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

6 September 2021

Dear ██████████,

Re: Crossrail PRep Project Status Report 153 – Period 4

I am writing in response to the PRep Sponsor Summary cover letter and report for Period 4.

Our delivery strategy continues to be the achievement of critical milestones on or close to the deterministic schedule. This is the best route to minimising the Programme's Cost to Go. It reduces the requirement for prolongation risk and provides for the earliest opportunity for ██████████ in a controlled way. We continue to make good progress with this strategy. In addition to the drive to the deterministic early dates we have a series of interventions planned in order to minimise the funding requirement from the £1.1bn identified in DCS1.1.

These interventions come from recent "Cost to Go workshops" and have been very productive and have resulted in 70 discrete actions, all allocated to individual executives. These actions cover a broad spectrum of activity. Most notable is the commitment to ██████████

██████████ These interventions are being tracked weekly and the benefit will become apparent over the coming periods. We have also established "scope books" that have effectively sentenced all remaining scope into time frames (by Trial Operations, by Revenue Service etc.) as well as by delivery channel.

The period of Trial Running continues to be very busy and challenging. Good progress is being made as we conduct the final integration tests and prepare for the planned commissioning of the Revenue Service quality systems for the Tunnel Ventilation System (TVS) and the "ELR100" signalling software. In particular, the TVS system has required more time than deterministically planned, although within the P50 risk allowance, as this large and complex system is "tuned". This has resulted in a new re-sequenced Access Plan (J7 replacing J6) that will get us to the ██████████ commissioning Blockade that is due to start on ██████████. Adjustments such as this are to be expected as we complete the integration of this system.

The DCS1.2 is complete in terms of schedule and associated time risk assessment. Revised milestones have already been adjusted up to Stage 3 Revenue Service under change control. The main additional change to DCS 1.2 is the formalisation of the combination of Stage 4 and Stage 5B into a single Stage; the earliest this can occur is ██████████. We are in the

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process of costing DCS1.2 in view of the new latter stage sequence, the Scope Book outcomes and the Cost to Go workshop assumptions.

We are at a very important and challenging phase of the Programme. Whilst we are doing well delivering close to the Deterministic schedule there remains a reducing but influential group of technical integration and reliability risks. The risk adjusted opening window for the Central Section remains the first half of 2022. A successful commissioning in the [REDACTED] Blockade will be defining in any adjustment to this window.

CRL acknowledges the Project Representatives concern regarding the challenges CRL has encountered during timetabled Trial Running services. This is somewhat inevitable as we are dealing with a system with known bugs that are fixed in ELR100. This is all part of the learning process that is intrinsic in the Trial Running phase. In recent weeks the Operations team have done a very good job learning how to work around these known bugs and within the same timeframe, we have typically delivered over 95% of 12TPH mileage; this bodes well for the important running weeks after the [REDACTED] ELR100 commissioning Blockade.

Regarding the Project Representative's reference to the lack of a process in place for countdown to Trial Operations, the T minus countdown process for Trial Operations has commenced, built on lessons learned from Trial Running. To date, the two meetings held at T-15 and T-13 have been well attended by senior colleagues from all stakeholders as well as CRL representation. This process has commenced significantly earlier than that for Trial Running which started at T-8 and a Trial Operations Readiness Tracker has been produced that covers key interrogative areas in anticipation for Entry into Trial Operations.

I hope this response provides a useful summary of the measures in place to address the specific issues you have highlighted. A more comprehensive response focussed on the content of the Sponsor Summary report will be issued as an Appendix to this letter.

Kind regards,

[REDACTED]

