



Crossrail Project Representative

Crossrail Joint Sponsor Team

Sponsor Summary

Project Status Report 138

Period 2 FY2020-21

3 May 2020 – 30 May 2020

Document No. B2387600/138/1.5

25 June 2020



Official ~ Sensitive Commercial

Sponsor Summary PSR 138

Project no: B2387600
 Document title: Sponsor Summary for PSR 138
 Document No.: B2387600/138/1.5
 Date: 25 June 2020
 Client name: Crossrail Joint Sponsor Team
 Client no: RM 3730
 Author: [REDACTED]
 File name: PSR 138 Period 2 FY 2020-21 Sponsor Summary - v1.5

Jacobs U.K. Limited
 2nd Floor Cottons Centre
 Cottons Lane
 London SE1 2QG
 England
 Phone: +44 (0)203 980 2000
www.jacobs.com

© Copyright 2015 Jacobs U.K. Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Disclaimer: This report has been prepared by Jacobs UK Ltd (Jacobs) pursuant to its contract (the Contract) entitled "Crossrail Project Representative reference number RM 3730" and dated 28 April 2015 with the Department for Transport (DfT) and Transport for London (TfL), DfT and TfL being the Clients. This report is prepared on behalf of, and for the exclusive use of the Clients and is subject to, and issued in accordance with, the provisions of the Contract. Jacobs neither has nor accepts any liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Note: This report relies on the information set out in CRL's Period 2 reports augmented by more current information received by PRep during the course of our routine discussions with CRL since the Period close on 30 May 2020. Note that information emerging after the close of Period 2 is subject to formal confirmation by CRL in its Period 2 reports. This report is supplemented by our weekly reports to JST and regular meetings with JST staff.

Document history and status

Revision	Date	Description	By	Review	Approved
1	18 June 2020	PSR 138 Period 2 FY 2020-21 Sponsor Summary v1.2 ~ Draft	[REDACTED]	[REDACTED]	[REDACTED]
2	18 June 2020	PSR 138 Period 2 FY 2020-21 Sponsor Summary v1.3 ~ Draft	[REDACTED]	[REDACTED]	[REDACTED]
3	25 June 2020	PSR 138 Period 2 FY 2020-21 Sponsor Summary v1.5 ~ Final	[REDACTED]	[REDACTED]	[REDACTED]

1 Sponsor Summary

1.1 Health and Safety

In Period 2, there was 1 Lost Time Case (LTC) and no RIDDOR incidents. The LTC was related to a back strain in lifting a bucket of grout. Overall, the safety KPIs reported in Period 2 are within the benchmarked KPIs and all reflect the reduced level of activity on sites across the programme.

A HPNM level 2 was raised on 4 June; this relates to failure of the system to ensure that the DTSRP can be completely confident that all safety documentation arrangements are in place before start of Dynamic Testing. The incident is subject to a SIER investigation and may be downgraded to Level 3 depending on the findings.

H&S KPI	Period 10	Period 11	Period 12	Period 13	Period 1	Period 2
HSPI	2.59	2.76	2.78	2.66	2.72	2.83*
RIDDOR AFR	0.09	0.07	0.1	0.09	0.08	0.08
HPNM	0.37	0.32	0.32	0.27	0.26	0.24
LTC	0.17	0.14	0.17	0.15	0.14	0.15

Note: * Denotes HSPI based on reduced man hours worked¹ due to COVID-19.

Figure 1 - 1 ~ Health and Safety KPIs in Period

In addition, an extraordinary SHELТ meeting was held in mid-June to present findings from the working group on leadership in safety.

