APPENDIX B

SUPERTRAM: SUMMARY OF FUNDING SUBMISSION AND ROUTE DESCRIPTIONS

SUMMARY INTRODUCTION

A funding submission has been prepared by South Yorkshire Passenger Transport Executive in order to obtain a provisional view from the Department for Transport on the likely funding of extensions to the South Yorkshire Supertram network.

The extensions that are included in the submission are:

- Meadowhall - Rotherham Parkgate via Rotherham town centre; and
- Sheffield city centre – the Royal Hallamshire Hospital.

These routes are illustrated in Plan A, together with the existing Supertram network. The full appraisal and appendices run to approximately 800 pages. Much of the detail on the routes, the alternatives and the costs and benefits were reported to the April PTA. This summary concentrates on the key aspects of the proposed extension.

Context

South Yorkshire is among the most economically deprived counties in England with a GDP/head in 2000 that was only 72% of the European Union average. The area has suffered severely from the decline of its traditional industries, including coal mining and steelmaking. These problems were recognised by the European Union, which awarded Objective 1 status to the area, to assist the process of economic transformation.

The South Yorkshire Authorities have long recognised the importance of transport investment in stimulating economic regeneration and in catering for the travel demands that this will generate. In particular, high quality public transport is required to ensure that development occurs in a socially inclusive and sustainable form.

Scheme Development

The Authorities recognised that the bus, light rail and heavy rail modes all have a role to play in the integrated development of the County's public transport network. One strand of this work was consideration of possible extensions to Sheffield's successful Supertram system, which now carries 12 million passengers per annum. Over the past 4 years a wide range of routes have been considered and, in many cases, it was found that light rail was not the most appropriate technology. These corridors are being considered further as part of parallel work for other forms of improvement.

However, the studies identified four key radial corridors that were suitable for light rail and were high priorities for investment. Following discussions with the Department for Transport and stakeholders it was recognised that funding such a large programme of extensions would be difficult. Accordingly the two routes above are being recommended for further development.

While the routes had been identified as having potential for light rail, a rigorous and objective appraisal was undertaken to ensure that this was not only economically justified but was the best option to meet national and local government objectives.

The appraisal was undertaken in accordance with Department for Transport guidance and benefited from a substantial amount of very helpful advice from DfT officials. Four options were appraised in detail and the results are set out in the appraisal and were reported to the April PTA. The options were:

- LRT - extension from Meadowhall South to Rotherham Parkgate plus a one way loop to serve the Royal Hallamshire Hospital and the University of Sheffield;

- LRT – extension from Meadowhall South to Rotherham Parkgate plus a short spur to serve the Royal Hallamshire Hospital, providing a lower cost approach to serving the hospital;

- Bus Rapid Transit (a very high quality bus-based system designed to replicate LRT quality, as far as possible, using bus technology) – route from Meadowhall Interchange to Rotherham Parkgate; and

- Quality bus corridor route from Meadowhall Interchange to Rotherham Parkgate.

Summary results from the economic appraisal of these options are shown below, assuming a 40% "optimism bias" uplift to the capital costs.

Table B.1: Results of Cost Benefit Analysis

	Economic Net Present Value (£m)	Economic Benefit:Cost Ratio (£m)
Tram-based		
Royal Hallamshire Hospital (Loop) – Rotherham Parkgate	85.75	1.57
Royal Hallamshire Hospital (Spur) – Rotherham Parkgate	63.76	1.46
Bus Rapid Transit	2.12	1.05
Quality Bus	(25.44)	-

The table demonstrates that the Royal Hallamshire Hospital (Loop) – Rotherham Parkgate tram option has the highest net economic benefits. It also provides a better service to and from the Broomhill area than the spur, including a number of hospital sites. This is reflected in a higher predicted annual ridership gain of 6.4m, compared with 5.2m for the spur. The bus-based options are, at best, marginal. This reflects the high quality of service offered by light rail and the additional connectivity offered by extending the existing Supertram system, offering extensive through journey opportunities.

