



Transport Delivery Committee

Date	22nd July 2019
Report title	Metro Investment Programme Briefing
Accountable Director	Laura Shoaf, Managing Director Transport for West Midlands
Accountable Employee	Phil Hewitt, Metro Programme Director Email: phil.hewitt@westmidlandsmetro.com Tel: 07712 089532
Report to be/has been considered by	N/A

Recommendation(s) for action or decision:

The Transport Delivery Committee is recommended to note the report:

1. Purpose

To report on matters relating to the Metro Investment Programme in the West Midlands.

2. Background

- 2.1 The Midland Metro investment programme has continued to make good progress since the last update. This note provides an overview of the main activities of the West Midlands Metro team (comprising TfWM, Midland Metro Limited and the Midland Metro Alliance) and the actions being taken to manage the principal risks / issues and opportunities that have arisen. A map showing the location of the proposed extensions is appended to this report can be viewed in Appendix 1.

- 2.2 An updated organisation chart showing the meetings through which governance is exercised on the Metro Programme is enclosed in Appendix 2 for the information of TDC members.
- 2.3 TfWM has now secured the funding for the first phase of the Metro Investment Programme comprising the Centenary Square, Edgbaston (Hagley Road), Wolverhampton and Wednesbury Brierley Hill extensions together with associated upgrades to the Line 1 infrastructure. Options for funding phase 2 (Birmingham Eastside and East Birmingham Solihull) continue to progress and a decision from Government on Birmingham Eastside funding is expected in Q2 2019/20.
- 2.4. The following is a summary of the principal highlights of the Programme:
- 2.4.1 **Westside Extension – Centenary Square:** Despite additional works arising from the diversion of a district heating main and repairs to the A38 tunnel roof works are progressing well in all sections. Trackwork is expected to be sufficiently complete to allow first tram testing on the extension towards the end of August. The project remains on schedule to open in December 2019.
- 2.4.2 **Westside Extension – Edgbaston:** Enabling works to strengthen the Broad Street canal bridge have been completed and utility diversions continue to progress well. Main works commenced through Five Ways underpass on the 3rd June. The project remains on schedule to open in December 2021.
- 2.4.3 **Wolverhampton Extension:** Construction of stages 2 and 3 has progressed well and the track laying has been completed. Urban realm works are progressing ahead of the planned demobilisation of the worksite pending completion of the Wolverhampton Station forecourt works. Opening of this extension is dependent upon the completion of the station enhancement project.
- 2.4.4 **Wednesbury Brierley Hill:** The Inquiry into the Transport and Works Act Order CPO Application was held on 19 March and the Inspector's report is now with the Secretary of State for consideration and determination of the order. A decision is anticipated end 2019. The Final Business Case was approved by WMCA Board in March which has secured the full funding package for the scheme. MMA have submitted a Target Cost 1 Project Proposal for TfWM review and approval.
- 2.4.5 **Birmingham Eastside:** MMA has completed the preliminary design and are finalising the Target Cost 1 proposal. Discussions are continuing with HS2 and DfT around the potential construction interfaces between the Metro and Curzon Street station works subject to the award of the TWAO TfWM will be seeking in September 2019.
- 2.4.6 **East Birmingham Solihull:** The submission of the Outline Business Case and application for powers has been deferred to end 2020 to allow for further scheme refinement, assessment of the impacts and benefits of the proposal, definition of the overall funding strategy and to allow time for a

thorough consultation on the proposal to be undertaken at the start of 2020. The project remains on schedule to open in 2026.

2.4.7 3rd Generation Trams: Four bidders were pre-qualified and taken through to the Invitation to Negotiate (ITN) stage. Several of the pre-qualified bidders requested an extension to the ITN return meaning that the return date is now the 1st July 2019. Contract award is scheduled for Q3 2019.

2.4.8 Catenary Free Trams: 11 trams have now completed the retrofit and testing cycle and returned to passenger service. A further 2 trams are in the process of retrofit and testing and the project remains on programme to deliver sufficient modified trams will be available for passenger service to CSQ in December 2019.

3. Financial Implications

All financial information is contained within the report.

4. Legal Implications

No legal implications are identified for this current report, however any further details reported back after this report require legal consideration.

5. Equalities Implications

No legal implications are identified for this current report.

6. Inclusive Growth Implications

These are addressed in formal submissions relating to each project.

7. Geographical Area of Report's Implications

The Metro Programme report encompasses Programmes and Projects works in Wolverhampton, Sandwell, Dudley, Birmingham, Solihull and Coventry.

8. Media

The Media team have reviewed the report and approved its publication.

9. Other Implications

None have been identified.

West Midland Metro Programme Overview June 2019

Catenary Free Trams

Eleven trams have now completed the battery retrofitting and testing programme and been accepted back into passenger service. These are as follows:

Tram No	Passenger Service Date
18	20 th April 2018
31	3 rd July 2018
36	1 st August 2018
21	1 st October 2018
28	26 th October 2018
35	11 th December 2018
37	4 th February 2019
17	19 th February 2019
23	8 th April 2019
19	24 th May 2019
29	19 th June 2019

At the time of writing this report tram number 30 and 20 are out of passenger service and in the Retrofit programme being carried out at the Wednesbury Depot Facility. Based on the current schedule 19 trams will be commenced prior to the planned commencement of passenger service to CSQ with the full fleet completed in January 2020.

The CAF team remain committed to complete the full programme of works before the end of 2019 and are continually looking for alternative working arrangements that will reduce the durations and bring forward completion of the programme. A draft revised accelerated schedule has been prepared which indicates this is achievable subject to the provision of the right resources.



Picture: Tram 18 running on battery power with pantograph retracted at Soho, Benson Road.

Westside Extension – Phase 1 – Centenary Square

West Side Programme Cost		
£149.2m		
Phase 1 Cost	Construction Start	Passenger Services
£65.8m	12 June 2017	December 2019
Powers	Midland Metro (Birmingham City Centre Extension Etc) Order 2005	
	Midland Metro (Birmingham City Centre Extension Etc), (Land Acquisition and Variation) Order 2016	
Funding	GBSLGF	£7.55m
	Enterprise Zone	£20.35m*
	Third Party	£3.6m
	HS2 Connectivity	£38.7m ¹
Schedule	<ul style="list-style-type: none"> • First tram (testing) – August 2019 • Handover for Driver training – November 2019 • Passenger Services commence – December 2019 	On Programme (Dec 2019)
Cost		At risk but mitigation in place

This is the next stage of the Birmingham City Centre Extension original powers for which were granted in 2005 and extended in 2016. The extension runs for some 650 metres between Grand Central and a temporary terminus on Broad Street in Centenary Square. The short extension will have an additional stop at The Town Hall (Victoria Square) and will be operated entirely Catenary Free – a first for the UK.