Mark Wild
CEO, Crossrail

Appendix – CRL Response to Period 4 PRep Report

Programme Response Category	PRep Period 4 Sponsor Summary Content	CRL Period 4 Response
<p>Observations in the Period</p>	<p>CRL has continued the development of DCS v1.2 in the period, and with a series of supporting cost, risk and scope reduction workshops; it expects to formally issue the completed plan with updated costs in September 2021. While there is clear commitment from CRL, key milestones in DCS v1.1 J6 are already under threat, and the compounding effect of 12 TPH trials failures and further delays in stations delivery has significantly increased schedule pressure.</p> <p>The recent rise in Covid-19 cases might have a critical impact upon the Programme in the lead-up to Trial Operations. However, we are encouraged by the resilience planning and contingency working initiatives which CRL has implemented to protect the schedule.</p> <p>12 TPH trials re-started as planned following completion of the June/July 2021 Blockade. CRL and RfLI management now have access to dashboards that indicate the status of maintenance works, although inclusion of the forecast plan of works would further benefit monitoring approaching Trial Operations. The</p>	<p>CRL agrees with the Project Representative’s comments regarding the series of Cost to Go workshops undertaken, totalling five in number to support the development of the DCS1.2 exercise. The Trial Running Staging Plan has been reviewed to incorporate the TVS mode and air flow testing, which became J7 following a change control process. The DCS1.2 schedule baseline has been confirmed as the baseline to which Period 5 reporting will be aligned to.</p> <p>CRL concurs with the Project Representative’s comments in the Period regarding the recent rise in COVID-19 cases across sites and the potential impact this could have on the Programme. The measures in place are still proving effective and positive COVID-19 cases or self-isolation as a result of the ‘pingdemic’ has reduced as government guidelines continue to be observed. CRL continues to work towards protecting the schedule in line with the Project Representative’s comment regarding CRL’s adoption of contingency initiatives and resilience planning.</p> <p>In line with the Project Representative’s comments, CRL agrees with the assessment of the status of the maintenance bridging works, with the PSSG functioning as a route of escalation for issues requiring Executive level intervention.</p>

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	<p>PSSG forum is providing appropriate focus and a route for escalation of issues for executive management attention.</p>	
<p>Headline Concerns</p>	<p>CRL resumed 12 TPH trials following completion of the June/July 2021 Blockade, but it has proved difficult to sustain a period of consistent service, because of a range of known and emerging technical faults. Many of the known faults are planned to be fixed with the deployment of ELR100 in [REDACTED]. However, the new software may also impact the ability to exit Trial Running if it introduces unwanted behaviours. In the meantime, CRL is having to avoid some of the disruption by careful management of train headways during Trial Running.</p> <p>While this necessitates running trains at lower frequencies than 12 TPH, it allows some meaningful testing to continue, albeit there will be reduced returns from 8 TPH running. Achievement of a stable service will require the removal of the more than 50 Operational Restrictions currently in place and there is a risk that more might be introduced, for example to address residual faults with ELR100 and ELR110 (formerly known as ELR11X). ITAP safety acceptance of Auto-Reverse functionality has also not yet been secured. Cumulatively, these issues mean that opportunities for mileage accumulation and reliability growth are reduced and the step-up to 24 TPH trials has been delayed.</p>	<p>The Project Representative is accurate to point out the challenges that have been encountered during 12TPH Trial Running services. As part of the achievement of reliability workstream a soft ramp up plan has been successfully implemented to increase to 12TPH start of service in an effort to build greater stability and deliver more net mileage whilst signalling software deployment to fix the reliability issues is planned during the [REDACTED] Blockade.</p> <p>The ELR100 signalling software will deliver significant improvements in performance, reducing the existing number of operational restrictions and improving reliability. A paper on Auto Reverse functionality to support Trial Running was reviewed at ITAP on 26 August 2021 with further reviews anticipated to close out any concerns.</p> <p>Contrary to the Project Representative’s comment regarding 24TPH services – there is no step up to 24TPH trials. The 24TPH demonstration is through the two-and-a-half-minute close headway test, scheduled to be carried out after the commissioning of ELR100 signalling software.</p>

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	<p>DCS v1.1 J6 was established as an interim schedule for performance measurement in Period 3; while it was a significant improvement on DCS v1.1, it has quickly become outdated. Demand for trace access for completion has increased, for example because of extra pre-commissioning tests for ELR100, additional Tunnel Ventilation System (TVS) mode change works, and the re-planning of Bismarck Tests; this, in turn, is reducing the time available for System Testing with a Train (STT) and mileage accumulation. A revised Trial Running Staging Plan will require sign-off by all stakeholders, and we anticipate that agreed compromises will use any schedule contingency previously provided; the revised Plan is expected to be included in DCS v1.2.</p> <p>The Trial Operations Configuration continues to be developed for finalisation and agreement with all key stakeholders. The Configuration State Description, a key component of the Trial Operations Configuration, has yet to be completed, but is important because it sets the criteria for entry into Trial Operations and supports the completion of the assurance process. An opportunity for an early start to the Trial Operations readiness countdown has been missed and a future start date has yet to be declared by CRL.</p> <p>While stations are generally achieving their deterministic dates for handover, with agreed deferral of certain scope elements up to Trial</p>	<p>As mentioned above, The Trail Running Staging Plan has been reviewed to incorporate the TVS mode and air flow testing which has become the J7 following a change control process and sign off at PSSG on 25 August 2021. The DCS1.2 schedule has been confirmed as the baseline at ELDG following a consensus of no objection. Period 5 reporting will be against the DCS1.2 schedule baseline.</p> <p>The Trial Operations Configuration Staged Plan has been updated and agreed among all relevant parties. It is currently undergoing final sign off by all parties. As above, the Trial Operations T minus countdown process is underway, with formal meetings at T-15 and T-13. This is significantly ahead of Trial Running, which started at T-8. These are underpinned by Trial Operations T Minus reviews in the respective stakeholder organisations. A Tracker and question set has been developed with KPIs and a RAG status pre and post mitigation of issues.</p> <p>The Project Representative is accurate to state that the Stations are largely achieving their Deterministic target dates with Whitechapel</p>
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Appendix – CRL Response to Period 4 PRep Report

