GREATER MANCHESTER INTEGRATED TRANSPORT AUTHORITY

REPORT FOR RESOLUTION

COMMITTEE: **Capital Projects**

DATE: **18th September 2009**

SUBJECT: **Metrolink Second City Crossing Alignment**

REPORT OF: **Metrolink Director, GMPTE**

PURPOSE OF REPORT

To provide Members with an update on the alignment for the Metrolink Second City Crossing

RECOMMENDATIONS

Members are asked to consider the contents of the report and confirm that Cross Street should be the alignment for the Second City Crossing and that the documentation for the related public consultation in Spring 2010, should be prepared on that basis.

BACKGROUND DOCUMENTS

Report to Development & Operations Committee on 1st August 2008 – Metrolink Capacity at Cornbrook Viaduct and Through the City Centre.

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1. Background

1.1. Since its launch in 1992, Metrolink has become a very well used and essential part of Greater Manchester's public transport network. Metrolink's strength is in serving corridors with high levels of demand, and catering for trips of medium length. Its combination of high frequency service, penetration of the main business and shopping areas of the Regional Centre and high level of accessibility have proved extremely popular. The entire network now carries over 20 million passengers per year on the original Phase 1 routes from the Regional Centre to Bury and Altrincham, and the Phase 2 extension to Eccles via Salford Quays added in 2000.

1.2. The Phase 3a Contract awarded in 2008 will, over the next few years, result in four further routes being added: Mediacity in 2010, Chorlton in 2011, and to Rochdale Railway Station and Droylsden in 2012. The Mediacity service comprises a shuttle from the Cornbrook interchange, whereas the other three routes will result in additional services operating in the Regional Centre.

1.3. The Greater Manchester Transport Fund delivery strategy agreed at the July 2009 meeting of the Policy and Resources Committee and subsequently by the AGMA Executive includes a number of Metrolink extensions amongst the projects to be advanced over the next few years. In particular GMPTE is presently progressing Full Approval from DfT for the East Didsbury extension and the Ashton extension, both of which are in the Accelerated Package for delivery in 2013.

1.4. In addition to the accelerated package extensions, GMITA and AGMA approved the following schemes; Chorlton to Manchester Airport, Oldham Town Centre and Rochdale Town Centre. The effect of all these lines will be to significantly increase the accessibility of the Regional Centre from all areas. The expansion of the system is accompanied by a corresponding increase in the potential passenger capacity in the Central Area of the network.

1.5. Metrolink services in the Regional Centre currently operate along Mosley Street/High Street when travelling directly between Altrincham and Bury. Services to Piccadilly Station diverge from the Mosley Street/High Street corridor at Piccadilly Gardens. As Phase 3a comes into service the new routes to Rochdale and Chorlton will result in a further group of services passing along the Mosley Street/High Street corridor.

1.6. The implementation of the additional extensions in the GM Transport Fund investment plan would push the demand for services on the Regional Centre network above its optimum capacity. In particular Mosley Street has a practical operational capacity of 25-30 trams per hour, above which the network reliability will reduce. Network reliability is determined by various factors including

permitted line speeds, interfaces with traffic signals and numbers of passengers boarding and alighting the trams. The Cornbrook viaduct is segregated track, and the capacity of this section of track would be able to accommodate all Metrolink services including the new lines currently under construction and the proposed new extensions. The capacity for street sections of track such as Mosley Street and Parker Street are less than the segregated track as the running speeds are slower due to signals and interface with other traffic and pedestrians.

1.7. A Second City Crossing is therefore necessary to, provide the additional capacity to support the system expansion and provide the overall network resilience during daily operations.

2. Metrolink expansion

2.1. The Greater Manchester Transport Fund makes provision for a Second City Crossing which will provide the following:

- an increase in the operational capacity that will facilitate the full realisation of the GM Transport Fund investment plan services;
- improvement in the reliability of all Metrolink services including the new routes;
- the capacity to accommodate additional extensions beyond those currently funded and the capacity to extend services from Mediacity:uk into the City Centre without having to change trams on route for special events.
- a second route will reduce the disruption caused by future maintenance and renewals in the City Centre, and provide a diversionary route when one of the two routes is obstructed for any reason.

2.2. All of the above serve to reinforce and enhance the effectiveness of the Metrolink System in supporting the economic growth of the Regional Centre.

3. Options

3.1. Introduction

3.1.1. This report compares the two route corridors that have been considered for providing a second Metrolink crossing of Manchester City Centre, namely:

- Option 1: connecting to the existing track in the vicinity of Manchester Central complex (formally G-Mex centre) and Victoria Station, and routed via Mount Street, Albert Square, Cross Street and Corporation Street;

- Option 2: connecting to the existing track to the north of the Trafford Bar stop and Victoria Station, and routed via the A56 Bridgewater Boulevard / Chester Road, Deansgate, Cateaton Street, Hanging Ditch and Corporation Street.

