

Date: 24 January 2023

Item: Elizabeth Line Programme Assurance Update

This paper will be considered in public

1 Summary

- 1.1 This paper reports on progress with programme assurance activity across the Elizabeth line since the last report.
- 1.2 A paper is included on the Part 2 agenda which contains supplementary information that is exempt from publication 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 Recommendation

- 2.1 **The Committee is asked to note the paper and the exempt supplementary information on Part 2 of the agenda.**

3 Background

- 3.1 The Elizabeth line Integrated Assurance Framework is based on a Three Lines of Defence model comprising:
 - (a) Line 1 – Management functions of Crossrail Limited (CRL), Rail for London (Infrastructure) Limited (RfL(I)) and key interfaces;
 - (b) Line 2 – Project and Programme Assurance Elizabeth line (PPA-EL); and
 - (c) Line 3 – TfL Internal Audit and a sub-group of the Independent Investment Programme Advisory Group (IIPAG-EL).
- 3.2 This paper reports specifically on Line 2 (PPA-EL), Line 3 (Internal Audit) and Line 3 (IIPAG-EL) assurance progress.
- 3.3 The teams meet periodically with a panel of advisers to ensure that assurance is carried out by the right team, at the right time and to avoid duplication and minimise overlap of effort.

4 Line of Defence 2 (LoD2) Assurance

- 4.1 The Elizabeth line has demonstrated a consistent level of good performance (as measured by the public performance measure (PPM)) in the central operating section (COS) since opening on 24 May 2022. The successful introduction on 6 November 2022 of train services running directly from Reading and Heathrow to

Abbey Wood, and from Shenfield to Paddington, using Network Rail (NR) infrastructure on the Great Western lines and Great Eastern lines has added a further degree of infrastructure complexity which has resulted in a reduction in the PPM below that required to maintain a resilient 24 trains per hour (tph) service in May 2023. The operating challenge going forward is to improve the reliability and resilience of the end-to-end railway to achieve the required tph.

- 4.2 The resilience of the Great Western infrastructure and the impacts on performance on the overall end-to-end train service have been a concern. This is recognised and control measures and improvement interventions are underway following reviews by NR.
- 4.3 Work has continued on a continuous assurance basis with formal reporting via the LoD2 Periodic Assurance Review (PAR) Reports. Of particular focus has been the overall system and fleet reliability and availability, the quality of the service response to issues arising during service operation as well as the status of continued works and people and team readiness across all aspects of the Operation and Maintenance teams.
- 4.4 Since the last meeting of the Committee, LoD2 PAR Reports have provided input to the periodic Integrated Assurance Report to the Elizabeth Line Delivery Group and to the Audit and Assurance Committee.
- 4.5 Regarding cost to complete, although potential new cost pressures are being prudently recognised in the Anticipated Final Crossrail Direct Cost (AFCDC) as they arise, the programme continues to maintain provision and contingency budgets. Actions are ongoing across all areas to identify opportunities to reduce the AFCDC and minimise funding requirements.
- 4.6 The programme for the remaining works to successfully deliver the whole end-to-end railway has been baselined and is being used to monitor progress.
- 4.7 Deterministic dates are being held as follows:
- 4.8 Stage 5c is May 2023 (24tph full end-to-end service), dictated by the national railway timetable changes. The key drivers continue to be confidence in achieving the required fleet availability and whole systems reliability to support the enhanced intensity of service. The maintenance of the programme is being led by the Elizabeth line Operations team, with support from CRL for those elements of work it is responsible for.
- 4.9 The programme has continued to make significant progress since the last report, key progress highlights include:
 - (a) substantial completion of the physical works at Westbourne Park to facilitate later introduction of auto reverse functionality, although a delivery issue is delaying the Closed-circuit Television (CCTV) testing and commissioning;
 - (b) improvements in team working and embedding of lessons learnt across the Operations teams, leading to stronger service recovery and incident handling;

- (c) continued engagement, planning and the implementation of improvement initiatives with Network Rail on the Great Western Main Line to support the continued reliability performance improvements since merging the three railways at Stage 5b minus and with the run up to full 24tph service in May 2023; and
- (d) software development, testing and upgrades to signalling, fleet and infrastructure software, improving performance resilience further.

