



Crossrail Project Representative

Crossrail Joint Sponsor Team

Sponsor Summary

Project Status Report 131

Period 8 FY2019-20

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Note: This report relies on the information set out in CRL's Period 8 reports augmented by more current information received by PRep during the course of our routine discussions with CRL since the Period close on 10 November 2019. Note that information emerging after the close of Period 8 is subject to formal confirmation by CRL in its Period 8 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	4 December 2019	PSR 131 Period 08 FY 2019-20 Sponsor Summary v4.0 ~ Draft	[REDACTED]		
2	11 December 2019	PSR 131 Period 08 FY 2019-20 Sponsor Summary v5.0 Final	[REDACTED]	[REDACTED]	[REDACTED]

Sponsor Summary

Health & Safety Performance

This period, CRL has challenged the HSPI scores, which are generated by the Tier 1 contractors under a self-assurance regime. The contractors have consistently scored themselves at around 2.59. However, following a review of the contractor performance by CRL, the score has reduced to an average of 1.59, which we expect will be reflected in next periods performance figures. This drop is extremely disappointing and represents complacency by the Tier 1 contractors in their own performance. CRL has challenged the Tier 1 contractors to take more of a self-ownership approach and this aligns with the increase in performance visibility.

During the period, there was 1 RIDDOR in which an operative slipped on some plastic sheeting and broke their foot. The Stations are now entering a period in which they appear complete and can give the impression they are a safe environment. This false sense of security can increase the risk of an accident and is more aligned to a facility management environment. CRL may want to consider reaching out to facility management or stations operations experts to consider how they manage safety going forward.

H&S KPI	Target	Aim	Period 6	Period 7	Period 8
HSPI	2.20	-	2.67	2.62	2.59
RIDDOR AFR	0.15	0.06	0.08	0.09	0.09
HPNM	-	-	0.35	0.34	0.32
LTI	0.23	0.17	0.16	0.16	0.17

Figure 1 - 1 ~ Health and Safety Performance COS

Programme Delivery

Predictable Performance

During the period, we have observed during a visit to Paddington Station that site teams are continuing to ‘plan to targets’. With a completion date of 20 December 2019 for Red Line Drawings and with 780 to go, the teams have planned 195 drawings per week (i.e. 780/4 = 195). In the first week, the team achieved 51. The plan for the following 3 weeks remained at 195, rather than increasing the performance to 243, to maintain the target date. The current performance rate will obviously result in the delivery date being missed.

This approach is undermining the milestone dates and overall delivery plan. While we can understand the need to keep pressure on the teams, these clearly unachievable targets do not assist CRL’s ability to plan the remainder of the Programme. An implication of this approach is that CRL is having to frequently change strategies for completion, in order to align with actual progress.

In response to this, CRL is reinvigorating its Vis-Board sessions to take a more forward-looking approach, rather than recording past performance. We support this approach, acknowledging that, while the unmitigated dates will become later, they will have more chance of being achieved.

The schedule compression, created as a result of planning to targets, is now resulting in milestone slippage, as projects are now unable to maintain their forecast dates. For example, Farringdon Station has maintained an SC3 date of 28 November 2019 for over 8 periods. During this period, the completion of PACs (phase 2.3) has moved to 28 November 2019 (the

same as the SC3 date). As a consequence, CRL has been unable to maintain this date, and has moved the SC3 date out to [REDACTED]

