



Crossrail Project Representative

Crossrail Joint Sponsor Team

Sponsor Summary

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Note: This report relies on the information set out in CRL's Period 3 reports augmented by more current information received by PRep during the course of our routine discussions with CRL since the Period close on 22 June 2019. Note that information emerging after the close of Period 3 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	22 July 2019	PSR 126 Period 03 FY 2019-20 Sponsor Summary v1.1 Final	[REDACTED]	[REDACTED]	[REDACTED]

Sponsor Summary

Health & Safety Performance

Through our observations and discussions with the various CRL teams, we are observing some signs of 'programme fatigue'. This follows a culmination of a number of events including; i) missing the opening date and drop in morale, ii) large amount of change following the announcement, iii) the speed at which the DCS has been produced, while simultaneously attempting to maintain construction progress and noting some members of the team have been on the project now for over 10 years. The introduction of the approved DCS will provide much-needed focus to the programme, however, it also has the potential to increase the pressure on the teams to maintain dates. Strong leadership and close control will be required to ensure the right behaviours are exhibited.

Programme Delivery

Underpinning the DCS (Cost & Schedule)

The mobilisation period, originally planned for completion at the end of June 2019, was extended to the end of July. The original dates were remarked by PRep last period as being ambitious, noting the amount work necessary to underpin the DCS, while at the same time delivering the Programme. We note again that this process is taking longer than anticipated, with indications that the 'full' underpinning of the DCS will not now be complete until some point in August 2019. This extended period reflects the maturity of the DCS.

CRL must determine when to 'call time' on the mobilisation period and concentrate solely on the delivery of the Programme. A balance must be struck by CRL between 'completing every detail' and 'being sufficient' with respect to the work required to provide confidence that the output can be delivered. CRL has struggled to exit the mobilisation period due to: a) a lack of stability in the delivery programme, caused by the 5 'tightening areas'; and b) discovery of further critical issues that undermine delivery confidence (e.g. assurance documentation required for handover).

Assurance

CRL's 1st Line of Defence includes the line management organisational structure together with CRL's processes and procedures. Noting the limited time remaining on the project, it would be impractical for all the processes to be updated at this stage. We have assessed that there are approximately 19 processes that could be considered to be 'mission-critical' (e.g. commercial reporting and risk management) requiring them to be urgently updated to provide clarity and more importantly, consistency to all CRL teams. This lack of consistency was evident at the recent AFC reviews, in which several slightly different approaches were adopted by the project teams.

CRL acknowledges that the above issue requires resolution and has initiated a review of its processes, led by the relevant Senior Leadership Team member. CRL anticipates that the identification of the key processes will be complete by 19 July 2019 and is targeting the end of August 2019 for the processes to be updated.

As previously reported, CRL's 2nd Line of Defence, 'internal assurance', has initiated two targeted reviews centred on the DCS: i) overall schedule; ii) AF CDC. However, this approach raises two issues, which we have previously identified:

1. The assurance team has concentrated on inputs and process, rather than outputs.
2. The assurance process is being carried out in parallel with the production of the DCS, rather than on a finalised pack

We accept that the challenging timescales are driving this approach, however we advise Sponsors that the assurance process should be carried out on a complete and final version of the source documentation, and that elements of the output are assured to highlight key themes that are applicable to the full cost & schedule.

We have now received a copy of the targeted assurance reviews and our assessment of the two reports covering cost & schedule will be provided in our next period report.

