms.

In line with these responses, it is worthy of note that the A65 proposals presented in this report are not simply a bus priority scheme, but provide associated improvements in facilities for both cyclists and pedestrians.

As well as clear public support for a scheme on the A65 there is also strong support from key local stakeholders, in the form of the PTE, bus operators and other local organisations and user groups. This is covered in more detail in chapter 4.

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Delivery Case

4 Delivery Case

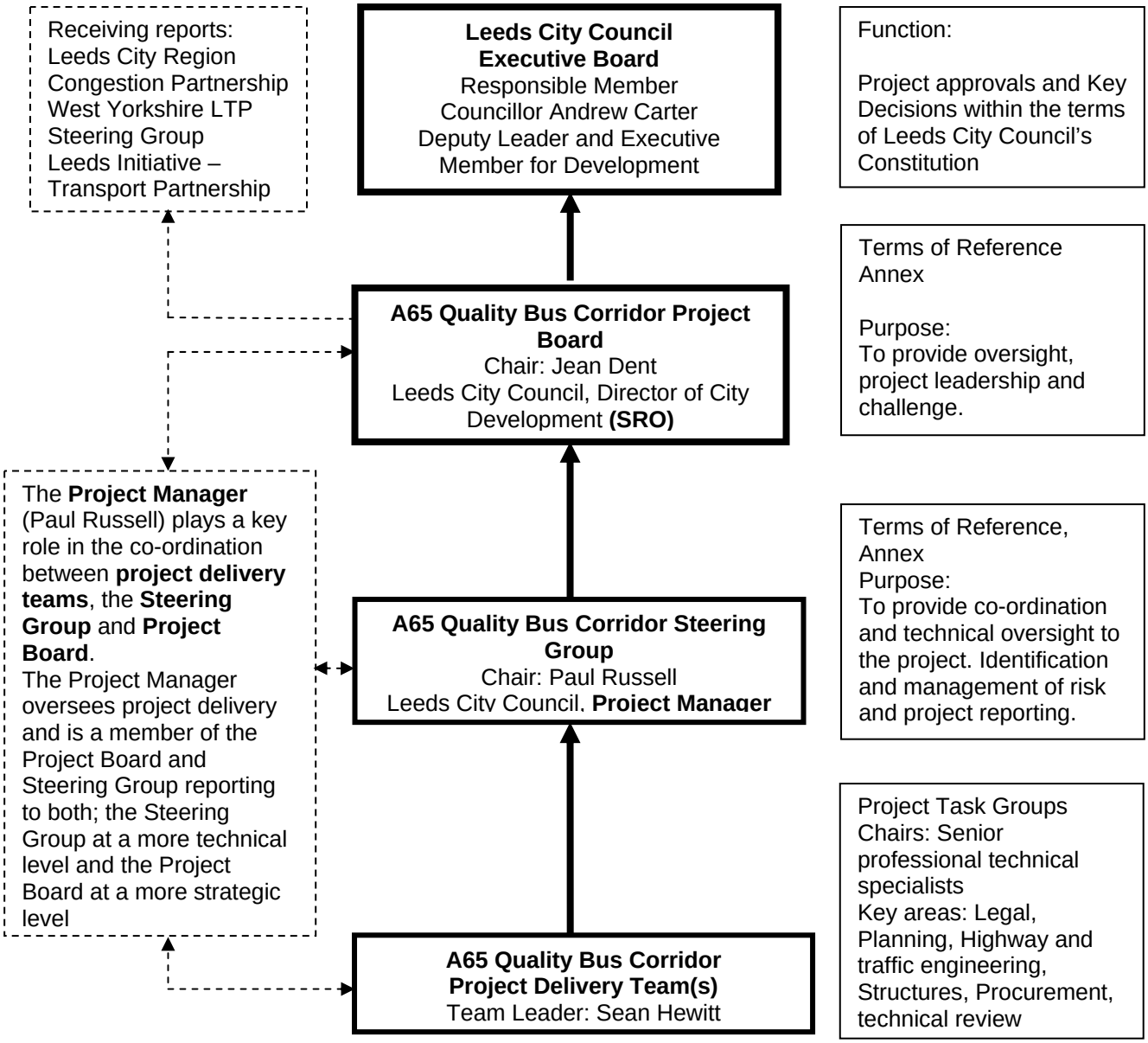
4.1 Introduction

This section sets out how LCC intends to deliver the A64 QBC scheme. It demonstrates that there are sound project management processes in place to take the scheme to through to completion, and set procedures in place for beyond scheme completion.

4.2 Project Organisation (Governance)

The development of A65 QBC project has been managed by Paul Russell, a project manager from LCC. His position within the project organisational structure is presented in **Figure 8** below. Paul is a principle engineer, and is being supported by design engineers from LCC and Mouchel. The project delivery team leader is Sean Hewitt, a group engineer within LCC.

