

# Midland Metro - City Centre Extension & Fleet Replacement

## Executive Summary

October 2009

# CONTENTS

Executive Summary

Introduction

- A. The Strategic Case
- B. The Value for Money Case
- C. The Delivery, Commercial and Financial Cases

## Appendices

- A-1 Letters of endorsement from regional bodies
- A-2 Detailed Route Drawings
- A-3 Option Development Paper
  
- B-1 Modelling and Forecasting notes
- B-2 TUBA files
- B-3 NATA Worksheets
- B-4 Evidence of consultation with key stakeholders
  
- C-1 Procurement Strategy
- C-2 BCCE Programme Rationale
- C-3 Depot Programme Rationale
- C-4 S151 Letter
- C-5 Governance & Delivery
- C-6 BCCE Project Plan
- C-7 Trams & Depot Project Plan
- C-8 High Level Programme
- C-9 BCCE Programme
- C-10 Trams & Depot Programme
- C-11 Risk Management Strategy
- C-12 Not used
- C-13 Not used
- C-14 BCCE Stakeholder Communication Plan
- C-15 Trams Stakeholder Communication Plan
- C-16 Cost Estimate

## EXECUTIVE SUMMARY

### Background

1. In March 2008 the West Midland Authorities concluded an extensive study setting out the foundations for the investment needed to facilitate housing growth, improve competitiveness and stimulate regeneration. The study concluded that whilst congestion remained a concern, road pricing was not the right solution for the West Midlands. An alternative transport package was recommended and adopted which would support economic growth and help tackle local congestion. Those measures include:
  - | Quick wins programme;
  - | Delivery of the regional transport priorities; and
  - | Smarter Travel choices and intelligent transport systems.
2. In 2009, building on the need for public transport alternatives to be delivered, Centro published its Draft Integrated Public Transport Prospectus for the West Midlands setting out its vision for supporting the City Region's economic competitiveness and growth. The Prospectus reinforces the need for there to be much greater investment in public transport to support sustainable growth and tackle congestion. The Prospectus includes a delivery plan which sets out a number of transport interventions in important regeneration corridors to be delivered jointly by key stakeholders (the local authorities, key private sector partners and transport operators). It also complements the nine Regional Transport Priorities which the Region published in October 2008.
3. In February 2009 the Region submitted its Regional Funding Allocation (RFA) to Government that set out the links between transport improvements and economic development. It proposed that the transport RFA provides some £80m for the Midland Metro plans for additional capacity, enhanced frequency and the extension to New Street as one of the regional transport priorities.
4. The scheme fully supports the ongoing regeneration of central Birmingham and integrates with the redevelopment of New Street Station through providing transport infrastructure fit for a world class city.
5. For public transport users, city centre visitors and investors, Birmingham City Council and Centro, the proposed scheme will deliver a step change in real and perceived connectivity in central Birmingham and along the corridor to Wolverhampton and deliver greater efficiency from existing infrastructure.

### Introduction

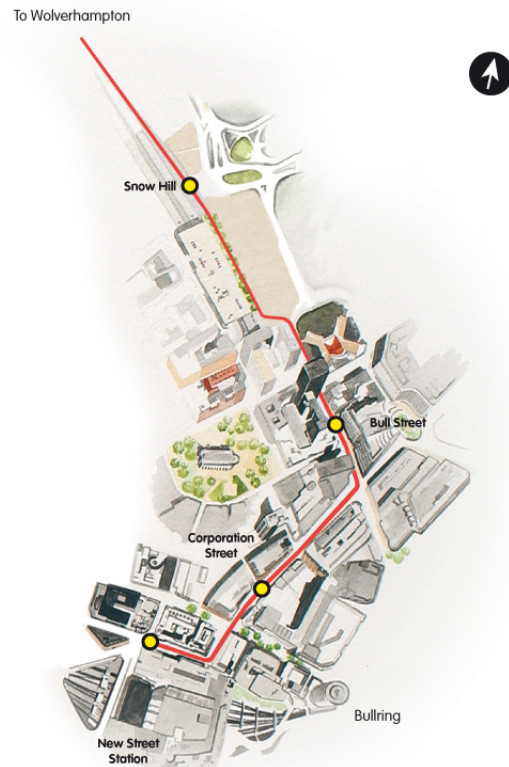
6. This Business Case promotes the scheme to extend the existing Midland Metro scheme from Snow Hill through Birmingham City Centre to the redeveloped New Street Station. In addition the scheme includes a new fleet of trams to operate enhanced service frequencies on the existing system and an associated extension to the depot facilities. The scheme will:
  - | Provide improved linkages to and from Birmingham city centre