Programme Execution

Through the attendance at numerous CRL meetings, visits to the stations and attendance at the new combined AFC/Schedule review, we have the following observations which have a potential impact both the forecast opening dates and cost forecast:

- The total number of IRN/PCC/PACs at the stations is changing. The numbers are minor but is still surprising at this stage of the programme. This changing definition or lack of confirmed scope makes the forward-looking projections in cost and schedule difficult to control, evident by the continued increases of the project AFCs.
- The implementation of the T-minus process has successfully highlighted the scope required for handover in the future, forcing teams to look ahead, rather than focusing on day-to-day activities. While the T-minus approach, has to some extent resolved a high level issue, at a lower level (stations) we have observed that project teams are focusing on activities that are imminent. While teams are working hard to complete their scopes of work, working so close to outputs does not allow them sufficient time to react to a change and deliver the promised outputs. In our opinion this is a part-contributor to the 'optimism bias' we have previously reported.
- The changes highlighted in the AFC reviews concentrated on the 'what' had changed, rather than 'why' things had changed. An example of this approach can be seen in one of the stations most recent trends for 'P13 increase in emerging costs for SoCC - People, Labour, Site Preliminaries based onto P13 PFA', totalling £2.793m. This describes to an extent what has changed, but does not define why it has changed this period. We have observed that the majority of CRL's performance measures are lagging indicators, rather than forward-looking, something CRL may want to consider.
- Predictable delivery of IRN/PCC/PACs continues to fall short of projected targets, without significant impact on project dates, and we are concerned teams might be planning to targets, rather than forecasts. A preliminary assessment of one of the key stations indicated that to maintain the Phase 2.1 date of 17 July 2019, 44 IRNs per period are required, however current run rate over the last 4 periods was only 25. A full analysis of all key contracts will be completed in the next period.
- CRL have identified the 6 critical Tier 2/3 suppliers and have now engaged them as a collective on a weekly basis. Staffing profiles for these resources have identified through to September, but this needs to be completed for the remainder of the project. CRL are also flagging to DfT and TfL, where these key resources are working on contracts outside of CRL and are requesting that they are given priority. CRL have not yet initiated programme level intervention to direct the resources to the critical locations, at the detriment to low priority sites. This intervention is in our view the right thing to do for the programme; however the delay impact on low priority sites has not been factored into the schedule.

- The CRL teams’ projections for IRNs are based on a linear run-rate. However, it is well understood that the last IRNs take a considerable amount of effort to complete, as they are usually the ‘hard’ ones. CRL’s performance culture is based on numbers and has focussed teams on delivering a number of IRN/PCC/PACs and so it is understandable that easier outputs have being prioritised first. An example of this challenge was exhibited previously at Farringdon and currently being observed at Tottenham Court Road, where the delivery of the last IRNs has stalled. The implications are that stations will not be ready for handover until later than currently planned.
- The programme is being delivered in a fast-paced environment requiring communication to and between the teams to be evermore clear and concise. The procedures require updating to provide consistency with the new methods of working (e.g. SC1/2/3, T-minus, etc.) to avoid confusion and misunderstanding.
- Looking ahead, in addition to the assurance documentation challenge, due to the inefficiency of completing work under ROGS, CRL may want to consider a ‘Snags campaign’ to handover the stations defect-free. This aspirational target may not be realised, but it should be set high to drive achievement as much as possible, noting that one station reviewed has over 3000 snags, and rising. CRL may also want to consider an alternative approach for completion.

Visualisation Management

As noted in previous reports, CRL still needs to move quickly from ‘process confirmation’ to ‘project improvement’. This was evident in the AFC review, where CRL stated what had not been completed, but did not fully describe why targets are not being achieved. This does not only apply to the AFC reviews, but also the IRN/PCC/PACs across the programme. Without understanding the root cause, it will be difficult for CRL to develop meaningful improvement plans, with the consequent risk that productivity will remain at current low levels.

High Level DCS Summary

The Period 3 has seen a further refinement of the DCS schedule, with mitigation plans included for the two constrained areas of BOS SC1 and Plumstead Sidings.

The QSRA has been completed on Period 2 schedule only, due to an initial delay on the lockdown of the schedule. It is anticipated the full QSRA will be applied to the Period 4 DCS, scheduled for lockdown on 19th July 2019. The application of the QSRA has resulted in the following:

Milestone	EOP (Approved)	DCS P2 QSRA
Entry Into ROGS [REDACTED]	Jan 2020	[REDACTED]
Stage 3 [REDACTED]	Aug 2020	[REDACTED]
Stage 3 [REDACTED]	Jan 2021	[REDACTED]
Stage 3 [REDACTED]	Mar 2021	[REDACTED]

We are surprised, noting the realisation of the risks identified in this period report and the [REDACTED] contain minimal float, that the ROGS date in particular, has not been impacted. Although it must be noted that several mitigation plans are still to be applied to the above date movements. The QSRA will be applied to the Period 4 DCS, together with Period 3 progress, at which point we will be able to run a full assessment of the DCS.

