

TRANSPORT FOR LONDON

BRIEFING NOTE

Subject: Weekly Mayoral update on Crossrail / Elizabeth line

Date: 15 February 2018

<p>Manifesto commitment(s)</p> <p>Not applicable</p>	<p>Draft Mayor's Transport Strategy (MTS)</p> <p>A good public transport experience</p> <p>Proposal 57: The Mayor, through TfL, will work with the DfT to open the Elizabeth line in 2019, with services initially providing 24 trains per hour through central London and increasing in frequency during the 2020s as demand requires.</p>
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1 Purpose

- 1.1 The first weekly update to the Mayor outlining progress and challenges ahead of the launch of the Elizabeth line.
- 1.2 The Mayor is asked to **NOTE** this briefing.

2 Headlines

- 2.1 At the TfL Board meeting on 30 January, we reported that the Crossrail programme is facing significant emerging cost and schedule pressures (Appendix A). These pressures continued to be actively managed by Crossrail Ltd (CRL) at Board and Executive level.
- 2.2 Whilst good progress continues to be made across a number of areas on the project such as station fit-out and elements of system wide installation, overall delivery remains behind forecast. This has resulted in greater compression (and therefore increased risk) in the remaining programme of activities required to achieve the launch of Elizabeth line services on 9 December 2018.
- 2.3 To ensure even more active management of the remaining programme and its critical integration, testing, commissioning, handover, trial running and trial operation activities, CRL have brought forward their review of the delivery schedule – the Master Operational Handover Schedule (MOHS) 2018. This review will be finalised next week and has been developed with input from the project's contractors, future infrastructure maintainers and a revised schedule from Bombardier Transportation (BT).
- 2.4 The current draft of MOHS 2018 sets out how CRL plans to achieve key milestones, and ultimately, deliver a fully integrated railway. It maintains the start of Stage 3 operations on 9 December 2018 but it demonstrates that in many cases, it will be necessary to undertake key activities concurrently, such as the final stages of fitting-out, testing and the beginning of trial operations.



- 2.5 MOHS 2018 also requires a maintained focus on productivity improvements and pressure on contractors to deliver on schedule, safely and at the required quality level. Challenges that will be tackled include maintaining the programme for handover from CRL to TfL's maintainers and operators (London Underground, Rail for London and MTR), including the delivery of key safety and regulatory documentation.
- 2.6 BT's development and integration of train software remains a significant risk to the programme. Following engagement from Mike Brown, Mark Wild and Howard Smith, with BT there are some early indications of improving performance. To emphasise the importance of delivering the project on time, a call has been scheduled between the Mayor and TfL with Bombardier's President and CEO, Alain Bellemare on 22 February.
- 2.7 We are currently scheduling a deep dive session with the Board Members, where we will explore with them potential opportunities for their help with contractor relationships.

3 Costs

- 3.1 CRL's cost position remains a significant concern. CRL's 'most likely' forecast for central section delivery remained unchanged at Period 10 (10 December to 6 January) at £12,507m - which would result in a drawdown of £595m of the £600m TfL contingency (with the likelihood of the contingency being exceeded assessed at around 20 percent). However, CRL's outturn cost forecast for the central position is expected to increase further once updated to reflect the revised MOHS.
- 3.2 CRL has set out a number of cost efficiency proposals. However, given that the project is more than 90 per cent complete, there are few opportunities left that could be implemented without compromising delivery of a railway that is safe, operable and maintainable and in line with requirements.
- 3.3 CRL continues to challenge, where possible, cost escalation in its contracts at the highest levels within the Tier 1 contractors. Discussions have commenced with Sponsors regarding the order of magnitude of any extra funding that might be necessary to complete delivery of the project.
- 3.4 The forecast cost for Network Rail's (NR) delivery of the 'On Network Works' (ONW) remains unchanged at £2.530m, against the original budget of £2.300m. Under the Crossrail agreements, this cost overrun is a DfT held risk, and additional funding has accordingly been allocated by the Department.
- 3.5 CRL has worked with NR to improve their cost reporting and NR is taking a more aggressive commercial approach with one of its major contractors as a result of cost escalation. However, it is understood that further ONW cost pressures may be emerging, which will exacerbate the overall funding shortfall facing the Sponsors.

4 Programme and Schedule

- 4.1 CRL achieved a major milestone when energisation of the eastern part of the tunnels (Zones 1 & 2) commenced on 1 February 2018. However, this is three months later than scheduled and is a consequence of faults in the power equipment installed at Pudding Mill Lane and the voltage transformer failures in November.



