A65

TRANSPORT ASSESSMENT

13th May 2005

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Revisions

Rev A: date added to front page
Rev A: correction to last sentence, paragraph 4.5.3

1.0 Introduction

1.1 The A65 Transport Study was commissioned to assess traffic conditions along the A65 corridor. Data for this Report was collected from a number of sources including the draft Local Transport Plan LTP2, Leeds Monitoring Report 2004, the Revised Surface Access Strategy - Executive Summary for Leeds Bradford International Airport (LBIA) and the A65 Quality Bus Initiative (QBI) Study by Faber Maunsell. Unfortunately, a further document, the Outer Ring Road Study, is not available for reference.

1.2 Site visits were made to the area and a number of key junctions were observed in the morning and evening peak periods.

2.0 Overview
LTP2

2.1 The Local Transport Plan (LTP) sets the transport policies in the wider context of West Yorkshire. The present status of the LTP is that there is currently a draft version of the second 5 year LTP (LTP2) out for consultation, covering the period 2006-2011. LTP2 transport objectives are consistent with national and regional policy and set out how West Yorkshire aims to deliver the Vision for Transport. They cover both the long term transport strategy and the five year implementation plan.

2.2 In summary, the transport objectives are:

- To support the growth of local economies, contribute to an enhanced quality of life within communities and reduce the adverse impact of car based travel
- To improve access to jobs, education and other services particularly by public transport, walking and cycling.
- To improve the personal security and perception of safety of transport users.
- To improve journey time reliability and make better use of highway capacity.
- To encourage a greater proportion of journeys by public transport, cycling and walking.
- To reduce the level of demand for travel by car.
- To reduce the number and severity of road casualties, and tackle problems facing vulnerable road users (including those in deprived areas).
- To reduce transport emissions of air pollutants, greenhouse gases and noise.
- To improve the condition and manage the use of the highway and public transport infrastructure, to meet the needs of current and future transport users.

2.3 Congestion arises from greater demands on the transport system than it can cope with. This is partly a result of more people taking advantage of the

transport networks available and making more journeys on those networks. Congestion itself was one of the top transport issues identified by the general public, and reducing congestion was the most popular method for improving transport. LTP2 proposes to measure congestion by vehicle delay (time lost per vehicle kilometre) in the morning peak period from 07:00 to 10:00. However, there are suggestions that person delay would be a more appropriate measure as this takes account of priority schemes eg HOV and bus lanes.

2.4 Figures 1 and 2 show the congestion patterns for the primary road network centred on the A65. The average vehicle speeds over the 3 hour morning and evening peak periods have been developed by the West Yorkshire Monitoring Team from weekday data (2003) supplied from the Department for Transport (DfT). Each direction of travel along the roads is coloured to represent the average speed in the peak period. Red colours identify low vehicle speeds whilst green colours are higher speeds. From the plans, the commonly congested lengths of the A65 are clear although, there will be periods when congestion is worse than the average shown.

2.5 Similar figures for the whole of Leeds (which are available separately) indicate that all corridors on the network suffer congestion, but with the A65 and A660 substantially more congested than other radial routes into the city centre.

2.6 Other general factors to be aware of are that:

- demand for travel is increasing. This can be seen in average car ownership level for West Yorkshire which has increased by 20% over the 10 year period (1991-2001). This trend is in addition to the forecast growth in households which will also impact upwards on car ownership levels.
- there is suppressed demand for public transport in the corridor, particularly rail. This evidence comes from the rapid take up of new rail capacity on the Airedale Line, first with electrification, then following introduction of new and additional train sets and finally following extension of the train sets from 3 to 4 coaches.

3.0 Detailed Assessment of the A65 Corridor

3.1 Traffic Influences

3.1.1 The Leeds Monitoring Report 2004 is the source of much of the transport data. This document includes a report on movements into Leeds Central Area, utilising a cordon around the central area which is split into corridors to assist analysis (Figure 3). The A65 forms part of Corridor 6.

3.1.2 The A65 itself is the 4th busiest radial road across the cordon. Only the Ingram Road Distributor, Clay Pit Lane and York Road have flows higher than the A65's 45,000 vehicle all day, weekday, 2way flow. All are dual carriageways where they cross the cordon.