3.1.2. The funding that has been allowed for in the Greater Manchester Transport Fund is based on the Cross Street alignment as the alternative alignment, which is based on using Deansgate would not be viable from a 'value for money' perspective.

3.1.3. The costs relating to the Deansgate alignment would be approximately £55 million (including Optimism Bias) higher than for Cross Street. Because the cost differential is so large, (more than 50% higher for Deansgate), the other factors influencing 'value for money' would have to be overwhelmingly in favour of Option 2. However, as explained in the analysis below the opposite is true; Option 2 has much lower levels of non-monetary benefits than Option1; including longer journey time, lower operational flexibility, a longer and more complex construction and reduction of interchange at Cornbrook.

3.1.4. Option 1 allows full connectivity between routes at Cornbrook and Manchester Central (G-Mex). However, Option 2 would not allow passengers to interchange easily at Cornbrook between services travelling through this city using the alternative route (i.e. existing Metrolink or new second city crossing route). This limitation would significantly reduce the flexibility within the system, the associated benefits and the resilience of the system to accidents, and maintenance and renewals works.

3.1.5. Map showing the two Metrolink alignments:

See Appendix 1 for detailed map.

3.2. Journey time

3.2.1. Based on a comparison of overall route lengths, as measured between common points on the existing track outside of the area of interest (notionally

Trafford Bar and Victoria Station stops), Option 1 is approx. 5% longer in distance than Option 2. However, Option 2 has a greater proportion of shared, on street running and a higher number of the at-grade junctions on routes shared with general traffic. Option 1 therefore has an overall journey time which is approximately 33% quicker than Option 2.

3.2.2. As outlined in 3.2.1, the higher proportion of shared running and greater number of at-grade junctions for Option 2 would have a detrimental impact on the reliability of the service, particularly in operating to an established timetable. In addition, it would be more susceptible to peak hour traffic flows and resulting delays, as the route utilises part of the A56, Bridgewater Boulevard and Chester Road, which is a main approach road to the city centre. This would increase the journey time differential further during the peak.

3.2.3. The shorter journey times for Option 1 would also result in higher demand for through journeys across the City Centre, compared to Option 2.

3.3. Property Impacts

3.3.1. Both routes lie in part within the city centre environment: comprising a mixture of commercial, residential and retail properties, together with areas of public realm, listed buildings and conservation areas. The adopted route will incorporate appropriate urban design, to enable the integration of Metrolink into the existing built environment.

3.3.2. In Option 1, Metrolink would interface with a number of areas of public realm; including the area in front of the Manchester Central complex, Albert Square and the fringe of Exchange Square (Corporation Street).

3.3.3. Option 2 would also interface with Exchange Square (Hanging Ditch), the open areas at Cateaton Street and Spinningfields and the frontage of properties at Cornbrook and St George's.

3.3.4. Connections to the existing track at Victoria would be more challenging in Option 2 and the Cateaton Street section would require reduced speeds due to track radii and interfaces with pedestrians in Exchange Square.

3.3.5. Maintaining frontage access for servicing and deliveries to retail/ business premises would be more challenging under Option 2.

3.3.6. Noise and vibration issues can be mitigated as they have been for the operation of the current system.

3.3.7. In overall terms there is considered to be little significant difference between the two options from a property impact perspective.

3.4. Structures

3.4.1. Both options require possible modifications to existing structures along the route, together with the requirements for new major structures as part of the works. The issues arising from these structures represent a significant part of the overall works, and have differing levels of associated risk:

3.4.2. For Option 1:

- The widening of the existing G-Mex ramp to accommodate the third track would need to consider impacts on the existing sub-station and underground parking to the complex;

- The headroom to the existing pedestrian footbridge across Corporation Street needs to be established, to identify the exact clearances that are available for the tram.

3.4.3. Neither of these issues are considered to have a material impact on taking the scheme forward. Officers are confident that these can be managed as part of the design development process.

3.4.4. For Option 2:

- The headroom and profile of the existing Metrolink and Network Rail (NR) overbridges in the vicinity of the Deansgate / Whitworth Street West junction would need to be confirmed to ensure that adequate clearances are available for the Metrolink overhead line. This issue is considered to be a significant risk item, given the likely costs, construction issues and impacts on Metrolink / third parties (NR and other road users), should it be necessary to undertake extensive works to these structures. There is also a risk due to the additional earthing interface with Network Rail lines and structures that was difficult to resolve during the implementation of Phase 1;

- The structural integrity of the elevated A56 over the Bridgewater Viaduct and the separate bridge over the Rochdale Canal would potentially need additional works to support tram loads. Similar to the item above, this is considered to be a significant risk item given the likely costs, construction issues and third parties (British Waterways and other road users), potentially involved;

- A new major structure, comprising retained approach ramps and possible overbridge, to facilitate the connection to the existing tracks (to the north of Trafford Bar stop) would be required.