Works have picked up pace in section 1 (Pinfold Street) and 2 (Paradise) having hit key milestones of installation of first rails. Works in section 3 have progressed despite having to accommodate the requirements of the Arena Central (HSBC) development and additional diversion of a district heating main to accommodate the Centenary Square redevelopment and Arena Central works.

Surveys carried out on the existing A38 Queensway Tunnel identified that the waterproofing of the Tunnel had been damaged prior to MMA taking control of the site. The waterproofing system needed to be remediated urgently to enable the Metro extension to be built. These works have now been completed and the final

¹ Additional funding of £4.4m has been approved by the EZ Board but is awaiting final approval of the Business Plan prior to formal confirmation.

structural elements within this section are nearing completion, rail is also being laid in this section.

First phase tie-in works between the operating tramway and the extension started in September 2018 on Stephenson Street and Pinfold Street. The closure of the head shunt in Stephenson Street remains in place and as a result all West Midlands Metro services will continue to arrive and depart from the same platform at Grand Central metro stop until the headshunt is re-commissioned. The tie-in works are moving forward in line with the MMA programme.

The issue with the Engie district heating main diversion in Centenary Square has now been sufficiently resolved to allow the Metro works to be progressed without delay to the planned opening date. Nevertheless, agreement needs to be reached between Engie, BCC and TfWM on the allocation of the diversion costs between the Metro project, BCC (CSQ project) and Engie (for Arena Central and ICC network enhancements). Despite the challenges that have arisen over the last six months MMA remain confident that the Westside Extension will be delivered within the approved funding envelope subject to agreement of additional funding to address 3rd party scope changes (i.e. Engie works, surface treatment etc).

A testing, commissioning and bringing into use strategy and timetable has been developed by TfWM, MMA and MML and presented to the Office of Rail and Road. The project is on target to complete this work and to open on schedule in December 2019. Initial testing of trams on the extension will commence in August 2019 and will be progressively extended in scope and complexity between August and November. Driver training will commence in mid-November.



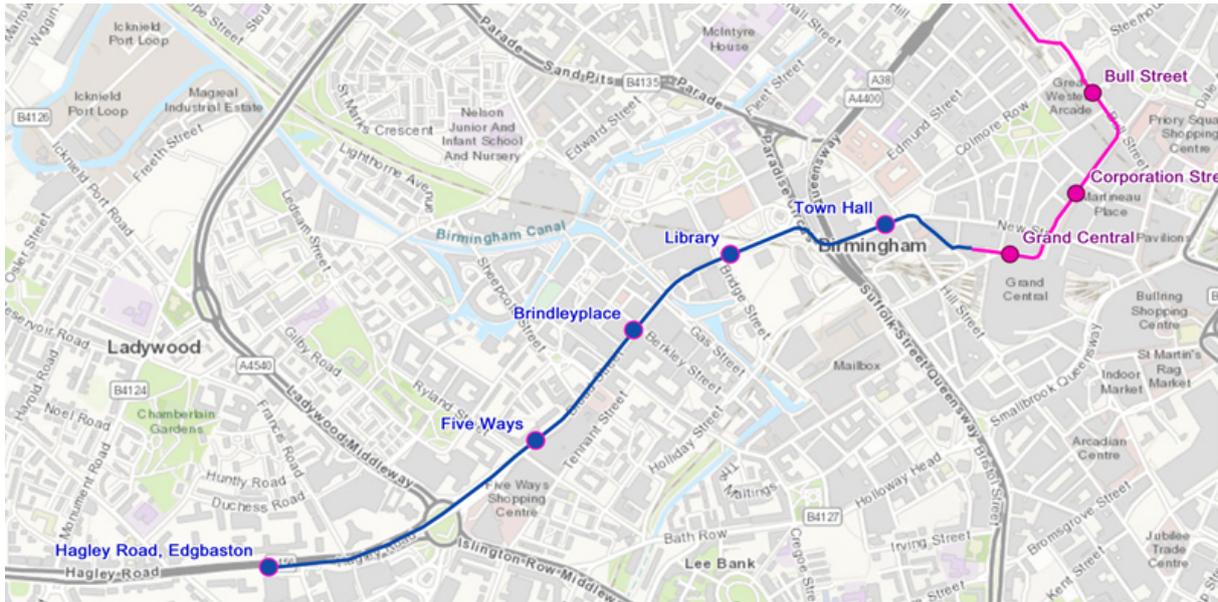


Pictured: Paradise Street / Victoria Tram Stop, rail installation continues over A38 Overpass and Overview Paradise Street and A38 Overpass.

Westside Extension – Phase 2 – Edgbaston (Five Ways)

Programme Cost		
£149.2m		
Project Cost [TC1²]	Construction Start	Passenger Services
£83.4m	June 2019	December 2021
Powers	Midland Metro (Birmingham City Centre Extension Etc) Order 2005	
	<i>Midland Metro (Birmingham City Centre Extension, etc.) (Edgbaston Extension Land Acquisition) Order 2019</i>	
Funding	Enterprise Zone	£1.3m
	Third Party	£2m
	HS2 Connectivity	£20.3m
	DfT Grant	£59.8m
Current Status	Design – in review Utilities Phase 2 – December 2017 to August 2019 Canal Tunnel enabling works completed Construction of main works commenced (Section 8, Five Ways underpass)	
Programme	<ul style="list-style-type: none"> • Completion of Canal Tunnel strengthening – March 2019 • Commence main works Phase 1 – 3rd June 2019 • Commence main works Phase 2 – September 2019 • Passenger Services commence – Dec 2021 	On Programme
Cost		On Budget

² This cost reflects further review and value engineering by the Midland Metro Alliance which has reduced the forecast out-turn cost of phase 3 relative to the TC1 figure.



Pictured: Map showing the Birmingham Westside extension.

The final phase of the Birmingham City Centre extension, due to open in December 2021, is some 1.3 km long operating entirely on highway with stops at Brindley Place, Five Ways and Edgbaston (Hagley Road). The sections between Centenary Square and Brindley Place and between Five Ways and Hagley Road will be operated catenary free.

An application for powers to acquire the land to construct and operate the extension was approved by the WMCA Board at its meeting on 17 March 2017. Subsequently the DfT have granted the Order which came into force on 14th May 2019. Negotiations with landowners have continued to progress well and all agreements with land and building owners at the terminus have exchanged removing the need for compulsory purchase. Compulsory purchase may still be required for the small strip of land required at the Hyatt hotel on Broad Street.