3.1.3 Tables 1, 2 and 3 show basic data for the A65 in comparison to the cordon.

2004 – Traffic Flows	A65	Leeds Cordon
am peak hour 0700-0800 inbound	1950	
am peak hour 0800-0900 inbound	1950	36564
am peak hour 0900-1000 inbound	1580	
am peak hour period 0700-1000 inbound	5480	98280
pm peak hour 1700-1800 outbound	1830	35321
pm peak hour period 1600-1900 outbound	6840	120708

Table 1: Traffic Flows on the A65 in comparison to the cordon

2004 - car occupancy per 100 cars	A65	Leeds Cordon
car occupancy 0730-0930 inbound	121 occupants	124
car occupancy 1600-1800 outbound	124	131

Table 2: Car Occupancy Rates

2004 - am 0730-0930 inbound	A65	Leeds Cordon
motorcyclists	32 (0.6%)	646 (0.6%)
cyclists	58 (1.0%)	577 (0.5%)
people walking	182 (3.2%)	3786 (3.5%)
bus passengers	1390 (24.5%)	33461 (31.0%)
car occupants	4010 (70.7%)	69517 (64.4%)
train passengers	n/a *	12435

Table 3: AM peak modal split (excluding train) of Travel into Leeds
* rail line data cannot be specifically allocated to one corridor

3.1.4 Table 1 identifies that inbound traffic flows are about 2000 vehicles per hour. This level is commensurate with a single carriageway flow rather than a dual carriageway flow and reflects the capacity restriction of the single carriageway A65 at Cardigan Fields. The Table also identifies that the A65 is virtually at capacity for the whole 3 hour period.

3.1.5 Table 2 identifies the slightly lower level of car occupancy on the A65 compared to the occupancy figures for cars crossing the cordon. This information is referred to later when discussing improving A65 capacity.

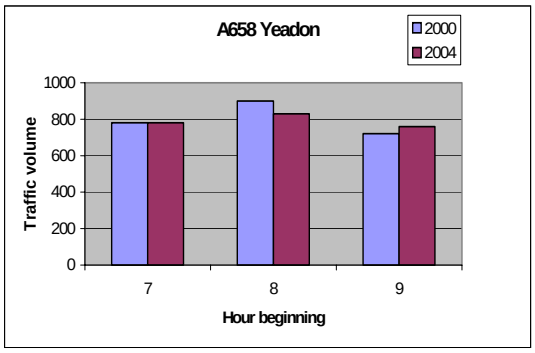
3.1.6 Table 3 identifies the am peak modal split (but excluding train) of travel into Leeds. The table identifies that the A65 has a higher than average percentage of cyclists (although the actual numbers remain small), a lower than average percentage of bus passengers numbers and a higher than the average percentage of car occupants.

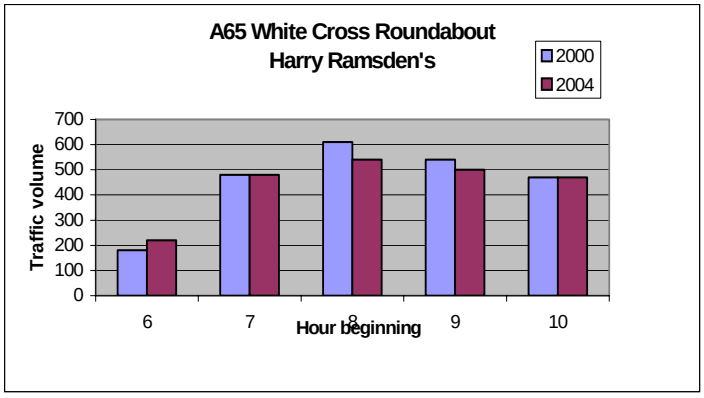
3.1.7 Figures 4 and 5 identify sites along the A65 where traffic counts are regularly monitored. Peak hour flows indicate over the last 4 years indicate a degree of consistency which in turn, indicates that peak hour traffic flows are generally

as high as the road allows i.e. the road is at capacity.

3.1.8 The data identifies that there have been different patterns of traffic growth on the A65 at different locations. In some locations, there has been growth in the periods either side of the peak hour but not the peak hour. This is referred to as peak spreading and is generally considered a consequence of trips being held up on the network combined with motorists travelling either earlier or later to avoid the congestion. The Quality Bus Initiative Report (July 2004) also states that there is congestion on the A65 and peak spreading will worsen the situation.

3.1.9 Counts located between junctions along the A65 have been investigated for peak spreading. Charts 1a and 1b identify a fall in traffic levels in the peak hour between 2000 and 2004. In the case of the A658, Harrogate Road passing the airport, there is a corresponding increase in the following hour which illustrates peak spreading. In the instance of the White Cross roundabout, peak hour flows have dropped, but there has been an increase in flows before 7am with traffic travelling earlier.





