

RAIL AND UNDERGROUND BOARD

SUBMITTED BY : David Hughes, Director of Major Programmes Sponsorship
SUBJECT : Tunnel Cleaning Train Update
DATE : 8 October 2013

1 PURPOSE AND DECISION REQUIRED

- 1.1 The purpose of this paper is to update RUB on the replacement Tunnel Cleaning Train (TCT) project. RUB is asked to:
- (a) **Note** that the project is now 'on hold' following confirmation that without removal and encapsulation works (the extent of which is not yet established) the presence of asbestos containing materials (ACMs) renders the TCT inoperable across 98 percent of the LU network.
 - (b) **Decide** whether the project should now:
 - i) Be abandoned; or,
 - ii) Remain 'on hold' pending further investigation of the extent of ACM removal works required to allow for future TCT operation, albeit with a reduced network coverage.

2 BACKGROUND

- 2.1 The TCT project was authorised in 2009 for £8.634m and re-authorised in February 2012 with an increased EFC following identification of a number of design issues (most notably power related), which have now been successfully addressed. The current authority is £14.322m and includes £2.124m of risk. The current EFC is £13.630m, including £1.806m of risk. All prices are outturn. The EFC is lower than the authority owing to various efficiencies achieved by the project team, including negotiation with suppliers and recycling of materials from disused passenger stock. The TCT was expected to be operational in March 2013 and was approved against a BCR of 6.16 to 1.
- 2.2 The predominant problem now facing the TCT project is the interaction between the TCT and ACMs found in various forms throughout the LU network. Historically, LU has managed ACMs safely by identifying and recording their location and then performing detailed pre-work surveys and removing them only when necessary. In the absence of the TCT, there would be no requirement in the foreseeable future to change this approach.
- 2.3 However, design work on TCT has now established that any mechanised cleaning able to remove heavy (iron) dust particles will also disturb ACMs, potentially releasing asbestos fibres. It has been concluded that without removal of certain classes of ACM from the network, the TCT would be inoperable across 98 percent of the LU network. Without commissioning further work to address this ACM issue, the TCT project is therefore no longer viable.

- 2.4 ACM removal or encapsulation in the track bed is believed to be feasible, and would allow the TCT to clean the track bed over across roughly 66 percent of the network. (The remaining areas where track bed cleaning would remain prohibited are those where there is asbestos noise shelf and contaminated ballast, these areas are predominantly found on the Central, Jubilee and Northern Lines. The Hazardous Materials Unit is trialling a new encapsulation product on the noise shelf that, if acceptable, could permit TCT operation in more areas). Initial estimates suggest that the cost of these removal works would be in the order of £2-5m and could take up to 18 months. However, these are rough order of magnitude estimates, and detailed surveys would be required to determine the likely scope and cost of the required works. These surveys and analysis of the findings would take 5-7 months to complete, at a cost of around £500k, and would provide LU with the necessary information to permit the safe removal of ACMs, without impacting adjacent non-ACM assets.

3 OPTIONS

- 3.1 Following identification of the ACM issue, expenditure on the (externally supplied) Tunnel Cleaning Unit (TCU) procurement was put on hold by the project sponsor. It was agreed that work on the (internally supplied) Motive Power Units (MPUs) should be progressed to a sensible state of completeness so they are suitable for testing in advance of operation and for storage in the open air, recognising that in the event of TCT abandonment they could be usefully deployed elsewhere on the network.
- 3.2 The options available are as follows:
- a) Abandon
- i) If no action is taken to remove or encapsulate ACMs on the network, then the TCT would only be permitted to operate on 2 percent of the network (the Terminal 5 and Jubilee Line extension). The project is clearly not worth proceeding with on this basis.
 - ii) Total expenditure to date is £5.6m, with a commitment of £3.1m. The majority of this commitment, £2.6m, is for the TCU Contract. However, TCU Contract cancellation costs are estimated at £0.5m should LU terminate it now. The works to complete the MPU are £0.5m. Thus, if the project was abandoned, but the MPUs were completed, LU's total sunk costs would be £6.6m.
 - iii) This option minimises abortive work and sensibly re-uses assets where possible. However, it leaves unresolved the long term solution for the cleaning of the tunnels beyond continuing with manual cleaning.
 - iv) The TCT project has been the subject of considerable press / stakeholder interest and its abandonment would undoubtedly give rise to negative publicity, which would require careful handling.

b) Pause pending ACM survey

- i) The alternative to abandonment is to commission the ACM survey described in paragraph 2.4 above, in order to validate the estimated scope, cost and duration of the ACM removal works which are thought necessary to enable TCT operation across circa two thirds of the LU network. The estimated £0.5m cost of the survey works would be funded from the TCT project authority

Pending completion of the survey works, a further £0.6m of project costs would be incurred (excluding the £0.5m associated with the MPUs) as follows, which will be funded from the existing project authority:

- TCU Contract Costs: It is estimated prolonging the current 'cease work' instruction to the TCT supplier for a further nine months would incur costs in the region £0.5m.
 - Management & Engineering Costs: Estimated at no more than £0.1m, as management time would be dedicated to ACM surveys.
- ii) Under this option, the intent would be to report back to RUB in June 2014 following completion of the required ACM survey works. RUB would then be able to review TCT viability, and re-authorise it as applicable, on the basis of a firm understanding of the cost and duration of the required ACM removal works.
- iii) Discounting the ACM removal costs, TCT's projected BCR has in any case reduced from the original 6.16:1 to 2.36:1, as a result of reduced network coverage (post the ACM removal works) and deferred entry into service. It must therefore be recognised that if the estimated ACM removal costs of £2–5m are 'scored' against the TCT business case, the analysis is unlikely to support TCT continuation.
- iv) A separate 'stand alone' business case should be developed to support the ACM removal works, although the longer term benefit of the ACM removal, whilst real, is nonetheless difficult to quantify.
- v) Finally, it should be noted that most of world's best metro systems now own or lease some form of mechanised cleaning system, and the common experience is that this is beneficial.

4 CONCLUSION

- 4.1 RUB is invited to review the above options and discuss and agree how best to proceed.

5 CONTACT

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APPENDIX

Consultation

The following individuals are members of the Project Board and are aware of the issues covered in this paper. They have not been consulted on this specific paper.

Name	Department/Title
Jill Collis	Director of Safety
Peter Syers	Programme Delivery Manager
Malcolm Dobell	Head of Train Systems
Ed Wells	Head of Assurance
Trevor Jipson	Head of Track Engineering
Martin Skiggs	Lead Premises Engineer
John Caves	Principal Premises Engineer
Simon Hargreaves	Asbestos Control Unit (Advisor)
Dave Simpkins	Hazardous Materials Unit Manager
Paul Hewitt	Technical Manager (Hazardous Materials)
Guy Harris	Project Engineer
Steve Walling	Senior Project Manager
Alan Wilson	Project Manager