Figure 8: The Project Organisation Structure



Senior specialist advisers, or their nominees, will also provide support to the Board. The list of board members and a list of core specialist advisers are highlighted in **Tables 10** and **11**: There is also a steering group, with core members comprising of a: -

- Transport Strategy Manager
- Design & Construction Manager
- Head of Highway Services
- Finance Manager
- Principal Engineer Highway Design &Construction
- GOYH Representative
- METRO Representative
- Bus Operator Representative

There are also additional members who attend as appropriate: -

- Key Designers
- Procurement
- City Services
- UTMC
- Planning Services
- Development Legal Services
- Asset Management (Property Services)
- Police
- Urban Designer

Table 10: Project Board

Name	Title	Department	Role
Jean Dent	Director, Chair of Board	LCC, City Development	Project Executive (Senior Responsible Officer)
Gary Bartlett	Chief Highways and Transportation Officer, Deputy Chair	LCC, City Development	Project Sponsor
Dave Gilson	Head of Transportation	LCC, City Development	Senior User, representing the Highway Authority
David Hoggarth	Director	Metro	Senior User, representing Metro and the ITA
Roy Coello	Head of Engineering	LCC, City Development	Senior Supplier, representing the engineering and design
Richard Harris	Commercial Director	First West Yorkshire	Senior Supplier, representing bus operators
Paul Russell	Principal Engineer	LCC, Development	Project Manager
Maureen Taylor	Chief Officer, Financial Development	LCC, Corporate Services	Financial management and corporate risk

Table 11: Specialist Advisers

Name	Title	Department	Role
Paul Brook	Chief Asset Management Officer	City Development	Property and land advisor
Christine Addison	North West Area Manager	Neighbourhoods and Housing	Community relations and planning advisor
Phil Crabtree	Chief Planning Officer	City Development	Planning and development advisor
Helen Franklin	Head of Highways Services	City Development	Highways maintenance and asset management advisor.

In addition to the Governance Structure briefly detailed above, the scheme also benefits from independent project assurance from within the Council's own Project Assurance section. This assurance takes the form of a Healthcheck undertaken at 4 monthly intervals measuring against pre determined criteria for successful project management. This results in a healthcheck report being produced which is presented to Project Board. A key part of the

healthcheck is the red, amber, green table showing the status and improvement made in each project assurance category. This is included in **Appendix I.**

4.3 Project Planning

The current status of the scheme is that Provisional Approval has been granted and a satisfactory outcome from the CPO Inquiry of 2008/09 has been gained. Carillion have been appointed at scheme contractor on an Early Contractor Involvement (ECI) basis and work is currently underway to finalise the detailed design and contractor costs of the scheme. With this in mind, the current remaining main scheme milestones are shown in **Table 12.**

Table 12: Delivery Programme

Element	Time Period
Conditional/Full Approval granted	Sep – Dec 09
Publish traffic orders	Oct 09
Mobilisation	Nov 09 – Feb 10
Construction	Feb 10 – Feb 12
Full Scheme Opening	Feb 12

Appendix J includes the latest version of the Council's full project plan (incorporating the contractor's construction plan) from the present day to full scheme opening. Both a summarized and detailed version of the construction plan is provided and together show that the implementation plan for the scheme has already been progressed to a high level of detail.

4.4 Risk Management

Management of risk will be in accordance with the Leeds City Council Risk Management Framework. A draft of the risk register was produced following a project initiation workshop. The risk log is controlled by the project manager, and will be reviewed and updated after Project Board, Steering Group and Project Team meetings. As such, it will act as a working document which serves to manage, minimise or eliminate the elements of risk within the project.

Project controls will ensure that an appropriate framework for communication, control, and monitoring is used. In particular, the project controls aim to:-

- Establish the level of control and reporting required by the Project Board
- Develop controls that are consistent with the risks and complexity of the project.
- Establish the day-to-day monitoring required to ensure that the project will be controlled in an effective and efficient manner.

As stated above, the risk register has been constantly reviewed and updated throughout the development of the project. The most recent version of the register is included in **Appendix K** and provides a comprehensive record of each identified risk item together with an assessment of likelihood of occurrence and value. It shows a current valuation of £1,240,000. At this stage it is important to note that this register takes into account the fact that some of the risk items can be transferred to the contractor and incorporated into the contractors initial target cost. This is taken account of in the register to avoid double counting of any risk items. For information, the contractors risk register is also included.

The risk register is continuing to be developed and the allocation of risks to those who are best placed to manage them may take place. The possibility of transferring risks will also be investigated as part of the Final Target Cost preparation. The transfer value of such risk will need to be agreed but by fixing the cost at FTC stage, again this gives more certainty on the final out-turn cost.

4.5 Stakeholders

An appropriate method of communication has been taken to involve and inform ward members, community group, council members, local residents, bus users, motorists, cyclists, and pedestrians. Forms of communication have included briefings, e-mails, letters and leaflets, local exhibitions, press releases and web pages.

During these early stages of scheme development, public consultation and engagement consisted of;

- Winter 1999, Ward Member briefing
- February 2000, survey of current bus users
- July 2000, public consultation on scheme proposals which included

  - 17,000 leaflets distributed to residents and commercial premises
  - Three staffed public exhibitions in Burley, Kirkstall and Horsforth
  - Attendance at Kirkstall Festival
  - Consultation with community groups (5 groups)
- Autumn 2000, displays in local libraries along the route
- Summer 2002, Ward Member briefing
- September 2002, Kirkstall Forum briefing

The project governance also includes a Communication Task Group which sits within the Steering Group to plan and develop ongoing and future communications. This has resulted in ongoing consultation since Programme Entry in 2006 and also has a detailed communication plan for future consultation.