Charts 1a and 1b: Highway Traffic Flow Changes

3.1.10 Peak spreading is, however, much more evident at junctions which are generally the capacity restraint. More frequently the junctions, or perhaps a pinch point such as a pedestrian crossing, are the cause of congestion and these locations can be identified on Figures 1 and 2.

3.2 Junction Assessment

3.2.1 Five junctions were observed during the peak periods. The following conditions were noted:

- A6120/A65 Outer Ring Road roundabout

Peak queues are common, quite often caused by queues on the ring road.

- A65/A658 Apperley Lane roundabout, Yeadon

This junction generally performs well because traffic is unable to reach the junction in sufficient numbers to cause congestion. Traffic is constrained by

the lack of capacity at the A65 junctions either side, in particular A65/Micklefield Lane/Harrogate Road signals.

- A65/Micklefield Lane/Harrogate Road signals, Rawdon

Congestion here appears related to airport traffic both turning right from and into the A65.

- A65/A6038 Harry Ramsden's Roundabout

There is little evidence of queuing caused by this junction. However, there are external influences which do affect traffic flows at this junction. To the north, the A65/Bingley Road/Buckle Lane signalled junction acts as a capacity restraint for traffic heading for Leeds, especially in the AM peak. Were this restriction to traffic flow to be eased, the operational performance of the Harry Ramsden roundabout would be expected to suffer as a consequence.
Equally, in the PM peak, there is evidence of traffic blocking back from the same A65/Bingley Road/Buckle Lane signalled junction.

- A65/Oxford Road Signals, Guiseley

There are four phases to these signals rather than the conventional two, the additional phases providing benefits to pedestrians but at the expense of vehicular capacity even though the pedestrian phase largely works in the shadow of Oxford Road.

3.3 Road Safety

3.3.1 Within Leeds there are a number of road safety issues. Figure 6 identifies both the present lengths of road for concern and individual sites for concern in the vicinity of the A65.

3.3.2 Some lengths of road are included because of a high number of speed related accidents (e.g. Bayton Lane) others predominantly because of shunt type accidents (e.g. Ring Road Rodley).

3.3.3 The highest ranked individual site for concern in the area is the A65/A6120 junction (Site No. 7 out of 108). Improvements for this site are expected to be influenced by the Outer Ring Road Study. The proposals to address road safety issues for the A65 Kirkstall Road/ Viaduct Road/Willow Rd junction (ranked No 8) are to review the surface quality of the carriageway. The A65 Commercial Road/Abbey Road junction (ranked No. 9) proposals are to investigate changes to the layout and signaling to reduce the current accident levels. Addressing road safety issues generally reduces rather than increases highway capacity.

3.4 Public Transport – Rail

3.4.1 West Yorkshire Passenger Transport Executive (WYPTE) recognise there is general lack of rail capacity at peak times and that nearly 30% of all peak time Leeds arrivals are overcrowded. Even on the two rail lines running parallel for most of the A65 in Leeds - the Airedale and Wharfedale Lines - improved capacity has been eroded. As argued earlier, there is suppressed demand for public transport in the corridor, particularly rail. This evidence

comes from the rapid take up of new rail capacity on the Airedale Line, first with electrification, then following introduction of new and additional train sets and finally following extension of the train sets from 3 to 4 coaches.

3.5 Public Transport – Buses

3.5.1 The unreliability of bus services is known to affect patronage (as demonstrated in "The demand for public transport: a practical guide" paragraph 3.2.8, p21). For example, in West Yorkshire during 2004 bus punctuality was 88.5%, reliability was 98.3%. Also affecting patronage is the general lack of available space on buses at peak times in certain areas. The A65 is of special concern because there are no bus priority measures on the A65. Indeed, the A65 Quality Bus Initiative (QBI) study by FaberMaunsell reported that buses suffer severe and variable delays and that these delays are not confined to peak hours.

3.6 Airport

3.6.1 The airport is the fifteenth largest airport in the UK in terms of passenger throughput with 2.369 million passengers in 2004. The airport is currently served by two bus services, one from Bradford Interchange and one from Leeds City Station. Public service buses are identified as meeting 4% of these trips, with minibuses and coaches meeting a further demand of 12%. The remainder of trips (84%) arrive by car.

