



██████████
Project Representative
Jacobs

Crossrail Limited
 5 Endeavour Square
 London E20 1JN
 T: 0343 222 0000
 Helpdesk
 T: 0345 602 3813
 www.crossrail.co.uk

28 January 2021

Dear ██████████,

Re: Crossrail PRep Project Status Report 145 – Period 9

I am writing in response to the contents of the P09 PRep Sponsor Summary report and letter.

As noted in your letter, period 09 has seen good progress made across the project in line with the Delivery Control Schedule 1.1. Six of our Routeway Chapters achieved their 'ready for handover' states; construction works at Farringdon and Paddington station were determined to be substantially complete; with Farringdon entering the T-12 weeks handover process; Limmo shaft was handed over to TfL; and we began System Integration Dynamic Testing, on schedule, on 3 December. We have also been able to recover the forecast of Trial Running to ██████████ through changes to the scheduling logic.

In addition to the recognition of the progress made across the project during P09, a few points have been identified as requiring further action or explanation. These broadly cover controlling cost pressures, resourcing through to passenger services and co-ordination of a joint approach to completing the safety case for Trial Running. Initial responses to these points are listed below.

1. When will CRL confirm the timing for implementation of a fully defined strategy to control cost pressures?

It should be noted that Crossrail does not produce a separate cost management strategy from its delivery strategy. However, there are four pillars of strategic work to minimise cost pressures, namely:

- Integrated schedule cost and risk periodic scrutiny through the programme cadence.
- Earlier warning and escalation to Executive Programme Performance Reviews (EPPR) and onwards. This has led to the emerging pressures list being created.
- Strengthened change controls and financial controls.
- The commercial close-out strategies for each project.

The current cadence provides for schedule and cost to be reviewed simultaneously through a number of reporting mechanisms. Detailed reviews of this aspect of the

MOVING LONDON FORWARD





Anticipated Final Cost, representing [REDACTED] of the cost to go are being built into the periodic cycle. This will focus on line by line reviews and the mitigating actions. In parallel to the identification of cost pressures, offsetting options are being identified. This can be through specifically held overlays and provisions, a draw on identified risk or addressed through the CEO Reserve or Scope Gap provision for unknown unknowns. This process is further maturing with greater Executive involvement in the challenge on pressures.

The current cost to go will be reviewed at a meeting with all interested parties scheduled for the end of January. The framework for addressing cost pressures will be shared at this meeting. This is based upon only releasing specific funds for known issues, and the release of unallocated central funding to address unknown unknowns. Therefore, however challenging a position this is, a degree of cost uncertainty will remain for a significant period.

2. How can CRL demonstrate that it is securing Duty Holder support for the Safety Case, to achieve successful entry into Trial Running?

There is an integrated approach running through the organisations responsible for delivering successful entry into Trial Running. Support for the plan (DCS) to get to Trial Running was endorsed by both the Chief Operating Officer of the Elizabeth line and Crossrail Ltd's Chief Programme Officer. Regular meetings are held with the Managing Director of London Underground to discuss the progress of entry into Trial Running. The new governance changes have simplified responsibility and improved alignment with me directly reporting to the Commissioner. This formally brings both operations and project together with one line of reporting. The Chief Operating Officer of the Elizabeth line as a member of the Crossrail Ltd Executive is fully aware of the whole programme and, therefore, when he is engaging with the Office for Rail and Road, he is fully aligned with Crossrail Ltd's delivery and technical specifications.

There are also activities in place across the project to ensure that there is a coordinated approach with the Infrastructure Managers and our partners to support the completion of the safety case to enter into Trial Running. This includes the creation of a Trial Running Readiness Delivery Group to provide responsiveness in resolving cross organisational issues; completion and sign off of the Trial Running and Trial Operations configuration system descriptions; close out of technical assurance dependencies for Trial Running and the development of operational mitigations for any reduced functionality with the RfL Operations and Maintenance teams.

3. When will CRL provide evidence of a fully defined organisation structure, indicating personnel through to Passenger Service with the overall associated costs?