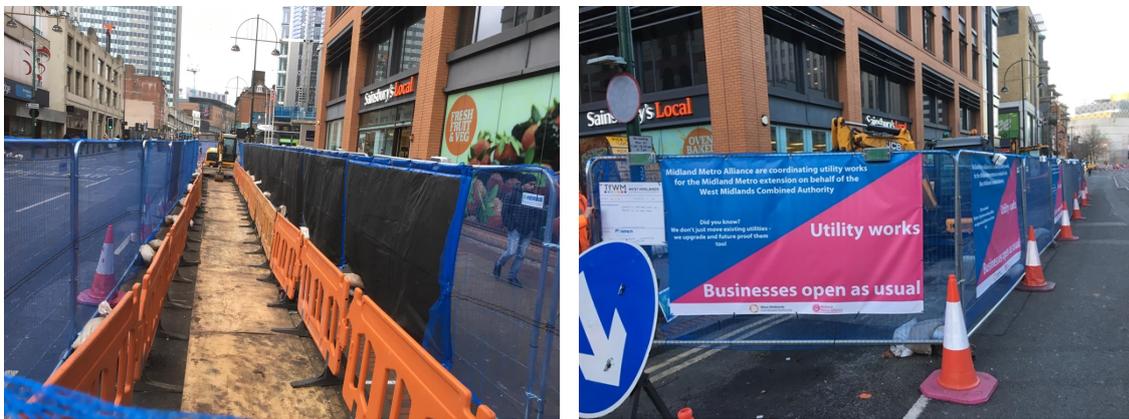
An initial Project Proposal and Target Cost (TC1) submitted by the Midland Metro Alliance for the Edgbaston Extension works was approved by the WMCA Board at its meeting on 17 March 2018, with authority to approve the final Target Cost 2 delegated to the Metro Director and WMCA Finance Director, subject to a satisfactory report from the Alliance Auditor. The final Project Proposal and Target Cost (TC2) was submitted for the approval of the Owner's team in May 2019 which has subsequently been challenged pending a value engineering exercise.

The project is fully funded and TfWM have released funding for the continuation of the project in order to commence the first phase of construction through Five Ways underpass (Section 8) along with installation of overhead line columns, the next phase of main works is due to commence towards the end of August 2019 which will require further approval by TfWM.

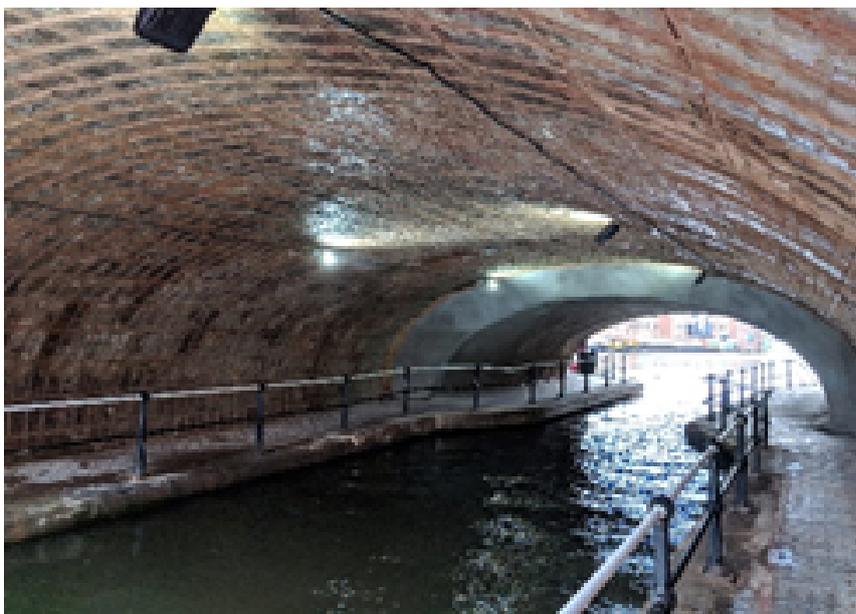
Utility works are progressing well despite significant restrictions on working arrangements agreed with the Westside BID to mitigate the impact of these works on the weekend night time economy. Following the successful completion of the canal

tunnel strengthening works on schedule in March the main works commenced on 2nd June with closure of Five Ways underpass (section 8) on programme. To date the works have progressed well and 1st stage concrete is expected to be poured ahead of schedule.

Senior personnel from TfWM and the Alliance continue to walk the route regularly to meet with stakeholders. The “Westside Weekly” provides updates about the works and traffic updates with additional information being provided three-times weekly through a WhatsApp group administered by the Westside BID. A video has also been produced and released by the Midland Metro Alliance (as well as shared by WMM) to advertise that Broad Street is open as usual during the works and during the important festive trading period. This video was created in partnership with Broad Street stakeholders and can be found at <https://vimeo.com/306458358>.



Pictured: Utility works currently taking place along Broad Street.



Pictured: Completed strengthening works to Broad Street Canal Bridge.



Pictured: Removing underpass median wall and planning for trackform construction.

Wolverhampton City Centre Extension

The extension is a core part of the Wolverhampton Interchange Programme – funding is for the overall WIP.

Project Cost	Construction Start	Passenger Services
Programme £81.8m	August 2017	Q4 2020
Including Metro £33m		
Powers	Wolverhampton City Centre Extension Order 2016	
Funding	ITB	£3.0m
	LGF	£13.5m
	WMCA (DfT-MSCP)	£21.9m
	WMCA (HS2)	£12.4m
	CWC	£16.0m
	WMCA (IP)	£15.0m
Current Status	Phase 2 & 3 construction – ongoing due to complete Summer 2019. Project will be suspended pending completion of the Station Construction works. Project schedule rebaselined to reflect current overall WIP programme.	
Programme		At Risk
Cost		On Budget



This is a short (850m) on-street extension forming part of the Wolverhampton Interchange Programme (“WIP”). The extension will provide new stops at Wolverhampton Railway Station and at Pipers Row, where it will serve Wolverhampton Bus Station. The extension will connect with Metro Line One at Bilston Street between

the Wolverhampton St Georges and The Royal tram stops. Between Piper's Row and Wolverhampton Station the route will operate catenary free.