Stations	Phase 2 T&C	Period 11	Period 12	Period 13	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8
Paddington	Phase 2.1	13-Jun-19	01-Jul-19	02-Jul-19	05-Jul-19	19-Jul-19	01-Aug-19	30-Aug-19	23-Sep-19	08-Nov-19	20-Nov-19	20-Nov-19
	Phase 2.2	15-Apr-19	10-Jun-19	11-Jun-19	03-Jul-19	16-Jul-19	30-Jul-19	17-Sep-19	01-Oct-19	15-Nov-19	27-Nov-19	27-Nov-19
	Phase 2.3	12-Jun-19	01-Jul-19	09-Jul-19	24-Jul-19	13-Aug-19	29-Aug-19	01-Nov-19	07-Oct-19	20-Nov-19	03-Dec-19	09-Dec-19
Tottenham Court Road	Phase 2.1		20-Jun-19	17-May-19	07-Jun-19	07-Jun-19	30-Jul-19	16-Aug-19	NA	30-Sep-19	11-Oct-19	11-Oct-19
	Phase 2.2		11-Jul-19	07-Jun-19	12-Jul-19	12-Jul-19	09-Aug-19	25-Aug-19	NA	10-Oct-19	23-Oct-19	23-Oct-19
	Phase 2.3		22-Jul-19	14-Jun-19	15-Jul-19	15-Jul-19	16-Aug-19	02-Sep-19	NA	21-Oct-19	01-Nov-19	28-Nov-19
Farringdon	Phase 2.1	15-Mar-19	12-Apr-19	05-Apr-19	05-Apr-19	13-May-19	14-Jun-19	12-Apr-19	12-Apr-19	12-Apr-19	12-Apr-19	12-Apr-19
	Phase 2.2	12-Jun-19	05-Apr-19	26-Apr-19	26-Apr-19	03-Jun-19	14-Jun-19	18-Jul-19	08-Aug-19	08-Aug-19	08-Aug-19	08-Aug-19
	Phase 2.3	12-Jun-19	05-Apr-19	28-Jun-19	28-Jun-19	28-Jun-19	01-Jul-19	25-Jul-19	16-Oct-19	22-Nov-19	22-Nov-19	28-Nov-19
Liverpool Street	Phase 2.1		25-Jun-19	14-Jun-19	17-Jun-19	08-Jul-19	17-Jul-19	02-Aug-19	30-Aug-19	06-Sep-19	20-Sep-19	20-Sep-19
	Phase 2.2		07-Aug-19	24-Jun-19	15-Jul-19	23-Sep-19	23-Sep-19	23-Sep-19	30-Oct-19	13-Jan-20	18-Nov-19	10-Dec-19
	Phase 2.3		20-Aug-19	21-Aug-19	21-Aug-19	09-Oct-19	09-Oct-19	21-Oct-19	06-Nov-19	28-Feb-20	18-Dec-19	14-Jan-20
Whitechapel	Phase 2.1	28-May-19	15-Aug-19	19-Aug-19	17-Sep-19	23-Sep-19	30-Sep-19	04-Nov-19	04-Apr-20	11-Jun-20	19-May-20	31-Jan-20
	Phase 2.2	04-Jun-19	20-Sep-19	11-Oct-19	17-Oct-19	24-Oct-19	12-Nov-19	18-Nov-19	08-May-20	24-Jun-20	21-May-20	17-Feb-20
	Phase 2.3	11-Jun-19	04-Feb-20	18-Nov-19	18-Nov-19	13-Jan-20	17-Dec-19	14-Jan-20	08-May-20	24-Jun-20	21-May-20	06-Mar-20

Figure 1 - 2 ~ Compression of Intermediate Milestones prior to SC3

Risk to Stage 3 Opening

As we have previously highlighted, the current projections for the delivery of engineering assurance documentation have appeared unachievable, supporting our ongoing view of 'optimism bias'. We have been concerned that, once the required run-rates for document delivery are made visible, the projections will not support the DCS milestones.

We have completed an assessment of required run-rates, which shows the completion of SC3 documentation being delayed by circa 8 months, to [REDACTED]. The implication of this performance is that Stage 3 Opening could slip to [REDACTED]. Even if performance rates were increased 4-fold, current dates would not be maintained.