Building on the detailed workforce plan that was updated over the summer, further work is planned during the current period (P11) to ensure that there is resource in



place to support the project through to the end of the programme. A detailed review of the organisation and associated cost profiles is being conducted by the Crossrail Executive team and is expected to conclude in the coming weeks.

Please find attached a more substantive response focussed on the contents of the Sponsor Summary report.

Kind regards,



Mark Wild
CEO

PRep Period 09 Sponsor Summary Content	CRL Period 09 Response
<p>Health and Safety: In Period 9, there were two Lost Time Cases, resulting in one RIDDOR, and two High Potential Near Misses. The Safety Performance Indicator decreased slightly, but overall indicators remain within those set by the Programme.</p> <p>CRL continues to maintain a state of heightened awareness as the Covid-19 'second wave' and now 'third wave' impacts the Programme, with attention directed to safeguarding key resources, providing resilience and protecting crucial assets for operations.</p>	<p>Health and Safety: The Project Representative's comments regarding Health and Safety performance in Period 9 are noted.</p> <p>It is worth highlighting that in Period 10, CRL has seen four green weeks with no significant incidents. In the first two weeks in Period 11, there have been two High Potential Near Misses, relating to unauthorised access by an operative onto part of the railway, and incorrect train movement from one of the sidings.</p>
<p>Recovery Plan and Schedule: CRL continues to adopt the Period 4 DCS v1.1 [REDACTED] to measure Programme performance. CRL is to validate Stations commissioning plans and critical resource management inputs to support the baseline schedule, together with T- Minus meetings to commissioning.</p> <p>The Critical Path to Trial Running remains within the safety assurance process, which requires Safety Justifications (SJs) Acceptance through the clearance of Dependencies and the use of a supporting StEJ process for the Central Operating Section SJ (COS SJ). RfLI's assurance process requires CRL SJ Chapter completions to support its own RCAC/EAC and Trial Running Railway Assurance Case, leading, in turn, to the Crossrail Engineering Safety Assurance Case (CESAC). The Declaration of Control of Risk (DoCoR) certifies Duty Holder acceptance of a safe, assured and operable railway, and this provides the basis upon which the ORR permits Trial Running to start. Period 11 will determine whether the significant closure rate of Dependencies, which is reliant on the timely provision of supporting information, can be delivered by an under-pressure assurance team.</p>	<p>Recovery Plan and Schedule: The Project Representative's comments regarding assurance requirements are noted.</p> <p>CRL acknowledges the Project Representative's concern regarding the Stations' schedule adherence. For clarity, schedule adherence as a measure is calculated for [Period Y] based on the number of activity finishes planned in [Period X] that were actualised in [Period Y]. This measure increased from 49% in Period 6 to 68% in Period 8. In Period 9, Stations' schedule adherence slipped to below 60%, with 60% being the intended 'green' benchmark. This slip can be attributed as follows:</p> <ul style="list-style-type: none"> • Tottenham Court Road station – Delay of weather dependent works due to cold-wet weather. • Paddington station – Review of data shows non-progression of planned certification and assurance activities due to Tier 1 performance. • Custom House station – Delays in getting SC1 Enactment evidence from Network Rail, combined with changes to the larger Bringing Into Use programme have resulted in a low score. • Canary Wharf station - Review of data shows non-progression of certification and assurance activities, along