Since 2006 consultation has consisted of: -

- September 2006, Ward Member briefing following DfT decision to grant Programme Entry
- September 2006, Report to Executive Board
- Autumn 2006, A65 QBI web page updated to reflect the new scheme status
- Winter 2006/7, briefing for Kirkstall/Burley Forum and display of plans for Inner North West Area Committee
- Spring/Summer 2007, Article in *About Leeds* regarding the scheme
- July 2007, Ward Member briefing
- Autumn 2007, 15,000 newsletters printed and distributed. 8000 delivered to local properties
- Autumn 2007, three staffed exhibitions in Kirkstall and Burley
- September 2007, letters to 140 immediate frontages with officer visits as necessary
- September 08, Ward Member briefing
- Autumn 2008, 15,000 newsletters printed and distributed. 8000 delivered to local properties
- Nov 2008, presentation to Inner NW Area Committee
- Appointment of Carillion as ECI contractor

Following the appointment of Carillion as the ECI contractor in November 2008, consultation has continued with further Ward Member briefings, attendance at local community groups, with the most recent being further representation at the Inner North West Area Committee on 22 October 2009. A dedicated web page has been established and maintained (www.leeds.gov.uk/a65qbc) which also allows people to register for electronic updates. Newsletter No.3 was also recently distributed to over 8000 properties in October 2009.

As part of the professional services identified in the ECI Phase of the Contract, a Liaison Officer role has been identified to be provided by Carillion. This person forms an integral member of the Communication Task Group to contribute and feed into the consultation and engagement process. A "*Communication, Customer Care and Community Engagement*" document has been developed which pulls the Council's communication strategy and plan together with Carillion's community engagement policies to form a single strategy document. The whole delivery team is committed to continuing with the consultation and communication process. Once construction work commences, communication and engagement will remain to be important with much of the scheme success relying on successfully continuing with public engagement. This is included as **Appendix L.**

Leeds City Council has contacted the relevant Statutory Authorities and organisations with regard to the previous scheme submissions. The responses received are included in **Appendix M.** No responses have been received which raise significant or fundamental objections to the scheme. The responses are summarised in **Table 13.**

Table 13: Summary of Responses from Statutory Bodies

From	Comments
Environment Agency	'No objection' with regard to flood defence
English Heritage	'Comments remain unaltered' from the Provisionally Approved scheme. Concerns about Kirkstall Abbey (not affected by the current scheme scope)
English Nature	'Do not wish to add to the comments made in our response (dated 9th May 2001)'

West Yorkshire Archaeology Service	'Will not affect any known sites of archaeological interest'
Network Rail	'No additional comments' (Sep 2003). 'In principle… no objection' (Dec 2000).
West Yorkshire Police	'No objections'.

In addition to the above, LCC has prepared a comprehensive Environmental Report **Appendix N** which acts as a summary document drawing together further study, investigation and consultation. As the scheme has not materially changed from previous consultation, the position of the Statutory Bodies remains unchanged.

4.6 Evaluation

A number of monitoring methods will be used to determine the extent to which the scheme meets the scheme objectives and policy objectives identified. One of the strengths of the monitoring strategy for this scheme is that it is easy to conduct using existing mechanisms, whilst any improvements in technology can be harnessed to provide more detailed and accurate results.

Data will be collected before the scheme starts, during construction and twice after the scheme is completed – once within 3 months of completion and again after 1 year. Survey work will be conducted jointly with Metro and operators.

4.6.1 *Traffic Flows*

Automatic counters to be installed on Abbey Road and Kirkstall Road with data to be collected for 2 full weeks in each case. Note that there is also a continuous site on Kirkstall Road (outside the fire station) which will provide data throughout the project.

Data will also be collected on parallel routes – to include at least Argie Ave, Kirkstall Hill, and St Anns Lane - to assess the impact of traffic diversions. Counters will also be installed on Woodside View, Argie Road and Haddon Ave.

4.6.2 *Traffic Speeds*

Traffic speeds will be monitored throughout the programme using GPS data supplied from Trafficmaster. This data is updated at six monthly intervals and is made available via DfT.

GPS data can also be used to monitor speeds on parallel and diversion routes.

4.6.3 *Turning Counts*

AM and PM Peak period turning counts will be undertaken at key junctions to assess the volumes of traffic joining or leaving the A65. Suggested junctions include Vesper Lane, Abbey Walk, Kirkstall Lane, Burley Wood Mount, Woodside View, Argie Road and Willow Road.

4.6.4 *Queue Lengths*

The amount and duration of queuing traffic will be measured at key junctions and pinch points, including queues on side roads.

Trafficmaster data can also be used to monitor very slow moving traffic and estimate queues.

4.6.5 *Modal Split*

Modal split data will be collected at the city centre end of the route.

4.6.6 *Public Transport Patronage*

All day and peak period figures for aggregated routes along the A65 and parallel routes. To be obtained from ETM data via METRO.

In addition patronage changes to be compared with city wide or West Yorkshire wide figures (LTP2 target L5)

4.6.7 *Public Transport Journey Times , Reliability and Punctuality*

Bus journey should be obtainable from AVL (Automatic Vehicle Location) or, if not, using roadside survey methods. Reliability and punctuality data may be available from operators, METRO surveys or roadside observation and comparison to published timetables.

