

Date: 3 July 2018

Item: London Underground World Class Capacity Programme

This paper will be considered in public

1 Summary

London Underground World Class Capacity Programme (WCC):				
Existing Financial Authority	Estimated Final Cost (EFC)	Existing Programme and Project Authority	Additional Authority Requested	Total Programme and Project Authority
£ 211.3m	£ 231.6m*	£ 245.1m	£0	£245.1m

*The EFC includes; £95.7m spend to date, £115.6m in the Business Plan to 2022/23 and £20.3m spend in 2023/24 beyond the current business plan period.

- 1.1 The purpose of this paper is to update the Committee on progress with delivery of the World Class Capacity (WCC) Programme.

2 Recommendations

- 2.1 **The Committee is asked to note the paper and note that the authorities requested have a duration beyond the end of the current Business Plan and future Business Plans will need to provide for the remaining authorities.**

3 Background

- 3.1 The WCC Programme was established in 2013 to deliver service capacity increases on the Victoria, Jubilee and Northern London Underground Lines.
- 3.2 This Programme supports the strategic objective in the Mayor's Transport Strategy of 'providing a good public transport experience' and supports the 'improving public transport services' measure on the TfL Scorecard.
- 3.3 In June 2016, the Committee was updated on progress with the WCC Programme which had been established to deliver the following frequencies:
- (a) 36 trains per hour on the Victoria Line;
 - (b) at least 34 trains per hour on the Jubilee Line; and
 - (c) at least 30 trains per hour on the Northern line between Euston and Morden via both the Charing Cross and Bank branches.

- 3.4 In May 2017, we successfully introduced 36 trains per hour in each direction on the Victoria line during peak periods, making it one of the highest frequency metros service in the world. When the Committee was updated in June 2017, we were in the final stages of a procurement process to purchase additional trains for the Jubilee and Northern lines to further increase capacity with the frequencies set out above in paragraph 3.3.
- 3.5 The Jubilee and Northern lines have had substantial investment through new signalling and the additional trains were intended to deliver a second stage of incremental service improvements.
- 3.6 As the Committee will recall, last autumn, after careful consideration to balance our investment priorities across the network, the decision was made not to proceed with the procurement of additional Jubilee and Northern line trains. Although the business case for the additional trains remained strong, it was recognised that the Jubilee and Northern are two of LU's already upgraded and therefore higher frequency lines. There was also confidence that some further capacity enhancements could be achieved on these lines within the constraints of the existing fleet sizes (albeit not to the same extent as would have been the case had the fleets been augmented by the purchase of the new trains).
- 3.7 Cancellation of the procurement for trains realised savings to the TfL Business Plan in the order of £600m. Partly as a result, the 2017 Business Plan was able to focus LU investment to prioritise those lines that are yet to be upgraded (i.e. the Piccadilly, Bakerloo, Central and Waterloo & City). As the Committee will recall, approval to proceed with the first stage of that programme was granted at its 16 May meeting, with the announcement of the intention to award a contract on 15 June for the first tranche of new trains for the deep tube lines, starting with the Piccadilly line.

Proposed Revised Scope

- 3.8 Following the rebalancing of our Investment Programme last autumn we have been developing a package of works for the Jubilee and Northern lines to maximise the utilisation of the existing train fleet (funding for this purpose having been retained in the 2017 Business Plan).
- 3.9 With the Victoria line upgrade successfully delivered, the re-scoped WCC Programme will now deliver the following outcomes for the Jubilee and Northern lines:
- (a) Jubilee line capacity improvement: Up to 32 trains per hour to operate between West Hampstead and North Greenwich stations in the peak periods by the end of 2021; and
 - (b) Northern line capacity improvement: A minimum of 31 trains per hour on the Morden branch in peak periods in early 2020 (the Morden branch is one of the most congested parts of the entire London Underground network in the peak periods). This will also facilitate a small improvement in capacity on the Bank branch in the peak periods and enable the introduction of services on the Battersea branch once the Northern Line Extension is completed.

3.10 The Programme is also carrying out final close out activities from the original Jubilee, Northern and the Victoria line upgrades. More detail on the revised scope is included in Appendix 1.

Changes in Capacity Outcomes

3.11 The proposed capacity increases now being taken forward based on utilising the existing fleet of trains are shown in the table below.

