

Date: 11 July 2012

Item 7: Deep Tube Programme – Feasibility Phase

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**This paper will be considered in public**

**1 Summary**

- 1.1 This paper summarises the need for additional project authority of £6.167m until December 2012 for the continuation of the Deep Tube Programme Foundation phase beyond the current Outcome Definition stage into a further, more detailed Feasibility stage during 2012/13.
- 1.2 The Projects and Planning Panel will consider reports on the second Gateway A review (A++) by the Programme Management Office (PMO) and the external scrutiny by the Independent Investment Programme Advisory Panel (IIPAG) at its meeting on 11 July.
- 1.3 The Committee is asked to grant additional project authority of £6.167m.

**2 Recommendation**

**2.1 The Committee is asked to:**

- (a) note the current status and outline scope of the Deep Tube Programme;**
- (b) grant the additional project authority of £6.167m until December 2012 for the continuation of the Deep Tube Programme Foundation phase beyond the current Outcome Definition stage into a further, more detailed Feasibility stage during 2012/13; and**
- (c) note that further authority will be sought from the Board in due course following the outcome of the detailed Feasibility stage.**

**3 Background and Current Position**

- 3.1 The Foundation phase of the Deep Tube Programme (DTP) was authorised by the Committee in May 2011 and in March 2012 the Managing Director, Finance granted project authority of £5.475m to undertake a series of high level strategy and scope development studies by July 2012. The DTP aims to plan, develop and deliver a co-ordinated series of line upgrades and asset renewal schemes commencing in 2018 for the Bakerloo, Waterloo & City, Piccadilly and Central lines in a more sustainable and cost efficient manner than previously achieved under the PPP contracts.
- 3.2 DTP has reached the Outcome Definition stage and a Gateway 'A' Review has been held to consolidate the findings of the programme to date prior to the commencement of more detailed feasibility studies. The strategy for the DTP

provides a once in a generation opportunity to transform the customer experience on the deep tube lines through technology-enabled change and the catalyst of asset renewals. Increased network capacity is sought, but with improved energy efficiency to realise a sustainable line upgrade solution to meet demand but without a significant rise in tunnel temperatures.

- 3.3 Lessons learnt from the current upgrades have been incorporated into the approach for the DTP. Specifically it is clear that much of the final cost and performance characteristics of the upgrade programme and subsequent operation and maintenance are determined by decisions made early in the lifecycle of the upgrade programme. Furthermore, understanding the interaction between different parts of the overall operational system is critical to achieve high levels of performance and reliability. For these reasons, the DTP is adopting a structured approach for the foundation and feasibility stages, seeking to spread these costs across a number of future line upgrades, rather than a separate feasibility stage for each one.
- 3.4 The opportunity has been taken to aim for a standardised and generic design of rolling stock to enable higher volume procurement and greater operational consistency leading to lower whole life costs. The need to increase capacity without exacerbating tunnel temperatures has driven a focus on weight reduction and more active consideration of the opportunities for energy recovery within power supply and service control systems.
- 3.5 In support of this funding request, the DTP has been the subject of a second Gateway A review (A++) and external scrutiny by the Independent Investment Programme Advisory Panel (IIPAG). Both these reviews are supportive of the proposed approach and the recommendations from the reviews have been accepted by the DTP Programme Team. The reports and associated management response will be considered by the Projects and Planning Panel at its meeting on 11 July 2012.
- 3.6 This proposal incorporates suggestions made during the review process, specifically the recommendation by IIPAG that the programme return for further discussion and / or authority at Board level in due course, recognising the potential impact on the scope of this programme by decisions made during the TfL Business Planning process, which is due to be concluded in November 2012.

## **4 Options**

- 4.1 With the Business Planning round currently underway, line upgrade implementation timing and funding availability is not yet confirmed and the need for flexibility in the extent of commitment to feasibility investigations is recognised. The following options have therefore been identified:
  - (a) progress the full scope of the DTP Feasibility stage during 2012/13 and 2013/14 to completion at a Gateway B review in July 2013 with an overall cost of £22.980m; or
  - (b) progress the Feasibility to an interim stage with a total authority commitment of £11.642m to December 2012 to allow the Business Plan status and funding

for the DTP to be confirmed prior to continuation of the Feasibility work streams to completion at Gateway B.

## **5 Proposal – Deep Tube Programme Feasibility Stage**

- 5.1 The emerging appraisal of the DTP confirms the strong business case for improving customer journey time through line upgrades with new trains and signalling, particularly on the Piccadilly line. A conventional train system solution is being maintained as an option alongside an optimised train system (including the new energy efficient or 'EVO' rolling stock solution) with increased train capacity and lower whole life costs. The optimised solution is expected to return an overall BCR for the upgraded Piccadilly line ranging from 2:1 to 4:1 depending on scope.
- 5.2 The business case continues to be refined with the development of cost estimating, risk and benefits models and it is confidently expected that a robust business case for an optimised, more co-ordinated line upgrade programme will be evidenced at the Gate B stage on completion of Feasibility studies, anticipated in 2013. It is therefore proposed to progress Feasibility to an interim stage with a total authority commitment of £11.642m to December 2012 to allow the Business Plan status and funding for the DTP to be confirmed prior to continuation of the Feasibility work streams to completion at Gateway B.

## **6 Commercial and Financial Implications**

### **Commercial**

- 6.1 The industrial strategy for DTP is for a higher volume, evenly paced production of new trains with an initial order for the Bakerloo, Waterloo & City, and Piccadilly lines. Options for subsequent line fleets must be safeguarded while maintaining competitive pressure from a range of potential suppliers.
- 6.2 The procurement approach for DTP will be to ensure all of the main sub-system procurements are linked together and managed as a single programme in view of the interfaces and dependencies as part of an integrated railway system. Sub-system procurements will be grouped for synergy where this reduces technical and commercial risk and improves value for money.

### **Financial**

- 6.3 To period 3, 2012/13 LU has committed £4.5m of the current authority on the preliminary and Foundation phases of the DTP. This has supported scoping, modelling, system and business requirements work using internal LU resources augmented by specialist external consultants.
- 6.4 It is currently estimated that the total cost for the programme to complete feasibility to 'Gate B' by the Summer 2013 will be in the order of £22.98m, depending on any changes to scope confirmed during the business planning process. A programme risk provision of £1.8m has been included this sum. The project is budgeted within the updated Business Plan.

## **7 Conclusions and Next Steps**

- 7.1 The Foundation phase of the DTP has enabled LU to develop a clearer view of the opportunities, risks and challenges for the next generation of renewals and upgrades. The early focus on an optimised rolling stock solution has emerged into a wider railway system approach, which in turn has enabled the opportunities for higher level of automation on the deep tube to lines to be explored.
- 7.2 The DTP has now reached a key stage in its development where a broad implementation strategy, scope and business case has been defined and a range of potential system solutions identified. The programme is now in a position to enter the more detailed Feasibility stage to develop the DTP line upgrades to a point where scope can be finalised and single options specified.
- 7.3 On completion of the Feasibility stage the programme will be subject to a Programme Gate B review, after which authority will be sought for the programme to enter the procurement and delivery phases during 2013/14 and beyond.
- 7.4 Given that the outcomes of this programme are heavily influenced by decisions made in the TfL Business Planning round, this paper recommends authority be granted with an interim point of December 2012, in order to take account of the business planning process outcomes.

### **List of appendices to this report:**

None

### **List of Background Papers:**

None

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