Benefits Delivered

The proposed scheme will deliver a wide range of benefits that contribute to meeting national and local policy objectives, including objectives in the Government's 10 year plan for transport. The benefits include:

- Delivery of 675 additional jobs to residents in the 26 wards in Sheffield and Rotherham which are among the most deprived 20% of all wards in England, contributing to the retention and expansion of employment;

- Significant improvements in access to healthcare, training, shopping and leisure for residents in these wards, contributing significantly to achieving a more socially inclusive society;

- A substantial contribution to improving the accessibility of Sheffield City Centre, Rotherham Town Centre and sites within the M1 Strategic Economic Zone, assisting their economic renaissance;

- 2.2 million extra public transport journeys annually, matched by a reduction of more than 10 million vehicle kilometres pa on the highway network, assisting in meeting government targets to reduce congestion;

- Improved access to the transport system and better interchange both within the light rail mode and between it and other travel modes; and

- A contribution to land use policy to focus development in existing urban centres, as brownfield sites and within public transport corridors.

Extensive public consultation has taken place during the development of the scheme and this has shown widespread public support for the routes contained in the submission.

The assessment shows that the scheme would operate without ongoing subsidy from the start of operations and would generate a significant operating surplus, which could be captured to help fund the capital costs. This is addressed in a separate paper on funding and procurement options.

A Robust Appraisal

The appraisal of the scheme has been conducted in a rigorous and conservative manner, in line with DfT guidance. It has benefited from the advice of DfT officials and from a Peer Review undertaken by one of the Department's audit consultants – Arup.

In particular, the following key assumptions are conservative, particularly in relation to the preferred LRT option:

- Population and employment has been constrained to the highly pessimistic TEMPRO forecasts for South Yorkshire, except in the case of identified development zones;

- No allowance has been made for induced demand as a result of the scheme;

- The convenience benefits of eliminating interchange, apart from the time saving involved, have not been included; and

- The Bus Rapid Transit option has been treated as if it were light rail in the appraisal and this may have overstated the benefits of this option.

The appraisal was undertaken prior to the Secretary of State for Transport's recent announcement that he considers that Quality Bus contracts have a role to play in developing greater integration between light rail and bus. This could provide an opportunity to unlock significant additional benefits through greater inter-modal integration.

Route Description

Meadowhall-Rotherham Parkgate

The route from Meadowhall to Rotherham is shown in Figure B.1. After leaving the Meadowhall South stop, the proposed route to Rotherham diverges from the current route with a new delta junction placed to avoid the proposed alignment of the Halfpenny Road connection to Meadowhall from Rotherham. The route turns under the M1 and onto the disused Blackburn cord, which will be used to provide a connection from the new line to feed trams into the existing Meadowhall terminus.

The route continues northeast running along the north side of the Tinsley rail line, crossing the River Don on a new structure serving a new stop at Templeborough/ Magna, then continuing alongside the current alignment crossing the River Don on a new structure and continuing under Bessemer Way to a further new stop. The route continues alongside the existing rail alignment running under the Barrow Hill line using the Ickles Viaduct. The alignment from this point rises and crosses from the north side of the Tinsley line using a new structure, crossing the Sheffield to Keadby Canal and descending back to run alongside the south side of the alignment. The route then continues under the existing Centenary Way Bridge and serves a stop prior to Main Street, in the area of a proposed new development.