3.4.5. Overall, the risk associated with structures on Option 2 is considered to be significantly higher than that for Option 1.

3.5. Stops

3.5.1. For Option 1, two additional stops would need to be constructed between G-Mex and Victoria; however for Option 2, four additional stops would be required between Trafford Bar and Victoria. This is because the existing Cornbrook and Deansgate Castlefield (G-Mex) stops could not be used under Option 2, but would be used in Option 1.

3.5.2. For Option 1, potential stop locations, together with a number of possible alternatives, have been identified, namely in Mount Street/Albert Square and in the vicinity of the Cross Street / Market Street /Corporation Street junction. The integration of Metrolink's raised platforms within the public realm (particularly for Albert Square), retaining vehicular / pedestrian access to adjacent properties and management of other movements (access traffic, pedestrian and cycles) in the vicinity of the stops would need careful design integration with the central area locations. The stops on Option 1 serve a similar area to the existing Network, which reduces the need for passengers to change to reach their destinations.

3.5.3. For Option 2, initial suggestions for stop locations are A56 Chester Road (Cornbrook and St Georges) areas, with the remaining two at suitable locations on Deansgate (ie. Spinningfields and No1 Deansgate). As two of the stops are located outside the city centre environment, there could be some flexibility in respect of their position; however for operational and passenger convenience reasons a short pedestrian connection would be required to the existing Cornbrook stop. Direct interchange would not be possible, which is of particular relevance to passengers travelling on the Eccles Line and to Mediacity:uk. For the stops on Deansgate, similar issues to those identified for Option 1 would apply, but the traffic conflicts are likely to be much greater, making the siting and design of the stops particularly challenging.

3.5.4. On the basis of the above, Option 1 is advantageous compared to Option 2, particularly as this option supports the role of Cornbrook Stop as a major hub of the Metrolink Network, which is addressed under the operations section of this report.

3.6. RCTS Interface

3.6.1. The Regional Centre Transport Strategy (RCTS), which was promoted by Manchester City Council and GMITA/E, as outlined in the RCTS Consultation Report (December 2007), detailed a number of traffic and transportation measure packages across the city centre. The RCTS is a component of the

City Centre Strategy concerned with the future direction and form of the expanding Regional Centre.

3.6.2. The RCTS has a number of objectives including reducing unnecessary 'through–traffic' movements, and expanding the pedestrian core at the heart of the city centre. The Metrolink proposals have the potential to both complement and take advantage of the proposed RCTS measures.

3.6.3. The RCTS is an on-going scheme, which is currently subject to revision and consultation is due to take place in the Autumn. Option 1 is more compatible than Option 2, with the emerging proposals of the RCTS and future traffic movements will need to be finalised with the agreement of Manchester City Council as the design is developed.

3.7. Operational

3.7.1. Under either Option 1 or 2, tram services to the north (Bury and future Rochdale / Oldham lines), south (Altrincham and future Chorlton / Airport lines) and east (Piccadilly and future Ashton under Lyne lines), would operate using a combination of the Second City Crossing and the existing city centre route. However, connections to the west (Eccles and future Trafford Park / Media City lines) would be impacted by the Second City Crossing option decision.

3.7.2. Under Option 1, either the Second City Crossing or the existing Mosley Street route could be utilised for all services, however Option 2 bypasses the existing Cornbrook Stop and would therefore not accommodate direct services from the Eccles, Media City and potential Trafford Park extensions travelling across town to Victoria via the Second City Crossing.

3.7.3. Option 2 would not allow passengers to interchange easily at Cornbrook between services travelling through the city using the alternative route (i.e. existing Phase 1 or new second city crossing route). This limitation would significantly reduce the flexibility within the system, the associated benefits and resilience of the system to incidents such as accidents, maintenance, and renewals.

3.7.4. For the above reasons, Option 1 would be a significantly better operational solution and would have much better linkages between the existing Mosley Street alignment and the planned extensions and it would provide greater flexibility for the Metrolink operations.

3.8. Constructability

3.8.1. The longer route, the additional structures, works and stops associated with Option 2, would be likely to result in longer construction and commissioning periods than Option 1. The high proportion (and length) of shared on-street running of Option 2 would also result in greater disruption to other road users (general traffic, pedestrians and cyclists) than Option 1.

3.8.2. Based on the current level of scheme development, no significant difference between the options is envisaged in the disruption to existing tram services during the implementation of the works. Provision for the new connections could be made in the design of the recently procured new Tram Operating System (TOS) to minimise disruption later.