- | Release suppressed demand for the tram
  - | Make better use of Line 1 infrastructure
  - | Support the regeneration of central Birmingham
  - | Provide transport infrastructure fit for a world class city
7. Midland Metro is popular and well used, however for public transport users, city centre visitors and investors, the proposed scheme will deliver a step change in real and perceived connectivity in central Birmingham and along the corridor to Wolverhampton.
8. The West Midlands have approved the expansion of Midland Metro as a regional priority and therefore the West Midlands Regional Funding Allocation (RFA) includes earmarked funding for the proposed extension of Midland Metro Line 1 to New Street Station and for the procurement of new trams to replace the existing Midland Metro fleet.
9. With Transport & Works Act Order powers already obtained and the scheme at an advanced stage, through the business case submission Centro is seeking Conditional Approval for the scheme.

### The Scheme

10. Midland Metro Line 1 opened in 1999 and operates mainly on former rail formation between Wolverhampton city centre and Snow Hill Station in Birmingham city centre. It serves the town centres of West Bromwich, Wednesbury and Bilston. It is 20.4 kilometres long, has 23 stops and offers 538 spaces for Park & Ride distributed between four locations along the route.
11. Annual patronage levels on Metro Line 1 are around 5 million but are constrained by system capacity. The service takes an estimated 1.2 million car journeys off the roads and the four Park & Ride sites along the line experienced an increase in usage from 74% to 84% in 2007/8 compared with 2006/7. In addition, 14% of passengers using the tram formerly used cars for the same journey and 30% of its passengers had a car available for their journey.
12. This demonstrates the attractiveness of the current system and the significant role Midland Metro plays as part of the wider public transport network. However a comparison with other UK tram systems identifies Midland Metro's lack of city centre on street penetration and smaller vehicle size as two factors which constrain the system. Therefore, prioritising investment in the existing system to ensure efficiency would align with one of the recommendations of the Eddington Study, making best use of existing assets.
13. By overcoming the constraints above and delivering the improvements in the Business Case, annual patronage is expected to increase to over 9 million (40%) by 2026.
14. The proposed route runs for 1.4 kilometres through Birmingham city centre. The alignment will tie in to the existing track south of the existing Line 1 St Paul's tram stop and will run to a new terminus outside the main entrance to New Street Station. The route is illustrated in Figure 1

FIGURE 1 BIRMINGHAM CITY CENTRE EXTENSION



15. New, bigger trams will be introduced to replace the existing fleet and enable the city centre extension to New Street Station to be served with a tram every six minutes in each direction. The trams will be 2.65 metres wide and will have a capacity of approximately 200 passengers (compared to around 150 at present); together with the proposed enhanced frequency this will provide a 40% increase in system capacity.
16. The new trams will, as far as practically possible, be of a standard specification, have a high level of reliability as demonstrated on other tram networks and be fully DDA compliant. There will be level access from platforms to provide for mobility impaired passengers. The new trams will be modern and attractive in design and have a high standard of passenger comfort. They will have a livery developed to reflect the Network West Midlands integrated transport strategy.