4.6.8 *Public Transport – Passenger satisfaction*
On – bus interview surveys to determine passengers views before and after the scheme. To include parallel routes and also a "do nothing" comparison from another part of the city. After surveys to be undertaken soon after opening and again after 1 year.

4.6.9 *Public Transport – modal transfer*
On bus or pre-paid postal interviews of new passengers to determine mode used for same journey pre-QBC. Could be included on questionnaire for passenger satisfaction.

4.6.10 *Public Transport Operators Views*
Interviews with main PT operators to determine opinions (positive and negative) of QBC – soon after opening and 1 year after opening

4.6.11 *Further Information*
- Air Quality issues will be monitored using equipment currently operating in area as part of a long term Leeds University ITS project. No additional environmental monitoring is envisaged.
- The A65 is one of the LTP2 congestion monitoring routes with an associated mandatory target. As such PT patronage, PT and car journey times, and traffic flow will be measured every year until 2010/11 and compared to a 2004 base.
- LTP monitoring will also ensure that modal split is collected annually until at least 2010/11.

4.6.12 *Estimated Costs*

Survey Planning :	£2,000
Survey Conduct :	£6,000 per phase (4)
Analysis & reporting	£3,500 per phase (4)
Total (before, during and two after surveys)	**£40,000**

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Commercial Case

5 Commercial Case

5.1 Introduction

This section considers the commercial case for the scheme. In line with DfT requirements it covers the following areas: -

- Procurement route and detailed procurement strategy;
- Contract type and balance of risk;
- Contract management arrangements

5.2 Procurement Route and Strategy

Appendix O is a Leeds City Council document that considers procurement strategy for the scheme. It highlights the following as key issues influencing the decision: -

- Final approval from Dft not given until construction tenders received. Until approval, all expenditure at LCC risk;
- Land on south side of A65 likely to be developed prior to completion of A65 QBI. Any development will require A65 access resulting in scheme changes;
- Fixed budget available from Dft;
- The effect of inflation on the budget for the Works Cost alone is equivalent to £0.7m annually;
- Land acquisition including CPO has been a key risk. Following confirmation of a modified CPO the Secretary of State's decision in September 2003 following which the statutory Notice of Confirmation has been served. Subject to no objections being received service of the necessary acquisition papers will proceed in order to ensure a start on site can be achieved in line with this Business Case.
- Extensive Statutory Undertakers diversions are required; and
- A65 is one of the busiest routes into the City and traffic management will be critical.

It concludes that "any procurement strategy needs to deliver flexibility for design changes early completion and minimise disruption within budget".

It considers three contract options; ICE 7th, Early Contractor Involvement (ECI) under a NEC contract and Lump Sum (either through ECI or ICE 7th). The report concludes that an ECI contract is the most suitable on the basis that it "maximises the potential for earlier start and shorter construction period…this is likely to result in lower costs, partly from reduced inflation effect and increased efficiency".

5.3 Contract type and balance of risk

Probably the most significant issues listed above which affected the decision on the choice of procurement strategy is the fact that there is a *fixed budget available from DfT.*

The chosen contract strategy reduces the risk of exceeding the overall fixed budget and has built in early warning mechanisms within the ECI phase.

In line with the scheme governance, the LCC report (Appendix O) was presented to the A65 Project Board who resolved to adopt its recommendations. Many of the Board members had similar positions on Boards for other major schemes in Leeds and took confidence from the previous success of using the same NEC procurement strategy with early contractor involvement.

The NEC contract used in the procurement is in two phases. Phase 1 is an NEC professional services contract with Phase 2 being NEC Option C - Target Cost with Activity Schedule.

The contract incentivises the contractor to work efficiently and has bonuses mechanisms based on a share of potential savings. There are also penalties based on costs increasing over original forecasts.

These bonus incentives are in three areas:

i) Design Bonus

A design bonus is 25% is payable on any savings in construction costs identified in Phase 1.

ii) Construction Bonus

The construction bonus works on a pain/gain mechanism and varies dependant on the levels of spend as shown in **Table 14** below. Actual costs are paid with open book accounting.

Table 14: Contract Pain/Gain Mechanism

Share range	Contractor's Share Percentage
Less than 90%	15% gain
90 – 100%	20% gain
100 – 110%	50% pain
110 – 120%	75% pain
Over 120%	100% pain

iii) Final Bonus

The final bonus relates to the initial overall scheme budget. This is again 25% of any savings made on the overall initial tender stage scheme budget (capped at 2.5% of the overall budget)

The bonus mechanisms are a key element in the contract strategy, especially with the pain/gain share percentages and final bonus payments. These focus the contractor on working with the Council to proactively manage site issues and risk, as escalation of costs due to these, ultimately effect bonus payments.

5.3.1 *Phase 1 – Professional Services*

Phase1 of the contract is a straight professional services form of contract, with early contractor involvement to assist the final phases of the design process. During Phase 1, the contractor works with the Council's design team and offers input and advice on a range of issues. LCC retains full responsibility for the design and the contractor's costs are reimbursed at hourly rates tendered for in the contract.

The Scope of the contractor's input in Phase 1 is detailed below and consists of: -

a. Cost Estimates

Work with LCC's design team to establish reliable overall cost forecasts for the scheme and methods of monitoring changes to ensure that funding allocations are achieved but not exceeded.