3.7 Environment

3.7.1 The road junctions examined within this report are only one element of the highway network. The A65 passes through a number of residential and shopping areas. These areas cause residents and pedestrians to experience environmental problems such as severance, traffic noise and intrusion. However, the A65 does not have major environmental problems and does not qualify as an 'air quality management areas'.

4.0 Future Proposals

4.1 Introduction

4.1.1 The Local Transport Plan (LTP2) identifies that in the next ten years, Leeds will see a growth of 31,000 jobs, in particular in the Aire Valley. Whilst elements of this will be part-time and off-peak, a substantial proportion will be peak inflows on already busy corridors.

4.1.2 Another development which will significantly affect future travel behaviour along the A65 will be any outcomes from the Revised Surface Access Strategy for Leeds Bradford International Airport (LBIA). This proposes a new link road to the airport from the A65, improved bus based public transport access and further feasibility work on a rail link.

4.1.3 Another development which will also impact on future travel behaviour along the A65 will be any highway changes arising from the Outer Ring Road Study. A draft of the consultant's report is currently being appraised by LCC's Transport Policy Group and was not available for this study.

4.1.4 The impact of airport growth, future rail and bus on the A65 are discussed below. However, the greatest effect on the A65 will come from cumulative development along the route and this is the final heading in this section.

4.2 Airport Growth

4.2.1 Current forecasts of passenger levels are for 3M passengers per annum by 2009, at least 4M by 2016 and 7M by 2030. By 2009, this translates into additional trips to and from the airport of 600,000 per year, up 25% from 2.4M in 2004.

4.2.2 The airport authorities aim to increase public transport share by 4% by 2009. However, this value is not as high as it appears as the airport authorities use the Department for Transport (DfT) definition of public transport which includes private hire and car park transfer bus services.

4.2.3 Accepting a 4% increase in modal shift from the private car to service bus public transport, still leaves an additional 460,000 to arrive by car or 1260/day.

4.2.4 In order to achieve this 4% increase, the airport authorities identify a number of short term actions:

- complete the A65 QBI
- introduce a direct bus service to Harrogate
- encourage public service bus use

Further details can be found in the document Revised Surface Access Strategy - Executive Summary for Leeds Bradford International Airport, available as a supporting document.

4.3 Rail Improvements

4.3.1 The Local Transport Plan seeks to manage traffic growth. In LTP2, the emphasis will be on increasing capacity on rail based public transport although LTP2 recognises that the fixed nature of the rail network will provide only limited opportunities. However, large scale rail improvements are recognised as being expensive and requiring long delivery times.

The railway lines in the vicinity of the A65 are recognised by WYPTE as having potential for two additional stations with some potential for park and ride. However, one additional peak hour service would only provide 300 seats. If these were to be filled by people transferring from the car, this would equate to 240 less cars on the network. More likely, some of the seats will be filled by some passengers transferring from cars, some from existing bus services and some from suppressed demand – trips that currently cannot take place because there is no capacity.

4.4 Bus Improvements

4.4.1 LTP2 identifies two 'draft' targets for bus public transport in West Yorkshire. The first is a target of a 3% increase in bus patronage over the next 5 years and 7% growth by 2016. The second target is specifically for corridors which see quality bus improvements and, in this case, the target would be to see an additional growth of 5% per year

4.4.2 Table 4 puts these targets into context. In 2004, 1390 bus passengers crossed the Leeds cordon in the peak hour (Table 3). If 3% passenger growth were to be achieved by 2009, an additional 42 passengers would need to cross the cordon. This number is less than the capacity of one bus. However, should the A65 quality bus initiative (QBI) come into effect, an additional target of 5% growth per year would be set, giving a target of an additional 342 passengers (assuming QBI commences in 2006). This is the equivalent of an additional 5 buses crossing the Central Area cordon per hour.

AM Peak	
bus passengers crossing the central cordon into Leeds City Centre (2004)	1390 (Table3)
necessary increase in bus passengers to meet 3% target (LTP2 - 2009)	42
necessary increase in bus passengers to meet 5% targeted growth per year from the opening of QBI opens (assumed 2006)	300

Table 4: LTP2 bus patronage targets

4.4.3 The objective of the A65 Quality Bus Initiative is to reduce the delays and variability of bus services and encourage a modal shift away from the private car by providing improved and integrated public transport services. The scheme (Figure 7) has been designed around relocating the existing traffic queues to positions where bus priority can be provided without a detrimental effect on highway capacity.