Cost & Commercial

The AFCDC at Period 3 remains at £14,819m and has been since Period 1. Completion of the fully-costed DCS was due at the end of July 2019 but is now expected to be at the end of August 2019.

We still regard the Period 3 AFCDC to be understated. This view is based on; uncertainties in respect of Tier 1 contractor alignment, consistent period cost burn rate, an immature QRA, programme slippage, poor predictability and period on period AFC incremental increases. Consequently, there is an increasing likelihood of further increases arising from DCS development, risk assessment and from the ongoing cost growth trends, which will continue to challenge existing financial authorities.

CRL for the second period has reported that the period total actual costs are identical to the period work performed, this is to allow for a full cost analysis of the DCS to be completed. This conflicts with our observations at AFC and funding drawdown reviews and from various other CRL meetings and available information. However, CRL is presently carrying out its bottom-up estimate based on its DCS to form the new cost baseline for the completion of Crossrail. As a result, CRL has retained its AFCDC at £14,819m pending the conclusion of its AFC reviews of the contractor DCS submissions and associated assessment of Programme Risk.

The new Project AFC Review format has been established for project team reporting from Period 3 onwards that provides closer alignment and consistency across the teams. However, each project team continues to supplement the review and prepare information in individual ways. The scrutiny applied to the cost and schedule impact was not up to the level of rigour we would have expected, noting the quantum of some of the changes presented for approval.

[REDACTED]

The period funding drawdown for Periods 1, 2 and now 3 are all significantly below CRL forecasts; the underfunding being £10m in Period 1, £26m in Period 2 and £18m in Period 3. The deferment of this planned funding (linked to stage payments) is due to signalling programme slippage and potential productivity issues. We regard these to be construction-related activities, which means the deferred funding is expected to occur prior to ROGS. Consequently, the effect of this underfunding is expected to cause the construction period burn rate to remain around the historical £100m per period spend rate.

In addition to the above comments, we highlight the following principal indicators of potential cost escalation:

- The burn rates for COWD and CTG, which also include the forecast outturn for Defined Costs, indicate a continuing growth trend;
- The lack of the DCS cost plan and risk assessment is contributing to cost uncertainty;
- CRL has reported that none of the Tier 1 Contractors have contractually 'bought-in' to the DCS schedule; hence they are not yet supporting the Cost and Risk elements that fundamentally address the re-baselining exercise of the DCS AFCDC. Close monitoring of schedule submissions and acceptance are critical to support the robust cost re-baseline;

- [REDACTED]

[REDACTED]

Risk

Through our assessment of CRL’s risk management database ‘ARM’ it is positive to see that although risks have increased (by volume) and these cover a greater diversity of areas and the risk mitigations have increased significantly from last Period to 283.

However, recognising it is a subjective view, in our view, only 56 of the 283 mitigations identified by CRL we consider to be tangible and have the potential to be successful if implemented, based on the lack of risk root causes, previously identified. The mitigations identified by CRL have the potential to reduce the risk by approximately £69.7m. This is supported by the minor differential (44/42%) between pre-mitigation and post-mitigation likelihood identified by CRL.

In addition, the mitigations do not seem to be addressing the primary problems in programme synergy, productivity, increased scope and poor quality. As such, risk is increasing in areas which are not being mitigated and, as the schedule compresses, cannot be mitigated due to the absence of either commercial incentive or flexibility.