	<p>Operations, costs continue to increase. Control of these costs is the subject of recently completed cost reduction workshops which are considering [REDACTED] and the identification of non-critical scope that can be deferred until after Passenger Service has started. We are concerned that the scope to complete at Canary Wharf Station continues to 'evolve' as CRL tries to bring the station up to full compliance with LU/RfLI standards. Rapid conclusion of these issues is necessary to ensure that the re-scheduled deterministic date of [REDACTED] for completion is achieved. A detailed review of Bond Street Station scope, schedule and costs, and options for earlier delivery, is being supported by the cost reduction workshops. Delivery delays are moving both Canary Wharf and Bond Street Stations closer to the critical path.</p> <p>While CRL and RfLI engage in workshops on scope and cost reduction and [REDACTED], it is unlikely the associated AFCDC for Programme completion will be finalised within Period 5. Commercial arrangements for [REDACTED] and [REDACTED] for scope beyond Stage 3 opening also need to be concluded to fully inform the AFCDC. Outcomes from the cost reduction workshops will be reported next period. However, we believe it is improbable that CRL will outturn under the £825m funding threshold. Following this reporting period cut-off, CRL has held its AFCDC to £15,939m1 for the third consecutive period, despite emerging cost</p>	<p>station being the latest station in the handover sequence to accomplish handover on 23 August 2021.</p> <p>With that said, CRL acknowledges the Project Representative's concern in relation to Canary Wharf station. However, a clear path to delivery has been identified at Canary Wharf station to be delivered by [REDACTED] in advance of the target commencement date for Trial Operations. On the contrary, Bond Street station is not close to the critical path and is currently on plan to achieve SC2 milestone on [REDACTED]. The latest date is driven by access restraints from Trial Running and other Programme priorities.</p> <p>The revised DCS cost baseline will be submitted to ELDG in September 2021. There are still several moving parts which will impact the AFCDC for Programme completion including the realisation of key schedule milestones. It is important to note that the AFCDC has not been 'held', it does however remain stable. Several cost pressures particularly on the Routeway were incorporated into the AFCDC in Period 4. The vast majority of this was offset by the release or retirement of risk. The delta was taken from the CEO reserve as a reflection of confidence in our ability to rebuild this based on realisation of further cost reduction opportunities across the Programme. CRL will</p>
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	<p>Our concerns are summarised as follows:</p> <ul style="list-style-type: none"> • The Elizabeth Line completion plan has yet to be finalised in DCS v1.2 and risk assessment is still necessary to provide certainty to key milestone dates and final costs; • Milestones dates in interim schedule DCS v1.1 J6 are under threat, and significant challenges in systems testing, stations and assurance will prevent the start of full Trial Operations on ■ November 2021; • Canary Wharf and Bond Street Stations are close to being back on the critical path and Abbey Wood Station requires completion by NR, putting at risk the start of Trial Operations and Passenger Service; 	<p>restarted its T-12 process and has successfully passed all T-minus reviews to date. The impact of these risks has been to affect the P50 dates for Trial Operations and Revenue Service</p> <p>In response to the Project Representatives summary concerns, CRL responds as follows:</p> <p>As previously stated, the DCS1.2 schedule has been confirmed as the Programme baseline and Period 5 reporting will be against DCS1.2 schedule. It is the intention to baseline the cost and risk position at the end of the Period 5 reporting cycle. DCS1.2 includes all key milestones to Stage 5C at ■ and as such represents the end to end plan for the Crossrail Programme. Any residual works beyond December 2023 will be delivered by others.</p> <p>DCS1.2 schedule has been approved by a consensus of no objection at ELDG. This means that the DCS1.1 J6 will no longer be reported against as the DCS1.2 which incorporates the change controlled J7 Staging Plan becomes effective as at Period 5 reporting.</p> <p>CRL agrees with the Project Representative in view of the criticality of Canary Wharf station. However, a clear path to delivery has been devised to be achieved by ■, ahead of the commencement of Trial Operations. Contrary to the Project Representative’s comment regarding Bond Street station – it is not</p>
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<p>Health & Safety</p>	<p>RfLI reported one significant incident with a voltage transformer in Period 4; this is under investigation. The overall indicators remain within those set by the Programme. CRL continues to focus on the communication of change and implementation of new procedures for safe access, resulting from updates to RfLI Green Book. Covid-19 cases increased significantly in Period 4, and these are mainly linked to transmission from outside the Programme. Covid-19 continues to be a threat to the Programme.</p>	<p>CRL notes the Project Representative's comments regarding Health and Safety performance in Period 4 as accurate. In order to contain the potential threat COVID-19 may pose to the Programme, CRL has implemented resilience planning alongside contingency working initiatives which the Project Representative notes as encouraging.</p>
<p>Programme Overview:</p> <p>Schedule</p>	<p>DCS v1.1 J6 was adopted in Period 3 for the monitoring of performance towards Trial Operations and Passenger Service. However, several challenges have since emerged that are putting pressure on this schedule. For example, the rise in Covid-19 cases has impacted resource availability and resulted in some re-scheduling of works. Preparatory works ahead of TVS mode changes require access before the [REDACTED] Blockade that has not been allowed for in DCS v1.1 J6. The unplanned rescheduling of Bismarck Tests also requires further access time. Collectively, these issues are having an impact on Trial Running, and in particular on System Testing with the Train (STT), with the majority of the shifts lost to accommodate other project works.</p>	<p>DCS1.2 schedule has been approved, therefore The DCS1.1 J6 adopted in Period 3 will no longer be reported against. The revised DCS1.2 which incorporates the change controlled J7 Staging Plan becomes effective as at Period 5 reporting. This is in addition to a new set of milestones against which performance will be measured.</p>