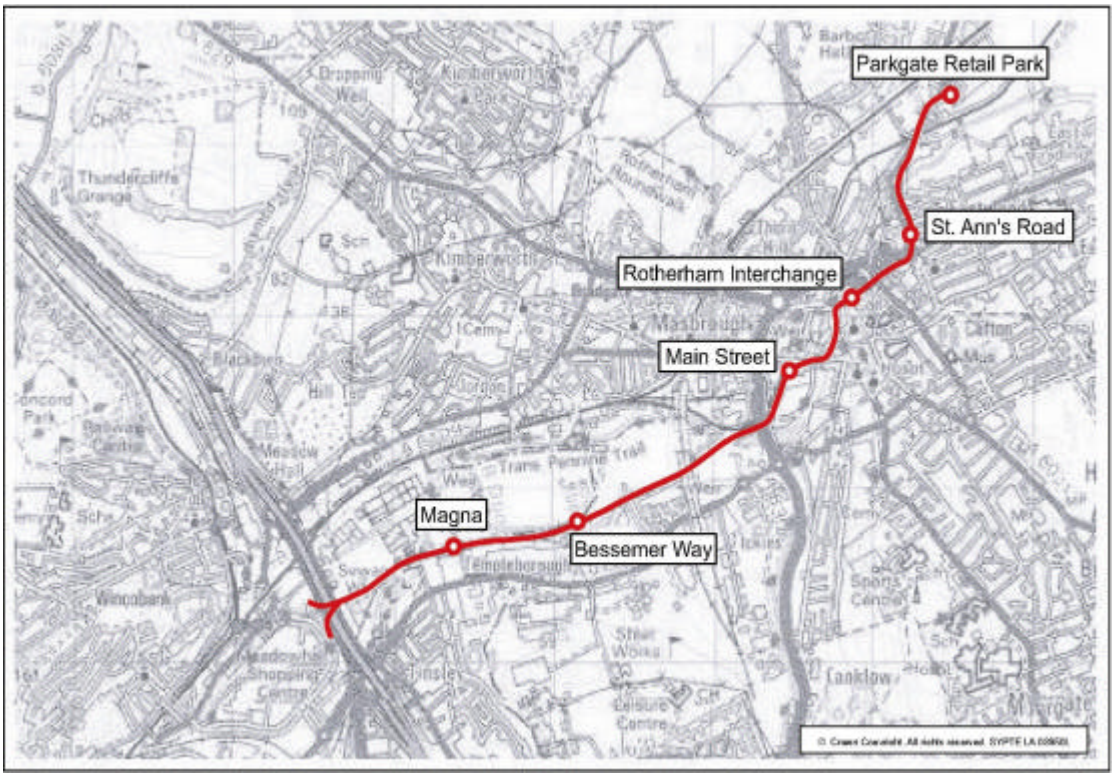
Approaching the town centre, the route runs onto Main Street and crosses the River Don on the existing road bridge. Here, strengthening works would be required. It then turns into Market Street and then northwards into Corporation Street, running to the junction with Fredrick Street where the route will run along the pedestrian-only Fredrick Street to a stop serving the centre of Rotherham and connecting with the existing bus Interchange.

Exiting the town centre, the route continues, crossing Drummond Street onto the pedestrian-only Walker Place to the junction of the A630 Centenary Way and the A633 St Ann's Road. Here, the road layout would be changed as part of highway improvements to remove the current junction arrangements. The route crosses onto the southbound dual carriageway, which will become tram-only with the road reduced to a single carriageway using the current northbound side. A stop would be located at the start of St Ann's Road.

The route then continues along St Ann's Road, remains segregated to the east side of Rotherham Road, crosses the River Don on a new structure and remains segregated as it crosses the Sheffield and South Yorkshire Navigation, the Tinsley line and the Earl Fitzwilliam's Canal. Remaining segregated to the east side of Rotherham Road, the route turns eastwards into the Parkgate Retail World shopping centre with a stop alongside Stadium Way. The route will terminate at this point.

Within the Retail World development, there will be potential for a second stop to serve a new transport interchange within the area of a proposed further development.