Prepare and update cost estimates for Phase 2 or parts thereof as requested.

On completion of detailed design and within fourteen days of the LCC's written request provide a completed Activity Schedule and Target Cost for Phase 2 based on the Works Information provided by the Council.

Work in collaboration with the design team to establish effective communications and possible IT links between the parties to ensure compatibility of IT systems and procedures to facilitate financial monitoring of the scheme.

b. Programme

Advise on Phasing and programming of the works throughout the detailed design. At the completion of detailed design and within fourteen days of the LCC's written request provide a detailed programme for Phase 2: Construction of the Works.

c. Publicity and Liaison

Assist the design team in complying with the communications strategy for the scheme. Provide the necessary resources to ensure adequate consultation to finalise the design. The contractor will assist in preparing, designing, erecting and distributing information for the public. Attendance at meetings with the Communications Task Group, general public, individuals and businesses that may be directly affected by the construction of the works will also be necessary.

Provide a senior and appropriately experienced Liaison Engineer. The Liaison Engineer will undertake or manage all the above duties and those given in item 4 below.

d. Traffic

Assist the design team in planning traffic management during the construction of the scheme so as to minimise traffic disruption and minimise disturbance to residents and businesses. This may include liaison and meetings with Local Authorities, Bus Operator's, Emergency Services and other Statutory Bodies, as well as attendance at other public meetings to agree measures.

e. Risk Management

In collaboration with the design team undertake risk assessments and propose risk mitigation measures including attendance at risk workshops.

Assist in the CDM/ Risk Assessment process and in finalising the Pre-construction Health and Safety Information.

f. Statutory Bodies

Assist the design team to identify the location and type of statutory undertakers' apparatus along the scheme and help co-ordinate all works associated with diversions or protection of apparatus with the respective undertaker. Assist the design team in liaison with Statutory Bodies, LCC Planning Authority and Highways Authority to determine the extent of work required, obtain cost estimates and co-ordinate the work of such bodies.

Attend meetings with statutory bodies and assist the design team in obtaining any formal notifications that may be required.

g. Structures

Assist the design team in the design of the Structures by utilising his practical experience to ensure that the final design is buildable, maintainable, fit for purpose, economical and safe to construct and use.

Assist the development of the preliminary designs into a detailed design and possibly offer alternative proposals with due consideration to the Council's requirements.

h. Earthworks

Assist the design team in the detailed design of the Earthworks by utilising his practical experience to ensure that the final design ensures an efficient earthworks operation which is buildable, fit for purpose, economical, maintainable, and safe to construct and use.

i. Highways

The general layout and design shall be in accordance with the preliminary design and specification. However, the contractor is still expected to identify areas of improvement within the existing design proposals and add value to the scheme design.

Assist the design team in the detailed design of the road pavement by utilising his practical experience to ensure that the final design ensures a durable road surfacing which is fit for purpose, economical, maintainable, and safe to use.

Incorporate the recommendations within the Landscaping, planting and Ecology reports, the Archaeological report, Environmental report as outlined in the site information.

j. Specification

Assist the design team in preparing the specification for the works. The specification will be the 'Specification for Highway Works 'published by The Stationary Office (formerly HMSO) as Volume 1 of the Manual of Contract Documents for Highway Works as modified and extended during the detailed design. A full specification will be prepared by the design team helped by the contractor prior to the end of detailed design and the Council's request for a programme and priced activity schedule.

k. Value Engineering

Assist the design team by identifying aspects of the design that may be refined to provide better value and /or environmental benefits.

Use expertise in planning the efficient execution of Phase 2 and give advice on the necessary design changes that will achieve this objective.

Propose and organise in discussion with the design team methods of achieving Best Value for the scheme based on his experience, such as partnering meetings, facilitated workshops, design reviews and value engineering workshops, including attendance at such workshops.

Propose and agree with design team procedures for supply chain management to achieve Best Value.

l. Quality Assurance

The contractor shall operate a quality management system. The contractor shall afford full opportunity for the Project Manager to examine and audit its quality management system and quality plans and those of its Sub-Contractors and suppliers. These quality audits will be undertaken on a regular basis but reasonable notice shall be given to the Contractor by the Project Manager of the date of such audit.

m. Accommodation Works

The contractor shall assist the design team to determine the need for all the accommodation works within the scheme and to liaise with third party owners with regard to the access rights and any other issues associated with the accommodation works.

n. Health and Safety

The contractor is expected to carry out his duties in full compliance with the CDM 2007 regulations in his capacity as the 'principal contractor'.

o. Co-Location

The Council will provide office accommodation for the contractor's key staff within the Middleton Office of Leeds City Council for the duration of the Phase 1 contract. In order to ensure an integrated team approach to the design the contractor's key staff shall be co-located with the design team at the Middleton Office.

Phase 1 commenced in November 2008 and was programmed for approximately 12 months. During this time, LCC is carrying the risk of the design costs, and also the cost of the contractor's phase 1 input. Much of this cost will be identified as preparatory costs.

During Phase 1, the contractor produced an initial target cost (ITC) to be used in the justification for Conditional Approval which also serves as an early warning of potential budget increase. At the end of Phase 1 when the detailed design is sufficiently complete, the contractor will produce a final target cost (FTC) to be used for Full Approval.