CRL may want to consider developing a back-up plan strategy that, if required, would enact a programme wide intervention, by going into ROGS across all stations at SC1, rather than SC3. This would break the link between ROGS and the documentation requirements for Stations. There are 3 pre-requisites to this approach:

1. Software configuration P_D+11 is proven on site as fit to support Trial Running;
2. There are sufficient trains available for the start of ROGS;
3. Routeway assurance is complete.

The Routeway assurance is a major challenge, and CRL may want to consider reallocating assurance resource from Stations to the Routeway. This would not impact Stage 3 Opening, as the link between assurance documentation for Stations would be broken, due to the Stations entering ROGS at SC1. TfL may want to consider a TOTEX approach and incentivise the Routeway assurance by using a proportion of the revenue of Crossrail to reduce the critical path.

Alternative Delivery Route

[REDACTED]

High Level Schedule Summary

The delay to the start of Trial Running will have an impact on the start of Trial Operations and Stage 3 Opening. The best achievable date for the start of Trial Operations is [REDACTED] and for Stage 3 Opening is [REDACTED]. The result of QSRA for both key milestones is shown in Figure 1 - 3.

Key Milestones	Best Dates	Most Likely	Conservative
Handover Routeway ROGS (Finish) - EOP	[REDACTED]	[REDACTED]	[REDACTED]
Trial Operations (Start) - EOP	[REDACTED]	[REDACTED]	[REDACTED]
Stage 3 Opening (Finish) - EOP	[REDACTED]	[REDACTED]	[REDACTED]

Figure 1 - 3 ~ ROGS / Trial Operations / Stage 3 Opening EOP

As well as the delay to the three key milestones, most of the Station SC3 milestones have encountered a significant amount of slippage¹. Some of these delays can be attributed to the replacement of the Kentec fire panels, new work to Canary Wharf Station and the CMS/UPS at Bond Street Station. The definition of SC3 has also been changed. Previously, SC3 only took account of the completion of Phase 2 testing, but Phase 3 testing is now included².

Overall, the DCS Cardinal Milestones continue to show significant slippage. Out of a total of 120 milestones, 37 were planned to be completed by the close of Period 8, of which only 28 have been achieved to date. However, out of nine milestone planned in Period 8 two have been achieved and two are achieved ahead of the planned.

There are 61 milestones out of 120 that are later than the [REDACTED]; 28 milestones are just within the [REDACTED]; and 31 milestones are showing positive float against the [REDACTED]³.

Schedule integrity has improved in Period 8 due to a reduction in the number of constrained milestones. An analysis of float degradation against the [REDACTED] shows that the amount of negative float to the Cardinal Milestones has increased (See Figure 1 - 4).

¹ See Appendix A: Cardinal Milestones Period 8 Report.
² See Section Stage 3 Opening for further details.
³ See Appendix A: DCS Cardinal Milestones Period 8 Report.