Figure B.1: Meadowhall-Rotherham Parkgate



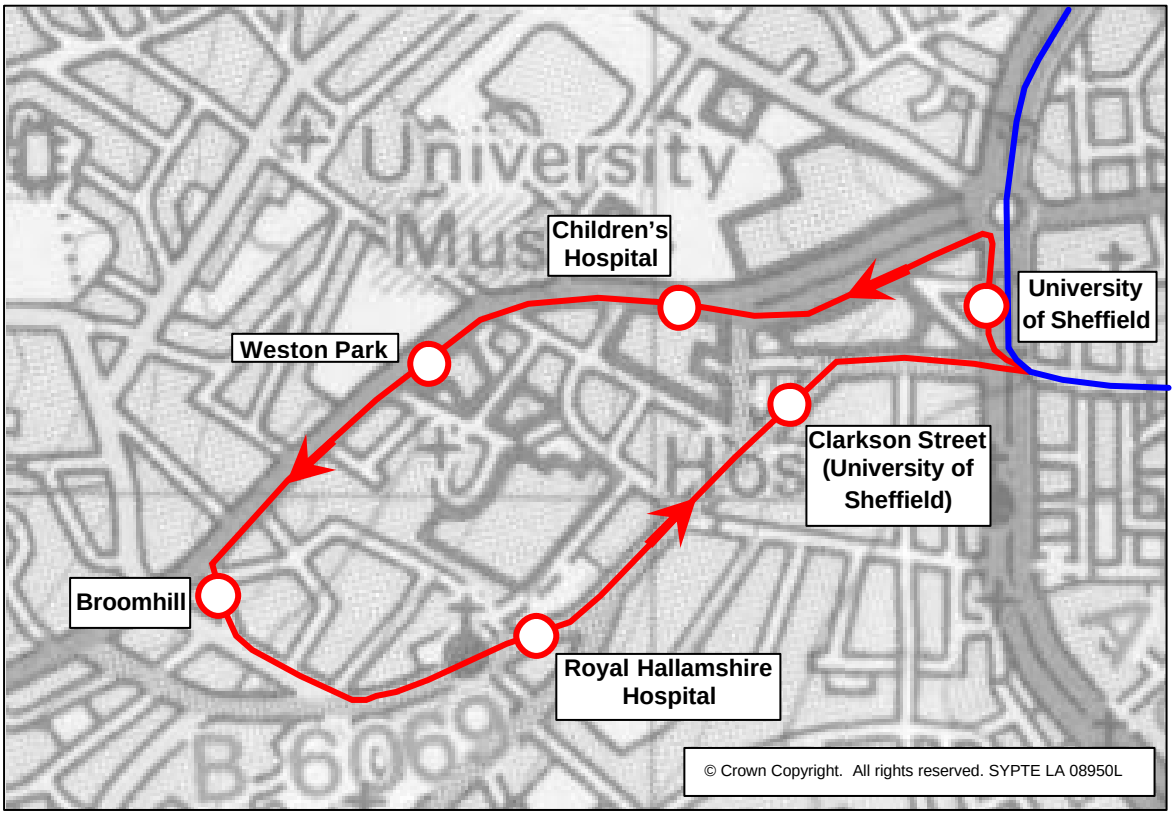
Royal Hallamshire Hospital to Sheffield City Centre

Loop Option

Route Description

The Royal Hallamshire Hospital route is shown in Figure B.2. It leaves the current system at the junction of Glossop Road and Upper Hanover Street turning north into Upper Hanover Street gutter running on street to the west of the existing alignment. A new University platform is parallel to the existing University stop.