We also have concerns regarding the numbers that are being used to underpin both the probability of the risk occurring, and the range of impact values. Varying the probability percentage or impact range can have significant impact on the out-turn risk provisions. While the current risk provision at face value appears excessive, noting the above comments, maintaining the programme QRA at [REDACTED] (as detailed in the board report) is currently a prudent position to take at this stage.

CRL have recognised the above issues require further development and now the QSRA has been baselined, the team can concentrate on improving the quality of the product.

Stage 2 Phase 2

CRL has now confirmed a start date for Stage 2 Phase 2 of [REDACTED], but internally is targeting [REDACTED]. These dates are more in accord with our comments from previous reports. This means that the Class 360 rolling stock will need to be retained, with its associated costs and poor performance, until [REDACTED].

The principal risks of train software development and safety authorisation remain unchanged. There are also issues with the GSM-R system that NR must resolve to avoid impact upon driver training. The overdue Integration tests (between the Rolling Stock and NR’s trackside equipment) are expected to start in mid-August 2019.

The internal CRL project team has a range of between the end of [REDACTED] for start of passenger service. The variability is based upon the uncertainty in software development, assurance process and driver training period. We would expect the Opening to be at the later end of that range.

¹ Baseline date was May 2018.
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Stage 3

Stations, Shafts and Portals (SSP)

Productivity levels for completion of the physical installations, and production of IRNs², PCCs and PAC³s remains lower than forecast. Installation, T&C, documentation submission and certification sign-off is still taking longer than envisaged as contractors continue to underperform against their plan. CRL's productivity, when trended forward, suggests that continued delays in achieving certification documentation sign-off will put the new Cardinal Milestones under increasing pressure.

Bond Street, Farringdon and Whitechapel Stations still account for most of the shortfall in IRN submission against their plan. Bond Street and Whitechapel have yet to record progress in PCC sign-off. All stations, except for Canary Wharf and Custom House, have made little progress with PACs.

We note, with concern, that the first of the T-minus reviews for Farringdon station (T-12 review) and two Portals (Victoria Dock and Pudding Mill Lane for a T-3 review) failed to achieve a pass. The process has already identified a number of significant issues that need to be resolved, prior to handover, it is positive that issues have been highlighted early, but challenging, noting the volume of work to be completed.

CRL and the IMs (LUL and RfL-I) have met⁴ to agree on the T-minus governance process for SC and HO of the SSP assets. There will be a series of follow-up planning workshops to identify the detailed requirements for each SSP, on a case by case basis. These meetings will aim to agree what CRL will provide, what the IMs will accept (as a minimum), to what level of detail and assurance, and by when. The outcome of the meeting has the potential to adversely affect the DCS and have cost implications. T-minus slippages (failed gate reviews), that lead to bunching of asset reviews, could also overload the already limited LU/RfL resources and further expose the magnitude of the documentation sign-off problem.

Permanent power for **Bond Street Station** WTH was forecast by the end of June 2019, but this now appears to be slipping to mid-August 2019. The provision of permanent power is becoming critical for C610, as it is required to bring the WTH ventilation fans into operation for tunnel ventilation and air-flow testing. Continued slow progress on the MEP fit-out and delays to the supply of permanent power have impacted on the energisation of the downstream LV power supplies and delivery of the associated IRNs and PCCs. Bond Street has yet to establish a strategy that will deliver SC1.

Routeway

Completion by C610 of downstream mechanical and electrical works continues to be impacted by the lack of availability of permanent power and UPS systems at Bond Street. Tunnel Pumped Drainage (TPD) system completion is being impacted by steelwork load checks at Connaught Station and by under-capacity pipework at Bond Street. Availability of header tanks at Stepney Green Shaft and Farringdon, Bond Street Whitechapel and Woolwich Stations continues to prevent the completion of C610 Fire Main testing. Close co-ordination with the SSP contractors is still required to facilitate technical support and site access for Phase 3 flow testing, and completion of testing has slipped to 8 September 2019.

² Installation Release Notes (Phase 2.1).

³ Pre-Commissioning Certificates Phase 2.2 and Partial Acceptance Certificates Phase 2.3.