- 4.2 This delay has caused further schedule pressures, particularly in the fit-out of the signalling and communications systems and energisation of the western part of the tunnel (Zones 3 & 4) but is reflected in MOHS 2018 which still demonstrates Stage 3 delivery in December 2018.
- 4.3 CRL has escalated its concerns regarding these delays and quality failures at the highest levels within the companies concerned (Alstom Costain JV and sub-contractor General Electrics) and has been “micro-managing” the contract since November 2017.
- 4.4 On 14 February, Crossrail achieved a major milestone with the energisation of the new overhead line in the eastern areas between Abbey Wood/Stratford to Whitechapel. Over the next two weeks there is an intense schedule of tests (including short-circuit tests to ensure no stray currents disrupt other services including LU). This will enable Crossrail to start dynamic testing of the new rolling stock (one unit initially) by the end of the month in the eastern part of the tunnels up to near Whitechapel station.
- 4.5 Within the central section, a number of works remain on the critical path to full opening, including critical systems delivery (e.g. SCADA, PA/AV, platform screen doors, fire alarms) at stations including Paddington, Bond Street and Woolwich. These works have been prioritised and need to be completed to enable station testing, staff training and gaining required safety and regulatory approvals.
- 4.6 Bombardier is continuing with the development and integration of the on-train software, including integration of the three signalling systems necessary for the full service. Bombardier provided a revised programme in January. This is judged to be deliverable but has limited time for rework and re-approval and relies on successful testing of the train with the various trackside systems, including the Communications Based Train Control System (CBTC) used in the Central Section.
- 4.7 In addition to delivering the individual components of a highly complex and interdependent programme, integration of the assets and services will be key. CRL is actively managing this integration which requires all of the key stakeholders, including the operators and NR to work together to ensure success.

5 Stage opening

- 5.1 We have now informed key stakeholders that a contingency plan for Stage 2 will be implemented in May 2018. This plan will provide two trains per hour (tph) from Paddington to Heathrow Terminal 4 using leased rolling stock from Heathrow (and the inter terminal shuttle) and 2tph Paddington to Hayes and Harlington using the new rolling stock.
- 5.2 While this does not initially meet Sponsors Requirements, it has reduced the risk that the Stage 2 opening date would not be met altogether and allows Bombardier to focus even more closely on delivering the Stage 3 central section requirements.



- 5.3 To deliver the Stage 2 contingency, there is still the need to deliver a Class 345 into passenger service from the new Depot at Old Oak Common with the necessary train functionality including Selective Door Opening (SDO) which is not needed for their current use on TfL Rail's Shenfield to Liverpool Street services. We are actively managing delivery of the depot and bringing it into use in alignment with the training and service requirements.

6 Industrial relations

- 6.1 On 21 December 2017 Unite the Union announced that their electricians' members who work for Balfour Beatty at Woolwich (circa 70 staff) had voted in favour of strike action regarding a dispute over their demand for an enhanced second tier payment and a completion bonus. This would be in addition to a previously agreed productivity bonus between Balfour Beatty and Unite.
- 6.2 A day of strike action took place on 10 January and a subsequent one on 30 January. An announcement was made of four additional strike days on 7, 14, 21 and 28 February. On 13 February Unite announced that the strike planned for 14 February had been postponed by Unite ahead of a meeting which is scheduled with Balfour Beatty for this Friday (16 February). CRL is maintaining close contact with Balfour Beatty regarding their approach to managing this dispute and continues to meet the industrial relations leads of all its Tier 1 contractors.

7 Appendix

- **Appendix A:** Table of key risks and issues



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Risk / Issue	Key date	Mitigation / Action
Stage 2		
Issues arising from integration of on-board European Train Control System (ETCS) with infrastructure and associated delays to Regulatory Approvals	Initial ETCS integration testing started 12 Jan 2018	Revised BT programme was presented on 9 Jan 18. Weekly high- level dialogue with BT and dedicated CRL Stage 2 integration lead in place. Alternative (Class 360s) units secured - contract signed - to cover any delay.
Stage 3		
Timely provision of design assurance information, asset data, key operations/ maintenance information.	Handover 5 Aug 2018	Design assurance slowed in the period so will receive further focus at close out meetings delivery of asset information including O&M requirements remains cause for concern. Escalation with Tier I contractors.
Risk of delays to the Bombardier schedule for installation of the Class 345 on-board TCMS / CBTCS (v 6.1.1 & v7) impacts activities for Dynamic Testing.	Train tested & delivered to central section 29 Jan 2018	CBTC Testing started at Old Dalby. Revised plans developed to continue testing to build contingency to start of testing in central section in February 2018.
Risk of delays to commissioning of NR interfaces impacting trial running.	Blockades Z1&2 3-24 Mar 2018 Z3&4 6-20 May 2018	Recovery plans under development for installation of contract C620 equipment on NR lines to Stratford
Risk of insufficient time to undertake trial operations activity.	Trial Ops 09 Sept 2018	Complete infrastructure and testing as early as possible to allow unimpeded trial operations. Prepare station handover plans
Risk of LU readiness being impacted by ongoing construction at stations, spares availability and completion of staff training.	Trial Ops 09 Sept 2018	LU Readiness Board overseeing this activity.
Preferred delivery option and programme for wifi and 4G for passengers from stage opening and maintenance teams from handover.	Wi-Fi available to maintainers 5 Aug 2018 Wi-Fi for passengers 9 Dec 2018	Confirm programme and way forward. Scope and confirm funding.