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	<p>It is increasingly apparent that the DCS v1.1 J6 contingency is likely to be used to accommodate competing outstanding works into an already tight schedule, ahead of the start of Trial Operations.</p> <p>The critical path to the deterministic date for the start of Stage 3 Passenger Service on ■ February 2022 is through the implementation of signalling software ELR110. This is planned to be commissioned at ■■■■■■■■■■, with delivery closely linked to signalling works on the GWML being carried out by NR at the same time. These works require close attention from both CRL and NR, to ensure that they are properly co-ordinated, and to ensure that there is no impact upon the start of Stage 3 Passenger Service.</p> <p>ELDG’s approval of the delivery strategy for signalling software ELR200 and ELR21X in 2022 allows CRL to finalise access planning for ■■■■■■■■■■, for incorporation into DCS v1.2. This will allow CRL to develop the Stage 5 delivery element to the same level of detail as the rest of the schedule, including identified access windows, a full suite of milestones and P50 and P80 schedule forecast dates. It is expected that this will inform the updated AFCDC position for Programme completion.</p>	<p>As mentioned above, the DCS1.1 J6 is no longer the basis of Programme reporting. The newly implemented DCS1.2 will serve as the schedule baseline effective from Period 5 reporting.</p> <p>CRL agrees with the Project Representative’s overall statement, however, it should be noted that the Deterministic date for the start of Stage 3 Revenue Service, ■ February 2022, is driven by the achievement of Deterministic dates. The risk assessed P50 date is ■ May 2022 for the start of Stage 3 Revenue Service.</p> <p>CRL notes and agrees with the Project Representative’s comments in the period in reference to post- Stage 3 configurations and delivery strategies.</p>
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<p>Commercial and Risk</p>	<p>In Period 4, CRL reported a draft AFCDC of [REDACTED]; an increase of [REDACTED] from Period 3. This increase was attributed to an additional [REDACTED] AFC and Risk and [REDACTED] offsets. At the Period 4 EPPR, CRL reported⁵ an updated draft AFCDC of [REDACTED]. The increase of [REDACTED] was attributed to an additional [REDACTED] AFC and Risk, and [REDACTED] offsets, which includes [REDACTED] AFC reduction agreed within the cost reduction workshops. These variances are most likely due to cost reporting for the period progressively evolving as a result of CRL's endeavour to contain costs within its funding limit. The final Period 4 AFCDC is subject to CRL's executive review and update for ELDG endorsement.</p> <p>Cost reduction workshops are reviewing the scope to completion to achieve a safe reliable 24 TPH railway to Stage 5C, while minimising expenditure in order to remain as close as possible to the £825m funding level. The workshops include a review of the cost reduction/opportunity on the costs-to-go for Stations, Routeway, Operations and Indirect Resources. At the time of writing these workshops have only just been completed, and cost forecasting remains subject to review and change, in order to deliver a final position for Period 4. However, initial workshop output indicates a draft range between [REDACTED] to [REDACTED] of potential opportunities; these remain strategic and subject to validation by CRL. This range of proposed cost reduction is presently not fully underpinned and is unlikely to fully recover the</p>	<p>CRL concurs with the Project Representative's comments regarding the AFCDC. The final Period 4 AFCDC presented to ELDG was £15,939m.</p> <p>Following further review and a Monte Carlo analysis, the P50 outturn for the opportunities was [REDACTED]. Of this [REDACTED] was included in the Period 4 AFCDC as a consequence of the project risk reviews and immediate Anticipated Forecast Cost reductions identified in Operations. Whilst commitments and actions continue to be worked through, it is expected that CRL will refine potential cost estimates and start to further realise cost reductions within the AFCDC.</p>
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	<p>excess of cost forecast above current funding. The ongoing cost and scope reduction workshops point towards a future priority focus on cost containment.</p> <p>The widening gap between funding and limited opportunity to fully offset costs, together with increasing cost pressures, reaffirms our opinion that it is improbable that CRL will outturn under the already agreed £825m funding threshold. The cost reduction workshops will result in commitments and actions to contain costs within CRL’s previously requested upper funding limit, and offer improved certainty to maintaining within the funding limits; however, the speed with which the actions are implemented through the supply chain will be vital.