Figure B.2: Royal Hallamshire Hospital Loop



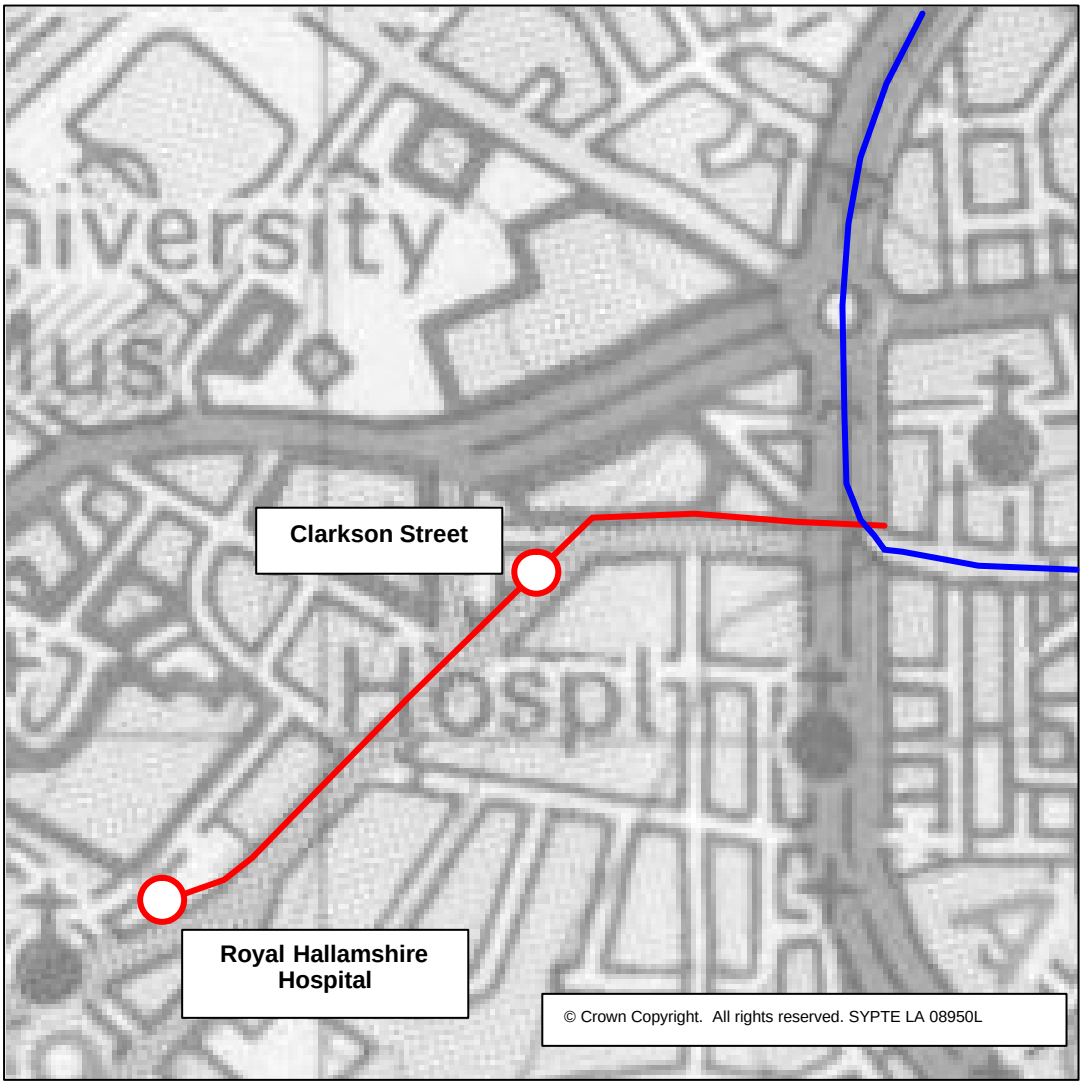
The route continues gutter running up Upper Hanover Street to the junction with Brook Hill, where the route turns west onto Brook Hill, running in the nearside lane of the dual carriageway and continuing on Western Bank. Following the junction with Clarkson Street, a tram stop is located prior to the Children's Hospital. The carriageway narrows following the stop; the tram will need to be given priority to pull in front of the traffic.

Running within the traffic, the route continues from Western Bank onto Whitham Road, stopping outside the Western Park Hospital prior to continuing to the junction with Newbould Lane. The route turns down Newbould Lane where a stop will be located on the east side of the road. The route continues into Nile Street running down to the junction with Glossop Road. Turning east on Glossop Road the route continues on street gutter running to the Royal Hallamshire Hospital stop situated in front of the hospital close to the junction with Clarkehouse Road. The route continues on Glossop Road stopping at the University stop sited between Clarkson Street and Durham Road. The route continues on Glossop Road, crossing the outbound track of the loop and the existing track to Middlewood at the junction with Upper Hanover Street prior to connecting to the existing system and continuing along Glossop Road.