### Strategic Case

17. The proposed scheme is designed to help deliver the aims of national, regional and local policies. The Stern Review and the Eddington Study brought into stark focus the importance and interdependence of tackling climate change and ensuring continued economic growth: addressing how transport policy and delivery will change to meet the challenges and issues outlined in these two critical reports. This scheme will help to meet those challenges in the heart of the West Midlands.
18. In developing the transport policy response to ensure that transport meets the needs of its users the Department established five goals for transport which were more

recently reinforced in Delivering a Sustainable Transport System (DaSTS). As detailed in the following chapters of this Business Case, this scheme strongly supports the five goals:

- | By delivering an efficient transport link it will support **economic competitiveness and growth**, by increasing GDP by £50m per annum and boost employment by 1300 jobs;
- | By **reducing emissions of carbon dioxide** and other greenhouse gases, with the desired outcome of tackling climate change through modal shift;
- | Through a step change in quality Metro will contribute to **better safety, securing health and longer life-expectancy by reducing the risk of death, injury or illness** arising from transport and by promoting travel modes that are beneficial to health;
- | By increasing access to jobs and services Metro promotes **greater equality of opportunity for all citizens**, with the desired outcome of achieving a fairer society; and
- | Through improving efficiency and sustainability Metro **will improve quality of life for transport users and non-transport users**, and to promote a healthy natural environment.

19. The scheme is also important as it contributes to the delivery of the Regional Spatial Strategy by:

- | Making the major urban areas of the West Midlands increasingly attractive places where people want to live, work and invest;
- | Supporting the cities and towns of the Region to meet their local and subregional development needs;
- | Supporting the diversification and modernisation of the Region's economy while ensuring that opportunities for growth are linked to meeting needs and reducing social exclusion;
- | Ensuring the quality of the environment is conserved and enhanced across all parts of the Region;
- | Improving significantly the Region's transport systems;
- | Promoting development of a network of strategic centres across the Region; and
- | Promoting Birmingham as a world city.

20. The scheme also supports the aims and objectives of the Local Transport Plan, Birmingham City Council's Big City Plan and Centro's recently published Draft Integrated Public Transport Prospectus.

21. The Prospectus will be delivered through a staged programme of improvements. These improvements represent key building blocks (e.g. Midland Metro expansion) that enable the longer-term transport strategy to be delivered, but also deliver tangible benefits in their own right in the context of current travel patterns and networks.

22. Like all major cities, Birmingham faces increasing journey times and therefore improved connectivity and excellent transport links are essential for Birmingham to

continue to meet its committed future investment plans for long-term sustained economic growth. Birmingham has currently £17 billion of development planned and has ambitions to become a world city within the next two decades. A high quality transport system is needed to underpin this transformation.

23. It is in this context that £580 million has been committed to the redevelopment of New Street Station. The redevelopment proposals will transform this strategic gateway into a true 21st Century station. The station redevelopment will provide for an improved passenger experience in Birmingham subsequently improving the city's image. In addition, improvements will add additional capacity and put passenger growth at the station on a more sustainable footing. The easy connectivity with the tram network provided by this scheme will enhance access and egress from the station to other areas of the city and region.
24. With the improvements at New Street Station underway, investment in the central Birmingham public transport network, including Midland Metro, is a critical next step to spread the benefits of the New Street Gateway project. By building on the initial investment the full potential of benefits can be captured through an integrated approach. Therefore, while the station regeneration makes great improvements, with future forecast rail passenger growth Midland Metro will further enhance passenger dispersement, including direct connectivity with Snow Hill Station and therefore the remainder of the West Midlands' rail network.
25. The extension to Midland Metro Line 1 lends strong support to future economic growth and will address real problems. Unreliable transport networks and delays increase costs to business and reduces overall economic productivity. With Birmingham playing a pivotal role in the economy of the West Midlands, efficient and effective transport is essential to the city's future. The Centre for Economic and Business Research has estimated that the Metro extension will boost regional GVA by around £50 million by 2026 (2006 prices) and boost employment by over 1,300 jobs.
26. Summary of benefits:
 