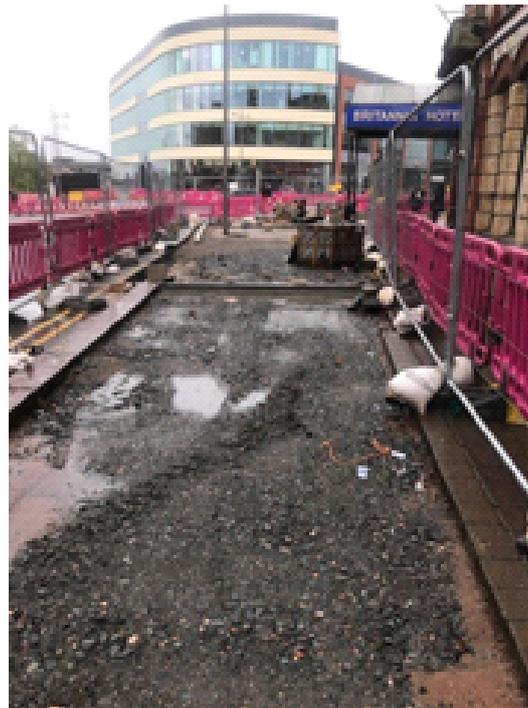
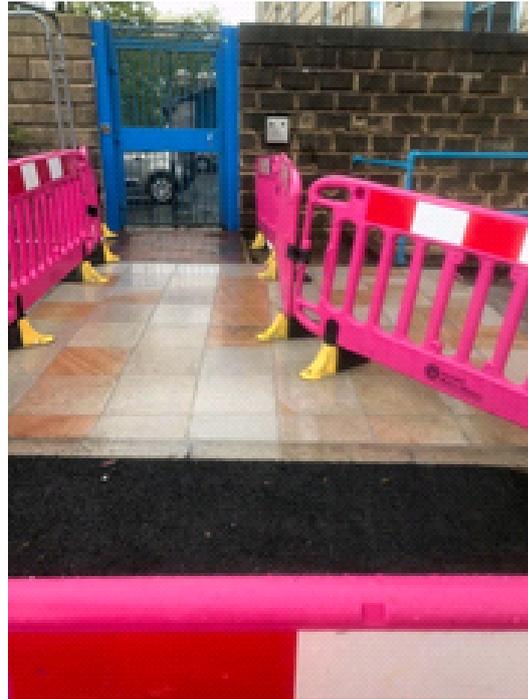
Following the station works contract being awarded to Galliford Try, it was agreed at the WIP January 2018 steering group that the Midland Metro Alliance would accelerate the tram extension works to run in parallel with the Galliford Try station works. These works (Phase 1) started on Pipers Row in April 2018 and on Railway Drive from July 2018 however they exclude the Station Plaza works (Phase 2) that will be carried out on completion of the Galliford Try station project.

The main track construction works have been completed on Piper's Row. These were completed on 3 September 2018 with the road reopening to traffic in time for the back-to-school period as scheduled. Rail construction was completed in Railway Drive, and the site handed back to Galliford Try, shortly before Christmas 2018.

The MMA continue to have a presence in Wolverhampton until summer 2019 as work to improve the street including overhead line equipment foundations, tram stops, paving and street furniture, continues.

As the Phase 2 Metro works in the station forecourt cannot commence until the station works are completed, the Alliance has advised that on completion of Phase 1, the WCCE project will demobilise with only a limited design team remaining active to deal with any station interface issues. The Alliance will remobilise ready to commence Phase 2 construction works as Galliford Try complete the Railway Station works. Galliford Try have advised that they will need to maintain their hoarding lines until the end of the Station Works which will limit opportunities to commence Metro works before the station is complete. On completion of the Station works the Metro construction will run uninterrupted through to completion approximately six month after completion of the station works.

Completion on time is dependent upon access being granted to the Station Plaza site by Galliford Try which is out of TfWM's control.



Pictured: Paving complete & Britannia works continue

Birmingham Eastside Extension

Project Cost	Construction Start	Passenger Services
	Q3 2020	Q4 2022
Target Cost 1 £152.2 ³		
Powers	Midland Metro (Birmingham Eastside Extension) Order – Decision expected Q3 2019	
Funding	DfT / DCLG	£131.7m
	LGF	£5.5m
	BCC £15m [Digbeth Urban Realm]	
Current Status	TWAO Decision – July 2019 DfT funding decision – July 2019 Preliminary Design – complete May 2019 Approval of Full Business Case – September 2019	
Programme	Awaiting TWAO Award	TBC
Cost	Awaiting TWAO Award	TBC

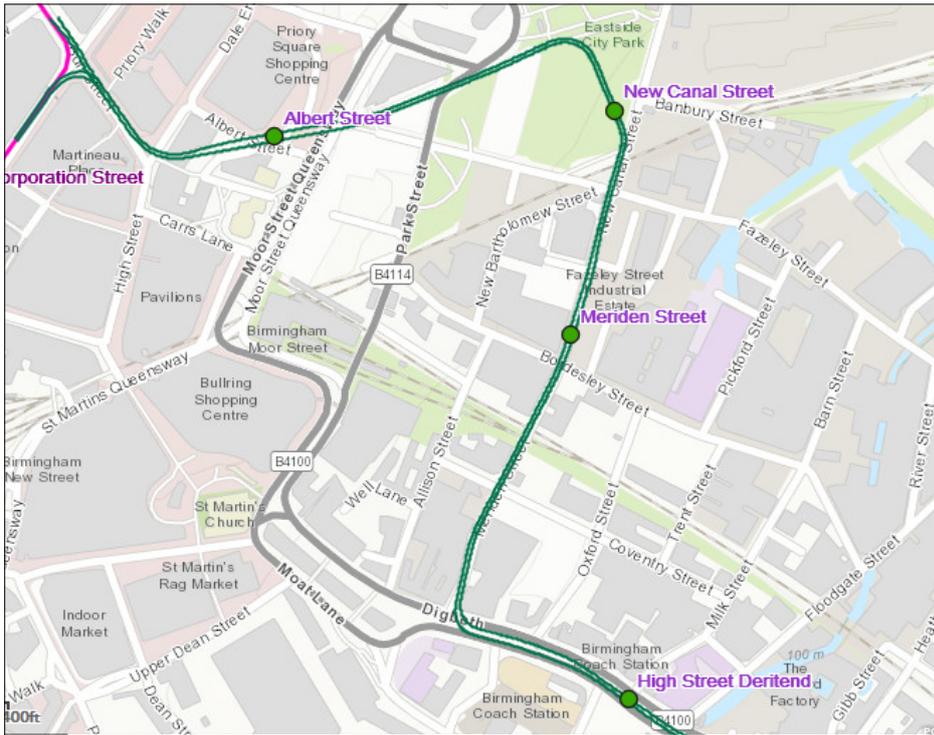
This is a short but complex 1.7km street running tram route that departs from Line One at Bull Street and runs to Digbeth where a temporary terminus will be provided pending the construction of the East Birmingham to Solihull line. Four new stops are to be provided at Albert Street, New Canal Street (HS2) Meriden Street and High Street Deritend (Coach Station) with the section between Albert Street and High Street being catenary free.

The Public Inquiry took place on 22/23 November 2017 and given the overwhelming case for the project and lack of objections at the Inquiry, the Inspector was able to submit his report in January 2018 via the Planning Inspectorate to the DfT TWA Orders Unit.

Dialogue with HS2 regarding the construction and operation of the Metro during HS2 construction has highlighted areas of perceived cost and schedule risk that need to be addressed. An agreed approach to management of these interface risks, consistent with HS2 and TfWM's programmes has been developed. WMCA, HS2 and DfT discussions have continued in a positive manner and a decision from DfT is anticipated in July.

Progression of the HS2/ TfWM Development and Utilities Agreements is ongoing and approval will be subject to agreement on the above mentioned interface risks and award of the TWAO.

³ This cost excludes any adjustments arising from MMA's formal submission of a target cost proposal or arising from the proposed HS2 Development Agreement.



Pictured: Birmingham eastside extension route map.