⁴ CRL and the IMs met on 28 June 2019 to try to agree on the T-minus governance process.
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C660's radio priorities remain the completion of GSM-R radio and Fire Brigade radio (LFEP), in the SSPs and along the route. PA/VA IRN, PCC and PAC completion dates are not robust and CRL is investigating the potential for streamlining the access management process (e.g. the issue of permits, keys etc) to increase confidence in forecast completion dates. The use of GSM-R to support Trial Running and Trial Operations continues to be considered by CRL.

Risks with SCADA completion remain due to incomplete M&E installations, and unreliable IRN delivery dates, principally associated with Stations. Delivery of non-critical SCADA alongside critical SCADA where there might be efficiencies in doing so remains unresolved within CRL.

Dynamic Testing

Siemens has not responded fully to the various challenges set last period by CRL. Issues with insufficient specialist resources, late delivery of assurance evidence and the emergence through testing of issues in the signalling design, have not abated in the period. The ability of the Siemens design team based in Germany to support the clearance of issues discovered during dynamic testing on the Central Section (known as ChampFX items) remains a concern, and the Siemens proposals are awaited.

The impact of CEG's routeway integration tests⁵ is still being assessed by CRL. The Technical Authority Group (TAG) has concluded recently⁶ that there has been insufficient development of detailed test requirements, logistics and timings, and that further work is required. There is therefore a potentially significant schedule and cost risk, for which allowances may or may not have already been made by CRL in the DCS.

The dynamic testing restrictions imposed by CRL pending resolution of the early 2019 signalling irregularities, were effectively lifted in the period. However, several restrictions remained in place because of maintenance issues with turnouts, and limitations associated with the Siemens and BT software. Thus, while the downloading of P_D+8 software⁷ to the Central Section in mid-June 2019 was successful and provided greater signalling functionality than before, in practice the scope of dynamic testing was constrained by the slow and progressive provision of assurance evidence by both BT and Siemens. The assurance process to deliver the full range of tests continues but remains at risk because of delays to supporting off-site pre-testing and the production of test evidence.

The recent imposition during dynamic testing of onerous track speed restrictions by C610 (as Principal Contractor) during MDT 15, suggests that there is a lack of clarity and understanding as to the purpose, scope and expected outcomes of planned tests. There is also a concern that there is insufficient communication between testing decision-makers to resolve perceived issues. CRL recognises these issues and plans to address them quickly.

Approvals, Assurance and Agreements

CRL has made no significant safety submissions to RAB(C) in the period. The anticipated peak in Portals and Shafts documents which was forecast several periods ago, predicated upon the [REDACTED] contained in the developing DCS at the time, has not occurred. This is in part due to the movement of schedule dates that has taken place with during DCS development, but is also because of poor production progress. The size of the predicted peak workload (both

⁵ As described in the document 'Integration Tests for Routeway Systems and Related Installations' CRL1-XRL-Z-RGN-CR001-50511 Rev. 3.0).

⁶ TAG meeting held on 2 July 2019.

⁷ P_D+8 does not contain all signalling functionality; the balance will be included in future releases.

for submission preparation and availability of Board members for approval) and the inability to forecast occurrence remains a significant concern, pending the issue of DCS v1.1.

The DTSRP⁸ considered and accepted the Statement of Safety⁹ for Phase 1 Multi-Train Testing using P_D+8 software on the Central Section. This allowed limited access to MTT functionality during MDT 13 on 25 June 2019, the software having been downloaded to the Central Section in mid-June 2019. The follow-up Statement of Safety¹⁰, intended to allow Phase 2 and 3 MTT, was not accepted by DTSRP¹¹, because the supporting evidence was not in place. This means that complex multi-train movements using P_D+8 will have to be deferred until the necessary documentation is in place, which in turn, might reduce the opportunities to implement fixes in subsequent software builds.

These examples illustrate again the difficulties and uncertainties of having to produce fragmented submissions, in order to support incremental, rather than wholesale changes to functionality. We accept that this situation is difficult to avoid, given the need to overcome issues with incomplete installation, test failure or the misalignment of Siemens and BT software. However, the preparation workload and co-ordination effort necessary to support this approach is significant and threatens to overwhelm the available resources.