The ECI element of Phase 1 incurs additional contract costs up front but this allows the design team and contractor the opportunity to examine in detail the design and construction of the scheme proposals and identify areas where information is outstanding, unclear or ambiguous and address this now, significantly reducing the risk of potential conflict during construction.

5.3.2 *Phase 2 – Construction*

At the completion of Phase 1, the contractor is obliged to provide a Final Target Cost which is linked to an activity schedule and detailed construction programme. The FTC will be used in substantiating the Full Approval business case

Due to the ECI in phase 1 the contractor will also have an in-depth knowledge of the scheme proposals and worked with the design team to finalise the detailed design and to develop the construction programme.

Under the NEC ECC Option C, the contractor is paid "at cost", i.e. with open book accounting to substantiate costs with a tendered percentage add-on to certain elements of the cost. A key element to the Phase 2 is to identify potential issues with early warnings and resolve them quickly and efficiently. The contractor gets a share of any savings made and should the works cost exceed the FTC, the contractor takes much of the pain. The pain/gain mechanism is biased against the contractor to put the focus on accurately estimating the cost in Phase 1.

The FTC can be adjusted due to changes that are made on site through compensation events but in doing this, it increases overall costs and reduced the potential for any final bonus.

The costs incurred in Phase 1 with the ECI, and the bonus share mechanisms incentivise the contractor to accurately estimate both cost and programme prior to starting on site. Once on

site, there are further incentives to work with the Council to proactively manage the project. Potential problems and risk items will have been minimised during the completion of the design and through the preparation of the FTC leading to a greater certainty of final cost.

5.4 Contract Management Arrangements

As demonstrated within Section 5 (and also the PID), there are robust scheme governance arrangements already in place. This is further enhanced by the introduction of the contractor earlier in the procurement process with ECI. The contractor is also represented on both the Steering Group and at Project Board level.

As mentioned previously, working through the final detailed design gives significant opportunity to look at best practice and utilise the contractor's strengths and expertise to deliver the scheme as efficiently as possible whilst also identifying and managing construction risks. An Initial Target Cost was produced mid way through Phase 1 providing early warning of budget pressures giving reassurance of remaining within the overall budget and also identified areas to focus on efficiency savings.

The contract strategy is biased to giving certainty of outturn cost through the pain/gain mechanism incorporated into the contract, and the contractor's fees incurred by LCC in Phase 1 will only help to insure this. The contractor is incentivised to make savings through efficiencies and the form of contract is much more partnership based than the traditional ICE form.

The NEC Option C form of contract is an open book form of contract where actual costs are paid with fixed percentage add-ons to certain elements which were established competitively at tender stage. Should the contractor's works cost exceed the FTC by more than 120%, all this risk (and pain) is carried by the contractor.

It is therefore important that following the ITC and ultimately the FTC, in order to balance risk, the works budget is accurately forecast. Through the ECI and extensive site investigation that has been undertaken it is expected that changes to the scope of the work will be minimal once construction is started.

With regard to local Project Management, it is proposed that the Council's design team, Project Manager, and the contractor's staff involved in Phase 1 are based on site during construction. Experience has shown that minor site issues are best dealt with on site. Also with the incentives on the contractor, to work efficiently early warnings are incorporated into the contract with a proactive management strategy.

As part of the Final Target Cost, the whole of the risk register will be scrutinised looking mainly at key construction risks with a view to who would be best placed to manage these risks. There will also be an opportunity transfer risk to the contractor for an agreed price. Again in doing this, the certainty of final cost can be increased.

The risk register will be maintained throughout the contract and reported on at both Steering Group and Project Board.

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Financial Case

6 Financial Case

6.1 Introduction

This section details the financial aspects of the proposed scheme. It incorporates an explanation of the schemes identified base costs as well as the impact of inflation and risk on the overall scheme costings..

6.2 Base Costs

6.2.1 *Total Scheme Costs*

At "Programme Entry" stage in 2006, the Original Total Scheme Budget was £21,580,000 as shown below.

Item	Original Estimate	
	LCC Development Costs	DfT Major Scheme Funding
TOTAL	834,000	20,746,000

Bearing in mind the requirement to work within the original budget, a revised procurement strategy was agreed by the Scheme Project Board aimed at giving certainty of cost. The revised procurement strategy involved appointing a contractor in November 2008. The contract was in two phases with phase 1 including early contractor involvement to develop the scheme and in doing so give a much more accurate forecast of construction costs. This could ultimately lead to phase 2 which would be construction. As the contract has progressed through phase 1, costs have been continually refined to give a higher degree of certainty that the final outturn cost will be within the original Major Scheme Funding envelope. Mid way through the initial ECI phase, the contractor produced an initial target cost (ITC) which gave an indication of ongoing budget costs and some assurance on overall costs. In producing the ITC, and also in providing assistance in the final stages of design, potential site issues and risks that could have significant time and/or cost implications were identified.

The completion of the phase 1 has resulted in a Final Target Cost (FTC) being produced along with a detailed programme for construction. In addition to the FTC, which is effectively the contractor's budget for construction, there are the resultant scheme costs that are effectively controlled by LCC. These include the cost of statutory undertakers' diversions, land costs, ancillary costs (traffic signals, noise insulation, etc.), risk, and fees. As detailed design has approached completion, these costs have also been further developed so the final outturn cost can be more accurately defined.