</p> <p>We are currently reviewing the seven Supplemental Agreements completed and executed since March 2021. However, we have deferred our analysis until finalisation of the outcomes of the cost reduction workshops, as there may be consequential alignment revisions and amendments. A further seven Supplemental Agreements are in development that principally focus on various final accounts or ongoing maintenance provisions. Similarly, these Agreements may be subject to further iterations to take account of the workshop conclusions.</p>	<p>A series of principles and commitments were presented to the Commissioner in Period 5. These are all underpinned by a series of actions which are being tracked weekly to ensure that key dates are met to fully realise the opportunities identified.</p> <p>CRL agrees with the Project Representative’s assessment of the seven Supplementary Agreements executed since March 2021 and the further seven Supplementary Agreements in development.</p>
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Organisation	<p>The cost reduction workshops include a focus on the Indirect resources required to complete the remainder of the Programme and the assumptions that underpin DCS v1.2. The outcomes from the workshops will set CRL’s strategy for management restructure and for defining a reduced organisation to support RfLI in the opening of the end-to-end railway.</p> <p>In the meantime, a number of key resources have started to depart the Programme from early July through to the end of August 2021. The recent departure of the Head of Engineering from the RfLI team presents an additional risk to achieving Trial Operations.</p> <p>CRL will be completing an ISO9001 audit by Lloyds Registry on its CMS management systems in Period 5. A successful audit is anticipated, which will support CRL completing the remainder of the Programme.</p> <p>The rise in Covid-19 cases has impacted the Programme because of the need for staff self-isolation. CRL does not intend to change its strategy for managing Covid-19 in the near future and will maintain this beyond the next</p>	<p>CRL concurs with the Project Representative’s comments regarding the Cost to Go workshops and the role the outputs from the workshops play in implementing a cost strategy to complete the remainder of the Programme.</p> <p>The Programme has and continues to take action to mitigate any impact on the departure of key resources. The Head of RFLI Engineering was successfully backfilled before the previous Head of Engineering left the Programme allowing for a handover period.</p> <p>The Lloyd’s Register Audit was a success and CRL now have a renewed ISO 9001:2015 Certificate. Zero non-conformities were raised and a single ‘opportunity for improvement’ was noted regarding the communication of CRL Internal Audit findings to a wider audience. The audit took place over four days, completing on 12 August 2021. The next Lloyd’s Register surveillance is scheduled for July 2022.</p> <p>At the time of writing, CRL is managing and closely monitoring the spike in COVID-19 cases across the Programme through the Gold Response Team structure.</p>
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<p>Stage 3 Trial Running, Trial Operations and Passenger Service</p>	<p>government update on restrictions in mid-August 2021.</p> <p>Trial Running re-started with a 12 TPH service on 12 July 2021. Since the restart, a number of operational challenges have been experienced, and this sub-optimal performance is likely to continue until fixes can be implemented.</p> <p>The deployment of ELR100 software is scheduled in the ██████████ Blockade, and preliminary testing was undertaken at the end of Period 4. While this was seen to be a success, works were impacted due to Covid-19, which required additional possession time; consequently, planned mileage accumulation has been reduced.</p> <p>Train reliability performance in Period 4 has generally been poor. The compounding effects of successive faults are significantly affecting daily operations. Only 2 out of 7 days of 12 TPH running were achieved, with the remaining 5 days reduced to 8 TPH. CRL's challenge will be to manage the disruption during the remainder of the Trial Running period to allow as much meaningful testing as possible. STT is being impacted, and there is a risk that insufficient evidence will be produced to demonstrate that the railway meets the reliability criteria for entry into Trial Operations. A significant increase in</p>	<p>While CRL agrees with the Project Representative's comments regarding Trial Running – ongoing timetabled running services at 12TPH has produced daily detailed analysis to establish the railway performance and root cause of any issues. These issues will be addressed in anticipation of the ██████████ Blockade.</p> <p>Trial Running Plan J7 has rescheduled commissioning requirements, TVS testing requirements, STT and Trial Running services. This was signed off at PSSG on 25 August 2021.</p> <p>System Testing with a Train has largely been successful with the bulk of test being completed with positive results. Whilst Mileage accumulation has not been as encouraging as originally anticipated, there are few new issues arising. Operational approaches are being developed to manage train reliability issues whilst the ELR100 and ELR110, signalling software, deployment to resolve these issues is awaited. Current software, Y0.630, is resolving issues with ETCS which will in turn improve reliability. It is worth noting that critical System Integration Dynamic Testing performed between 3 December 2020 and 18 December 2020 has informed the</p>
