

GREATER MANCHESTER PASSENGER TRANSPORT AUTHORITY

REPORT FOR RESOLUTION

COMMITTEE: Policy & Resources

DATE: 11th September 2009

SUBJECT: Metrolink – Replacement of Altrincham Overhead Line Equipment

REPORT OF: Interim Chief Operating Officer, GMPTE
Metrolink Director, GMPTE

PURPOSE OF REPORT

To inform Members of the circumstances leading to the late completion of works to replace the Overhead Line Equipment on the Altrincham Line, and the subsequent delay in reopening the tramstops at Navigation Road and Altrincham.

RECOMMENDATIONS

The Committee is recommended to note the contents of this report.

CONTACT OFFICERS

Bob Morris 0161 244 1022
Bob.morris@gmppte.gov.uk

Philip Purdy 0161 244 1040
Philip.purdy@gmppte.gov.uk

1. Background

- 1.1. The Altrincham Overhead Line Equipment (OLE) was originally installed in the 1930s and was converted for Metrolink use in the early 1990s, maximising the use of the original systems and structures.
- 1.2. A condition survey of the OLE was undertaken in June 2006 which identified quantities of damaged, worn and life expired equipment. This survey initiated the project to replace the OLE from Altrincham to Old Trafford (7 miles). The following project objectives were established:
 - a) improve dynamic performance, electrical capacity and hence achieve a better quality of passenger service;
 - b) improve short and long term reliability;
 - c) reduce the need to impose speed restrictions during summer months, due to wire expansion, by replacing the old fixed tension arrangements with an auto-tensioned wire system using balance weights;
 - d) conform to current standards; and
 - e) minimise the number of joints and repairs in the contact wire which can cause pantograph damage.

2. Implementation

- 2.1. Two possible approaches to execute the project were identified;
 - a) complete blockade of the Altrincham Line, constrained to one month to minimise passenger disruption; or
 - b) undertake the work during a combination of overnight and Sunday possessions, over a period of between 6 and 9 months.
- 2.2. As part of a competitive procurement exercise, tenders were requested and bids were received for both approaches. The aggregate cost to GMPTE including contractors' costs, revenue loss and the cost of providing replacement buses was similar for both approaches.
- 2.3. To reduce passenger disruption, it was agreed that wherever possible, other necessary improvement works on the Altrincham line should be carried out at the same time, as follows:
 - a) tramstop upgrades including enabling works for Passenger Information Displays and new Ticket Vending Machines;
 - b) major reconstruction of Old Trafford and St Peter's Square tramstops;
 - c) new track and Overhead Line Connection with the Trafford depot as part of the enabling works for the Metrolink Project 3A extensions;
 - d) track and Overhead Line Connection of the South Manchester Line as part of the enabling works for the 3A extensions;
 - e) tram Operating System enabling works;
 - f) re-modelling of Cornbrook Track and OLE to allow Media City works to be undertaken; and

- g) other maintenance and renewal activities.
- 2.4. The risk of disruption to passengers was considered to be less under the blockade approach and this would allow the other projects identified above to be carried out at the same time, as well as being financially beneficial.
- 2.5. It was established that undertaking the working during August would have the least impact on passenger service as a result of holidays during that month and the contractors were requested to provide a delivery programme for the works from 1st August to 31st August.

3. Procurement Strategy

- 3.1. In accordance with the terms of the Metrolink Combined Operations and Maintenance Contract, Stagecoach Metrolink Limited were awarded the contract for the OLE works.
- 3.2. Critically, the appointment of Stagecoach Metrolink Limited (SML) reduced the interface risk between the contractors and the Operator.
- 3.3. The works were managed by Stagecoach Major Projects Directorate who were the Principal Contractor, responsible for the delivery of the works on a design, supply, install, test and commission basis, resulting in handover back into operational service. Stagecoach Major Projects managed the works, and subcontracted the design, installation and testing to recognised, and experienced suppliers.
- 3.4. Stagecoach Major Projects identified and prequalified seven potential bidders for the Altrincham OLE project and VolkerPower was subsequently selected as the preferred bidder on the basis of:
 - their project knowledge and clear delivery methodology;
 - their delivery programme; and
 - value for money.GMPTE attended the bidders' technical presentations and contributed to that aspect of the evaluation.
- 3.5. VolkerPower's bid was based on the design and supply of the OLE materials being provided by their subcontractor, Brecknell Willis. Both companies are well recognised within the industry, with Brecknell Willis recently successfully undertaking the OLE design and installation for the light rail system in Dublin.
- 3.6. Each contractor carrying out works during the blockade was required to submit a time schedule for their works, to ensure that the interfaces between individual projects could be managed proactively, and that any conflicts could be identified and dealt with.

4. Description of OLE works

- 4.1. The OLE works involved replacing the existing system with modern equipment, whilst retaining the maximum number of existing support structures to reduce cost.
- 4.2. This included the replacement of mechanical parts supporting the OLE from the existing structures, installation of a limited number of new support structures and the provision of new contact wire and supporting tension cables.
- 4.3. Following the installation of the new equipment and its connection to the electrical supply, a programme of electrical and mechanical safety testing was required. This included verification of the physical interface between the contact wire and pantograph.
- 4.4. The works required the use of a large amount of rail-mounted machinery and access platforms, as much activity was carried out at height. Movement of rail operated plant involved strict safety controls to protect other work sites adjacent to the OLE works and operatives who were on or near the tracks.