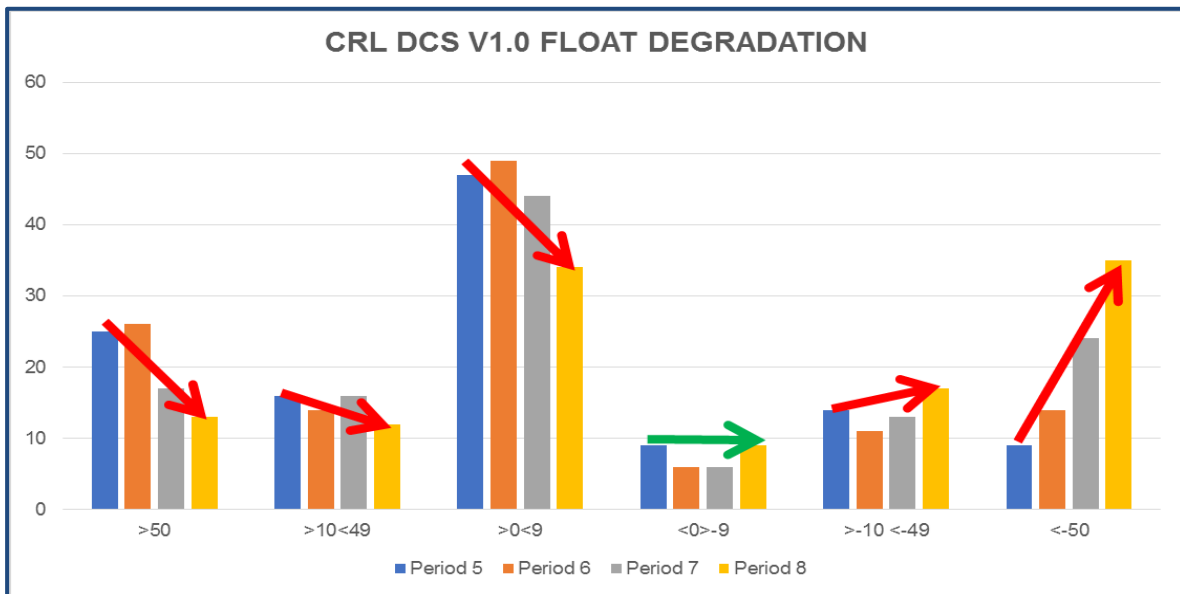


Figure 1 - 4 ~ CRL DCS Float Degradation Chart

In the absence of robust DCS performance metrics (i.e. Earned Value Management, quality assured processes and Risk Management), it is unlikely that the schedule will meet the 'best date', as described in CRL's Period 8 Board Pack. Some of the reasons that cause concern include:

1. Projects are forecasting to target rather than the actual productivity;
2. Production of key documents (e.g. O&M Manuals and Safety Justifications) require close attention to the technical writing, in order to minimise number of iterations;
3. Improvement to the work flow process, especially to the review and acceptance of the documents into the document control system eB.

CRL 3 Lines of Defence

1st Line of Defence

During Period 4, an exercise was undertaken by CRL to highlight the processes that are essential to deliver a successful programme. At the end of Period 8, of the 128 processes identified as programme-critical for review/update, 78 have been completed, leaving 50 outstanding and overdue. The consequence of these overdue processes is an increased risk that CRL's teams are working in an inconsistent manner.

2nd Line of Defence

Targeted Assurance Reviews

No reviews have been submitted for our assessment during this period.

Period Assurance Reviews

During Period 8, CRL internal assurance has highlighted the following issues:

Schedule performance – Recognition that SSP schedules have slipped a full period, compared to the Period 7 plan.

Factory oversight of software systems delivery – Due to the software being on the critical path, it is imperative that the speed at which issues are resolved between parties is maximised to reduce delays.

Prolongation and cost escalation risk – Issues such as the Kentec panels must be highlighted as soon as possible, to minimise the impact on the overall programme.

Assurance resourcing – The Shafts and Portals have highlighted the risk of contractor self-assurance, with several documents (previously assumed to be in place) are currently missing.

3rd Line of Defence

No audits have been provided for review this period; we still await 2 that were scheduled for delivery in October 2019.

Cost, Commercial & Risk

The P50 AFCDC has decreased by £15m in Period 8 to £15,313m. This is £350m above Sponsors Funding of £14,963m. This decrease is primarily due to the [REDACTED]

CRL has reported P80 and P95 AFCDC at Period 8 at £15,575m and £15,780m respectively. CRL has provided an elemental breakdown for its P50 and P80 QRA headlines; we presently await a copy of its P95 QRA breakdown. We have concern that the P80 provision for prolongation is identical to the P50 allowance ([REDACTED]) and consequently the P80 AFCDC may be regarded as nominally understated.