3.8.3. For the above reasons Option 1 is the preferred solution from the perspective of managing the construction process and resultant impacts.

3.9. Value for Money

3.9.1. The construction costs, and the overall project scheme costs, for Option 2 would be significantly higher than for Option 1:

- Option 2 has in the region of 2km of additional route, with associated new track, infrastructure, highway works and services diversions;
- Option 2 requires a new major structure, comprising retained approach ramps and possible overbridge at the connection to the existing system (to the north of Trafford Bar stop); and
- Option 2 includes two more stops than Option 1.

3.9.2. The capital costs for Option 2 would be approximately £55 million higher than Option 1 including Optimism Bias. This combined with the lower level of benefits including longer journey time, reduction of interchange at Cornbrook, lower operational flexibility, and a longer and more complex construction, results in Option 2 having very significantly poorer value for money compared to Option 1.

3.10. Alternative Options

3.10.1. A shorter version of the Deansgate alternative was also considered, where a connection would be made at Castlefield/Deansgate. This variant was not developed as the impact on the surrounding property and road users

would be severe and Deansgate would be halved in width in the section between Great Bridgewater Street and Whitworth Street.

3.10.2. It would also have to overcome a large difference in vertical levels between the track on the Cornbrook viaduct and Deansgate in the vicinity of Liverpool Road. Within the geometrical parameters of Metrolink it would not be possible for the vertical alignment to reach ground level by the end of Bridgewater Street. The gradient to achieve this would be at least 6.5%, which is in excess of the design specification for the LRV's (6%).

3.10.3. A variation to Option 2 was considered for access between Deansgate and Victoria, which would have run from Deansgate, onto Victoria Street, around the Cathedral. However, the alignment issues, at Fennel Street and Cateaton Street would have been too complex and would involve remodelling of the area around the Cathedral boundary.

3.11. Summary Table

3.11.1. The two options can be briefly compared in the table below with a ✓ indicating which route is preferable for each Factor:

Factor	Option 1	Option 2
Journey Time	✓	
Property Impacts	✓	✓
Structures	✓	
Stops	✓	
RCTS Interface	✓	
Operational	✓	
Constructability	✓	
Scheme Costs	✓	

3.12. Conclusions

3.12.1. Option 1 is the only alignment which represents 'value for money'. It costs significantly (£55 million) less to implement and has a much higher level of benefits than Option 2.

3.12.2. Option 2 is a much poorer operational and construction solution; it has longer journey times for passengers, it requires two additional stops compared to Option 1, it has much lower operational flexibility, it has a longer and more complex construction and a reduction of interchange at Cornbrook.

3.12.3. Whilst Option 1 allows full connectivity between routes at Cornbrook and Manchester Central (G-Mex). Option 2 would not allow passengers to interchange easily at Cornbrook, between services travelling through the city using the alternative route (i.e. existing Phase 1 or new second city

crossing route). This limitation would significantly reduce; the flexibility within the system, the associated benefits and the resilience of the system to accidents and maintenance, and renewals works.

3.12.4. The Cross Street alignment runs through the administrative and commercial heart of the Regional Centre and the Second City Crossing is a vital component in ensuring the network of the future can deliver the required reliability and frequency of services.

3.12.5. Due to more segregated track, passengers would enjoy quicker journeys into and across the Regional Centre with Option 1. The higher proportion of shared running and greater number of at-grade junctions for Option 2 would have a detrimental impact on the reliability of the service, particularly in operating to an established timetable. In addition, it would be more susceptible to peak hour traffic flows and resulting delays, as the route utilises part of the A56, Bridgewater Boulevard and Chester Road.

3.12.6. The longer route, the additional structures, works and stops associated with Option 2, would be likely to result in longer construction and commissioning periods than Option 1. The high proportion (and length) of shared on-street running of Option 2 would also result in a greater disruption to other road users (general traffic, pedestrians and cyclists) than Option 1.

4. Next Steps

4.1. It is proposed that Cross Street should be the alignment for the Second City Crossing that is incorporated into the RCTS Consultation during Autumn 2009. The current schedule is:

- RCTS Consultation - Autumn 2009
- Second City Crossing scheme consultation - Spring 2010
- Second City Crossing Application for TWA powers – Autumn 2010

4.2. There will be a detailed scheme consultation in Spring next year. The output from this will feed into advancing design elements such as stop locations, junction and access arrangements, in advance of the TWA application in the Autumn.

5. Recommendations

Members are asked to consider the contents of the report and confirm that Cross Street should be the alignment for the Second City Crossing and that the documentation for the related public consultation in Spring 2010, should be prepared on that basis.

Philip Purdy
Metrolink Director

APPENDIX 1 – Option Plan for Second City Crossing