As these costs are current, and will be expended in the next two years, no effect of inflation has been taken into account in the total or spend profile.

Table 15 Scheme Costs

Item	Current Estimate	
Contractor's Budget (Nov 2009)	LCC Development Costs	DfT Major Scheme Funding
Phase 1 Fee		400,912.00
Final Target Cost		12,595,223.00
Employer's (LCC) Budget		
Statutory Undertakers' Costs	With 18% discount	2,303,607.00
Land Purchase		1,920,000.00
Ancillary Costs		1,236,755.00
LCC Design/Phase 1 Fee	960,000.00	
LCC Phase 2 Fee		1,040,000.00
LCC Risk		1,091,000.00
TOTAL	960,000.00	20,587,497.00

Table 2 provides details of scheme costs in current prices. These costs are broken down into a number of elements as follows: -

6.2.2 *Contractor's Budget*

6.2.2.1 Phase 1 Fee

Throughout phase 1, the contractor was paid actual costs through an NEC professional services form of contract. These costs formed part of the contractor's budget and are used in the assessment of potential bonus payments. This being the case, the contractor had to carefully assess the benefit of the level of input that was needed in phase 1 as the phase 1 fee, would be offset against any savings that were made in phase 1 that could attract potential design bonus.

The contractor's phase 1 fee is included as part of the contract costs and although accrued before full approval, is advance spend primarily aimed at identifying a robust overall scheme cost, and remaining within budget. These phase 1 costs also assist the designer in identifying potential site issues and risk in advance of starting on site and can be offset against potential savings and avoided claims later on. As can be seen in table 17 the LCC development costs have also increased, which was always envisaged with the revised procurement route. LCC is carrying the risk of this sum but would seek to recover this in full on full approval being granted.

6.2.2.2 Final Target Cost

By using the NEC form of contract with ECI, many of the potential issues which could impact on cost and programme have been identified within Phase 1, and to a large extent, resolved in the final stages of design. At the end of Phase 1, with the detailed design substantially complete, the final target cost (FTC) has been produced by the contractor. This is also be linked to a detailed construction programme and schedule of activities against which performance and cost will be monitored.

The FTC is the contractor's detailed assessment of what the total construction costs will be. This will also include an element of risk for potential issues that arise on site e.g. adverse weather or non performance of sub-contractors. However with the contractor's involvement in phase 1 risks are being managed and reduced which should ultimately reflect in the final outturn cost. The importance of accurately forecasting this cost cannot be underestimated but with the incentives to manage risk and issues on site, there is always pressure to be proactive and to drive this cost down.

Prior to submission to LCC, the FTC firstly had to withstand detailed scrutiny by the contractor's own senior management. It needed to be in a format that satisfies, and could easily be reviewed and understood by the project manager and provide a solid cost base to execute the Phase 2 construction works, under the Option C Target Cost mechanism.

To achieve a robust FTC it has been mainly developed by the contractor's project team utilising the in depth knowledge they have obtained throughout phase 1. In addition to this, a traditional estimate was prepared independently by the contractor's in house estimating team. The philosophy of generating two relatively independent prices to carry out the works further reduced the risk of errors and helped to provide a check on the methods employed in estimating. It also promoted debate and discussion which then helped to improve the overall knowledge and understanding of the project costs. This ultimately produced a robust target cost which should accurately forecast the total cost of the works.

The FTC is a fundamental part of the contract, and a major part of the overall cost. Unlike the ITC which was in interim figure to give some budget assurance during phase 1, the FTC needs to stand up to scrutiny and be fully auditable. It includes a comprehensive breakdown of labour and equipment rates, material costs etc. and also include competitive sub-contract costs. It demonstrates market testing with different quotes showing a clear selection process. LCC have worked with the contractor and have undertaken an initial review. It will continue to perform a full independent review of the FTC to determine that it is a realistic cost.

6.2.3 *Employer's (LCC) Budget*

In addition to the works cost, there are other costs that are controlled by the employer (LCC). Similar to the ITC, these costs were reviewed mid way through phase 1 of the contract and have now been finalised within this submission.

6.2.3.1 Statutory Undertakers' Costs

The most significant cost within the employer's budget is the statutory undertakers' costs. Consultation is ongoing with SU's and many of the diversions have significant implications on programme. Detailed estimates have recently been received from the SU's and as the majority of this work will take place in the first year of construction, no adjustment for inflation has been included.

This is also one of the most significant areas of risk within the project (item 14 in the risk register). LCC has assessed the valued of this risk at £300,000. On site, the contractor will be able to influence and accommodate the performance, or more importantly non-performance, of SU's. Within the contract, there are share mechanisms, for any savings that can be made which will incentivise the contractor in this area. However, notwithstanding this, the nature of diversion works continues to carry a high risk value.

Under the New Roads and Street Works Act (NRASWA), a cost sharing discount of 18% can be claimed from the utility companies by making advance payments on their estimated costs. LCC has placed orders with a number of the utility companies in the region of £915,000 in order to secure the discount on some of the early diversions. LCC is carrying the risk on this and should the scheme not go ahead would expect to recover the majority of this amount.