4.4.4 The A65 Quality Bus Initiative has been divided into two schemes. The first scheme is the Abbey Road Bus Priority Scheme which runs from the Outer Ring Road to Kirkstall Abbey. The second scheme runs from Bridge Road/Kirkstall Lane junction to the A58 Inner Ring Road and covers a length of approximately 3.5km..

4.4.5 The Abbey Road Bus Priority Scheme provides a new inbound bus and cycle lane, along a 1.5km length from Kirkstall Forge to Kirkstall Abbey, bus lay-bys and associated footway works, new and improved controlled and uncontrolled pedestrian crossing facilities and cycle lanes both ways from Regent Avenue to Kirkstall Lane. There is a degree of certainty that this scheme will proceed in the near future.

4.4.6 Less certain is the Kirkstall Lane to the Inner Ring Road length. Alternative designs are being considered for this length.

4.4.7 The overall scheme is forecast to increase bus patronage by 9% over the day and reduce overall vehicular flows over the day by 6%. Environmental benefits are also predicted as a consequence of the reduction in vehicle numbers.

4.4.8 However, just recently Highways Development Services have been instructed to undertake a study of all existing and proposed bus lanes with a view to conversion to high occupancy vehicle (HOV) lane. This study will determine whether additional benefits over and above those the A65 scheme delivers to buses could be achieved by conversion of part or all of the length to high occupancy vehicle lanes. Such conversions are not always possible but, where HOV lanes can be built (such as on the A647), the capacity to deliver people rather than cars into the City Centre can be increased.

4.5 Future Development Proposals

4.5.1 Figure 7 also identifies the location of committed and future development and includes a table of the trips generated by each development in the am and pm peaks.

4.5.2 Traffic generations were derived from developer Transport Assessments, where available, for committed development and for current planning applications. The figures for committed developments are agreed, however, for all other applications the figures are subject to change. The redevelopment in the Kirkstall Valley Renaissance Area is not included.

Trip Generations (two way)			
AM trips north of the ring road	820	PM trips north of the ring road	816
AM trips south of the ring road	2490	PM trips south of the ring road	3041
	3310		3857

Table 5: Peak Hour Development Trip Generations

4.5.3 Table 5 identifies the cumulative traffic generation figures for the AM and PM peak hours. These trips will have to be accommodated on the highway network. The outlined development at Kirkstall Forge is ~~not~~ included in Table 5.
Rev A: correction to last sentence paragraph 4.5.3

4.5.4 This study has identified that there are highway concerns all along the A65 but especially at the A65/Oxford Road, A65/Outer Ring Road and Kirkstall Gyratory junctions. The A65/Oxford Road junction is a junction which is already at capacity and in the middle of the northern A65 developments. Table 5 identifies 820 additional AM trips in the area. Of these trips some will not pass through the A65/Oxford Road junction, but a conservative assessment would be that 66% would wish to pass through the junction. Assuming these trips can arrive at the A65/Oxford Road junction, 541 vehicles would be added to the existing queues. The likelihood is that these vehicles will only be accommodated by peak spreading or new highway measures.

4.5.5 Some local highway improvement measures have been agreed, for example, with the High Royds developer. These include a number of junction improvements around the site plus a diversion of some public bus services into the site. The A65/Bingley Road junction is being improved to increase capacity on the A65. This will assist PM peak traffic flows leaving Leeds but, in the AM peak, will only release more traffic southwards to junctions that are not being given additional capacity. All proposed junction improvements south of Bingley Road are to assist pedestrians and address road safety issues and these invariably reduce highway capacity. The cumulative effect of the additional trips from the developments plus the release of existing traffic at the Bingley Road junction will be to make the situation worse at places like the A65/Oxford Road junction.

5.0 **Conclusion**

5.1
- the A65 is at capacity, 1950 vehicles per hour at the cordon, 1000 elsewhere
- there is evidence of peak spreading with more trips travelling outside the peak periods
- public transport opportunities have been studied and are considered unlikely to result in a significant mode shift to either buses or trains. Potentially 590 trips have been identified
- future growth at the Airport has been assessed and will worsen conditions on the A65 and surrounding network. An additional 1260 car trips per day have been identified.
- developer generated trips have been assessed and these will worsen conditions on the A65 and surrounding network. 3310 additional 2 way peak hour trips have been identified from developments with traffic

generations available

- few opportunities to improve highway capacity have been identified. The possible improvements to the Outer Ring Road were not available to this study. There are plans for a quality bus corridor. One junction at Menston has been identified as providing additional capacity.
- the A65 does not have the capacity to carry all the identified additional trips in the peak periods