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	<p>train reliability, as measured by MTIN, is also necessary for entry into Passenger Service.</p> <p>Given the difficulties with 12 TPH trials, the planned preparatory exercises and demonstration of a 24 TPH service in August 2021 have been delayed. Auto-Reverse functionality is required for 24 TPH operation, but the preparation of safety assurance acceptable to ITAP is proving difficult. As a consequence, schedule risk is building in the approach to Trial Operations.</p> <p>A substantial number of Operational Restrictions (68) are currently in place which have an impact on performance; ELR100 deployment is expected to reduce this to 13. In the meantime, RfLI works closely with CRL and MTREL to reduce the dependency of the Programme on Operational Restrictions.</p> <p>CRL and RfLI management teams now have visibility of access and maintenance performance through weekly dashboards. While improvements being delivered by the Access Improvement Initiative and Engineering Hours Improvement Plan are evident, they need to be effective to support the reduction in engineering hours for the start of Trial Operations. RfLI continues to review and refine the maintenance work bank, which is indicating that 34% of the asset is non-compliant, but with an improving trend. Performance will need to be monitored regularly to ensure that outstanding</p>	<p>software deployments to be installed prior to Trial Operations.</p> <p>As mentioned previously, the deployment of ELR100 signalling software will deliver significant improvements in performance, reducing the existing number of operational restrictions and improving reliability. A paper on Auto Reverse functionality to support Trial Running was reviewed at ITAP on 26 August 2021.</p> <p>CRL agrees with the Project Representative’s comment regarding operational restrictions in relation to ELR100 signalling software deployment.</p> <p>CRL concurs with the Project Representative’s comments regarding the status of maintenance works. CRL is aware of the close performance monitoring required so that the outstanding maintenance works do not become an obstacle to the commencement of the Trial Operations phase.</p>
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<p>Stations Commissioning and Handover</p>	<p>maintenance does not become a barrier to entry into Trial Operations.</p> <p>The Trial Operations Configuration State Description will set the criteria for entry into Trial Operations. It will define the system configuration and functionality (or, if not achievable, the required mitigation measures) that will be in place at the start of Trial Operations and identify the associated assurance evidence. Completion of this document has continued to slip and it is now not expected to achieve cross-organisational sign-off until towards the end of August 2021. Experience gained since the start of Trial Running is planned to be reviewed in “Day in the Life of” workshops, in order to de-risk entry into Trial Operations. These types of workshops have been used to good effect by CRL in the past.</p> <p>Stations transfer progress has been maintained, with Liverpool Street Station achieving BIU on the deterministic date of 3 July 2021. While Paddington Station did not meet the planned BIU date of 23 July 2021, it achieved the re-forecast BIU transfer on 6 August 2021. This delay was necessary to allow time to complete test assurance activities related to Acceptance Certificates (ACs). Whitechapel Station is forecast for handover on 23 August 2021.</p>	<p>The Trial Operations Configuration Staged Plan has been updated and agreed among all relevant parties and is currently undergoing final sign off.</p> <p>CRL concurs with the Project Representative’s overall assessment of Stations’ handovers to their respective Infrastructure Managers. Whitechapel station achieved handover on 23 August 2021 as Deterministically planned; this brings the number of Central Section Stations handed over to seven.</p>
