

Jacobs

Crossrail Project Representative

Crossrail Joint Sponsor Team

Sponsor Summary

Project Status Report 140

Period 4 FY2020-21

28 June 2020 – 25 July 2020

Document No. B2387600/140/1.8

21 August 2020



Official ~ Sensitive Commercial

Sponsor Summary PSR 140

Project no: B2387600
 Document title: Sponsor Summary for PSR 140
 Document No.: B2387600/140/1.8
 Date: 21 August 2020
 Client name: Crossrail Joint Sponsor Team
 Client no: RM 3730
 Author: XXXXXXXXXX
 File name: PSR 140 Period 4 FY 2020-21 Sponsor Summary - v1.8

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 "TTWO0033 Crossrail Project: Crossrail Joint Sponsor Project Representative" and dated 30 March 2020 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 4 reports augmented by more current information received by PRep during the course of our routine discussions with CRL since the Period close on 25 July 2020. Note that information emerging after the close of Period 4 is subject to formal confirmation by CRL in its Period 4 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 | 14 August 2020 | PSR 140 Period 4 FY 2020-21 Sponsor Summary – v1.4 - Draft | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| 2 | 19 August 2020 | PSR 140 Period 4 FY 2020-21 Sponsor Summary – v1.6 - Draft | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| 3 | 21 August 2020 | PSR 140 Period 4 FY 2020-21 Sponsor Summary - v1.8 - Final | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| | | | | | |
| | | | | | |

1 Sponsor Summary

1.1 Health and Safety

In Period 4, there was one Lost Time Case (LTC) and one RIDDOR incident. Overall, the safety KPIs reported are within those set by the Programme and reflect reduced site activity.

We are concerned on the increasing trend in incidents involving working from height across the Programme. Two of these incidents have required further investigation and increased safety engagement and briefings; consequently, frontline supervision will be a key topic for SHEL.T.

1.2 In Period Progress Overview

'Construction Works to Go' continued, with adherence to Public Health England guidance and safe working measures during the Covid-19 pandemic. The site workforce varies between circa 1,730 and 1,870 resources, supported by circa 1,200 resources working from home. Tier 2 and Tier 3 critical resources are being extended until after completion of the Construction Blockade in mid-September 2020.

Recovery Plan

CRL continued with development and finalisation of its DCS v1.1, with a focus on the maturity of underpinning data for the Routeway, Shafts and Portals, and in particular the Stations Recovery Plan. From the Stations reviews, it is evident that CRL will need to adopt a similar co-ordinated Plateau Team approach, as employed for Signalling and Rolling Stock, to address integration, testing and commissioning for the Station Operations Rooms and Romford Route Control Centre.

Prior to commencing the Construction Blockade, the review of scope, resources, supply chain support and access and welfare provisions, led to a co-ordinated, agreed pre-defined scope for managing through a controlled process in the Blockade. We note this process galvanised the teams, while also identifying gaps in CRL's processes and systems.

Cost

At the time of writing, we have not received the Period 4 Cost and Risk analysis. The Period 4 Board Report commercial information and AFCDC is expected in Week 3 of the 4-week period reporting cycle. Our analysis and observations are based on CRL's Period 3 cost reporting position, from CRL Project AFC review meetings, DCS reviews, papers presented to DCS reviews and Investment Committee; with subsequent clarification with CRL, as appropriate or necessary.

Delivery and Assurance

The first step in Staged Completion for Familiarisation (SCF) was enacted for Plumstead Shaft and Eleanor Street Shaft, both slightly after the planned dates. Stepney Green Shaft is the last Shaft for handover and has been tracking 17 August 2020 as the SCF date. However, there are signs this may slip to early September 2020, before starting the T-Plus process to complete formal Handover.

Handover productivity for O&M documents for Shafts and Portals has remained steady, although similar productivity for Stations is to be reviewed to align with the DCS. It is important that production rates for these Handover deliverables are improved upon, to ensure the assurance process will support [REDACTED] Trial Running [REDACTED] [REDACTED]

Dynamic Testing and Trial Running

Completion of Dynamic Testing continued positively, although issues outside CRL control were experienced in the first weekend of August 2020; the balance of tests will be carried out after the Construction Blockade, allowing completion of software assurance for P_D+11. In the meantime, software configuration TR2 is under test at Melton.