1.2 Programme Overview

Recovery Plan

The Programme has remained in a Safe Stop since 24 March 2020, as a result of the Covid-19 pandemic. Despite the uncertainty and restrictions of the Covid-19 lockdown and ongoing difficulties due to the furlough scheme, resources mobilised on site supporting Niche Works now (at the time of writing) total over 1,900, representing almost 50% of the workforce pre-Safe Stop. Additionally, CRL has completed the exercise with its T2/3 specialist suppliers to secure the key skills and support to be readily available for a safe restart. From mid-June CRL will migrate from Niche Working and Safe Stop to a new way of working known as the 'Route to Finish' with related activities known as 'Construction Works to Go'. This will include the minimal resources required to attend site and the approach will enable the IDTs within the Routeway, Shafts and Portals to deliver and complete the works.

CRL has continued with its development of the Recovery Programme following presentation to the CRL May Board. It is evident that CRL faces a significant challenge in finalising a DCS that is robust and underpinned by viable assumptions. A key element is the Blockade and the planned duration and scope of works to complete. Attaining clarity on a number of products / workstreams and their interdependencies is key to forming a robust DCS, from which a credible cost to go can be established. At the time of writing it is becoming clear that CRL will require additional time to finalise its DCS to ensure underpinning assumptions are viable and also as it engages with its supply chain on the scope of works to complete. Scope that requires finalisation covers the Shafts and Portals, Stations and the 5% balance of the localised individual activities for the Routeway; this includes electrical and earthing bonding, which this has proved particularly slow to date.

¹ Period 2 HSPI 'Lite' noted from SHELТ meeting presentation, held on 11 June 2020.
PSR 138 Period 2 FY 2020-21 Sponsor Summary - v1.5

A Project Execution plan outlining the interaction of 9 pillars of the Recovery Programme is still under development and this will support the final DCS.

Cost

We have been unable to include a cost and risk analysis for this draft report, as CRL does not have the data available in time for its inclusion; this is still awaited. We expect [REDACTED] the AFCDC at £15,420m, as the DCS for the recovery plan is not fully developed and finalised. Stations are illustrative of this, having many integrated and complex elements, resulting in CRL not being able to evaluate station costs at present. While CRL has much work to do to complete a credible robust forecast of outturn cost which is recognised by the CRL Executive, we note this is a pragmatic approach to not prematurely publish cost data, until scope and schedule is finalised.

We expect the increase in ACWP in Period 2 to be a similar burn rate of Period 1; in the order of [REDACTED]. However, we expect CTG to increase significantly following the completion of the final pricing of a credible and underpinned Recovery Plan and the consideration of the cost pressures presented at the AFC reviews in Period 13 FY2019-20 and Period 1 FY2020-21.

Since Period 13, we have observed an increasing cost pressure of between [REDACTED] subject to Programme Overlay. These increases have not followed through into the CRL reported numbers and mitigating adjustment has not been evident in the programme overlay, specifically to negate impact. We are concerned that the AFCDC will increase further to recognise these pressures in addition to accounting for Covid-19 and the revised corresponding Recovery Strategy once finalised.

Construction and Assurance Progress

Up to the time of reporting, a definitive approved scope of works to complete (integration of EOWLs list and Niche Works) is still being finalised for both the construction windows and Construction Blockade. The station EOWLs have completed another round of review and triaging to reduce scope to the bare minimum necessary for Trial Running. The Stations Recovery plan is yet to be finalised, although we understand the final EOWLs list will incorporate minimum scope for stations for Trial Running and Trial Operations. A key success factor for the planned Construction Blockade will be completion of the required scope to close all outstanding hazards and dependencies in the Routeway Safety Justifications. In particular, those relating to Platform Screen Doors, Traction Power Supply, Signalling and Plumstead Sidings which are required for approval before Trial Running can commence.

Since starting Niche Works on 20 April 2020, initial indications show a steady completion of approximately 400 activities out of circa 2,200 approved activities in the period. The slow to steady pace has largely been due to ongoing difficulties in mobilising resources due to the furlough scheme; the IMs have also experienced similar difficulties with their resources. CRL has not identified a direct measure of productivity for the Niche Works, relying more on the number mobilised and completed work items as a measure of performance. Given this, we note that the Niche Works rate of activity completion, since starting is circa 23% up to the period. While this has increased recently, such rates may represent a concern for future productivity.