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	<p>While SC3 ROGS and BIU has been achieved at 6 of the 10 Central Section Stations, each still has varying amounts of physical works, assurance documentation and Asset Data still to be completed. CRL has agreed with the IMs that works can be completed after BIU transfer, but before Trial Operations. Agreements include the later submission of assurance documentation and the meeting of reduced requirements for upload of Asset Data into RfLI's database system (known as Maximo). [REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED] This will drive additional cost pressures by increasing prolongation costs.</p> <p>Both Canary Wharf and Bond Street Stations have much physical work to complete but have experienced constrained access since ROGS transition in March 2021. The lack of underpinned and fully integrated schedules for completion at both stations, suggests further delays are possible. The start dates for the readiness countdowns to BIU have yet to be confirmed.</p>	<p>As mentioned above, the recent handover of Whitechapel station on 23 August 2021 brings the Stations handover count to seven. The Project Representative is right to point out the work activities that remain across the Stations, however, physical residual works post-handover are integrated into the T-minus countdown process to Trial Operations and contract completion. Each station has an agreed plan to meet respective Trial Operations requirements and [REDACTED] in the DCS1.2 schedule.</p> <p>The Project Representative is correct to point out the physical works remaining at Bond Street and Canary Wharf stations compounded by access challenges as a result of the transition to a ROGS environment.</p> <p>There is now an agreed integrated schedule for both Canary Wharf and Bond Street stations to support Trial Operations. Canary Wharf station has successfully commenced its entry into the T-minus process and are at T-10. Bond Street successfully moved through T-8 in week commencing 23 August 2021. Bringing into Use at Canary Wharf station has been confirmed as well as any testing to achieve SC2 milestone at Bond Street station.</p>
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	<p>Canary Wharf Station continues to generate more challenges for resolution before the start of Trial Operations. Progress towards the SC3 ROGS milestone has been hampered by continued discoveries of [REDACTED] and non-compliant material/installation, and additional scope items have been identified that must be completed for SC3 ROGS. Issues have been found with fire systems, and concern remains that further works requiring long-lead items may be necessary, adding to the schedule pressure. An accelerated assurance process bespoke to Canary Wharf Station has not yet been agreed or implemented. CRL’s mitigation is to mobilise resources from other parts of the Programme to support the preparation of assurance documentation. CRL’s latest schedule date for BIU has slipped from [REDACTED] to [REDACTED], with approval of the ACs driving the forecast; a revised date of [REDACTED] has been presented to EPPR. We are concerned that this date will slip further, and that Canary Wharf Station delivery is moving towards the critical path for entry into Trial Operations.</p> <p>Bond Street Station is lagging well behind the other stations and still has mechanical and electrical works to complete. A finalised delivery plan, assurance strategy, and integration scheme to complete the station to SC2 and BIU is required. CRL continues to maintain that Bond Street Station will achieve SC2 on the deterministic date of [REDACTED].</p>	<p>CRL acknowledges the Project Representative’s concerns regarding Canary Wharf station. With that said, an integrated schedule has been devised and all relevant stakeholders are aligned with the goals and focus needed to deliver handover at Canary Wharf station.</p> <p>An integrated programme is being finalised at Bond Street station from its SC2 milestone to Bringing into Use with a final configuration to be agreed by the Executive and RFL by 6 September 2021.</p>
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	<p>although the project teams are forecasting [REDACTED]. Achievement of SC2 is important for entry into Trial Operations. The [REDACTED] date for BIU is likely to slip and work to achieve BIU/SC3 in [REDACTED] is under detailed review by CRL.</p> <p>CRL has identified a change in approach in which Abbey Wood Station will be commissioned in one stage instead of two. The new target date will be [REDACTED], although not all functionality will be in place (e.g. it will include lifts but not escalators) and to meet this date requires co-ordination and support from NR.</p> <p>CRL is working to conclude the commercial close-out strategy across all the stations. We remain concerned that there continues to be a 'long tail' associated with completing all works after station handover. While CRL has a target to [REDACTED] this is proving to be difficult to enforce, and risks increasing prolongation costs. The series of workshops planned for early August 2021 is intended to close the issue of scope-to-go and identify potential scope for deferral. [REDACTED] [REDACTED] [REDACTED] [REDACTED]</p>	<p>At Abbey Wood station, the strategy agreed with all stakeholders is based on Network Rail's commitment to complete required works, with the new target date as stated by the Project Representative as [REDACTED].</p> <p>[REDACTED] [REDACTED] [REDACTED] [REDACTED]</p> <p>The Cost to Go workshops and subsequent updates to the delivery strategy will drive the commercial close out strategy. [REDACTED] [REDACTED] [REDACTED] [REDACTED]</p>