The AFCDC remains dependent on the achievement of key schedule dates, which do not appear to be fully underpinned by the current assurance document production rates. The adequacy of the cost overlay that CRL has applied centrally to accommodate this date slippage can only be confirmed once a robust trend analysis has been completed. CRL intends to carry out deep-dive reviews on all projects to review the respective AFC position, QRA and overlay provision, to assure the CRL DCS cost model and the adequacy of the AFCDC, to inform the CRL Board in January 2020. This, in our opinion, does not leave sufficient time to complete the exercise in hand and so another 'management judgement' will be required.

We have adjusted our trend forecast at Period 8 to consider AFCDC increases from Period 1 2019/2020. This trend projection is aligning with CRL P80 AFCDC of [REDACTED]. We also show the forecast CTG based on the current available data from CRL. This shows a consistent period spend rate to Stage 3 ROGS such that the AFCDC trend and CTG forecast do not become coincident, but continue on parallel paths, as illustrated in Figure 1 - 5.

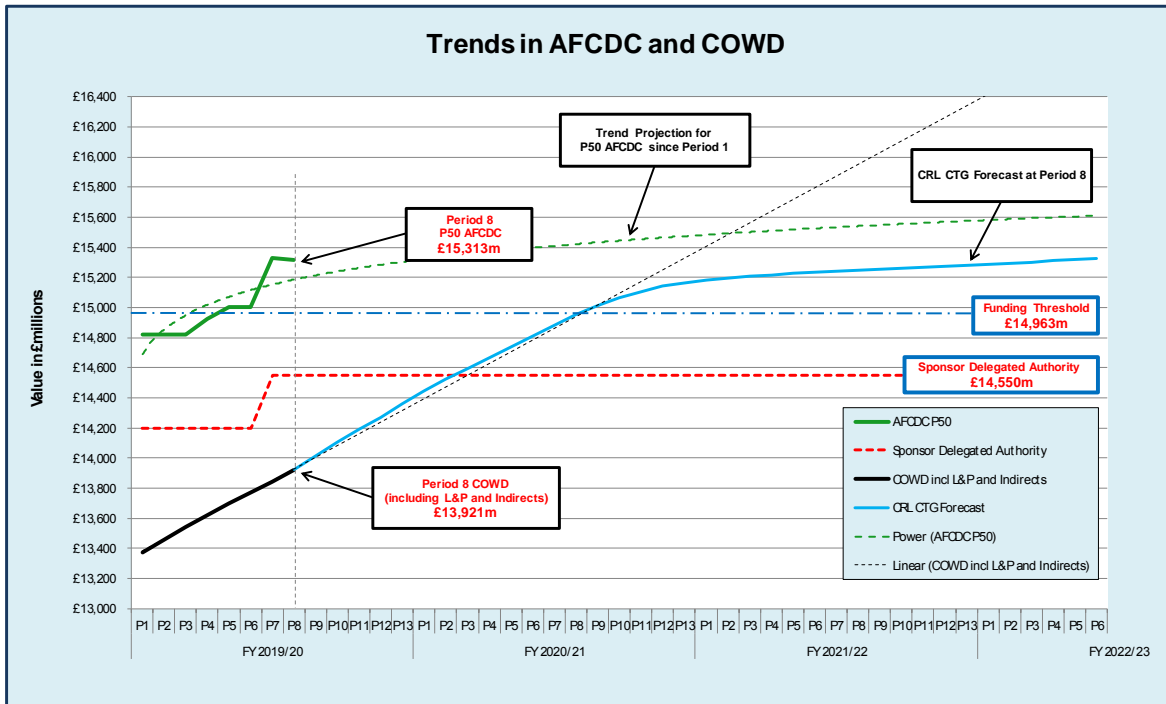


Figure 1 - 5 ~ AFDCD Headroom to Sponsor Delegated Authority

The CRL Period 8 CTG forecast indicates considerable spend at a consistent rate, averaging circa █████ per period until Stage 3 ROGS (12 periods). This rate of spend is amplified when compared to the DCS baseline in Period 2, illustrated in Figure 1 - 6. The CTG forecast at Period 8 indicates an intense spend profile to deliver the project into Trial Running. We will be seeking clarification from CRL to understand the reasons and justification for this forecast.