Intense resource and management activity continued for shafts and portals through the period to claim achievement of handover dates (namely North Woolwich Portal, Fischer Street and Limmo Shafts, just outside this reporting window). These handovers are either Virtual or by Stage Completion Familiarisation (SCF). Previous assets that completed the Virtual Handover process are now experiencing difficulties with inherent risks that were not foreseen. Consequently, this is causing confusion between the IM (RfLI) and the contractor on ownership of accountability asset access. CRL has since implemented a new initiative known as SCF, to achieve the in period

targeted handover dates. The process for this requires clarification and the purpose of this new initiative is to defer scope to complete into the T+8 Handover period. Works associated with this include assurance documentation, O&M manuals, asset data drops, red line drawings and H&S files. Given the volume of O&M documents and the continued poor productivity rates, it is likely prioritisation will need to be given to those critical for Trial Running, Trial Operations and Passenger Service. We remain concerned that RfLI has sufficient resources available to manage this workload as well as other conflicting priorities, such as the Routeway and Stations. Indeed, there are signs that RfLI is being hindered during restart of Dynamic Testing as a consequence of the Virtual Handover of shafts. If this is replicated through the SCF across the Routeway and Stations, this is a further risk to a timely transition to ROGs and achieving a Trial Running date.

Routeway SJs are now forecast for acceptance by RAB(C) as two to four weeks later than at Period 1. There has been little change in the forecast dates for ESJ and SJ submissions and acceptances for Stations. Delays to the Routeway have been caused by the need for dependencies identified during document review to be closed, such as an O&M Manual acceptance. Progress has also been affected by CRL prioritising Shaft and Portals completion in the last two periods, and the slow delivery by contractors of Testing & Commissioning evidence.

Dynamic Testing and Trial Running

Completion of all P_D+11 testing ahead of the Construction Blockade remains on track. Regression Testing was successfully carried out within this reporting period; the results provided a solid basis from which further tests were completed, including the pulling-forward of 'opportunity tests' to maximise the testing window. However, testing on the subsequent weekends, beyond the Period deadline, has not enjoyed the same levels of success. This is due to a range of issues both within, and outside, CRL control; some of which repeat those encountered during Dynamic Testing prior to Safe Stop. The remaining testing activities (and particularly those associated with NR interface possessions) are very tightly scheduled, and it is important that CRL provides for every possible outcome in its planning for the Dynamic Testing that remains.

In finalising its planning, it is important that CRL makes the right decision to optimise for access to the Routeway for Dynamic Testing, Construction and Reliability Running. Testing up to the Construction Blockade is necessary to allow the associated safety arguments to be finalised and documented, leading to the delivery of a fully safety assured software configuration for final consideration by the Safety Authorities, which is fit for start of Trial Running. P_D+11 is not the preferred configuration for Trial Running, but it would, nevertheless, allow the Programme to progress into ROGS; however, it would not allow progression into Trial Operations.

Following the Construction Blockade, TR2 testing is being prioritised over Construction and Reliability, in order to prove software performance as soon as possible, and to gather the necessary assurance evidence. This will lead to the delivery of a fully safety assured TR2 configuration for final consideration by the Safety Authorities, in time for Trial Running [REDACTED]. From this, significant improvements over P_D+11 will be delivered, which could be exploited during the Trial Running period (e.g. opening-up reliability growth opportunities) and will allow progression into Trial Operations. It would also avoid the need for a 'major change' to be processed and implemented under RfLI Rules, at a time of relative IM immaturity and capability.