6.2.3.2 Land Purchase Costs

Following a public inquiry over the compulsory purchase of two parcels of land in October 2008, the Secretary of State for Transport confirmed a modified order in September 2009. The modified order reduced the extent of one of the plots which will affect the valuations identified in this assessment. Revised land costs have been assessed in conjunction with the FTC to feed into the overall scheme budget.

6.2.3.3 Ancillary Costs

The ancillary costs include for the supply and installation specialist services not included in the main contract e.g. traffic signal installation, noise insulation and bus shelter costs.

The traffic signal installations will be supplied an installed through a separate specialist contract. Costs have been estimated using previous contract rates and due to the nature of the works should be accurate.

6.2.3.4 LCC Design/Phase 1 Fee

6.2.3.5 The LCC design team fee is accounted for in the total scheme budget, although this cost has been funded to date by LCC. The initial design fee accounts for work done developing the scheme proposals up to appointing an ECI contractor. The LCC design team has incurred further fees during phase 1, working the ECI contractor to finalise the detailed design. Recovery of these costs would be sought through a claim for preparatory costs. Using the NEC form of contract has incurred costs above the original £834,000, prior to full approval, due to the level of pre construction activity which has been done during phase 1.

6.2.3.6 LCC Phase 2 Fee

The LCC phase 2 fee is the cost element for supervision of the construction of the works. These costs are currently estimated at £1,040,000. This has been established following the finalising of the exact site personnel.

6.2.3.7 LCC Risk

The current Toatal Scheme Budget includes an allowance for risk. A risk register has been maintained throughout phase 1. These risks have been actively managed and in many cases the risk has been significantly reduced, and even eliminated. Many design risks have materialised and been accommodated within the scheme. The residual risks have had values and probabilities assigned to them to give an overall risk value. This risk remains with LCC and is valued at £1,091,000. Section 5.4 discusses risk in more detail with Appendix K including the risk registers for Leeds City Council's Risk

6.3 Cost Profiles

The cost profile for the scheme is shown in Table 3 and, in a more detailed form, in Table 4. It should be noted that since the scheme was granted provisional approval in 2004 the requirement for the Local Authority to contribute 10% of the cost of the scheme does not apply so Leeds City Council therefore requests the DfT fund the entire cost of the scheme. In line with the guidance the prep costs between the Provisional and Conditional Approval stages have

been omitted from the figure provided in the “Total” column of the table. LCC will however incur contract costs of £400,912 to pay for the early contractor involvement prior to full approval.

In a similar way to making advance payments to Statutory Undertakers, in order to get best value, LCC has utilised modern procurement methods with early contractor involvement. This has required contract costs to be paid in advance of full approval. In doing this, robust costs have been produced which gives a higher degree of certainty on final outturn cost. LCC is currently carrying all the risk on these costs but would seek to recover them fully as a contract cost on full approval. These initial contract costs have been included within the DfT Major Scheme Funding amount which remains within the original programme entry funding envelope.

Table 16: Scheme Costs Profile

	Prep Costs between PE and CA	Prep Costs between CA and FA	Costs after FA				Total
			Year 1	Year 2	Year 3	Year 4	
Total Scheme Cost (QCE)	£0.820m	£0.140m	£4.324m	£9.037m	£7.226m		£20.587m
DfT requested contribution	0	0	£4.324m	£9.037m	£7.226m		£20.587m
LA Contribution	0	0	0	0	0	0	0
Third Party Contribution	0	0	0	0	0	0	0

Table 17: Detailed Scheme Costs Profile

COST ESTIMATE SUMMARY

	2002/3	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13		Current Out Turn Costs based on FTC Programme	Original PE Total Scheme Budget
Index	**135**	**178**	**186**	**191**	**197**	**202**	**207**			
LCC Design Fee (PE to CA)		362,000.00	381,000.00	77,000.00				£820,000.00		
LCC Phase 1 Costs (CA to FA)				140,000.00				£140,000.00		
Preparatory Costs									**960,000.00**	834,000.00
Phase 1 Contract Costs			116,000.00	284,912.00				£400,912.00		
Carillion FTC (November2009)				1,049,601.92	6,297,611.50	5,248,009.58		12,595,223.00		
Statutory Undertakers' Costs				1,727,705.25	287,950.88	287,950.88		2,303,607.00		
Land Purchase				768,000.00	768,000.00	384,000.00		1,920,000.00		
Ancilliary Costs				154,594.38	618,377.50	463,783.13		£1,236,755.00		
LCC Risk				136,375.00	545,500.00	409,125.00		1,091,000.00		
LCC Phase 2 Supervision Costs				86,666.67	520,000.00	433,333.33		1,040,000.00		
DfT Major Scheme Funding									**20,587,497.00**	20,746,000.00
Total Scheme Budget									**21,547,497.00**	21,580,000.00

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Appendices

Appendix A: Existing Traffic Conditions

Appendix B: Scheme Drawings

Appendix C: Signalling Strategy

Appendix D: Support Letters from Regional Bodies

Appendix E: ASTs and Supporting Tables

Appendix F: Support Letter from First

Appendix G: Base Accident Data

Appendix H: TUBA Output Files

Appendix I: Contractors Project Plan

Appendix J: LCC Project Plan

Appendix K: Quantified Risk Assessment

Appendix L: LCC Communications Strategy and Plan

Appendix M: Consultee Response Letters

Appendix N: Environmental Report

Appendix O: LCC Procurement Strategy