

Date: 23 January 2014

Item 11: **Bond Street Station Cooling Project Authority Request**

This paper will be considered in public.

1 Summary

- 1.1 This paper requests that the Committee recommends that the Board grant additional Project Authority to complete the design and install station cooling at Bond Street station as part of the Bond Street Station Upgrade (BSSU) project. The project will provide cooling to the Jubilee and Central line platforms, and will enable future uplifts to the Jubilee line train service.
- 1.2 The amount requested is within the funding budgeted in the Business Plan for the works.
- 1.3 A paper is included on Part 2 of the agenda, which contains exempt supplementary information. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

2 Recommendations

- 2.1 **The Committee is asked to:**
 - (a) **note the paper and the supplemental paper on Part 2 of the agenda; and**
 - (b) **recommend that the Board grant additional Project Authority to the Bond Street Station Upgrade to deliver platform cooling, as detailed in the supplemental paper on Part 2 of the agenda.**

3 Background

Project Authority

- 3.1 Project Authority for Bond Street Station Upgrade (BSSU) was granted by the Board in November 2009. The previous Project Authority submission included the cost of designing a cooling solution with the cost of implementation to be funded separately by Cooling the Tube Programme (CTP). The funding for the CTP was subsequently reduced during business planning and the funding for Bond Street Station Cooling (BSSC) now forms part of the Jubilee line World Class Capacity (JL WCC) programme.

Bond Street Station Upgrade Update

- 3.2 The BSSU project is on track to achieve the 'Bringing into Use of the New Ticket Hall' milestone in March 2017. Progress to date includes completion of the final design for the station upgrade to RIBA stage F, completion of the utility strengthening works, demolition of 354-358 Oxford Street, completion of the tunnel strengthening works south of Bond Street, the commencement of the tunnelling works and the Over-Site Development rebuild.

Jubilee Line World Class Programme

- 3.3 The JL WCC is currently undertaking a feasibility study to assess the viability of increasing the number of trains per hour (tph) on the Jubilee line from 30tph (current peak service) to 34tph or 36tph peak service by 2019. Despite mitigation through energy efficiency measures, the increased capacity will lead to an increase in heat output and hence an increase in tunnel and platform temperatures. Without mitigation, Bond Street station platforms are predicted to exceed 30°C in the average summer afternoon peaks as a result.
- 3.4 In order to mitigate the heat increase at this location, a water-based platform cooling scheme is proposed, similar to those installed at Green Park and Oxford Circus stations in 2012. The cooling scheme would reduce temperatures on the Jubilee line platforms to an acceptable level, thereby acting as an enabler for the train service increases. In addition to enabling JL WCC, BSSC would also install cooling on the Central line platforms, one of the hottest lines on the network.

4 Project Scope

- 4.1 The main scope within the submission are:
- (a) completion of design of platform cooling to RIBA F;
 - (b) management of design and build contracts, via a variation in the BSSU contract;
 - (c) delivery of enabling works, install containment, wiring, pipe work and chillers;
 - (d) procurement and installation of seven Platform Air Handling Units (PAHUs): four on Central line and three on Jubilee line;
 - (e) control systems for the cooling units; and
 - (f) testing and commissioning of new assets.

5 Financial

Operational costs

- 5.1 The project will introduce cooling assets that will result in additional maintenance and electricity costs. The impact has been minimised by designing a system with a 'free cooling' mode when the external temperature is low, which reduces the costs of running the chillers. In addition, the station cooling units are not operational in the winter or during engineering hours. The PAHU is currently

being redesigned to reduce operational and maintenance costs, based on lessons learnt from the existing station cooling schemes and feedback from maintainers.

Estimate

- 5.2 The project estimate is based on a cost plan prepared by the main contractor for BSSU and has been updated by LU to reflect the latest scope and contractors' rates. It is considered to be more efficient, in terms of cost, resources and disruption to customers, to deliver the cooling scope as part of the BSSU project.

6 Commercial and resources

Procurement Strategy

- 6.1 The main contract awarded in 2010 for BSSU incorporated an option for the cooling works to be instructed at a later date. The procurement strategy is to procure the installation of the station cooling scheme by varying the existing BSSU contract. Since the design of the PAHUs is currently being value engineered by the CTP, a decision on whether these will be issued to the contractor or instructed via the main contract will be made at a later stage. The value engineering exercise is due to be completed by September 2014.

Resources

- 6.2 The staffing requirement for the delivery of BSSC is being sourced from within the existing BSSU project team. A thorough review of the LU staffing and management team resource was carried out for the Bond Street Station Upgrade Project, together with benchmarking against current live projects, to ensure an appropriate level of resource.

7 Milestones

- 7.1 The scope of BSSC will be integrated into the main BSSU programme and will form part of the practical completion milestone in April 2017, which is a Department for Transport milestone. The inclusion of cooling in this scope is not anticipated to impact completion of the milestone. The delivery of BSSC is two years in advance of the estimated completion date for JL WCC.

8 Project Benefits

- 8.1 BSSC is an enabler for the benefits of the uplift in the train service on the Jubilee line. The cooling costs are included in the current JL WCC business case, which has a benefit cost ratio (BCR) of 4.7:1 for 36tph, based on improved journey time. BSSC would be required for both 34tph and 36tph options since one of the main drivers for the increase in temperatures is the 27tph inter-peak service proposed for both scenarios.
- 8.2 In addition to enabling the journey time benefits of JL WCC, by reducing temperatures on the Central line and mitigating a temperature increase on the Jubilee line, BSSC delivers heat strain risk (safety) benefits and thermal ambience benefits.

- 8.3 The implementation of this project provides a further benefit since customers have an increasing expectation of thermal comfort driven by the prevalence of air conditioning systems in all areas of life, not least in other transport modes. There is an unquantifiable benefit associated with meeting this expectation at Bond Street station.

9 Options considered

Install station cooling after BSSU completion (Not Recommended)

- 9.1 This option would install the station cooling as a standalone project after the BSSU completion. The physical works would not be able to start until after September 2017 and, even if the project is accelerated, it is unlikely that the station cooling could be operational until after the current JL WCC implementation date. Therefore, this option would delay the delivery of JL WCC benefits.
- 9.2 This option is less cost effective than combining works with BSSU due to loss of synergies and would extend the period of disruption to staff and customers during implementation.

Do Nothing option (Not Recommended)

- 9.3 Since this project is an early enabler for JL WCC, not proceeding with the cooling would present a risk that the train service increases could not go ahead without accepting significant operational risks related to heat strain risk concerns. The Central line platforms would continue to experience high temperatures and is predicted to warm even further when the Central line upgrade is completed. In addition, when the cooled Crossrail part of the station is open, customers will expect similar temperatures throughout the station and may be even more dissatisfied with the unmitigated temperatures on the Central and Jubilee line platforms due to the direct comparison with the cooled Crossrail platforms.

List of appendices to this report:

A paper on Part 2 of the agenda contains exempt supplemental information.

List of Background Papers:

None

Contact Officer: David Hughes, Director of Major Programme Sponsorship, London Underground and London Rail

Number: 020 3054 8221

Email: davidhughes03@tfl.gov.uk