<p>Stations schedule adherence dipped slightly this period, with Tottenham Court Road, Paddington, Custom House and Canary Wharf achieving less than 60%. CRL has maintained pressure on all Stations to achieve the SC3 milestone, allowing the T-12 countdown process to SC3 ROGS to start in [REDACTED]. Canary Wharf and Whitechapel Stations are yet to achieve the SC3 milestone. The Farringdon Station T-12 process to SC3 ROGS handover started as planned, on 27 November 2020.</p>	<p>with several site activities which were moved to the December 2020 blockade. Retrospectively, the December 2020 blockade was successful.</p> <p>Renewed efforts to get a greater level of detail and control with the station assurance activities have taken place and CRL expect to be at previous levels of schedule performance in Period 11.</p>
<p>Handover Delivery and Assurance: CRL completed formal handover of all Shafts and Portals, with Limmo and Stepney Green Shaft Handover on 9 December 2020 and 18 December 2020, respectively. Plumstead Depot and Sidings are now targeted for handover on 22 January 2021.</p> <p>Four Stations achieved SC1 Enactment status. Liverpool Street and Woolwich Stations will start commissioning tests in Period 10, following the lessons learnt from the Farringdon Station 'dry-run'. CRL will focus efforts on the '3-wave' commissioning sequence, that aims to deliver integrated systems within the Stations and into start of operational use.</p>	<p>Handover Delivery and Assurance: The Project Representative's summary of progress on handover and assurance is agreed by CRL.</p>
<p>SIDT, Dynamic Testing, Trial Running and Trial Operations: Failures identified during the first SIDT period, will inform the next software build update that will be implemented for Trial Operations.</p> <p>CRL and RfLI have agreed an approach to the Trial Operations Configuration. However, further work is required, particularly on isolation and possessions, to minimise risk for entry into Trial Operations.</p> <p>Another step towards opening the Elizabeth Line is a governance change with the launch of the Trial Running</p>	<p>SIDT, Dynamic Testing, Trial Running and Trial Operations: The Project Representative's comments on SIDT informed software builds and EL governance are note and agreed by CRL.</p> <p>Further to CRL and RFLI's agreed approach to Trial Operations Configuration, an isolation and possession workstream has been developed with three remits: alternative power supply at Plumstead, electronic padlocking/permitting and Maintenance optimisation. Funding has been agreed and the remits have been issued to the relevant design consultancies. The developed proposals are scheduled for</p>

<p>Readiness Team, and the Passenger Service Readiness Team to follow.</p>	<p>sign-off at the Elizabeth Line Delivery Group in April 2021 and subsequent implementation.</p>
<p>Organisation Transition: The organisation for Trial Running has been developed. This originally identified an additional 164 roles, to be filled from CRL, the supply chain and RfLI, as well as by the extension of existing resource contracts [REDACTED]. CRL has also developed a Workforce Plan for the CRL organisation through to Programme completion and Passenger Service. Overall resource demand, final headcount and associated AFC is subject to further study by the CRL Executive.</p>	<p>Organisation Transition: The Project Representative's comments on the organisation for Trial Running are agreed by CRL, noting that the 164 roles were included in the overall review of resource demand, headcount and AFC by the CRL Executive.</p>
<p>Stage 2B Operations: Since the software release in early December 2020, FLU performance operating on the GWML has improved as a result of a significant reduction in ETCS faults. However, until a further software release is implemented in February 2021, we expect ATP failures to continue.</p>	<p>Stage 2B Operations: CRL would offer some clarity to the Project Representative's comments on ATP failure.</p> <p>Automatic Train Protection (ATP) failure is a subset of the European Train Control System (ETCS) faults that require the driver to do an ETCS reset to recover. This ATP failure subset has a fix included in the next software release for implementation in February 2021.</p>
<p>Stage 3 – SIDT, Trial Running, Reliability Growth and Trial Operations</p> <p>Rescheduling of Safety Assurance activities is resulting in resource concurrency adding pressure to the pivotal CESAC preparation by mid-February 2021. The mitigated schedule requires all Duty Holders (CRL, RfLI, MTREL and NR) agreement on operability, maintainability and performance for the DoCoR sign-off prior to ORR acceptance. This will require close engagement of all Duty Holders for Trial Running to start [REDACTED]. A Trial Running countdown readiness plan providing full transparency between CRL and RfLI is expected for implementation in Period 10. Key for resolution for entry to Trial Running is the ADM strategy that will inform roles and responsibilities under the CDM plan. [REDACTED]</p>	<p>Stage 3 – SIDT, Trial Running, Reliability Growth and Trial Operations: The Project Representatives assessment of the Trial Running start date is noted, as are the sources of pressure identified.</p> <p>Risk review workshops have been conducted on the Entry into Trial Operations signalling configuration ELR100 (TR3.5), and a fully assured software configuration plan has also been developed that will deliver the required operability and reliability. An ELR Dashboard is now in place to monitor progress. Additionally, Sprint Plans are presently being developed for the software development and works linking the ELR100 assurance deliverables into the Central Operating Section Safety justification (COS SJ) and Crossrail Engineering</p>