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>  Reduce congestion</li> <li>  Reduce CO2 / pollution</li> <li>  Improve access to jobs</li> <li>  Improve social inclusion</li> <li>  Boost employment by 1,300 jobs</li> <li>  Increase GDP by £50m per annum</li> </ul> | <ul style="list-style-type: none"> <li>  Improve accessibility</li> <li>  Connect city centre and Line 1</li> <li>  Alleviate overcrowding</li> <li>  Release rail capacity at Snow Hill</li> <li>  Improve air quality</li> </ul> |
|---|--|

### The Value for Money Case

27. The transport appraisal has been carried out in accordance with DfT Guidance and the New Approach To Appraisal (NATA) using patronage forecasting models, calibrated against the existing Line 1 data. User and non-user benefits, including monetised and non-monetised benefits have been calculated. The appraisal also assessed the financial viability of the scheme and includes the levels of Optimism Bias recommended by DfT Guidance.

28. Patronage and revenues are expected to increase by 36% reflecting the additional capacity and city centre penetration delivered through the extension / new trams. Operating costs have also been reviewed and an estimate prepared for the proposed scheme using a transport operating model customised for tramway schemes. A summary of patronage revenues and net operating revenues can be shown as follows:

|                              | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|------------------------------|------|------|------|------|------|------|------|------|------|------|
| Patronage (Millions)         | 6.8  | 7.3  | 7.9  | 8.0  | 8.2  | 8.3  | 8.4  | 8.6  | 8.7  | 8.9  |
| Average Fare (£'s)           | 1.5  | 1.5  | 1.6  | 1.6  | 1.7  | 1.7  | 1.8  | 1.8  | 1.9  | 1.9  |
| Revenues - Central Case (£m) | 10.0 | 11.1 | 12.3 | 12.9 | 13.5 | 14.1 | 14.8 | 15.4 | 16.1 | 16.9 |
| Operator fee (£m)            | 9.9  | 10.3 | 10.6 | 11.0 | 11.4 | 11.7 | 12.1 | 12.4 | 12.8 | 13.2 |
| Net Revenues (£m)            | 0.1  | 0.8  | 1.7  | 1.9  | 2.1  | 2.4  | 2.7  | 3.0  | 3.3  | 3.7  |

29. The scheme will deliver significant user benefit through journey time savings resulting from the increase in frequency reducing average waiting times and from the access into the city centre providing quicker access. These impacts also encourage new users. Further, by attracting increased demand onto Midland Metro it is forecast that this will remove over 1m highway kilometres off the road.
30. The scheme shows a net economic benefit and a benefit to cost ratio of 2.6:1 demonstrating the scheme's **high** value for money. Forecast revenues exceed operating costs, enabling support for borrowing.
31. The extension will also support wider economic benefits; the reduction in journey times the extension and frequency enhancements will have agglomeration, labour market and imperfect competition impacts. Better transport will bring more people into the labour market and move people into more productive jobs. Access to a larger job market will allow more choice for people in their type of work and impact on improved competition. CEBR have estimated that the Metro expansion will increase GVA by £47m by 2026 and boost employment by 1,300 jobs.
32. The extension will encourage a reduction in congestion along the entire corridor as modal shift takes place. By providing a high quality public transport solution along a busy corridor between Wolverhampton and Birmingham, people will have an alternative to their cars. By linking a large population along the corridor to the national and local rail network the extension is also forecast to increase rail patronage.