The Midland Metro Alliance has completed and consulted widely on the study of the Digbeth High Street urban realm and has approval for alterations to the alignment of the Metro to provide a passenger transport corridor in the centre and urban realm to the north side of the highway. The City Centre Enterprise Zone/GBSLEP/BCC has provisionally approved funds for this scheme to enable this to be incorporated into the preliminary design for BEE. BCC's FBC approval of the full contribution (£15m) will take place in line with WMCA governance for the BEE FBC, which commences with TAP in July. The scheme will provide a Metro, Sprint, bus and coach interchange in the remodelled Digbeth High St. A conditional grant agreement has been signed that enabled BCC to provide the funding to cover the outline and preliminary design phases.

The Midland Metro Alliance has now completed the Preliminary Design stage and issued to WMCA for final review.

Significant design has been undertaken by the MMA to produce a solution for the Bull Street delta junction that fits within the adopted highway boundary and meets the tram performance characteristics. Meetings have taken place jointly with BCC to determine a solution that meets highway requirements. This final trackform solution which will impact on bus stops on Lower Bull Street and will raise the level of the carriageway, has been agreed in principal with BCC, TfWM and National Express. Further works will be carried out in the detailed design stage to confirm and approve the final design.

In addition to the above issues, work to resolve outstanding issues with the business case is ongoing and the team is working towards submission of a Final Business Case to WMCA in July 2019 for approval at the September Board.

General development activity on this project has now been reduced to the minimum necessary to maintain the interfaces with HS2, BCC and Government pending DfT's decision on powers and funding and WMCA approval of the Final Business Case.

Trams

The funding package includes provision for procurement and supply of an additional nine trams that have been identified as necessary to allow services to be operated along the following routes:.

- Wolverhampton to Edgbaston
- Edgbaston to High St Deritend
- High St Deritend to Wolverhampton

Wednesbury to Brierley Hill Extension

Project Cost	Construction Start	Passenger Services
£449.5m	Q1 2020	Q4 2023
Powers	<p>The Midland Metro (Wednesbury to Brierley Hill and Miscellaneous Amendments) Order granted in 2005</p> <p><i>Midland Metro (Wednesbury to Brierley Hill Land Acquisition) Order – submission December 2017</i></p> <p><i>Decision pending</i></p>	
Funding	BCLGF	£0.4m
	Transforming Cities Fund	£207m
	WMCA	£103m
	Prudential Borrowing	£139.1m
	TOTAL	£449.5m
Current Status	<p>Preliminary design complete Q2 2019</p> <p>Target cost 1 estimate Q2 2019</p> <p>Final business case approved Q1 2019</p>	
Programme	<p>Opening of Passenger Services - 2023</p> <p>TC1 Project Proposal Approval - July 2019</p> <p>TC2 Project Proposal submission – December 2020</p> <p>Transfer of South Staffordshire Railway – September 2019</p>	On Programme
Cost	In stage approved budget up to TC1	On Budget



Pictured: New CGI of Wednesbury to Brierley Hill Metro extension

The Wednesbury to Brierley Hill Extension is 11km long and has the benefit of a Transport and Works Act Order, which was granted in 2005. 7km of the route runs along a former railway corridor with the remainder running on-street in Dudley town centre, Merry Hill and Brierley Hill. The scheme will provide up to 17 stops and will provide interchange opportunities at Dudley Port train station and the new Dudley Bus Interchange as well as improving accessibility to other public transport facilities accessed from the existing operational Metro line and proposed extensions in construction or being planned.

In accordance with the current principles of the proposed WMCA / NR agreement the project is required to make passive provision for joint future freight train operation (forecast to be no earlier than 2040). The details of the passive provisions to be incorporated into the Metro design continue to be progressed as part of land acquisition discussions with Network Rail.

MMA have now completed the preliminary design for the extension and submitted a Target cost 1 Project Proposal for the scheme to be reviewed by WMCA. The Final Business Case was completed and approved through the TfWM/WMCA full assurance process. MMA are working on four discrete packages of detailed design to maintain project momentum and de-risk the programme in 2023 whilst the Project Proposal is being considered.

Funding

WMCA has approved the full funding for the scheme and delegated authority to the Director of west Midlands Metro, Finance Director and Managing Director of TfWM to program the scheme. The Project Team has been authorised to draw down a total of £22.5m in funding to date to complete the TC1 Proposal and site preparation activities.



Pictured: Overnight borehole survey work being carried out in Dudley.

Management of the Statutory Process

This workstream includes the activities needed to secure, by means of a TWA Order, the Compulsory Purchase powers necessary to construct the line. WMCA, supported by MMA, is managing the ongoing statutory processes, with its own experienced team working in partnership with Parliamentary Agents, Counsel, WMCA's legal team and expert witnesses as necessary. The work includes:

- Negotiation with objectors and achieving an agreed settlement via legal agreement or assurances prior to inquiry where possible,
- Preparation of Statement of Case
- Preparation of Proofs of Evidence
- Management of the public inquiry process
- Preparation of rebuttals
- Public Inquiry

There were 25 objections to the Draft Order. On the day of the Public Inquiry 21 objectors had withdrawn. The Public Inquiry was held on 19 March and adjourned the same day. The Inspector's report was submitted to the Secretary of State in May and TfWM are waiting for the Secretary of State's decision.

Connecting Sandwell & Dudley

The second edition of the new quarterly WBHE newsletter, Connecting Sandwell & Dudley, was published in May 2019. The next edition will be released in July 2019.

Dudley Town Centre Package of Works

The second package of advance utility exploratory works in Dudley Town Centre was recently completed on schedule. The work was carried out to prove the location of the existing Severn Trent Water networks in the area, which will help feed the detailed design, and took place over a two-week period in June 2019 at night.

Depot

Potential site of a new stabling facility for the WBH extension trams has been identified adjacent to the line in Sandwell. Positive discussions are progressing with Sandwell Council officers and TfWM propose to take this site forward for planning approval in 2019.

East Birmingham Solihull Extension

Project Cost	Construction Start	Passenger Services
£735m ⁴	2023/4	2026
Powers	Midland Metro (East Birmingham & Solihull Extension) Order to be sought December 2020	
Funding	Enterprise Zone	£183m
	Funding Gap	£552m
Current Status	Preliminary Design and Outline Business Case development progressing PRISM traffic and highway modelling nearly complete	
Programme	The scheme is still on track to open in line with HS2	On Programme
Cost	Scheme costs remain on budget	On Budget



This 16.5km extension will link growing residential areas and key community destinations such as St Andrews, Bordesley Green, Heartlands Hospital and Meadway with existing and new growth areas including Curzon HS2, Birmingham City Centre office and retail districts, Paradise Circus/Arena Central developments and Brindley Place/Five Ways/Edgbaston to the west, and the NEC/Airport UK Central and HS2 Interchange Station to the east.