Capacity Comparison Table

	Start Capacity (Trains Per Hour)	End Capacity (Trains Per Hour)	Revised Capacity Increase	Target Completion Date
Victoria line	33	36	9%	Delivered
Jubilee line	30	32	7%	December 2021
Northern line (Morden branch)*	30	31	3%	Early 2020
Northern line (Bank Branch)*	26	27	4%	Early 2020
Northern line (other existing branches)	24	24	No change	

*morning peak hour in the northbound direction

4 Financial implications

4.1 The WCC Programme has a current Programme and Project Authority of £245.1m.

4.2 The TfL Business Plan approved in December 2017 includes funding of £115.6m to 2022/23 to deliver the remainder of the WCC Programme, the outcomes of which are described in paragraph 3.10. The Programme is therefore fully funded, and no additional authorities are sought in this submission.

4.3 Additional operating costs associated with the proposed frequency improvements are within the 2017 business plan.

4.4 The table below provides a summary of capital costs and funding position for the revised scope on the Jubilee and Northern lines. The phasing of the spend profile will be considered as part of the 2018 business planning process.

Investment Funding	Prior years	Current year	19/20	20/21	21/22	22/23	Future	Total
Business Plan 2017	95.7	17.6	23.9	27.1	24.5	16.2		205.0
Additional funding secured in 18/19 budget		6.3						6.3
Total Financial Authority	95.7	23.9	23.9	27.1	24.5	16.2	0.0	211.3
Programme EFC	95.7	23.9	33.5	24.2	18.7	15.3	20.3	231.6
Plan Surplus / (Shortfall)	0.0	0.0	(9.6)	2.9	5.8	0.9	(20.3)	(20.3)

5 Benefits and Value

- 5.1 The revised Jubilee line capacity improvements package is financially positive with a payback period of 11 years.
- 5.2 The Northern line capacity improvements are sub divided:
 - (a) the Working Timetable 58 project (WTT58) delivers improved customer journey times and is financially positive with a payback period of 10 years; and
 - (b) the remaining elements of scope for the Northern line have a range of benefit to cost ratios up to 5.7:1.

6 Assurance

- 6.1 A TfL Project Assurance and Independent Investment Programme Advisory Group (IIPAG) Assurance Review of the Programme took place in June 2018. There were no critical issues identified.

List of appendices to this report:

Appendix 1 – WCC Revised scope

List of background papers:

IIPAG and TfL Project Assurance Reports

Management response to IIPAG and TfL Project Assurance Reports

Contact Officer: David Hughes, Director of Strategy and Network Development
Number: 020 3054 8221
Email: davidhughes03@tfl.gov.uk

Appendix 1: WCC Revised Programme Scope

Victoria Line Upgrade 2

1.1 The Victoria Line Upgrade (VLU2) is substantially complete with project close out planned in the next few months. The 36 trains per hour peak service was successfully introduced in May 2017. A further improvement is intended for early 2019 extending the 36 trains per hour service to operate for a full three hours in both the morning and evening peak periods.

Jubilee Line Capacity

1.2 This includes projects which deliver the following main items of scope:

- (a) the modification of the signalling system;
- (b) works to improve maintenance infrastructure at Stratford Market Depot to improve fleet availability;
- (c) modifications to improve train fault diagnostic capability to reduce breakdowns in service that can occur, leading to an improvement in fleet availability; and
- (d) changes to maintenance processes.

Northern Line Capacity

1.3 This includes projects which deliver the following main items of scope:

- (a) track works and braking improvements to enable faster speeds;
- (b) the modification of the signalling system;
- (c) minor power works to support a higher frequency service;
- (d) improvements to maintenance infrastructure at Morden Depot to improve fleet availability;
- (e) renewal of track in the Kennington area;
- (f) a track upgrade at East Finchley; and
- (g) changes to maintenance processes.

Northern and Jubilee Line Power

1.4 The Programme includes power works required to address poor asset condition, provide additional resilience to the Northern line service and enhance network power capacity to support the future increases in service level on the Sub-Surface lines (District, Circle, Hammersmith & City and Metropolitan) after the Four Lines Modernisation (4LM) Programme is delivered. The power works on the Jubilee line are substantially complete with only close out activities remaining.

1.5 There are two main packages of works;

Power Package 1 comprises:

- (a) replacement of life expired coupling transformers at Stockwell substation; the condition of these assets is poor with no residual life remaining;
- (b) works at Whitechapel and Mile End Substations. This work is required to reduce existing load on the coupling transformers at Mansell Street and release capacity for future load growth associated with the service improvements to be delivered on the Sub-Surface lines after the 4LM Programme is delivered; and
- (c) an upgrade to the High Voltage network between Stockwell and Clapham Common substations to support service levels on the Northern line.

Power Package 2 comprises:

- (a) upgrades at several substations and cable re-reinforcement works along the Northern line to provide additional resilience to the Northern line service.

Northern and Jubilee Line Rolling Stock

1.6 This is a programme of modifications to address train braking performance, remove redundant signalling equipment from both fleets and alleviate a capacity constraint at Neasden train depot.