4.10 The maintenance programme continues to implement improvements to support the enhanced utilisation of resources and the introduction of automation, thereby delivering a more efficient maintenance service. Experience during operational service in the COS is helping to shape the improvements required in terms of response and fix times and root cause analysis to support a 24tph service.

4.11 Fleet reliability has been challenging since the introduction of the more intensive timetable and both RfL(I) and Alstom are working hard to understand the root causes and find solutions. This will be a prime focus for the teams going forward as improved reliability and performance are key to the successful implementation of the 24tph timetable in Stage 5c.

4.12 Following our risk based continuous assurance approach, concerns and recommendations are identified throughout each reporting period. Management responses for those items are provided in the following table and have been provided during Periods 7 and 8 of 2022/23 (18 September to 12 November 2022) (P7 and P8).

Periods 7 and 8	LoD2 Concerns	Management Response
P7/1	Great Western (GW) – While good control measures and improvement activities are underway in the West, there continues to be further improvements required both in the final days before Stage 5b minus and through to Stage 5c. Progress on plans to continue to be monitored and reported on throughout weekly cadence meetings.	Improvements have been limited as it has been challenging for GW to deliver sustained improvements across their infrastructure. The recent changes in GW senior management will hopefully bring about a change in approach for the better, however, any changes could be slow.
P7/2	Building towards Stage 5c – Suggest a revised high-level plan of all the activities required to be delivered for Stage 5c including NR’s improvement programme activities, ELR300, ELR400, fleet updates, auto-reverse, etc. together with an agreed ‘access plan’ to ensure the critical priorities will be	The Stage 5c block plan is continually updated and reviewed weekly to capture the changes and development of the Stage along with access constraints, the latest of this being the inclusion of Auto Reverse within the tunnels as part of Stage 5c. The development of the plan is driven by change that is agreed at the Mobilisation and Blockers meeting. This scope is then confirmed through the System Description document. The System Description for Stage 5c is currently under review by the

Periods 7 and 8	LoD2 Concerns	Management Response
	delivered and assurance activities complete in time.	Engineering and Technical Assurance team and is due by end of January 2023.
P7/3	Building towards Stage 5c – Desktop exercises and further training should continue up to Stage 5c to give staff the opportunity to continue to practice contingencies and operational scenarios, so that by Stage 5c the operational response will be slick and effortless.	Our ability to conduct further exercises is now limited. Our primary approach is now on sharing lessons learnt from incidents and to ensure embedded improvements in service recovery are evident.
P7/4	Transitioning to Business as Usual – Confirmation required as to who within TfL will have leadership accountability for the delivery of remaining infrastructure and systems. We recommend that signalling software upgrades should become part of the maintenance regime, so the priorities are driven by Operational requirements.	From early 2023 CRL close out will be led by the Close Out Director, who will now report into the Director of the Elizabeth line. The Director of Infrastructure will continue leading both the Renewal Capital works programme and Residual Works programme. With regards to Siemens' software upgrades following ELR400 (Easter 2023), the final plan is being formulated for this to be led by RfL(I).
P7/5	Auto-reverse – While there has been good progress on fencing and Interim CCTV design, there has been some slippage on fencing material delivery and installation and CCTV installation. Also, there are concerns regarding slippage on Safety Assurance activities and CRL and RfL(I) have developed mitigation measures for these slippages but it is unlikely that the works will now be complete and assured for the target date of 11 December 2022.	Auto-reverse delivery has been split into two elements: 1) Westbourne Park (WBP); and 2) In Tunnels. 5b Ready milestone is driven by a number of elements including the works at WBP, Assurance of WBP Auto-reverse, Operational and Maintenance Readiness, Integrated Testing, Rolling Stock and Lineside Signalling. The Programme for 5b Ready is reviewed weekly. At the Mobilisation and Blockers meeting on 26 October 2022, Technical Assurance was highlighted as critical (one week unmitigated delay) with the Engineering Manager being actioned to workshop the Assurance Plan and recommend the actions to best mitigate the programme. At the Mobilisation and Blockers meeting on 9 November 2022, Rolling Stock (software update H5.10 fleet load) was highlighted as critical (one week unmitigated delay) with mitigation plans to be developed to reduce this delay. Latest target date for 5b Ready is 28 January 2023.

