

Appendix 3

Summary using URS A52 Strategic Transport Priority

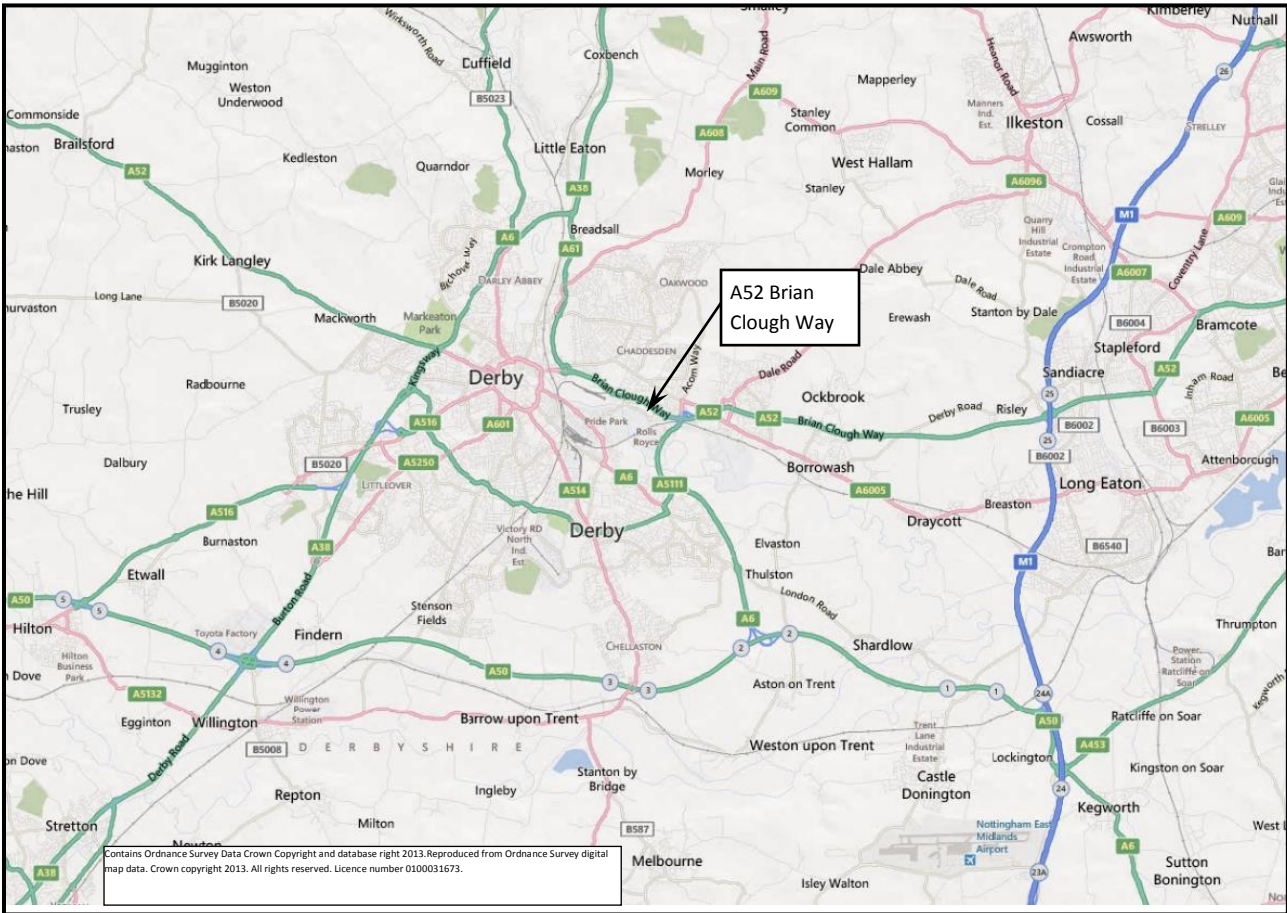
Option Assessment Report

Prepared for Derby City Council December 2013

Context

The A52 Brian Clough Way is part of a regionally important radial route linking Derby to Nottingham and the national road network including junction 25 of the M1, the location can be seen in figure 1. The A52 Brian Clough Way route also provides links for trips from more local origins such as the settlements of Spondon, Chaddesden, and Borrowwash to access areas of Derby including the city centre, Pride Park, Meadows Industrial Estate, and Wyvern Retail Park.