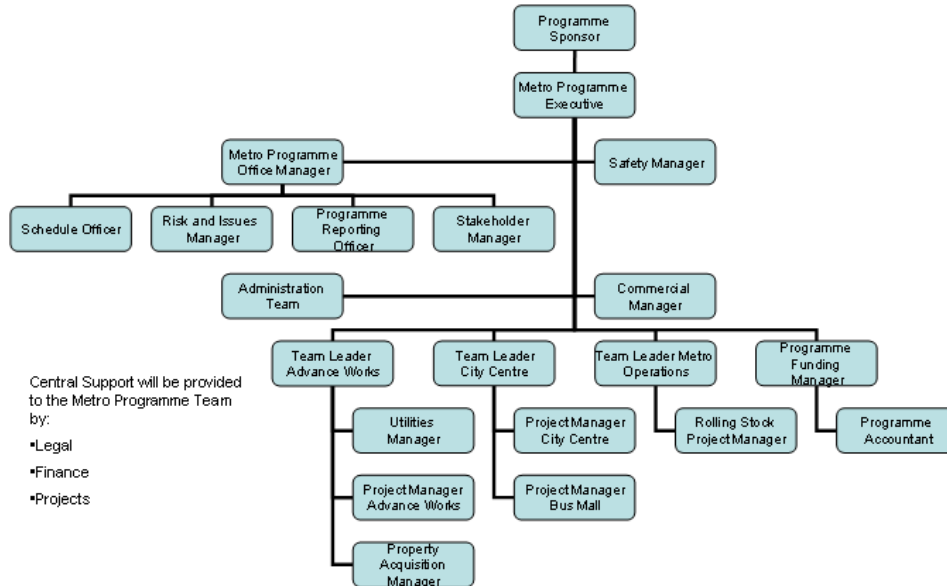
- 33. The proposal for the procurement of the projects comprising this Business Case has been developed to deliver a robust, affordable project that can be completed both to time and within budget and which will be attractive to the private sector construction and tram supply markets. The procurement strategy prosecutes separate contracts to deliver the construction of Birmingham City Centre Extension, depot extension and Line 1 modifications, and fleet replacement to attract maximum private sector interest and provide best value for money.
- 34. A detailed construction plan and programme addressing key dependencies and critical paths has been developed and is summarised below.

| Midland Metro Extension – High Level Programme |       |       |       |       |       |       |
|--|-------|-------|-------|-------|-------|-------|
| Key Milestones                                 | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  |
| DfT Conditional Approval                       | [Bar] |       |       |       |       |       |
| Issue Tram OJEU                                | [Bar] |       |       |       |       |       |
| Issue Tram ITN                                 |       | [Bar] |       |       |       |       |
| Issue Depot OJEU                               |       | [Bar] |       |       |       |       |
| Issue Depot ITN                                |       | [Bar] |       |       |       |       |
| DfT Final Approval                             |       | [Bar] |       |       |       |       |
| Award Tram & Depot Contracts                   |       | [Bar] |       |       |       |       |
| Issue BCC OJEU                                 |       | [Bar] |       |       |       |       |
| Utilities Diversions                           |       | [Bar] |       | [Bar] |       |       |
| Issue BCC ITN                                  |       |       | [Bar] |       |       |       |
| Award BCC Contract                             |       |       |       | [Bar] |       |       |
| Complete Depot Works                           |       |       | [Bar] |       |       |       |
| First 4 Trams in Line 1 Service                |       |       | [Bar] |       |       |       |
| All New Trams in Line 1 Service                |       |       |       |       | [Bar] |       |
| Complete BCC Extension Works                   |       |       |       |       | [Bar] |       |
| Trams in Service Through BCC                   |       |       |       |       |       | [Bar] |

- 35. A new operating contract will be tendered as soon as is allowed under the current concession. The new contract will cover operation and maintenance of Line 1, bringing new trams into operation and subsequently maintaining them and taking over the maintenance of the extension infrastructure after construction. It is anticipated that a wide range of significant market players will bid for the new Opco contract, affording the ability to obtain value for money in the letting of the contract, whilst ensuring that an operator with a long-term stake in the operation is in place prior to the arrival of the first new trams.
- 36. The reference contract will provide for the Operator to take full cost risk in delivering the specified service and quality levels, but Centro will accept revenue risk and control fares, as this is considered the approach most likely to deliver value for money. However, a variant bid will be invited to market test the value for money of revenue sharing arrangements.

Delivery & Commercial Case

37. A robust Governance Structure has been approved by Centro to deliver this Metro expansion programme. The Programme Team structure which will be responsible for effective delivery is shown below.



