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Chair, Public Accounts Committee  
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Dear Chair,

### **Crossrail progress update: Summer 2021**

Thank you for inviting the Transport for London (TfL) Commissioner, Andy Byford, and me, along with the Department for Transport (DfT) Permanent Secretary, Bernadette Kelly, and Matthew Lodge, DfT Director Rail Infrastructure South, to answer questions from the Committee in July. Along with your visit to Tottenham Court Road Elizabeth line station in late June, we hope you found the session useful as a means to receive an update on the Crossrail programme and to discuss the findings of the recent National Audit Office report in more detail. We look forward to the publication of the Committee's forthcoming report into Crossrail.

Following my last letter, dated 22 June 2021, I am writing to provide an update on the Crossrail project. The Elizabeth line remains on track to open in the first half of 2022 and we continue to make good progress with completing the works necessary to commence passenger services in the central section next year. We are doing everything we can to complete the Elizabeth line safely, reliably, and as quickly as possible, but there are no short-cuts to delivering this hugely complex railway.

Trial Running of trains through the central tunnels is well underway as part of the major railway trials taking place throughout this year, with 12 trains per hour (tph) in regular operation to build reliability and flush out any issues with our systems and signalling software. Seven of the new central section stations have now been transferred to TfL, and following the final integration of Abbey Wood station on 30 September, we are now focused on the handover of Canary Wharf this autumn and completion of the remaining works at Bond Street.

We also continue to make good progress with the final integration testing of the railway, which ensures that all the different systems work seamlessly together. There is more work to do over the coming months, but this is a positive step forward. The trialling of the software and systems are crucial to demonstrating the safety and reliability of the railway, a key step towards the start of passenger services. The next phase of the programme, Trial Operations, is forecast to commence later this year.

Since my last update, a revised delivery strategy for beyond the opening of the central operating section has been developed, alongside a series of workshops that have focused on supporting the delivery of the railway as close to the funding provision as possible.

**MOVING LONDON FORWARD**



The Delivery Control Schedule (DCS) 1.2 has now been agreed and forms the new baseline for all future reporting. It is an incremental refresh of the schedule to revenue service but also includes the stage of the programme following the opening of the central section, which sees services from the east and west running through the central section of the railway.

### **Safety**

Delivery of the Elizabeth line is in its final complex stages and the focus remains on ensuring that it is completed safely. There has not been a significant injury reported on the project for five consecutive periods and the overall Health and Safety indicators remain within those set by the programme. There have, however, been two minor slips and trips in recent weeks that have caused minor injury. Learnings from these minor incidents will help inform corrective measures to ensure we remain as safe as possible.

Crossrail continues to focus on the communication of change and implementation of new procedures for safe access, which has resulted in a significant improvement following the early fail-safe incidents that occurred after the transition to an operational railway earlier this year.

COVID-19 cases across sites are being contained and continue to be closely and carefully monitored through the Gold Response Team structure.

### **Trial Running**

The Trial Running of trains through the central tunnels began in May 2021 as part of the major railway trials taking place throughout this year. We continue to build up train mileage and identify any defects and bugs in the systems and software. The number of trains operating in the tunnels increased from four tph in May 2021 to eight tph in June 2021. Since 12 July 2021, 12 tph have been operating. This will be the initial level of service on the Elizabeth line when it enters passenger service in the first half of 2022.

Trial Running has been positive and although there have been a number of expected settling down issues encountered, they relate to known issues in the current software configuration. These are expected to be resolved with the upcoming software release, known as ELR100. A small number of reliability fixes have also been identified in addition to the significant uplift of functionality and quality in ELR100. Through Trial Running, we have been able to detect bugs and test fixes with the system and software well in advance of passenger service and this will help build a more reliable service for passengers.

In the coming months, there will also be timetable demonstrations of 24 tph. This will be the service frequency in the central section when the full end-to-end Elizabeth line is operational.

The ELR100 software should be the last major configuration before revenue service and is pivotal to the programme advancing through to the next stage, known as Trial Operations. It is expected that the software will be assured and commissioned in a two-week period in October and will be one of the most comprehensive and important software drops. Following the commissioning of the software, Trial Running will resume, and the performance of the software will be fundamental in determining the commencement of the next stage, Trial Operations.

The final railway integration tests to ensure that all components of the system work seamlessly together is forecast to be completed in the coming months. These tests apply to the tunnel ventilation system, trains, software, signalling and power systems and can only be done at this stage now that the completed railway is available. The testing has been successful so far, with more than 70 per cent completed. Until this testing has been completed and the uncertainty eliminated, the opening window cannot be refined.

In the autumn, work will take place to complete the outstanding works in the tunnels, including the commissioning of the tunnel ventilation system upgrade works.

Once Trial Running is complete, ELR100 is commissioned software and all final remaining works completed, it will demonstrate that the Elizabeth line can run at the performance levels necessary to move to the next phase of the programme, known as Trial Operations.