It is important not to reduce the opportunity for Dynamic Testing, as this will directly impact TR2 delivery; instead, compromises will have to be considered in construction and Reliability Running. While construction needs can be resolved, we are concerned over the lack of priority being given to reliability growth. However, we understand CRL may be considering an opportunity to gain reliability growth during the Systems Integration and Dynamic Testing (SIDT) period [REDACTED]

Organisation

CRL is also in the process of re-planning the organisation and developing a transition plan, together with roles and responsibilities and a defined responsibility matrix plan. The transition plan will define the organisation and resources through to the fully operational railway, and will align to the overall programme plan. We consider this to be long overdue and should benefit the IDTs which have been suffering from lack of clarity in scope and process ownership, responsibilities and accountabilities. Additionally, an essential component of engagement is a high level of trust between CRL and the IMs in accepting each other's position and responding constructively within agreed timescales to assurance related documents. This has generally not been the case in the past and will be a welcome positive change. A key success factor to any new organisation plan will be the need for leaner decision making and a clear and fast escalation process. This is evident from the ongoing topic of Cyber Security that is still debated, with a decision yet to be concluded, since we raised the topic in our Period13 report. Similar examples include D25 noise issues and most recently, a telephony upgrade for the RCC. These illustrate issues that require faster decision making or escalation for decision to avoid protracted project discussions and enable operational certainty.

Maintaining training of newly recruited teams with limited operational experience, is a key programme requirement for the newly formed IM (RfL). This is one of the key underpinning assumptions for the DCS and the recent example of availability of sufficient competent train drivers highlights the impact on testing. A gap analysis in competency and training has been highlighted, which requires an action plan with regular unambiguous updates. A risk to transition to ROGs will be building momentum, maintaining competency and training and identifying solutions to the prevailing gaps.

1.3 Areas of Ongoing Concern

CRL was successful in the period, in completing the scheduled Bismarck testing which demonstrated the resilience of the installed 11kV infrastructure. Dynamic Testing restarted, albeit with a slight delay, that is recoverable via an earlier than planned increase in trains that are simultaneously under test. However, our concerns in this period are summarised as:

Recovery Plan and Schedule

CRL continues to conclude and fully define the scope of works to complete including all interdependencies, resources and supply chain support. Whilst we note CRL's effort in preparing the Construction Blockade plan, we are concerned that the Blockade has been planned in a relatively very short period and the list of works to complete continues to grow and is not finalised at the time of writing.

Clarification is required on how the balance of works to complete will be undertaken should the full scope of works not be completed within the Construction Blockade window and how the risk to TR2 is mitigated and earliest date for Trial Running is achieved.

Sponsors are advised that clarity is still required from CRL as to the basis of productivity rates, probability of success for planned interventions associated with the Recovery Plan and how lessons learned from Shafts and Portals handovers will be incorporated.

Key to the Recovery Plan success will be buy-in from the supply chain. Sponsors should continue to press for confirmation that all stakeholders have been consulted on the recovery plan, and that full support has been received for planned dates, required resources and scope of works and materials provision.

With no confirmed date available in the period, for start of Trial Running and Stage 3 opening, Sponsors are advised to address with CRL, the opportunities that are available to address a rebalance in the cash flow and mitigate revenue impact as a result of the ongoing delays.

Stage 4A requires greater CRL management focus, to that similar as Stages 2A, 2B and 5A. Stage 4A has enough complexity to merit its own dashboard, which includes: Rolling Stock software development, infrastructure delivery (Civils and Systems), timetable change and coordination with Stage 3.

Cost and Risk

The proposals and mitigations presented for the Recovery Plan are reminiscent of those provided for the EOP exercise. In the twelve months since EOP was presented, CTG remains at █████, with █████ having been spent. Whilst for this current exercise, we are encouraged that CRL is placing emphasis on establishing a robust and credible plan, ahead of cost forecasting, we remain concerned that the same situation that was experienced post EOP could be repeated and CTG could remain significant despite continuing high levels of spend.

Until scope is fully defined, and supply chain support is fully secured, we expect that CRL will not be in a reasonable position to carry out its cost forecasting, until late July or mid-August 2020. Presently, we have not had visibility of a CRL plan to monitor this important process and this is a concern to us.