Figure 1 - 6 ~ CTG Forecasts

Although CRL is confident that the P50 and P80 levels are reflective of known risks, and that a contribution is set aside for unknown risks, CRL is carrying out a project-wide deep-dive on its overlay costs, QRA, and revised DCS cost model, in order to assure the adequacy of the AFCDC. We have requested attendance to review the progress and development of these deep-dive reviews and await CRL's itinerary.

The AFC reviews continue to demonstrate enhanced alignment and consistency in approach with standardised presentation, which enables a programme-wide review and overlay. The overlay itself is evolving, along with the introduction of a 'light touch' earned value mechanism that will provide some visibility on practical progress; we will continue to monitor this.

However, the project AFCs continue to increase in the Period, with the CRL Project Teams drawing-down programme risk allowances to offset the increases. The range of change is between zero and £7m, at an average of £1m across all projects; ██████████ is the biggest contributor to AFC increase at £7m. The target dates against which the project resource schedules and cost is built, in general are not achieved and slip, extending resourcing requirements.

The ██████████ initiative continues to progress slowly, predominantly due to the difficulty in identifying agreed dates for key common milestones. Presently, ██████████ budget has been allocated, of which ██████████ ██████████ ██████████ have been implemented, ██████████ has been identified as potential placeholders and ██████████ cancelled. At Period 8, only two ██████████ targets have been achieved and three have been missed.

CRL reports a risk exposure of ██████████ for Period 8, a decrease of ██████████ from Period 7. The reduction in financial contingency seems commensurate with an equally slight fall in the number of Risks. Based on our assessment of CRL's risk provisions, we assess the P50 exposure is more likely to be approximately ██████████. CRL is, therefore, likely to be holding additional cost in programme risk and management reserve.

While CRL has included mitigations against practically all the risks, we are still concerned that these interventions will not actually reduce the risk exposure. Many of these risks are becoming historically entrenched, with their probabilities now likely to be understated. In Period 5, CRL moved ██████████ from risk to CTG; since then, we have observed a number of additional risks have occurred and should be classified as CTG.

Risks continue to be short-term focused and are still in places aggregated, with significant overlap and duplication evident. Risk management continues to be a financial exercise in developing contingencies, project by project. Although CRL has appointed a specialist to ensure that the site teams are mitigating their risks, we are still awaiting the output from this intervention. While CRL is showing improvements in its contingency, this is a financial position which does not represent the underlying exposure. Although we believe that CRL should be able to reduce its held contingency, holding this sum as programme risk is a prudent position, given the points raised in this section of the report.

The maturity of CRL's risk process is being hampered by the large changes in the schedule dates, which requires a full re-run of the QSRA. This re-analysis is currently occurring each period. Figure 1 - 7 shows that the probability between pre-mitigation and post-mitigation does not change (i.e. mitigations are not effective); however, noting the instability in the schedule, it is understandable why CRL is reluctant to reduce these values and release risk provisions.

Category	Period 7	Period 8
CRL Risk Value	██████	██████
Risk Value Already Occurring	██████	██████
Number of Risks Raised / (Emerging)	594/(92)	577(80)
Number of Risks Closed	39	28
Mitigations Actions Raised	34	164
Mitigation Actions Implemented	0	6
Av. Probability 'Unmitigated' Risk	43%	43%
Av. Probability 'Mitigated' Risk	39%	39%

Figure 1 - 7 ~ Periodic Changes to Key Risk Indicators⁴

Stage 2B

The date for approval of the software that enables driver training to start has slipped by circa 2 weeks since our Period 7 report. Since the majority of the driver training programme will now occur after the December 2019 timetable change, when paths for training are more limited, we would expect FLUs to be incrementally introduced into service from February 2020. NR works in the Heathrow Tunnels were completed.