Operational Readiness Assessment

The key issues affecting Operational Readiness are now essentially associated with Handover. We have used information from the last 3 periods of CRL’s Handover dashboards to track the following key metrics:

Item	Total	Accepted		
		P1	P2	P3
As Built	4866	654	654	654
O&M manuals	34	0	0	0
Test Certificates	114	4	4	4
HMDL	13320	3578	3578	3578

Discussions are underway between CRL and the IMs to define what is expected to be delivered to what standard and by when during the T-minus process. All these issues then need to be captured by a revised Handover process that provides governance and definition going forward. This is a vital exercise that will be very beneficial as it gives clarity to all parties. Nevertheless, from the current position we would not expect sufficient evidence to be completed in time to allow SC3 to proceed by the end of November 2019.

Stage 4 Summary

The Stage 4 timetable application must be submitted to NR 9 months¹² before service, and Stage 4 must open during an NR timetable change (a May or December). CRL’s planning philosophy in developing the EOP was that Stage 4 will open approximately 6 months post Stage 3. We believe there is an emerging risk that the uncertainty of the Stage 3 Opening date will affect the confidence in submitting the timetable application. There is likely to be some form of criteria required for CRL to judge if the circumstances at the time will support a robust submission.

⁸ DTSRP meeting held on 19 June 2019.

⁹ Statement of Safety SS_018 Revision 2.0 signed-off by the Panel on 24 June 2019.

¹⁰ Statement of Safety SS_021 Revision 1.0 issued on 4 July 2019.

¹¹ DTSRP meeting held on 8 July 2019.

¹² This is the final submission; formal consultations begin 3 months prior to submission.

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For the Stage 4 works themselves, CRL has changed its overall RAG rating from 'red' to 'amber'. We believe that is an appropriate change, reflecting that the works are forecast to be completed in good time before the opening of the delayed Stage 4.

Operational Readiness Assessment

Station Information and Security System (SISS) works continue to frustrate. NR is required to submit a delivery programme to CRL describing how the equipment can be installed and connections taken to the RCC. Unfortunately this programme is under funding pressure, which could limit the options available. The connection within the RCC is part of C660 scope, but it appears unable to deliver that work due to pressure of other commitments. It is not clear how the existing facilities and current staffing arrangements will be upgraded in time for Stage 4 opening.

The other issue concerns the GEML Traction Power Upgrade. We described in our last report that the commissioning of the route from Liverpool Street to Gidea Park was now expected by April 2020. The project team is still continuing its assessment of whether there is any impact upon Trial Running. In addition, NR is now of the opinion that the upgrade between Gidea Park and Shenfield is no longer required. NR needs to prove to CRL, GA and its own Route that the functionality is not required. We will report further when the situation is clearer.

Other issues in the Stage 4 Operational Readiness Dashboard are DOO CCTV at Shenfield and Stratford; ticket offices and lifts at Gidea Park & Goodmayes and platform extensions at Liverpool Street Station¹³. We will comment upon these in future reports if they become risks to Stage 4 Opening.

Stage 5 Summary

CRL has given an overall rating of 'red' for Stage 5A Opening in its Period 3 PDB Dashboard. The completion by NR of its works, most notably at Maidenhead, Twyford and Slough, remains key. The DOO CCTV programme has become more compressed in this period, due to slippage of SAT submissions for six stations

MTR-C's SVP has approved proposals to place FLUs into passenger service between Paddington and Hayes & Harlington, and ECS movements from Paddington to Reading. There is a significant risk that FLUs will not be accepted for passenger service in time for Stage 5A. To mitigate this risk a plan is being developed to operate Stage 5A with RLUs.

CRL has given an overall rating of 'green' for Stage 5B Opening in its Period 3 PDB Dashboard. We believe that is an adequate assessment of the situation.