Assurance Process

The SCF process is being initiated by CRL to meet handover dates. However, it is not clear how this process has been thoroughly mapped out to assess any inherent risk to all parties concerned in the process. It is evident to us that a key requirement is a need for sufficient skilled and competent resource engaged in the IM (RfL) teams to ensure the process is as efficient as possible. But it is not clear to us on the timing and how this is being addressed.

We also question the claimed achievement of handover milestones, purely based on an interim staged completion. Based on previous performance, we remain concerned at CRL's ability to achieve a definitive Handover, 8-weeks after SCF.

Notwithstanding the identified concerns on the assurance process, productivity rates and ongoing interventions for the O&M manuals, asset data drops, red line drawings and H&S files, a key concern is CRL's full comprehension of the planned scope to complete and its relation to close out hazards and safety justifications. Sponsors are advised to address with CRL the timing of Joint Hazard Reviews to be held between CRL and IM and resulting agreement on functionality. This is important, as it will feed into the CESAC submission.

Organisation

The organisation transition plan and timing of its implementation will be a key supporting factor to achieving success in the Recovery Plan. A change in organisational culture will also offer a significant benefit; an area that might be assessed is for operations to become the 'guiding mind' with delivery as the supporting function. Sponsors are advised to request CRL for its time line for the organisation transition plan, methodology for assessment, implementation and maturity; noting the urgency for a leaner structure, faster decision making and clearer escalation lines with defined roles and responsibilities.

We recognise that development of a robust Recovery Plan is key to success; however, we note that the CRL senior leadership team is not only engaged in the development of the Plan but also

the day to day delivery, management activities and senior leadership meetings. We are concerned on the depth of leadership and support under the senior leadership team.

As the Recovery Plan is finalised in parallel with completing an organisation transition plan, there is a risk that uncertainty is created with the resources. We are concerned that key resources with the project knowledge and experience depart the programme in the near term, putting further risk on programme completion.

A transition plan will need to recognise and balance the current limited resources who are continuously engaged in planning the works, day to day delivery and future planning. Resources have become overstretched in meeting recent demands for handover of Shafts and Portals, any organisation downsize at such a critical time may only increase further pressure and adversely affect mental health wellbeing, on key resources to completion.

Reliability Growth

With pressure seemingly building on scope completion within the Construction Blockade, we are concerned on how developing reliability growth will be maintained should construction activities be required post Blockade. Sponsors are advised to seek confirmation that reliability growth will not be sacrificed for the sake of unnecessary construction works, and that reliability growth will be maximised pre-Trial Running, whilst ensuring a fully safety assured software configuration.

Key Areas of Concern

The Crossrail Programme remains in a phase of re-planning to determine a Recovery Programme to overcome the impact of Covid-19 pandemic. Dynamic Testing has restarted, although a consistent and fixed date for Trial Running is still to be confirmed. Steady momentum has been developed through the Niche Works to support the assurance and handover process, although poor productivity has required new initiatives to prevent slippage of handover dates to the Shafts and Portals. We are yet to see improvements in progressing efficiencies in the assurance process.

We remain concerned that a robust schedule underpinned with a fully defined scope, achievable durations with productivity rates is still to be finalised and costs to go are to be confirmed.

Based on our Period 2 status report, we consider the following points require further action or explanation to Sponsors, by the CRL Leadership Team:

1. How completion of the Construction Blockade works is supported by realistic productivity rates and Supply Chain commitment?
2. How Staged Completion for Familiarisation will de-risk the programme and deliver benefits to an earliest date for an operational railway?
3. With CRL's short term focus on schedule and cost, how has Reliability Growth been protected to enable earliest opportunity for Trial Operations and revenue service?
4. To minimise risk to project completion, how will CRL ensure key resource with project experience and knowledge will not depart the programme until the appropriate time?