5. Execution during the Blockade

- 5.1. The majority of the projects within the blockade were undertaken in line with the programme and were successfully handed back to the Operator through the process agreed by the end of August.
- 5.2. Stagecoach Major Projects experienced some delays in the fabrication of some materials of the mechanical installation during August. This resulted in testing of the system starting later than planned, but Stagecoach remained confident that through close management of the programme, this would not result in a delay to the reopening of the line on 1st September 2009.
- 5.3. On the evening of 31st August, final testing was undertaken by the contractor prior to re-energisation of the OLE. During the last phase of the safety critical high-voltage electrical testing an unexpected, “soft earth” problem was detected, indicating that something was making intermittent contact with the live section of the OLE causing loss of current to earth. Given the levels of public access to the system, it was imperative to locate the cause by visual inspection and rectify to avoid the risk of electrocution. Locating such faults was time consuming and regrettably this resulted in a delay to the reopening of the Altrincham line between Altrincham and Old Trafford, until 2nd September.
- 5.4. The X5 and X6 tram replacement bus services therefore operated on the Altrincham line on 1st September.
- 5.5. The Eccles line and services from St. Peter’s Square to Old Trafford did reopen as planned on 1st September.
- 5.6. The electrical problems were resolved during 2nd September and following retesting and approval by the contractor, designer and the Operator, a full passenger service to Altrincham recommenced at 6.00 am on Wednesday 2nd September.

6. Events following the Blockade

- 6.1. At midday on Wednesday 2nd September, after approximately 60 service trams had passed through the area, a dewirement (mechanical disconnection of the contact wire) occurred near the overbridge at Deansgate Lane. The pantograph of a double unit tram travelling outbound towards Altrincham on the single track section became entangled with the contact wire and support system.
- 6.2. The interface between the tram pantograph and the OLE appeared to have deviated from the normal operating parameters which is believed to have been caused at a set of points where two contact wires converge into one, above the track. Differing tension in the respective wires resulted in the pantograph passing above one contact wire instead of below it. This dislodged the contact wire from the support cables holding it in position, both horizontally and vertically. All eleven locations with a similar configuration were extensively checked before passenger service recommenced.
- 6.3. The extent of the damage was exacerbated as the tram driver followed normal operating procedures and 'coasted' to the nearest tramstop (Navigation Road). This resulted in damage extending to 400m of OLE rather than approximately 30m and on Network Rail infrastructure.
- 6.4. As the majority of the damage was on the single line section under the control of Network Rail, access to the area was heavily restricted and subject to Network Rail possession controls. Dialogue was immediately initiated at Chief Executive level between GMPTE, Stagecoach and Network Rail to expedite granting of the required possession.
- 6.5. Following the incident, services on Wednesday on the Altrincham line operated between St. Peter's Square and Old Trafford, and on the Eccles line as normal and the X5 and X6 services were re-deployed. To ensure a tram service could be provided as soon as possible, work focussed on recommissioning the Timperley turnback siding first, which allowed a regular service to operate between Timperley and St. Peter's Square, from 6.00 am on Thursday 3rd September.
- 6.6. Friday 4th September - Trams continued to run from St. Peter's Square to Timperley. In addition, the X5 ran a reduced frequency service of every 20 minutes in the off peak and maintained the 10 minute service during the peak. This was to cater for passengers from Altrincham choosing to take the replacement bus all the way towards Manchester and for any passengers who may not have been aware of the tram service operating to Timperley. A shuttle bus between Altrincham and Timperley ran a 5 minute service during the peak and a 10 minute service off peak throughout the normal operating hours.
- 6.7. Ongoing repair work, including electrical testing, commissioning and inspections, were undertaken on the line between Timperley and Altrincham from Thursday 3rd September to Sunday 6th September. To finalise the testing, the service to Timperley had to be suspended following the last tram on Saturday 5th September until 1 pm on Sunday 6th September to ensure the safety and robustness of the system.
- 6.8. Upon completion of testing and commissioning, and following final sign-off from the designers and the Operator, passenger services to Altrincham recommenced on the evening of Sunday 6th September.

- 6.9. At all times from 1st September until end of service 6th September the regular replacement bus services were provided free of charge. In addition, all tram services on the Altrincham and Eccles lines operated free of charge to passengers from Thursday 3rd September to Sunday 6th September inclusive. To ensure passengers received up to date information the tramstops were manned by staff and regular media communications were issued to keep the public updated.

7. Cost

- 7.1. The Contractor is accountable for any additional and unbudgeted costs arising from the issues relating to the OLE project described above.
- 7.2. GMPTE will therefore be seeking to recover any unbudgeted costs from Stagecoach Metrolink Limited.

8. Recommendations

- 8.1. The Committee is recommended to note the contents of this report.