From the DCS and Programme reviews, the emerging [REDACTED] for the start of Trial Running is [REDACTED]. While this represents a change from the Period 3 [REDACTED] it is more consistent with subsequent reviews².

RfLI started the final phase to achieving Stage 2B, when FLU passenger services to Heathrow began operations on 30 July 2020. This is the first time that a Baseline 3 ETCS passenger service has been deployed in this country.

Organisation Transition

We understand all parties are engaged and striving to successfully implement the Organisational Transition Plan by [REDACTED], and transition to the Elizabeth Line Organisation by [REDACTED]. The first phase of the organisation transition will be within the CPO Directorate. An important associated plan is CRL's workforce plan, which is nearing completion.

While CRL has implemented the first phase of the responsibility definition matrix, subsequent phases, such as Trial Running, need to be developed, communicated and implemented.

CRL and RfLI resource constraints continue to impact the Programme, particularly for specialists with competence and authorisation for assurance sign-off in testing and verification. The DCS is being developed to accommodate these constraints and delivery adapted in areas such as Stations and Safety Assurance approvals.

1.3 Ongoing Concerns

CRL successfully completed a full AP handover transfer on two Shafts, as well as the 22kV Bismarck Tests with a 96% success rate. Blockade planning was completed within 10 weeks, which would normally take many months. While there are signs of performance improvement, our ongoing concerns on the delivery of the Elizabeth Line are set out below.

Construction Blockade, Recovery Plan and Schedule

Construction Blockade planning has indicated that greater alignment between Technical and Delivery teams is required, particularly regarding scope closeout with works in CRL's management systems. The process of finalising scope, highlighted issues associated with CRL's differing legacy systems and a need for a more proactive approach to managing historical data. Initial indicators are that the change control process implemented in the Construction Blockade is proving successful, and will be key to ensuring additional scope is managed effectively.

While a Construction Blockade resource roster has been established, we remain concerned that key resources may be unavailable for extended periods.

CRL recognises the importance of linking the Construction Blockade planned EOWs to schedule activities. Proactive daily management reviews and reporting progress of the planned EOWs and

¹ DCS v1.1 / AFCDC Programme Baseline Review by CRL Executive held on 10 August 2020.

² Schedule Integration Review Meeting 29 July 2020.
PSR 140 Period 4 FY 2020-21 Sponsor Summary - v1.8

Acceptance Certificates, during the Blockade, should ensure resolution and closure; however, initial indications are that this may not complete until late in the Blockade.

A schedule review at end of Period 4³ indicated several areas of the DCS to be unclear and underpinning information was at a low level of maturity. Key areas in Stations requiring further attention, include: [REDACTED] interfaces, integration of Station Operations Rooms with the Route Control Centre, Tunnel Ventilation System, LV Systems AC, Tier 1 performance for completion of EOWLs, and documentation quality supporting Technical and Safety Assurance. A follow-up review⁴ indicated areas for further assessment as: identification of EOWLs to critical AC works, operability for Trial Running and Trial Operations and maintainability and maturity of scope to support Passenger Service. A staggered Station delivery strategy is likely to minimise these constraints, as well as to address concurrency and critical resource issues.

Lessons learned from handover of Shafts and Portals, particularly for LV Acceptance Certificates (ACs), will be crucial to transferring this experience to the more complex Stations.

[REDACTED]

Cost and Risk

Period 3 AFCDC has not changed from the last two Periods (£15,734m), noting an unsubstantiated emerging spot estimate, subject to change, on a range of potential outcomes. We do not expect to see CRL declare a robust and credible cost forecast in Period 4.