Figure 1: Primary Routes in the area of Derby



## **Existing Problems and Issues**

The A52 Brian Clough Way, which is a key radial route into Derby, experiences severe congestion in the AM peak hour (0800-0900) as a high volume of traffic accesses Pride Park. The “6Cs Congestion Management Study” found that during the AM peak hour, trips on the westbound carriageway of the A52 experienced over 8 minutes delay. The A52 is described in the Derby Local Transport Plan for 2011-26 as *‘amongst the worst roads in the East Midlands in terms of its susceptibility to non-recurrent or random vehicle delays, mainly related to accidents on the stretch between Derby and the M1 at Junction 25’* (paragraph 4.14, LTP3, Part 1: Strategy, April 2011).

Road traffic accidents are recorded at cluster sites, the most notable of which is on the westbound diverge from the A52 into the Wyvern Junctions. This link contains a poor horizontal alignment, combined with relatively high exit speeds from the A52 and a traffic signal controlled pedestrian crossing. A 30 mph speed limit has been implemented, which is reinforced by vehicle activated signsto alert those drivers leaving the dual carriageway.

The A52 provides a high frequency bus service between the cities of Derby and Nottingham. It also provides for local bus services to Spondon. During peak periods these services are affected by the unreliability of the route. In an attempt to improve reliability, westbound bus drivers have been provided with an alternative route via a bus-only lane that runs parallel to, and to the south of, the A52. However, this alternative bus route is also detrimentally affected by capacity limitations of the Wyvern junctions.

The Meadow Lane footbridge, which provides access between the residential area of Chaddesden and Pride Park, has stepped approach ramps which are not compliant with the Disability Discrimination Act and are not convenient for cyclists.

## **Future Transport-Related Problems**

The Derby Urban Area Potential Core Strategy Sites Traffic Impact Assessment Report (MVA, October 2012) indicates that by 2026, the A52 (Pentagon to city boundary) junctions would be over capacity even without the additional traffic generated by the potential core strategy sites.

The completion of development in Pride Park, in particular the new multi-purpose arena, is likely to increase both vehicular trips to the site (many of which would use the Wyvern junctions) and the number of trips on foot and on bicycles (many of which would use the Meadow Lane footbridge).

The D2N2 LEP’s “Strategy for Growth 2013-2023” document identifies transport equipment manufacturing as one of the six priority sectors for growth. Derby, including the area around Pride Park, provides an opportunity for employment growth in transport equipment manufacture, given key transport infrastructure improvements. There is a relationship between employment growth and demand for travel, which would increase transport-related problems.

The overall development strategy will lead to an increase in the demand for travel in the area. There are no new transport strategies or transport infrastructure improvements that will accommodate the

extra travel demands, which means that the extra travel demand is likely to be met by private vehicle trips on the A52 and through the Wyvern Junctions.

### **Option generation**

There are potentially a number of specific and local interventions that could be made, that in combination could resolve the difficulties being observed on the A52 and at the Wyvern junction and its associated transport network. However, there is a possibility that a larger-scale scheme could be implemented that would not only solve the perceived difficulties but also provide more 'headroom' capacity and thus future-proof against growth and further development within and around the city.

URS are a multi-disciplinary transport and highway design consultant that were retained by Derby City Council to develop feasibility options to resolve the problems around the A52 Wyvern Junctions. Part of their brief was to investigate a fundamental reorganisation of layout, such as grade separation.

Affordability and deliverability is a key consideration in the development of any solution. The level of public funding and the time constraints within which funding would be available were critical issues that needed to be considered.

All potential options were considered including grade separation of the existing Wyvern access to and egress from the A52. Those options that required a significant departure from highway design standards, where they did not address capacity problems, or where there would have been a significantly adverse environmental impact on the adjacent residential area, were rejected. Initially the following two options were considered:

#### **At Grade Improvement -Figure 2**

This option looked at improving capacity of the A52 Brian Clough Way, westbound direction and options for improving the capacity of the Derwent Parade (Toys R Us) roundabout. This scheme is shown in figure 2 and includes:

- Bus priority loops on the westbound approach to new traffic signals at Derwent Parade
- A new pedestrian and cycle bridge over the A52 to Meadow Lane

Improvements that would improve traffic flow in the Am peak – access to Pride Park/ Wyvern

- A widened A52 westbound carriageway to improve weaving capacity between the slip road from Raynesway and the diverge to Derwent Parade roundabout.
- A realigned connector road from the A52 westbound to the Derwent Parade roundabout.
- A realigned connector road from Derwent Parade to A52 westbound
- A traffic signalised Derwent Parade roundabout.