Spur Option

The route (shown in Figure B.3) starts on Glossop Road in front of the Hallamshire Hospital close to the junction with Clarkehouse Road. The terminus design being similar to that at Middlewood, allowing arriving trams to pull clear of the road when a tram is waiting in the stop to leave.

Figure B.3: Royal Hallamshire Hospital Spur



It then continues along Glossop Road serving a stop close to the University of Sheffield between Clarkson Street and Durham Road. The route continues to the junction of Upper Hanover Street, where it crosses and connects with the existing system as it turns from the University stop into Glossop Road and heads into the City Centre.

The route continues along the existing system through the City Centre.

Scheme Costs

Scheme Specification

The existing Supertram routes operate at 10 minute headways, with the exception of the Herdings - City Centre - Meadowhall route. This was regarded as the minimum frequency required to provide a 'turn up and go' service that would be attractive to customers. It would also be more efficient operationally if the existing and new services operated at the same headway. Accordingly it was decided that all the main routes would operate every 10 minutes. The proposed headways are shown in Table B.2.

Table B.2: Proposed Service Pattern

Route	Day Time Frequency (Minutes)
Middlewood- Meadowhall	10
Malin Bridge-Rotherham Parkgate	10
RHH-Halfway	10
Herdings - City Centre	30

In general, it is proposed that the extended system would operate in a similar way to the existing system and it could operate either with conductors or with modem, reliable Ticket Vending Machines. This is a decision best left to the future operator of the system.

Capital Costs

The capital costs of the scheme, including vehicle and depot costs assume this service specification. The capital costs have been calculated in 2002 prices.

The capital costs have been subject to a Quantified Risk Assessment. This has resulted in the estimates for individual risk items and cost headings being adjusted to take account of the level of currently unmitigated risk, which they include.

The capital costs of the scheme based on the RHH Loop are set out in Table B.3, while the costs with the RHH Spur are provided in Table B.4.

Table B.3: Capital Costs for Royal Hallamshire Hospital Loop to Rotherham Parkgate (£'000s)

Item	Net	Risk	Total
General			
Surveying, Drilling and Soil Sampling	50	0	50
Acquisition of Land	2,100	0	2,100
Earthworks (including Land Reclamation and Landscaping)	667	87	754
Fees and Professional Advisers	550	275	825
Transport Systems			
Tunnels, Bridges and Structures	7,840	666	8,506
Highway works, including alterations to and relocation of existing services and statutory undertakers apparatus	21,579	3,173	24,752
Permanent Way	17,246	4,105	21,352
Workshops, Depots, Stations and Buildings	3,994	1,051	5,044
Electrical Plant and Equipment	7,674	579	8,252
Signalling and Communications	3,397	1,376	4,773
Vehicles	13,572	3,293	16,865
Alterations, Modifications and removal of existing works	1,062	106	1,169
Totals	**79,731**	**14,710**	**94,441**

Table B.4: Capital Costs Royal Hallamshire Hospital Spur to Rotherham Parkgate (£'000s)

Item	Net	Risk	Total
General			
Surveying, Drilling and Soil Sampling	65	15	80
Acquisition of Land	2,100	0	2,100
Earthworks (including Land Reclamation and Landscaping)	664	86	750
Fees and Professional Advisers	550	275	825
Transport Systems			
Tunnels, Bridges and Structures	7,840	666	8,506
Highway works, including alterations to and relocation of existing services and statutory undertakers apparatus	18,709	4,210	22,919
Permanent Way	16,308	4,021	20,328
Workshops, Depots, Stations and Buildings	3,645	965	4,610
Electrical Plant and Equipment	7,421	569	7,990
Signalling and Communications	3,340	1,352	4,692
Vehicles	12,064	3,016	15,080
Alterations, Modifications and removal of existing works	988	99	1,087
Totals	**73,694**	**15,273**	**88,967**