The extension of the Midland Metro from Digbeth to east Birmingham and north Solihull will play a key role in delivering the full potential for growth and jobs of HS2 and provide transformational benefits to areas with a persistent and high incidence of multiple deprivation by giving people access to jobs and services, linked to the Greater Birmingham and Solihull Local Enterprise Partnership (GBSLEP) training and skills agenda.

The EBS project is much more than a transport project. By aligning initiatives promoted by a wide local partnership in Education, Health, Employment, Housing

⁴ The forecast out turn cost + optimism bias will be reviewed prior to submission of the Outline Business Case in the second half of 2019

and Education it seeks to transform the East Birmingham and North Solihull areas, breaking the people of this area out of the past and present embedded high levels of incidence of multiple deprivation.

The Metro scheme is the key backbone for this transformation, not only providing local jobs in design and construction through the Midland Metro Alliance, but by linking people to major current centres for employment and the future jobs and growth hubs in the Birmingham City Centre Enterprise Zone and UK Central, and by providing a stimulus to development along the corridor.

Initial work on the project in 2015-16 focussed on high-level engineering studies to develop the indicative route with which to test the viability of the project through development of an Initial Outline Business Case (IOBC). This work demonstrates a good value for money case exists for the project, with a Benefit: Cost Ratio of 1.6:1, rising to around 2:1 when wider benefits are added to this initial assessment.

The project team remain committed to the delivery of the scheme in 2026, just prior to the opening of HS2, although there is no room for delay if this is to be achieved. The next key milestone is to submit an application for Transport and Works Act Order (TWAO) powers to build, maintain and operate the extension and to confirm the route for funding the full cost of the project.

Concept design has been completed and topographical surveys undertaken to allow the commencement of preliminary design to feed into the TWAO submission. PRISM traffic modelling necessary to assess the impacts of the scheme on the highway network is running behind schedule. This modelling will influence the design decisions in key constrained sections of the route, ahead of the public consultation on the preferred alignment option.

The TWAO submission has been deferred to end 2020 to accommodate the public consultation and modelling work and subject to the necessary approvals from WMCA and confirmation of the overall funding package.

Briefings to ward councillors along the route commenced in November 2017 following agreement with the Cabinet members for Birmingham and Solihull. Public consultation on the preferred alignment for the scheme will take place in Q1 of 2020 and is an essential precursor to the submission of the Transport and Works Order application.



In July 2017 the Investment Board approved total funding of £9.5m to progress the project through the Transport and Works Act process.

Work has continued on the development of the Outline Business Case which will be submitted in 2020, having been delayed by issues with the PRISM 5.2 model. The Environmental Statement Scoping Report has been largely written and there has been ongoing consultation with key stakeholders to ensure collaboration and integration with other major projects along the route which are due to be developed and delivered within similar timescales.

A study has recently been commissioned to look at the integration of the HS2 Automated People Mover (APM) within the wider public transport offering within the UK Central area and the implications of this on the EBS Metro scheme is on-going. Initial findings have been discussed at meetings with the Urban Growth Company (UGC) at which key stakeholders in the region are present.



Pictured: Possible alignment of Metro at St Andrews

A budget and plan for taking the project forward beyond July 2019 (when current funding from WMCA expires) is in preparation and will encompass all activities needed to secure the powers and funding for the scheme.

3rd Generation Trams (3GT) – TfWM Metro Team

Project Cost	ITN	First Tram In Service
c. £150m	Q1 2019	Q3 2021
Powers	N/A	
Funding	£1.5m Procurement funding included in Eastside Budget	
Current Status	Market Sounding Workshops completed in Q2 2018 Contract Notice issued in Q2 2018 Evaluation of Supplier Questionnaires completed in Feb 2019 Invitation to Negotiate (ITN) issued in Q1 2019 Tenders returned 1 st July 2019 Contract Award Q4 2019 Delivery of First Tram Q3 2021	

This project will be progressed by TfWM’s Metro team outside of, but with support from, the Alliance and the Operator.

Modelling of the network has been undertaken and in order to operate the extended network with a five minute frequency service, TfWM will need to order a fleet of up to 50 additional trams capable of running catenary free.

The expectation is that the trams will be required to be delivered and commissioned in phases approximately 6 months prior to the opening of the following extensions.

Project	Trams
Edgbaston	6 Trams [Q3 2021]
Wednesbury Brierley Hill	15 Trams [Q3 2023]
Eastside	4 Trams [Q1 2025]
East Birmingham Solihull	23 Trams [2025/2026]

Funding for these vehicles is included in the Eastside, Wednesbury Brierley Hill and East Birmingham extension funding envelopes.

To operate the trams additional depot facilities will be required together with upgraded / new control and communications systems. These facilities and systems will need to be procured, delivered and commissioned in parallel with the 3GT procurement.

The information received following the Market Sounding in 2018 indicated the market is very interested and has proven tram products to offer, albeit with some clear concerns on the extent to which catenary free sections can be deployed on future extensions because of range limitations of vehicle power storage technologies. A paper was taken to the Metro Board on the 14th November 2018 where approval was granted to issue an amendment to the Contract Notice to inform the market of the removal of tram maintenance.

The amended Contract Notice was issued on the 4th December 2018 and no challenges were received. The four highest scoring suppliers that meet the minimum SQ thresholds were pre-qualified and taken through to the Invitation to Negotiate Stage (ITN). The 4 pre-qualified suppliers were:

- Alstom
- Bombardier
- CAF SA
- Skoda

As a result of requests received from bidders the tender period was extended to 1 July 2019.

The implications of agreeing the extensions to the tender period were considered by the Metro Board and a change control was approved on the 2nd June 2019. This now means that the ITN return date is 26 days later than the baselined scheduled date of the 31st May and 33 days later than the targeted date of the 20th May 2019. Contract Signature remains as the 4th October 2019 with no extension to the delivery of the first tram. This is possible by reducing the evaluation period from six weeks to four weeks, removing the previously agreed two week extension to the evaluation period. The evaluation period would now be from the 1st July to the 30th July, avoiding the two week period where key members of the evaluation team were on annual leave.

The estimated delivery of the first tram remains as the 30th July 2021, which means that there are 22 months between Contract Signature and proposed delivery of the first tram.

The baselined schedule shows a contract award date of 13th September 2019, however with the approved change controls the contract award date is now the 4th October 2019. There is time risk allowance of 66 days between contract award and the delivery of the first tram, so although contract award is later than in the original baseline schedule the delivery of the first tram should not be. Mitigation actions will be put in place to try to recover some of the lost time and to make every effort to minimise any further delays.

At the time of writing two bids had been received by the tender deadline and these are now under review by the tram Projects Team.

Birmingham City Centre Extension

In this period there have been no further incidents to report on the completed scheme.

All works were successfully completed by Balfour Beatty and all retention monies released.

A glazed barrier system at Grand Central has been designed to replace the existing barriers that were installed upon opening of BCCE to Grand Central in 2016. After obtaining approvals from Network Rail and BCC installation of the glazing system commenced in June 2019. Finally, the project will need to complete a stage 4 Road Safety Audit which is slightly delayed whilst the above mitigations are installed.

