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19th November 2019

Dear Mr Davies,

Crossrail progress update: Autumn 2019

Following the dissolution of parliament and disbandment of the Public Accounts Committee, we are writing to you to provide an update on the Crossrail project. This update follows the first in our series of updates that was sent to the Public Accounts Committee in August where we set out progress across the programme.

At the end of April, Crossrail announced the Earliest Opening Programme, the plan to complete the Elizabeth line by the earliest possible date. This contains four critical paths to Stage 3 opening – Paddington to Abbey Wood:

1. Build and test the software to integrate the train operating system with three different signalling systems
2. Install, test and assure vital systems in stations, shafts and portals
3. Complete installation of the equipment in the tunnel and test and assure all routeway systems
4. After completing these first three work-streams, trial run the trains over many thousands of miles on the completed railway to build reliability and ensure the highest levels of safety and reliability when passenger service begins

Since the August update the team has been delivering against the programme which we introduced in April. We have been continually targeting safety as our number one priority and have been making solid and steady progress against the plan we set out.

We haven't done this alone; we have been working collaboratively with our supply chain partners. We have invested heavily in re-building these relationships and are now seeing the dividends of our efforts. Our relationship with our supply chain remains fundamental to the success of the project.

MOVING LONDON FORWARD





Marked progress has been made across the programme as a result of the collaborative and transparent approach adopted by the team. However, significant challenges remain as we enter the final, complex phase of Crossrail.

Software

We identified early on that the software for the signalling system was going to be a challenge due to its novelty and complexity.

The software system configuration (PD+10 and Y0.500) was planned to be the first version capable of supporting entry into Trial Running. Testing in the Crossrail Integration Facility (CIF), identified some missing functionality and defects which are safety critical. As a consequence, it is anticipated that the next configuration (PD+11) will be the candidate for the start of Trial Running if it is at the right level of quality. Development of PD+12 is now well underway to minimise any potential impact on the schedule should it be required for Trial Running.

Working with the supply chain we have established an open and transparent two-way working culture which wasn't in place previously. An example of this is the co-location of the Bombardier and Siemens teams working on the train signalling; this has led to greater collaboration and is contributing to faster problem solving and implementation.

Stations

The fit out of the stations and tunnels has been the key focus for us in 2019. There is considerable technology at Elizabeth line stations that needs to be fully installed, tested and integrated, including over 50km of communications cabling, 200 CCTV cameras, 66 information displays, 200 radio antennas, 750 loudspeakers and 50 help points at each station.

A key programme priority is to ensure that all stations in the central section have reached a sufficient level of completion to support entry into Trial Running.

On 4 October, a significant milestone was reached when Farringdon became the first of our stations to go PPE-free – as most of the major works at the station are now complete, personal protective equipment (PPE) is no longer necessary for everyone on-site.

Bond Street and Whitechapel stations have a clear path to completion, benefitting from higher levels of productivity. Whitechapel station has reached Staged Completion 1, which is a significant achievement for the programme. This means that Whitechapel has reached a sufficient level of completion to support the entry into Trial Running in 2020.

We are also making progress on contractor productivity, a major area of risk and uncertainty for the programme. Our contractors have implemented focussed shift patterns amongst their workforce to maximise time on site and ensure that best practice is shared across locations. We have also adopted 'lean manufacturing' techniques to increase productivity such as bringing fabrication on site to reduce the schedule when activities were previously off-site.

Tunnel

We are on track to complete the remaining fit-out and snagging activity in the routeway; this is a major achievement for the programme. Trial Running can only begin when this work is complete.



Some particular areas of progress:

The testing of the train, including multi train testing at close headway, continues.

The installation of platform screen doors in the central section has been completed.

The central section of the Elizabeth line is connected to the GSMR – the national rail radio system. This is the system that is used for the railways mobile communications team. Work was fully completed in October.

LFEP (London Fire and Emergency Planning Authority) have assured the public-address system, which was commissioned and brought into use in the majority of tunnel. This is on programme to complete across the entire Crossrail Infrastructure later this year.

The maintenance facilities at Plumstead are operational and the 'yellow plant' engineering trains that will be used to maintain the central operating section have been commissioned.

Assurance / Handover

As part of the assurance and handover process for the stations, shafts, portals, tunnels and railway systems, nearly 200,000 validation and verification documents will be required. There is a good understanding of what is required in terms of assurance, but the scale remains a challenge and we are therefore working hard to optimise our approach.

A Handover Execution Plan (HEP) has been written for each station, shaft, portal and railway system – all of the significant assets. They set out the configuration of each element of the railway at each stage of completion. There will be 30 plans in total, with around 196,000 documents to be drafted and completed. In comparison London Underground handover one or two assets a year. We are handing over 30 in a controlled sequence in a 12-month period.

We have handed over to the operation the first two out of the 30 big engineering structures: Victoria Dock Portal and Pudding Mill Lane Portal. They were challenging but we gained experience through the process and are now transferring the lessons learned across the programme.

Through diligent and thorough testing, we are finding gaps in system integration. For example, we have had to replace 72 fire panels across the central section after discovering they fail to meet the standards required of the railway. These safety critical issues are of paramount importance to us as we look to complete the project.

November Board Update

In April, a detailed Delivery Control Schedule was produced outlining how Crossrail was to be delivered. A number of risks and challenges for the future were identified as potential scenarios. Those risks included: delays to software integration and challenges in assurance and handover due to the project's scale and complexity. These risks have materialised, impacting programme cost and the time it will take to complete.

On 7th November the Crossrail Board advised our sponsors of a new cost and schedule forecast. The Trial Running phase will begin at the earliest opportunity in 2020; this will be followed by testing of the operational railway to ensure it is safe and reliable.



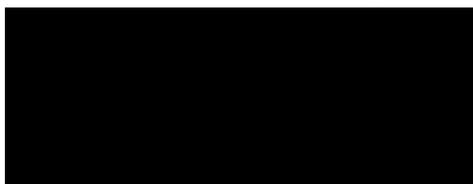
The latest assessment is that the opening of the central section will not occur in 2020, which was the first part of our previously declared opening window (October 2020 to March 2021). The Elizabeth line will open as soon as practically possible in 2021.

Crossrail Ltd.'s cost forecasts have increased due to programme risks and uncertainties. The latest projections indicate a range of between £400 million to £650 million more than the revised funding agreed by the Mayor, Government and Transport for London in December 2018.

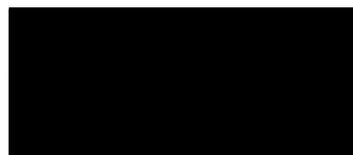
We are doing everything we can to complete the Elizabeth line as quickly as possible. We very much regret delays to the programme and increases in projected costs. However, it is vital that Crossrail is completed to the highest levels of safety and reliability. There are no shortcuts to delivering this hugely complex railway, which will transform transportation in London and its surroundings for generations to come.

In the meantime, if you require any further information about the project, please contact Crossrail's Public Affairs Manager, Ross Garrod, on [REDACTED] or by email at [REDACTED]@crossrail.tfl.gov.uk.

Yours sincerely,



Tony Meggs CB
Chairman



Rt Hon. Nick Raynsford
Deputy Chairman

cc: Clerk to the Public Accounts Committee