RLU – FLU Swap-Out

MTR-C SVP has approved¹⁴ the BT submission to introduce FLUs with software configuration Y0.256 into passenger service on the Hayes & Harlington route. This will start from 26 July 2019, with the RLUs being replaced one by one. The rate of the swap-out will be dependent upon the service performance of the FLUs. FLUs have also been approved by the MTR-C SVP for ECS to Reading. MTR-C will use this approval for driver training and mileage accumulation.

BT must convert its ECS approval to one of passenger service. This is not a simple process, as MTR-C is likely to want to see further increases in reliability for such an increase in service, and

¹³ MTR-C is responsible for delivering the extensions, and is currently developing its programme in consultation with NR.

¹⁴ 10 July 2019.

the RSSB derogation¹⁵ expires in December 2019. In case that is not achievable, CRL and MTR-C are developing a plan to convert 13 FLUs into RLUs and use the same proven software that is currently being used on the GE. The decision to convert will need to be made by the end of July. Starting the conversion programme does not rule out deploying the FLUs but does provide a mitigation plan in case they are not available. Not meeting the derogation is also likely to result in the FLUs operating the Paddington and Hayes & Harlington route would be withdrawn and replaced by RLUs.

Stage 5A Opening - NR

The critical path for Stage 5A service remains the delivery of the DOO CCTV. In Period 3 NR reported that there had been slippage within the programme, with SATs that were expected to be submitted in July now August, and those expected in August now September. The end date remains unchanged.

NR has attributed some of the delay to other programmes works, notably the On-Network Station Improvement Programme (ONSIP), but this is disputed by RfL. Whatever the cause, it has been made clear to all parties that DOO CCTV works should have priority. Nevertheless, NR and RfL believe they have sufficient float to deliver the programme and manage the compression of the works. Their assessment is based upon the experience of delivering Stage 2A DOO CCTV, so does provide some comfort.

Nevertheless we urge all parties to be extremely vigilant and seek additional resource wherever possible to deliver the programme. If it is not delivered then we believe the GW services would need to be engaged in some manner.

Stage 5B Opening

There is little change from our Period 2 report. Stage 5B Opening is rated 'green' in the Period 3 PDB Dashboard, with a proposed opening date to be confirmed. We surmise that date to be December 2021, based on the assumption built into the EOP that it must occur 12 months after Stage 3 Opening. In that context, there are no workstreams that are on the critical path for that date, with all works expected to be completed by December 2020¹⁶. There is of course a cost imperative in completing them as soon as reasonably possible.

Current issues are:

- Hayes & Harlington: there is a dispute between the operators and NR about the width of the temporary footbridge, required to enable the permanent works to start. This needs to be resolved in time to allow its erection during the August Bank Holiday.
- Ealing Broadway: NR has reverted to the original canopy design, as it has not been able to find alternatives that can be delivered and produce savings.
- Southall: The permanent design requires some land that has not been purchased. This situation needs to be resolved, by either buying the land or altering the design, soon so that does not impact the critical path.

Key Areas of Concern in the Period

Whilst we have identified a number of issues in this period report, CRL are aware of most of them and are developing plans, which are at various stages to addressing them. There are

¹⁵ BT received a deviation from a TPWS national standard by the RSSB. The derogation requires a software upgrade for it to be rescinded.

¹⁶ Period 2 Stage 5B Dashboard.

however two areas of particular concern which we would like to flag to sponsors that require further explanation from CRL;

- a. CRL's assessment as to 'what' has changed in the period, is to an extent well understood by the teams. However, the understanding as to 'why' the plans have changed, does not appear to be as robust. What plans does CRL have to address this issue?
- b. We are concerned that a number of CRL teams are planning to 'targets', rather than 'forecasts'. This approach potentially undermines the robustness in the delivery of future milestones on time. Does CRL agree with this observation and what plans does it have to address this culture?

As highlighted in previous reports, CRL is yet to fully address the following: root cause of the optimism bias; the IM's detailed integration plan; risk management maturity plan and the mitigation plans for limiting the increasing AFCDC.