Coventry Very Light Rail (VLR)



The Coventry Very Light Rail Research and Development Project is focussed around a proposal for the development of a new prototype vehicle along with a new form of thinner, lighter more easily laid, removable and replaceable trackform.

The VLR Project continues to be divided into four main work streams these are:-

- WS1 Vehicle – Development of a Prototype Vehicle – Lead organisation WMG;
- WS2 Trackform – Research and development of options – Lead organisation WMG;
- WS3 First Route – Lead organisation Coventry (in partnership with TfWM); and
- WS4 VLR Operations – Lead organisation TfWM.

Throughout the project, TfWM's Metro Team has been providing tramway related advice, including guidance on Transport and Works Act Order acquisition processes and tramway related technical and safety implications across the work streams. This activity continues as resources permit.

TfWM and Coventry City Council propose to provide a detailed update on the development of the Very Light Rail prototype vehicle, trackform and development of the initial route options to TDC at its September meeting.

A presentation on VLR Innovation Centre at Castle Gate will be jointly presented by TfWM, Coventry City Council and Dudley Metropolitan Borough Council to the Transport Delivery Committee in September.

Bilston Road

Bilston Rd Project Cost	Construction Start	Completion
£16m	12 June 2017	1st December 2017
Powers	Midland Metro Act 1989	
Funding	Funded through HS2 Connectivity Debt	
	£650k contribution from City of Wolverhampton	
Programme		Completed [2 Weeks Early]
Cost		On Budget

Construction work is complete and the tramway is open for traffic.

Construction work progressed well and the Midland Metro Alliance completed the works with the road fully reopening to traffic on 2 December 2017, two-weeks ahead of programme.

The Tramway service resumed on Friday 8 December 2017, following testing and commissioning and driver training.

Testing of the new infrastructure's stray current performance is continuing and MMA are working with TfWM to investigate areas where readings are non-compliant

The corridor remains under warranty from MMA.

CWC have implemented a financial assistance package for traders affected by the Bilston Road works. This mirrors the WMCA's FAP and is administered by the same independent assessor.

Network Wide Projects

Background

A series of projects are being progressed by TfWM to support the network expansion programme and these are listed below:

- Wednesbury Depot Additional Stabling and Maintenance Facilities
- Tram Preparation & Stabling Facility – Eagle Lane
- Line 1 Traction Power and OLE Upgrades
- Communications & Control

Each of the aforementioned projects will be discussed in detail below.

Wednesbury Depot

The existing Wednesbury Depot is comprised of stabling for the existing fleet of 21 CAF Urbos 3 trams, a 6 bay maintenance shed and a Testing & Commissioning shed. The capacity of the Depot is sufficient to maintain the existing fleet of 21 trams.

In order to be able to service all future network extensions it is envisaged that up to 50 new trams will be required to be procured, most likely in two delivery tranches, this will mean a total fleet of 71 trams. The first of the new fleet is expected to arrive in the Depot in July 2021.

Delivery Tranche	No of Trams in Tranche	First Delivery	Last Delivery
1	18	July 2021	March 2022
1+	Up to 7	March 2022	July 2022
2	25	December 2024	November 2025
Total	50	N/A	N/A

Table 3 – Tram Delivery Phase Plan

** The dates in table 1 are based on current timescales for required trams and are subject to change.*

Modification to the Wednesbury Depot will be required in order to undertake heavy maintenance of the future increased fleet of trams. The increased fleet size could potentially be made up of multiple tram types as well as manufacturers, as such consideration is being made for this. This would include additional spares storage, variation in tooling requirements and maintenance regimes, additional office, welfare and training accommodation and reconfiguration / possible extension of the maintenance building. As well as these modifications to the existing depot, additional

facilities for tram preparation and stabling will be required, most likely at more than one additional location on the expanded network. Studies undertaken by TfWM have identified that up to 6 additional trams can be stabled and maintained at Wednesbury Depot with the current arrangement subject to any special tooling requirements required to maintain the 3rd Generation Tram Fleet.

TfWM have procured Mott MacDonald to undertake a study of the current facility at Wednesbury and other depot/stabling options in accordance with the Royal Institute of British Architects (RIBA) Plan of Work 2013.

The core outputs from this commission will be the issue of a Concept Design, high level Cost Plan and Programme of Works. The report is due to be delivered in September 2019 and will involve significant input from MML to ensure that the requirements are captured and that the proposed works can be delivered without adversely affecting depot operations. Interfacing projects are also being factored in and these include but are not limited to the CAF OESS fitment programme, WBHE, MML's planned P3 maintenance and overhaul programme of the existing fleet planned and the Operations and Control Centre enhancement works.

Tram Preparation and Stabling Facility – Eagle Lane

TfWM have undertaken a detailed study to identify sites along Line 1 (existing network), WBHE and EBSE to provide additional tram prep and stabling facilities to augment the existing facility at Wednesbury Depot; and to support the timetable as each operating stage comes on stream. The focus of the team to date has been to provide facilities to accommodate the phase 1 expansion programme, in-particular the delivery, commissioning and entry into service of the 3rd Generation Tram Fleet. It is accepted that the existing depot can stable and maintain an additional 6 trams and beyond that point supplementary facilities are required to be made available either at Wednesbury Depot and or new sites.

The identified tram preparation and stabling facility sites for the phase 1 expansion programme were appraised on a set criteria and ranked. Following this process, the 'preferred' site identified was the land at Eagle Lane which is adjacent to the WBHE and in close proximity to Wednesbury Depot.

The Concept Design, high level Cost Plan and Programme of Works were delivered on programme at the end of June 2019 and are now under review. Numerous workshops have taken place with the key stakeholders present, a series of options developed and final 'preferred' option selection was made in conjunction with MML.

There are a number of challenges regarding the development of the land at Eagle Lane that the joint TfWM / Mott MacDonald team are contending with. Not all of these will be concluded by the time the Eagle Lane RIBA Stage 2 report is issued at the end of June 2019 but they will be progressed while awaiting the delivery of the Wednesbury Depot RIBA Stage 2 report in September 2019. Once both reports are delivered, TfWM will make a decision as to the most appropriate course of action to

provide the additional tram preparation and stabling facilities for the network expansion.

Line 1 Traction Power and OLE Upgrades

TfWM have been working with the MML and MMA to assess the condition of the existing Line 1 Traction Power system and to identify its Reliability, Availability, Maintainability and Safety (RAMS) moving forward to support the network expansion programme. Following a series of workshops in late 2018 and 2019, a number of work streams have been progressed to identify the requirements including:

- Various workshops to review overall system performance;
- A conditional survey of all Line 1 substations by the system maintainer;
- Works to increase the Traction Power network resilience of substation 9 (St Paul's) for CSQ opening;
- Works to increase the resilience of the traction power Supervisory Control and Data Acquisition (SCADA) system;
- High-Level Inspection to Overhead Line, Re-tension Works to System; and
- Traction power modelling and simulation of Line 1 and the extensions.