### **Trial Operations**

Trial Operations is the final stage before the Elizabeth line opens and involves scenario testing to ensure the safety and reliability of the railway for public use, including staff and volunteer exercises to confirm that the railway is passenger ready.

The countdown process for Trial Operations has now commenced, reflecting on the lessons learnt from the Trial Running countdown. Senior stakeholders from all organisations involved have attended the countdown meetings that have taken place so far. Taking into account the necessary completion of testing, commissioning of software and the completion of safety assurance, the earliest date that Trial Operations can commence is towards the end of November 2021.

Since my last update, we have handed over four more stations to TfL – Woolwich, Liverpool Street, Paddington and Whitechapel. This brings the total number of stations handed over to TfL is seven. The next station to be transferred is Canary Wharf, which is expected to be later this autumn. This leaves Bond Street station, which is currently showing encouraging signs that it will meet its requirements to be able to support Trial Operations. The team at Bond Street are pushing hard and making good progress and there is growing confidence in the schedule to finish the station. The opening of the railway will be independent of whether Bond Street station is available for use by passengers, but the team continues to work towards getting the station open as soon as possible.

### **Operational Readiness**

TfL Rail services on the eastern and western sections of the railway continue to operate with high levels of reliability. The latest Public Performance Measure (PPM) improved to 95.6%, which is better than the target. This was second best in the industry, with only Merseyrail recording a higher figure. The Moving Annual Average (MMA) at 95.4% also remained above target.

The current train control software on the Class 345 trains has not delivered the expected reliability growth, but the containment measures put in place by the operator have lessened the impact, allowing for a high performing passenger service. Further train software upgrades are being rolled out and another major reliability build will be released in December.

Following the introduction of nine-car Full Length Unit (FLU) Class 345 trains on the Liverpool Street to Shenfield route in May, six are now in operation alongside seven-car Class 345 and eight-car 'legacy' Class 315 trains. The transition of the Liverpool Street to Shenfield service to a full nine-car Class 345 operation, with up to 22 trains, will start in the autumn once the ELR100 software is commissioned, allowing the FLU fleet to run through the central section unhindered for maintenance at Old Oak Common depot.

As highlighted during July's evidence session, a revised staged opening plan for the Elizabeth line has been developed and approved by Sponsors. In the updated plans, Elizabeth line services from Shenfield through to Paddington and from Reading and Heathrow through to Abbey Wood will be introduced in autumn 2022 at the earliest. These plans bring forward the introduction of services from the west through to the central section by six months. It is expected that full end-to-end services will be introduced no later than May 2023.

## **Network Rail**

Network Rail are continuing upgrade works to surface stations along the Elizabeth line route, with all enhancements on the western section now complete following the opening of the new facilities at West Drayton, Southall and Hayes & Harlington this summer.

Station enhancement work continues on the eastern section at Ilford and Romford stations, with entry into service of the new station buildings anticipated in early 2022.

## **Cost**

As announced in 2020, Crossrail Ltd's cost estimates showed the project could need up to a further £1.1bn for completion, of which £825m has been identified and made available. We are working hard to manage costs and deliver as close as possible to the current funding available.

The P50 Anticipated Final Crossrail Direct Cost (AFDCD), which represents the median value scenario, is currently £150m above the additional funding of £825m. The £1.1bn of additional funding that was estimated to be needed in 2020 remains consistent with current estimates falling within our P80 to P95 range, representing higher levels of probability.

## **Governance / Scrutiny**

The Elizabeth Line Committee and Elizabeth Line Delivery Group continue to meet on a regular basis in order to provide oversight of the project and ensure that decision-making between Crossrail Ltd and TfL is seamless and fully aligned during the critical final phases of the programme. Quarterly updates are also provided to the DfT's Investment Portfolio and Delivery Committee chaired by the Permanent Secretary.

Crossrail Ltd continues provide regular project updates to the Mayor of London, Deputy Mayor for Transport and the Mayor's Chief of Staff as well as the London Assembly and the DfT minister responsible for Crossrail.

The next couple of months, moving into the autumn, will be crucial for the project for commencing Trial Operations. There is a real desire from everyone involved in the project to continue to build on the strong performance over recent months and put ourselves in a good position to deliver this railway in the first half of 2022.

If you require any further information about the project, please do not hesitate to contact us, or Crossrail's Public Affairs Manager, on 07597 190045 or by email at [rossgarrod@crossrail.tfl.gov.uk](mailto:rossgarrod@crossrail.tfl.gov.uk).

Yours sincerely,

Mark Wild

A handwritten signature in black ink that reads 'Mark Wild'.

**Mark Wild**  
**CEO, Crossrail Ltd**

CC: Andy Byford, Commissioner at Transport for London  
Bernadette Kelly CB, Permanent Secretary at the Department for Transport  
Gareth Davies, Comptroller & Auditor General at the National Audit Office