Approvals, Assurance and Agreements

RAB(C) and subsidiary Sub-Groups have continued to meet in the period, albeit infrequently because of a lack of formal submissions. There is little change in statements from our last period report, in that assurance evidence is being delivered at a slower pace than required. The key reasons for this are the slow rate of Testing & Commissioning and a lack of approved O&M Manuals.

The rate of delivery must increase significantly (to levels not achieved so far) if a re-baselined DCS is to be met.

Issues identified so far are:

- CRL is planning-to-targets rather than basing upon actual progress. This means that IM resources (and CRL management) are being aligned against milestones that were unlikely to be met. This disrupts optimum deployment of resources and blurs decision-making;
- There is a lack of synergy between the Tier 1 contractors, CRL Delivery, CEG and IMs. Parties are unaware of the needs of the other, availability of personnel etc.
- Resource constraints affecting the Tier 1 contractors (producing documentation) and CEG, act as a bottleneck. We suggest that the re-baselined DCS take this into account when planning multiple activities from constrained resources.

Dynamic Testing

New additional pressure is being directed at the schedule development process, driven by a desire to provide as much time as possible for reliability growth, through train mileage accumulation on the Central Section. While this might be viewed as an additional competing demand for access, restrictions associated with the operation of the Central Section as a

⁴ CRL Period 3 Final Board Report and CRL ARM Database.

construction railway under the CCRRB must also be addressed. As currently drafted, the CCRRB limits to 4 the number of trains under test at any time. While approaches to the ORR for authority to operate up to 8 test trains are being planned, the outlook of those involved in the original rule book discussions is pessimistic. It is also possible that C610 variable past performance in the practical application of the CCRRB to Dynamic Testing might become a factor. If adjustment of the CCRRB is not achievable, and the pressure prevails, an early transfer into ROGS might become the only remaining option; this would make works completion more difficult, risk further delay to Trial Running, and might require RfL to revise its IM readiness preparations.

It is important to note that, while P_D+11 has been developed to satisfy minimum criteria for entry into Trial Running, it still lacks full signalling functionality and features/fixes necessary to allow maximum reliability to be built. We believe that the prioritisation of reliability over delivery is premature at this stage, and there is a risk that, if extended multiple-train reliability running campaigns were introduced too soon, it would significantly compromise CRL's ability to complete, integrate, test and commission the infrastructure.

The planned timescales for Dynamic Testing with P_D+11 and the following assurance process now fall comfortably within the time available. It is possible that P_D+12 (containing the latest bug fixes and possibly all of the remaining functionality) will become the preferred configuration for Trial Running, should further schedule slippage occur elsewhere on the Crossrail Programme.

Availability of NR interface possessions continues to threaten CRL's ability to complete signalling interface testing onto the GE and GWMLs. Blockades for major infrastructure renewals at Maryland on the GEML are reducing possession availability, and CRL is investigating ways of completing testing in shorter periods, to overcome the situation. Ironically, the completion of the renewal works will eliminate any further short-notice possession cancellations made necessary because the existing infrastructure is life-expired. A total of 5 test cases remain to be completed at each interface, as pre-requisites to Trial Running.

Reliability Growth

The train achieved 588 MTIN in Period 8 and needs to be at circa 1,000 – 5,000 to start Trial Running, and 10,000 to start Stage 4. The Z-series of software configuration (being installed for Stages 5A and 2B) should see some improvement from its current low level. Since functionality is being prioritised, the development of signalling reliability within the software is being hindered.

Considering the above, there is a clear need for all parties (CRL teams, MTR-C, BT and Siemens) to be more co-ordinated in managing the functionality/reliability workstreams. Otherwise Trial Running will start at the minimum MTBSAF (generally accepted to be 90 minutes) and take notably longer than the current expected period of 4 months to complete.