<p>[REDACTED]. Having the right resources available to maintain the pace required to achieve [REDACTED] date will be an important factor. Given these pressures, we consider that [REDACTED] date for the start of Trial Running, is more credible than the current [REDACTED] target.</p> <p>The identification, sequencing and completion of critical Dynamic Tests and Routeway Integration tests with sufficient re-test time to [REDACTED], will be a factor to complete the assurance process.</p> <p>The full scope of works and criteria for exiting Trial Running and entering Trial Operations has yet to be finalised. Software update TR3.5, scheduled for August 2021 delivery to the Central Section, is the candidate configuration for entry into Trial Operations. The commitment to TR3.5 introduces some risk late in the Trial Running period, although delivery experience from similar software deployments gives confidence that this can be successfully managed. The risk lies in the timely provision of integrated safety assurance evidence, technical issues this deployment brings and their timely resolution. A further software release is planned during the Trial Operations period. Consequently, the [REDACTED] for Passenger Service start is now [REDACTED].</p> <p>Failure to enter ROGS in [REDACTED] will delay the ability to deliver Stage 4A by [REDACTED].</p>	<p>Safety and Assurance Case (CESAC) to Trial Operations are also in progress.</p> <p>Crossrail recognises the dependency of Stage 4a on Trial Running and associated risk. Steps have been taken to book necessary commissioning access in [REDACTED] 2021 to manage to the [REDACTED] in addition to the [REDACTED].</p>
<p>Stations Assurance and Commissioning for Trial Operations</p> <p>A CRL priority before Christmas 2020 was a focus on the achievement of SC1 Enactment for all Stations, as pre-requisite for Trial Running. While the schedule milestone dates are effectively based on achieving documentation sign-off, completion in practice is likely to drift into early 2021, with formal SC1 Enactment expected to take place in Period 11.</p>	<p>Stations Assurance and Commissioning for Trial Operations: SC1 Enactment represents the state that stations are required to achieved prior to entry into Trial Running. It is an assured state that enables safe evacuation routes through the stations. As at 26 January, SC1 Enactment has been achieved at all stations except Paddington, Tottenham Court</p>

<p>Clear communication will be required across CRL teams to fully define the enactment process, and how restrictions through change and configuration control may impact work practices; this may also have AFCDC implications. Canary Wharf Station is scheduled in January 2021, as the last to achieve SC1 Enactment.</p> <p>A Stations Bringing-into-Use plan is well developed, although this has yet to be fully integrated into DCS v1.1, with a full QSRA assessment to be completed. Bringing [REDACTED] Stations into use in 2021 will be a complex task; as yet, there is no indication that the durations will be sufficient for SC3 ROGS. Additional resources will be required for CRL and its supply chain to support the testing and commissioning teams, to avoid the conflicts of working on two Stations concurrently. A need for common competing Tier 2 and 3 resources will require close co-ordination between teams and might be better controlled centrally within CRL. Similarly, logistical planning to support congested, complex, and interrelated testing requirements in May 2021 will be a crucial success factor, but has yet to be developed. Resolution of complex integration issues required for Trial Operations, such as between the TVS and PSDs, continues to be a focus for the Station teams.</p> <p>A review of the strategy for completing Bond Street Station [REDACTED] is in progress and is expected to complete by the end of Period 11.</p>	<p>Road, and Abbey Wood. These are expected to be achieved towards the end of January.</p> <p>However, in response to the Project Representative's concern regarding clear communication to CRL teams in relation to SC1 Enactments, configuration and change control processes – workshops have been held and briefings are being prepared to demonstrate the configuration changes in the stations for SC1 Enactment and Trial Running. Briefings and procedures will be defined as areas with no access and areas that require pre-planned approved access through RFL or agreed Principal Contractor arrangements; physical and visual barriers and notifications will be in place to identify these areas. Anticipated Final Cost (AFC) is being reviewed based on respective restriction requirements.</p> <p>CRL recognises the Project Representative's comments regarding the Bringing into Use of Stations, and the particular complexities of the Trial Operations programme. An exercise will be undertaken to refresh the Delivery Control Schedule to allow for the granular detail in the Trial Operations programme that has been fundamental in the management of the Trial Running programme. This exercise will likely be started in early March, but the priority during this time will be the run up to [REDACTED].</p>
<p>Commercial and Risk: Drawdown against the £825m funding increase is expected to translate into Commitment Authority by Period 11. In the meantime, CRL continues to experience exceptional commercial pressure.</p> <p>Period 9 reviews indicate an increase across the project AFCs. At subsequent reviews, CRL reported an AFCDC increase to £15,910m, an overall Project AFC increase of £25m. A</p>	<p>Commercial and Risk: Reference to cost pressures reported in Period 9 have been noted by CRL and the programme has held subsequent discussions with the Project Representative team on the approach to review, challenge and manage these pressures. As highlighted in the report, initial emerging pressures have been challenged and the net risk is now a lower range. This is the result of direct challenges by</p>