The conditional survey of the Line 1 substations has been completed and MML has implemented a number of the recommendations made in the report.

Works to increase the resilience of substation 9 by the MMA are progressing in line with programme requirements and will lead to the installation of substation 9A at the same site. As part of these works the SCADA equipment at substation 9 will be upgraded and the central SCADA Server located at the Wednesbury Depot Comms Equipment Room will be replaced by a Server and software implementation for the SCADA system.

MML are progressing the works to undertake high level inspections of the Overhead Line and the phased replacement of the existing tensioning system, these works are currently in the procurement phase with tender returns being evaluated.

The final outstanding traction power modelling and simulation report was received in May 2019 and the 4 No. reports have been reviewed by TfWM, MML and the MMA independently. The reports identify works that are required to be undertaken to the Line 1 traction power system and the requirements for the extensions. Following the independent reviews, a joint workshop was convened with the consultant commissioned by TfWM to undertake the simulation to clarify the recommendations contained within. TfWM are considering the next steps which will include further modelling and the appointment of an engineering consultant to undertake a peer review and assist with the planning and implementation of the necessary works.

Comms and Control

Preparatory works have been progressing with regards to the upgrade of the Communications and Control system. The Comms and Control system is made up of a number of sub-systems and these are detailed in the table below:

Sub-System	Description
Backbone Transmission Network	Optical fibre network with associated network infrastructure for the transmission of data between wayside equipment and depot equipment room
Passenger Information Displays	Provides Passengers with real-time visual display information
Close Circuit Television	Viewing of tram stop and pre-defined locations from Operations Control centre and Summer Lane control rooms.
Supervisory Control and Data Acquisition (SCADA)	Command & Control of Traction sub-stations
	Command & Control of wayside equipment
Radio	Two way radio communications and data exchange between Operations Control centre and equipment room
Telecoms	Communications equipment for the Operations Control centre, maintenance and administration staff
Ticketing system – Automatic Fare Collection	Off tram ticketing system to be located at tram stop or other defined locations
Operations Control Centre Room	Control Room building work, furniture and technical equipment

The following section highlights the key issues with the existing Comms and Control system and the technological solutions that has been proposed by TfWM.

Line 1 Backbone Transmission

Identified issues:

- No resilience on Line 1/BCCE optical network, only 1 physical fibre between nodes; and
- Network switches require upgrade due to manufacture support issues and future capacity requirements.

Solution:

- Installation of new fibre on Line 1 & BCCE (ADSS – on OLE)
- Upgrade Network switches
- Consider SG potential to reduce reliance on FON

Line 1 and BCCE Passenger Information Displays

Identified issues:

- Line 1 & BCCE Passenger Information Displays only consist of 2 information Lines; and
- The first Line is for next tram arrival with second line used for scrolling information text. More route information will be required.

Solution:

- Increase capacity of Displays to house two lines of information for tram arrival/destination; and
- Have third Line for scrolling customer service information.

Line 1 and BCCE Passenger Assistance Units

Identified Issues:

- Line 1 & BCCE Passenger Assistance Units are for Emergency calls only, and
- All calls are currently routed to network controllers not customer services staff.

Solution:

- Migrate PAU to model which is capable of both Emergency and Information calls.
- Allow differentiation of routing of emergency and information calls.

Radio

Identified Issues:

- The current VHF Radio on Line 1 suffers coverage issues in the central area/Tunnel(CSQ and WCCE have been surveyed and have coverage); and
- The VHF Radio is only voice, voice and data are required for future needs (On-board systems).

Solution:

- Migration of VHF to Digital Mobile Radio Tier 3 (or similar); and
- DMR can use existing infrastructure, both voice and data.

Supervisory Control & Data Acquisition System

Identified issues:

- The current Traction SCADA is obsolete and will not support future project requirements/upgrades; and
- Current SCADA is not monitoring any auxiliary wayside equipment only traction sub-station.

Solution:

- New SCADA capable of future network needs and command and control requirements; and
- Upgrade Line 1 / BCCE to include wayside RTU/PLC for wayside monitoring.

Close Circuit Television

Identified issues:

- Existing Synectics recording system no longer supported; and
- Still have Analogue cameras on network.

Solution:

- Upgrade of Synectics system, cold storage and operator interface for future network; and
- Upgrade of Analogue cameras.

Automatic Vehicle Localisation System

Identified issues:

- Localisation of trams accuracy defined by Tram Detection System Loops only; and
- Limited functionality of on-board systems.

Solution:

- Project Automation on-board Traincontroller system (Already Installed on Urbos 3)
 - Continuous Localisation; and
 - Enhanced driver HMI function.

Operations Control Centre

Identified issues:

- Operations Control Centre is not equipped for network expansion; and
- Sub-systems are not automated.

Solution:

- Upgrade/New Sub-systems for future needs;
- Automate where possible operator functions; and

- Build more intelligence into sub-systems.

Work has been undertaken by TfWM and the MMA to identify suppliers for each of the sub-systems detailed above and a series of meetings has taken place over the last few months to refine requirements and develop an overarching programme that aligns with the network expansion programme including the Comms and Control works required to be undertaken on the 2GT fleet and the free issue equipment to be provided to the manufacturer of the 3GT fleet (once awarded).

Project Automation (PA), the incumbent OEM and maintainer of the Line 1 SmarTram Automatic Vehicle Location System (AVLS) and Signalling & Telecoms system submitted an offer in February 19 for the upgrade of the existing system and the phase 1 network expansion projects, namely BEE, EDGE and WBHE. Following review by TfWM and the MMA, PA were asked to submit a revised offer and this was received on the 07/06/19. PA will further revise their offer and resubmit to TfWM in early July 2019.

PA have also provided a quotation for the removal of the 2 Line Passenger Information Displays (PID's) and Passenger Assistance Units (PAU's) on all of the Line 1 tram stops and replacement with 3 Line PID's and 2 button PAU's as per the 2 no. tram stops that form the CSQ extension. The aim is to have PA under contract in order to complete the works in-line with the opening of CSQ to provide passengers with a uniform experience across the network. Included within this contract will be the supply and fitment of a 3 Line PID as part of the Snow Hill Station 3rd entrance project.

TfWM and MML have met with WM5G team to investigate ways in which 5G mobile technology can be utilised within the tramway architecture. A further meeting is scheduled to take place in early July 2019 to explore options.

The current Radio maintainer has identified a staged approach for the migration of the current VHF radio to a DMR (Digital Mobile radio) tier III system. The DMR solution will provide both voice and data capabilities without the need of multiple base station sites, this needs to be explored further for viability and the team are planning to make the necessary arrangements for a radio coverage survey to be undertaken in the coming months.

The focus in the next quarter is to set up a series of workshops with MML, procure key suppliers and baseline the programme.

Appendix 2 – Governance Structure chart