CRL may not be in a reasonable position to validate its cost forecast until after completion of the Construction Blockade. This may further delay CRL in establishing its cost forecasting and ultimately, ability to close out funding requirements. In the meantime, we are concerned on how CRL is managing and controlling and monitoring its works and cost activities. We are assuming that CRL is currently monitoring to both the existing DCS v1.0 and the Blockade programme, but this is unclear to us.

At Period 3, Sponsor Delegated Authority and Funding were under pressure. On 30 July 2020, CRL was granted an additional [REDACTED] Delegated Authority to ensure maintaining authority protocols and governance.

Assurance Process

CRL is adapting the T+8 period for Shafts and Portals to a more flexible period (T+12). This is due to electrical single point of failure issues, and teams ability to process documents to achieve full Handover to the IM. CRL has been particularly challenged for all the Shafts, to complete electrical LV ACs as scheduled and maintain productivity. Changes to the handover process represent a continual learning and understanding of the overall complex quantum of work.

An Asset Data Working Group has been formed to give this area due attention. Production of Health & Safety Files is now a key issue that requires similar focussed attention as O&M Manual delivery recovery, and the same strong co-ordinated approach between CRL and RfLI.

While some safety assurance submissions have been made to RAB(C), not all have been approved. Importantly, an overall schedule is not visible for all the documents necessary to support submissions for Rolling Stock/Signalling integration, to allow full safety assurance. Routeway SJs and, more

³ Schedule Integration Meeting held on 29 July 2020.

⁴ DCS v1.1 / AFCDC Programme Baseline Review by CRL Executive held on 10 August 2020.
PSR 140 Period 4 FY 2020-21 Sponsor Summary - v1.8

importantly, clearance of their Dependencies, are now an issue. Until Dependencies are completed, work could be protracted and affect Handover.

Organisation

CRL's management systems require updating to reflect its latest management structure, practices and process. While CRL recognises this as an important activity, it will require additional resources that may otherwise be engaged in finalisation of the DCS or the Construction Blockade. CRL anticipates completing this important activity in [REDACTED], at the same time as the organisational transition. In the meantime, a process for control, management and prioritisation of scope of works at Stations is a key area to address.

An important underpinning element for successful Station completion works will be the Stations Close-Out Strategy, which CRL is starting to develop.

CRL served notice periods to a number of resources at 30 July 2020; so far, we have not seen this to be a demotivating factor in the delivery of the Construction Blockade.

Trial Running and Reliability Growth

Smoothing delivery of the Chapters forming the Routeway assurance, will be considered in finalising the DCS, particularly addressing resource concurrency and avoidance of simultaneous submission of multiple Chapters.

Trial Running [REDACTED], which will include a combination of Reliability Growth, software drops and resolution of physical works. Software fix turnaround times will be critical, requiring suppliers' focussed attention to ensure the [REDACTED] Trial Running period is achieved. CRL has focused on detailed planning for entry to Trial Running, but there is a need for a detailed plan to exit Trial Running and proceed through Trial Operations to Passenger Service. Particularly, as we have previously highlighted, a significant amount of EOWL physical works have been deferred to the Trial Running period. A [REDACTED] may prove insufficient, should more time be required for Reliability Growth, systems integration and construction works.

Achieving ROGS Rules for [REDACTED] will be a key milestone for Stage 4A, in particular the tunnel within the Central Section. The schedule is extremely tight, and all dependencies and activities together with Stage 4 and 5 will need to be considered in the final DCS. We recommend that Sponsors engage with Network Rail on the Traction Power Upgrade; Network Rail may not commission this until just before the Stage 4A Opening.

1.4 Key Issues for Sponsors

We remain concerned, particularly for the Stations Recovery Plan, that an assured end-to-end schedule, underpinned with a fully defined scope, achievable assumptions and supply chain commitment is still to be finalised, from which the costs-to-go can be confirmed.

Based on assessment and concerns in our Period 4 status report, we consider the following points require further action or explanation to Sponsors, by the CRL Leadership Team:

1. In the absence of an assured control schedule, how is CRL managing ongoing scope and cost activities?
2. How will CRL manage the essential minimum scope for Station openings?
3. What is CRL's detailed plan for all scope activities to complete Trial Running?