Improvements that would improve traffic flow in the PM peak- egress from Pride Park/Wyvern

- Widening of the A52 eastbound carriageway
- Widening of Wyvern Way
- Traffic signals at Pullman Road junction with Wyvern Way and Sidings junction with Wyvern Way

- Improved Stanier Way/Wyvern Way roundabout

URS estimated Present Value Cost (2010 prices discounted to a 2010 present year) and excluding land costs and contingencies of £5.56 million for this option.

URS recommend that this option is progressed to detailed design with a supporting major scheme business case. A broad operational analysis of the option was undertaken using available historical traffic data, junction modelling and a prediction of forecast traffic growth including future land use growth. The analysis indicates that this option would accommodate forecast traffic flows, including planned developments and would provide transport economic efficiency and journey time reliability benefits, whilst being a lower cost intervention than the grade separated options considered.

### **Grade Separated Option - Elevated roundabout junction in location of existing access to Wyvern from A52 eastbound approach, Figure 3.**

This option is grade separation of Derwent Parade (Toys R Us) roundabout from the A52, providing a new roundabout junction over a new local access Wyvernside Roundabout, which can be seen in figure 3. This option would reduce delays to traffic on the A52 in the morning peak hour and would provide a more direct egress from Pride Park onto the A52 but had the following disadvantages:

- The construction of a grade separated junction in close proximity to the existing residential communities would have a detrimental impact upon the urban environment.
- Because of the removal of the slip roads to the A52 eastbound all flows to and from Wyvern Way and Stanier Way traffic would be routed through the new local access road roundabout and onto the grade separated A52 roundabout.
- There would be a considerable requirement for third party land
- The option would result in only a single point of access to Wyvern Way and adjacent development.
- This option would not be able to accommodate additional land use development trips in the afternoon peak hour.

URS estimated Present Value Cost (2010 prices discounted to a 2010 present year) and excluding land costs and contingencies of £20 million for this option.

### **Further option development**

In order to address the environmental disbenefits of a grade separated junction adjacent to a residential area and to ensure all the options for a grade separated solution were fully explored, URS were asked to investigate the feasibility of a grade separated junction east of the existing Wyvern junction. At a location nearer to the existing Raynesway junction (shown in figure 4) differences in ground level would potentially provide a barrier between the new elevated highway and residential areas and would go some way to mitigating the environmental disadvantages of a grade separated junction.

**Grade Separated junction – two bridge elevated junction in the location of the existing egress from Wyvern, Figure 4.**

A grade separated improvement east of the existing access to Wyvern and Pride Park for westbound traffic incorporates a conventional two bridge grade separated roundabout layout where the current A52 eastbound Wyvern access/egress crosses the A52. This option would require considerable realignment of the A52 but would provide capacity for both east and west approaches. It is anticipated that this scheme would provide both journey time and reliability benefits. There would be travel time benefits for drivers travelling into and out of Derby on the A52; however, it has not been possible to evaluate these travel time benefits without a transport model that includes the delay effect at the A52/A61 Pentagon Island junction. While there would be significant capacity improvements for the A52 and Wyvern junctions, traffic would be constrained by congestion at Pentagon and other locations on the wider highway network. URS have stated that they expect that outputs from this model would demonstrate transport economic efficiency benefits for this layout; but it is not clear whether the size of these transport benefits would outweigh the capital investment costs of the option.

URS estimated Present Value Cost (2010 prices discounted to a 2010 present year) and excluding land costs and contingencies of £31 million for this option.

This option would also require the most third party land and would result in significant disruption to Wyvern and Pride Park occupiers.

**Conclusion**

URS recommend that the At Grade Option should be progressed as this option would accommodate forecast traffic flows, including planned development and would provide transport economic efficiency and journey time reliability benefits whilst being a lower cost intervention than the grade separated options considered.

The Local Transport Board, Major Scheme Funding, is for funding in the Spending Review Period 2015/16 to 2018/19. Derby could expect a share, based on a 2017 population estimate, of £4.1 million. As a result of the funding and time constraints the At Grade option is a more realistic, achievable option.

The preferred option needs to be progressed to detailed design and assessed for transport and economic benefits in a major scheme business case.

For the D2N2 Local Transport Board scheme prioritisation process, the construction prices calculated by URS were taken and costs including land, contingency and traffic management were added. The total 2016/2017 outturn costs for the At Grade option were estimated to be £10.04 million.