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<p>Assurance</p>	<p>Woolwich West Shaft was handed over to the IM at the end of July 2021; only the handover of Bond Street Station shaft remains, which is anticipated in August 2021.</p> <p>Outstanding station assurance activities include the delivery of ACs, As-Built Drawings, O&M Manuals, H&S Files and Asset Data. Several review iterations of Asset Data are proving necessary to meet agreed standards, requiring resources to stay longer on the Programme. Completion of the O&M Manuals that require As-Built Drawings and ACs is proving time-consuming and frustrating and may pose a threat to start of Trial Operations.</p> <p>With the June/July 2021 Blockade completed, delays are occurring in the processing of the documentary evidence to support the assurance process. This is due to both resource constraints and timely processing of information from CRL's supply chain into its management system. This will necessitate further follow-up by CRL.</p> <p>CRL continues to review the EOWs that must be cleared ahead of Trial Operations and Passenger Service. Many of these are linked to the closure of Dependencies and the completion of Safety Justifications, and to the CESAC required for the start of Trial Operations. The data suggests that the burn-down of Dependencies is slowing and this may threaten timely completion of the assurance process.</p>	<p>The Project Representative is accurate in its comments regarding the handover status of Shafts across the Programme.</p> <p>CRL agrees with the Project Representative comments in the period. These are reported on a weekly basis through T-minus reviews and at PSSG.</p> <p>CRL concurs with the Project Representative's comment regarding the delays that have occurred in processing assurance evidence. This has been subject to management escalation.</p> <p>The closure of EOWs is dependent on works being completed and subsequently, assurance evidence being made available. This is not a linear process but progress on achievement is reported through weekly management reviews. The status of EOWs and what is preventing their closure has been subject to management review as part of the DCS1.2 and Trial Running Staged Plan re-baseline.</p>
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<p>Future Stages</p>	<p>Services on the GWML will be altered in the [REDACTED] timetable changes to facilitate the implementation of Stage 5B. These are referred to as Stage 5A+ and Stage 5A++.</p> <p>The opening of Stage 5B depends upon reliable performance of Stage 3 operations, the implementation of software configuration ELR200, and the completion of power upgrade work at Plumstead Depot. Software deployment is likely to require a window over the [REDACTED] [REDACTED] followed by ELR21X in [REDACTED] [REDACTED] risk assessment may indicate that additional 15 weekend possessions on the Central Section after [REDACTED] are necessary for bug fixes. CRL and RfLI will target Stage 5B opening in [REDACTED] and this is expected to be reflected in DCS v1.2 as a deterministic date.</p> <p>Software configuration ELR300 will be required to facilitate the end-to-end operation of Stage 5C services.</p> <p>MTREL will distribute the Stage 5B timetable to stakeholders for discussion. This will be followed by a timetable bid in early [REDACTED]. However, should CRL achieve Stage 3 opening</p>	<p>It is important to note that these services on the GWML are referred to as 'Stage 5A which is 'enhanced peak' and Stage 5A+ respectively.</p> <p>The opening of Stage 5B is dependent on the reliable performance of Stage 3 operations and the subsequent implementation of ELR200 and ELR 21X signalling software configuration.</p> <p>The content of ELR300 has not yet been confirmed, although the required functionality for end to end operations is intended for delivery in ELR200 and ELR210 for Stage 5B. ELR300 will be required for compatibility at the fringe with Network Rail's Stage 5C ETCS roll out on the GWML.</p> <p>Stage 5B can be implemented at any point after [REDACTED] Stage 3 reliability is proven and ELR200 and ELR210 is delivered. MTREL will</p>
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	in May 2022 (the P50 date), there may not be sufficient time to evidence a reliable service and this may pose a threat to the approval for the opening date for Stage 5B.	distribute the Stage 5B timetable to stakeholders for discussion.
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