Periods 7 and 8	LoD2 Concerns	Management Response
P8/1	<p>Building team resilience – Recommend a review of existing succession planning in RfL(I) for call critical roles now that the CRL programme is nearing completion.</p>	<p>The CRL Operations team have reviewed the workforce plan and ensured where critical resources are needed to complete the CRL programme that funding and extensions are obtained for these roles.</p> <p>More general resilience of the roles confirmed in the plan particularly in the context of a fairly rapid demobilisation of CRL resources is being reviewed with further resilience actions to be identified in January 2023.</p>
P8/2	<p>Systems Integration and Upgrade Management – With the transfer of software integration management and governance ‘Plateau’ to RfL(I) and CRL wind down, recommend keeping a joined up ‘one team’ approach to Fleet and Signalling software upgrades, with Alstom and Siemens both needing to be in the Planning meetings with RfL(I) to maintain an integrated systems approach.</p>	<p>Current approach is that the Senior Project Manager continues to lead on the plateau weekly meeting with key representatives from Rail for London (RfL) (including planning) and supply chain functions in attendance to align software updates with key outputs.</p> <p>The longterm approach under discussion in line with the RfL transition plan.</p>
P8/3	<p>Fleet Performance – Recommend the continued focus on fleet performance as it is still well below the 5c requirement of +20K Miles per Technical Incident (MTIN). Software update H5.20 is key to this improvement and this is now forecast to be available by end March 2023.</p>	<p>20K MTIN for Stage 5c has been set by the project manager, based on Alstom’s forecast of the MTIN improvement from the planned interventions.</p> <p>The project manager has not had it confirmed what the minimum required MTIN is from Stage 5c modelling work.</p>
P8/4	<p>Monitoring of recommendations from the Independent Rail Industry Review into the Overhead Line Equipment (OLE) Failure at Airport Junction on 19 September 2022 by Stewart Palmer – Suggest that progress against the Elizabeth line relevant recommendations from the Stewart Palmer report get tracked and reported in the weekly cadence meetings towards 5c readiness.</p>	<p>Recommendations/actions from the Independent Rail Industry Review into the OLE Failure at Airport Junction on 19 September 2022 are included in the NR weekly visualisation meeting, the output of which is shared with RfL and then in the fortnightly countdown meetings.</p>

5 Line of Defence 3 (LoD3 -TfL Internal Audit) Assurance

5.1 This section covers the Internal Audit activities that were agreed in the Integrated Audit and Assurance schedule.

5.2 In P7 and P8 no reports were issued, however one audit was in progress.

Audit Delivery

5.3 Audits in progress at the end of P8 are included as Appendix 1, and work planned to start in the remainder of Quarter 3 and Quarter 4 of 2022/23 (13 November 2022 to 31 March 2023) are included as Appendix 2.

Management Actions

5.4 The team monitors the implementation of all Internal Audit management actions and confirms whether they have been adequately addressed before closing them. There are no overdue actions at the end of P8.

Changes to the Audit Plan

5.5 TfL Internal Audit regularly review and update the audit elements of the Integrated Audit and Assurance Audit Plan throughout the year, in liaison with management, to reflect changing business priorities. No changes to the plan have been made to date.

6 Line of Defence 3 (LoD3 - IIPAG-EL) Assurance

6.1 The terms of reference of the IIPAG-EL sub-group require the group to provide a 'look ahead' of its proposed areas of interest and work. The areas of interest highlighted as part of the revised Integrated Audit and Assurance Schedule in February 2022 continue to apply. We also support the 'continuous assurance' process established by LoD2. This schedule is maintained and reviewed within the Elizabeth Line Programme Assurance Group which is co-ordinated by LoD2.

6.2 The focus by LoD3 over the reporting period has been on the preparations for the enhanced service level of Stage 5b minus, and the Stage 5c full 24tph service.

6.3 In general, the overall assurance framework for Elizabeth line has continued to operate effectively.

List of Appendices:

Appendix 1: Line 3 (TfL Internal Audit) Work in progress at the end of Period 8 2022/23
Appendix 2: Line 3 (TfL Internal Audit) Work due to start in the remainder of Quarter 3 and Quarter 4 2022/23

List of Background Papers:

None

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