38. This structure will:

- | Provide assurance to Centro and partners of the effectiveness and efficiency of the Metro Programme; and
- | Formalise reporting structures which will allow the performance of the Metro Programme to be monitored and measured.

39. The Governance proposal is in line with the requirements of the DfT for the delivery of major capital projects to which it contributes funding and will ensure that key stakeholders are represented. It is also subject to Gateway reviews by 4Ps. The programme team structure is based upon structures utilised in the delivery of other major programmes in the transport sector.

40. An experienced project team has been assembled with a mixture of in-house project managers and technical and operational light rail experts together with a strong team of supporting consultants and advisors covering all aspects of the development and delivery of this project.

41. A proactive risk management procedure is in operation which ensures that risks are continuously identified, owners assigned and mitigation measures put in place. Regular reviews check the status of each risk and regulate their control and mitigation.

42. An effective communications plan incorporating the management of relationships with project stakeholders is key to successful implementation of the scheme. Accordingly Centro has put in place detailed agreements with the key project stakeholders, such as Birmingham City Council and Network Rail, and has put in

place plans for managing the involvement of other stakeholders, such as utility companies, objectors, landowners and affected public authorities.

### Costs and Funding

43. Centro has carried out a thorough estimate of the costs for implementing the scheme in order to ensure they provide a comprehensive, robust and reliable basis for the consideration of the financial and Value for Money cases. The current estimate reflects the latest scheme proposals and includes levels of risk determined by a full Quantified Risk Assessment process. Associated with the development of the scheme cost estimate, a consistent approach has been used to prepare a programme of enabling and construction works. This has enabled the application of realistic cost inflation factors in order to produce scheme outturn costs.
44. The capital cost estimate is shown below.

| Outturn prices     | £m           |
|--------------------|--------------|
| BCCE and new trams | 52.4         |
| Replacement trams  | 52.1         |
| Depot              | 22.8         |
| <b>Total</b>       | <b>127.3</b> |

45. The proposed RFA funding package is based upon:
- | 75% of the Capex of the replacement tram fleet and works to the depot
  - | 50% of preparatory costs
  - | A capped contribution of £25m in relation to the City Centre extension
46. In overall terms the local contribution exceeds the 25% set out in Major Schemes Guidance. Based upon this proposed funding arrangement the total RFA grant will be £81.7m, with a local contribution of £45.6m.
47. The proposed share therefore between RFA funding, together with the expenditure profile is shown in the table below.

|                              | Prep | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | Total |
|------------------------------|------|---------|---------|---------|---------|---------|-------|
| Estimated Capital Cost (QCE) | 12.6 | 9.0     | 26.7    | 32.2    | 36.2    | 10.6    | 127.3 |
| RFA Funding                  | 6.3  | 5.9     | 17.6    | 21.1    | 23.8    | 6.9     | 81.7  |
| Local Contribution           | 6.3  | 3.1     | 9.2     | 11.0    | 12.4    | 3.6     | 45.6  |

**Conclusion**

48. The Midland Metro City Centre extension and fleet replacement will replace the existing tram fleet with higher capacity vehicles operating at enhanced frequency increasing patronage by 36%. By extending the system into the heart of the City Centre it will further support regeneration and provide transport infrastructure fit for a world class city.
49. The scheme is a regional priority and strongly supports the five goals set out in Government's DASTS agenda. Powers have already been obtained with the scheme at an advanced stage and capable of swift delivery.
50. An effective governance structure and programme team reflects best practice for a project of this nature. It has been assembled using experienced technical and operational experts from the light rail industry. A comprehensive risk register has been compiled and incorporated into the construction programme.
51. The value for money appraisal shows a benefit to cost ratio of 2.6:1 demonstrating high value for money, with operating revenues exceeding operating costs and patronage increasing from 5m to 9m passengers by 2026. The extension also lends strong support to future economic growth and jobs, complementing the development of New Street Gateway.
52. The funding proposition is in line with the RFA submission by the region requiring Government Funding of £81.7m with a local contribution from Centro of £45.6m.