Stage 5A Summary

The Stage 5A programme remains deliverable, with most DOO CCTV integration tests now completed. There are several issues to resolve at some stations, and all parties (CRL, RfL, NR & MTR-C) appear to be working collaboratively to address them. An RLU is currently in passenger service on the west as a programmed 'soft start'.

CRL has implemented its RLU contingency plan, which will operate the Stage 5A service from 15 December 2019. The priority will then be swapping-out the RLUs with FLUs at the earliest opportunity in the New Year. RfL is considering introducing FLUs onto the Paddington – Hayes

service⁵ initially and, once their reliability is considered adequate, they will be switched to the Reading service and their place taken by new FLUs; this is expected at some point from February/March 2020.

Stage 5B Opening

Stage 5B works relating to work package 3⁶ are beginning to experience increasing pressure upon schedule. Nevertheless, there remains a substantial period from the scheduled completion of the works to the start of Stage 5B to absorb any delay.

This will be crucial in building-up reliability for the fleet. The MTIN for Period 8 was 588⁷ and that figure will not significantly improve until the Z0.100 software configuration is installed on the trains and approved for Passenger Service. The date for this has slipped by circa 3 weeks⁸ since our Period 7 report.

The handover milestones for both WP2 (Acton, Ealing Broadway, West Ealing) and WP3 (Hayes & Harlington, Southall, West Drayton)⁹ are being maintained. However, pressure upon those dates is increasing at Southall and Hayes & Harlington. As we stated in our last report, this is due to programme resequencing at Hayes, and design interfaces at Southall. [REDACTED] and we believe the delivery schedule of these three stations will become problematic.

CRL has yet to receive NR's Value Engineering assessment [REDACTED]

Stage 4 & Stage 5 Summary

As we stated in our Period 6 report, reliability growth impacts upon the timetable bidding process. MTR-C will be bidding for the Stage 4 timetable 55 weeks before its start date. There is an industry standard of 15 weeks consultation, so at the point of 40 weeks' notice before the start date, NR will need evidence that the operation will be sufficiently robust.

CRL's Period 7 forecasts give most likely dates for Stage 3 Opening of [REDACTED] Stage 4 Opening in [REDACTED] and Stage 5B Opening in [REDACTED]. Therefore, to meet the Stage 4 Opening date, CRL will need to produce sufficient assurance to NR by [REDACTED] (start of Trial Operations) that it could operate a robust service. This will be demanding, given the reliability challenges described above. If evidence is not sufficient, Stage 4 Opening would move to the next timetable change, in [REDACTED]. This assumes that the required assurance can be provided by [REDACTED].

The details of exactly what that evidence will involve, is intended to be clarified as the reliability growth plan develops.

Key Areas of Concern in the Period

As reported previously, we held a productive session with CRL on the points raised in our previous reports. Tangible progress has since been made by CRL in the following areas: root cause of the optimism bias; IM's detailed integration plan; definition of the end-to-end programme; a culture of 'planning to targets'; limiting the increasing AFCDC through risk

⁵ The current FLUs, using Y0.256 configuration of software, will be withdrawn before 15 December 2019.

⁶ Hayes & Harlington, Southall, West Drayton Stations.

⁷ Set out in the RSD weekly service fleet performance_ 21-11-19.

⁸ Now forecast for 11 December 2019_ P9 wk 1 dashboard.

⁹ December 2020.

mitigation; and the alignment of the safety and technical assurance documentation production rates with the DCS. Further work is still required by CRL to fully close out the issues.

Based on this period's status report, we consider the following points require further action or explanation to Sponsors by the CRL Leadership Team:

1. What is CRL's assessment of the impact of re-profiling the delivery of the engineering assurance paperwork with the DCS? How are these rates underpinned and what levels of resource are required to ensure successful delivery of this key programme milestone (including float)?
2. While supporting CRL's [REDACTED] we believe there is substantial work required to establish the new approach. Could CRL provide details on the stages and timings of the transition, and confirm how this will be managed?