<p>drawdown of [REDACTED] from Programme Risk and Allowances is reported, to offset the increase, such that the AFCDC as reported by CRL is £15,880m. At Period 9, CRL's AFCDC exceeds funding by approximately [REDACTED]. However, of concern is the emerging potential of [REDACTED] cost pressures, yet to be accounted for within the AFCDC. While CRL management will review this, it is expected to minimise this impact to [REDACTED] and [REDACTED]. Current risk provisions are allocated, have limited allowance for contingency and no identified opportunities for savings. As CRL identifies further issues, and draws-down risk and contingency to offset AFCDC increases, the challenge to complete the Elizabeth Line within the funding threshold continues to grow.</p>	<p>management and due to some emerging pressures already planned for through existing risk and provisions.</p> <p>Cost pressures remain a key focus of CRL management as do the management of risk and central provisions. The drawdown on risk and central provisions is based on releasing only specific funds for known issues and the release of unallocated central funding for those unknown emerging pressures. Risk and mitigation of risk is in firm focus and plans are being formulated for detailed risk reviews. [REDACTED]</p> <p>[REDACTED] The risk and central provisions were identified and provided to address such issues and a draw on these funds at this time can be expected. Reported risk exposures include some opportunity for reduction through mitigation and some improvement is anticipated to be realised in Period 10.</p> <p>Delivering to the [REDACTED] remains the greatest financial opportunity, along with reviews into risk mitigations and other key activities. This will allow the release of risk held specifically for prolongation.</p>
<p>Organisation: We are concerned that the resource requirements are not centrally co-ordinated and managed, and that this is resulting in uncertainty between resource requirements, and confusion for integration into the AFC budgets and DCS v1.1. Resources are required across a number of key areas: entry into Trial Running, Asset Data input, supply chain support to complete works and support to Trial Running through to Passenger Service, as well as training requirements for around 1,000 staff in the new ROGS operating environment. While change control governance is being demonstrated across the individual elements of Technical, Cost, Schedule and Risk, there appears to be a lack of co-ordination between the elements.</p>	<p>Organisation: Coordination and management of resource requirements remains a key focus. As part of the Organisational Readiness Executive reviews that took place in November 2020 and December 2020, the critical supply chain training and resource requirements were determined. This has been reflected in the final resource requirements list to enable transition into Trial Running and successful completion of Trial Running. The Workforce Planning Group was established to review the existing workforce plan and associated costs for indirect resources from the present day until the end of the programme.</p> <p>Further joint reviews across the Executive Group were held in January 2021 to provide a more integrated view of organisational requirements and associated costs for entry into</p>

	<p>Trial Running through to the end of the programme. Outputs of the workforce plan review will be shared at the Elizabeth Line Delivery Group in February 2021 for approval. The supply chain resource requirements have been reviewed centrally by the programme delivery team and these requirements have been captured and reviewed by CRL Executive Group as part of a separate and focused exercise.</p> <p>Therefore, in response to the Project Representative's key observation of organisational resources in relation to budgetary constraint concerns, the series of workforce plan reviews that have taken place in January 2021 with key programme leads and Executive Group members optimise the organisation resources required at each remaining phase of the programme. The final recommended profile of the workforce, along with the associated costs, will be brought to the Elizabeth Line Delivery Group for approval in February 2021. Current funding has been approved to secure existing resources to protect the [REDACTED].</p>
--	--