

BD MIN 180913

**CROSSRAIL BOARD**

**Minutes of the Meeting of the Board of Directors of Crossrail Limited  
Held on Thursday 13 September 2018 at 14:00  
28th Floor Boardroom, 25 Canada Square, Canary Wharf, London E14 5LQ**

<b>Members:</b>	<b>In Attendance:</b>	<b>Apologies:</b>
Terry Morgan <i>Chair</i>	Funmi Amusu <i>Assistant Company Secretary</i>	Dawn Barker <i>Head of Human Resources</i>
Mathew Duncan <i>Finance Director</i>	Susan Beadles <i>Head of Legal Services and Company Secretary</i>	
Phil Gaffney <i>Non-executive Director</i>	Lucy Findlay <i>Chief of Staff</i>	
Robert Jennings <i>Non-executive Director</i>	Paul Grammer <i>Commercial Director</i>	
Anne McMeel (part of the meeting) <i>Non-executive Director</i>	Howard Smith <i>Operations Director</i>	
Nelson Ogunshakin <i>Non-executive Director</i>		
Andy Pitt <i>Non-executive Director</i>		
Chris Sexton <i>Technical Director</i>		
Mark Wild <i>Non-executive Director</i>		
Simon Wright <i>Chief Executive</i>		

The meeting was quorate.

	<p>The Chairman welcomed Board members and attendees.</p> <p><b>Directors' Interests</b></p> <p>Members were reminded that any interests in a matter under discussion must be declared at the start of the meeting, or at the commencement of the item of business.</p> <p>There were no interests declared in relation to the business of the meeting.</p> <p><b>Informal Session</b></p> <p>It was <b>NOTED</b> that an informal session of the Board had been held earlier in the day.</p> <p>The Board had received detailed briefings on the following topics:</p>
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	<ul style="list-style-type: none"> <li>• <b>MTR</b> – the staged delivery of the Elizabeth line.  The Board had <b>REQUESTED</b> that the implementation of more collaborative and strategic working with MTR, Bombardier Transportation (BT), Siemens, Network Rail (NR), London Underground (LU) and Rail for London (RfL), including joint high level strategic meetings, should be considered.  <b>Action:</b> Simon Wright  The Board had also <b>REQUESTED</b> that consideration should be given to bringing in additional expertise on signalling and testing &amp; commissioning.  <b>Action:</b> Simon Wright/ Chris Sexton</li> <li>• <b>Programme Overview</b> – progress across the programme including updates on the Master Operational Handover Schedule (MOHS); static testing; dynamic testing; handover; quality; sustainability; and the Crossrail art programme.  The Board had <b>NOTED</b> that an independent review of critical testing systems had been commissioned by CRL and <b>AGREED</b> that a report on the outcomes of these reviews, including the stability of the Inputs and Outputs schedule, should be brought back to the Board.  <b>Action:</b> Simon Wright  The Board had <b>REQUESTED</b> more rigour in reviewing the test plans for western transitions.  <b>Action:</b> Chris Sexton  The Board had also <b>REQUESTED</b> that more frequent reporting on Installation Release Notes (IRNs) should be considered.  <b>Action:</b> Chris Sexton</li> <li>• <b>Crossrail Organisation and Accommodation</b> – an update on phased organisational changes; and plans for accommodation.</li> </ul>
<p>BD MIN 180719 &amp; 180829</p>	<p><b>Minutes of the Meetings of the Board held on 19 July and 29 August 2018</b></p> <p>The Board <b>DID NOT APPROVE</b> the minutes of the meetings held on 19 July and 29 August 2018 for signature and <b>NOTED</b> that amendments would be made to the minutes as discussed at the meeting.</p>
<p>BD AC 180913</p>	<p><b>Actions and Matters Arising</b></p> <p><b>19.046 – Integration</b> – the Board <b>NOTED</b> that a briefing on integration issues was scheduled to take place on 18 September 2018.</p> <p><b>19.052 – Membership of Remuneration and Nominations Committee</b> – the Board <b>NOTED</b> that Phil Gaffney had accepted to chair the Remuneration Committee going forward.</p> <p>The Board <b>NOTED</b> that all the other ‘due’ actions had either been completed or were covered by the agenda for the day’s meeting.</p> <p>The Board discussed the events that had taken place since the public</p>

	<p>announcement of the decision to revise the schedule. It was <b>NOTED</b> that Sponsors were commissioning a review of CRL's (a) financial and commercial arrangements and (b) governance arrangements.</p> <p>The Board considered whether the right structure was in place given the challenges in the coming months to finalise construction, bring the trains into use, ensure operational readiness and control costs and <b>REQUESTED</b> an assurance map of all CRL's governance meetings and reporting.</p> <p><b>Action:</b> Lucy Findlay/ Chris Sexton</p>
<p><b>BD CBR 180913</b></p>	<p><b>Crossrail Board Report Period 5</b></p> <p>Simon Wright introduced the Board Report for Period 5 highlighting that:</p> <ul style="list-style-type: none"> <li>• On 30 August 2018 (in Period 6), CRL formally notified the Sponsors of the very disappointing news that there was insufficient time remaining to carry out the full range of integrated testing of the railway required to introduce Stage 3 Elizabeth line services in December 2018. This followed the decision taken at the CRL Board meeting on 29 August 2018 that additional time was needed to complete fit-out of the tunnels and development of reliable railway safety systems software packages, without which it would not be possible to introduce a safe and reliable railway for passenger service in December 2018;</li> <li>• A revised strategy for Stage 3 had been developed supporting opening of the central section in Autumn 2019. A revised MOHS that underpinned this was being developed and would form part of the Remedial Action Plan (RAP) being produced by CRL for the Sponsor Board on 20 September 2018, along with cost and business plan implications and consequences for Stages 2 (Phase 2), 4 and 5 delivery. The Board <b>REQUESTED</b> that the RAP be circulated to Board members;</li> </ul> <p><b>Action:</b> Lucy Findlay</p> <ul style="list-style-type: none"> <li>• At the end of Period 5, the project was 94.8% complete against a plan of 96.9% (100% would be achieved at Stage 5), with 0.4% achieved against a plan of 0.6% in the Period; and</li> <li>• The AFDCD remained unchanged at £12,810m (£297m above IP2). However, further cost pressures would materialise in Period 6 following the quarterly Quantitative Risk Assessment (QRA) and as unresolved trends were converted to cost.</li> </ul> <p><b>Are We Safe?</b></p> <p>It was <b>NOTED</b> that:</p> <ul style="list-style-type: none"> <li>• The RIDDOR and Lost Time Case (LTC) rates remained stable at 0.09 and 0.16 respectively;</li> <li>• In the Period, there were 2 significant incidents – 1 RIDDOR (also classified as a LTC) and 1 High Potential Near Miss; and 18 minor injuries were sustained, the largest category (5 injuries) being equipment/machinery related; and</li> <li>• 10 of the 11 key contracts had achieved a HSPI score of 2.20 or above,</li> </ul>

with 7 of the contracts scoring 2.50 or above. Overall, HSPI decreased slightly to 2.55 from 2.60 in the previous Period (compared to a target of 2.20); this was the third lowest HSPI score achieved in a year. Health and safety performance continued to be positive but there was no room for complacency. The rollout of a 'Finish Safe' campaign would commence in Period 6 and serve to remind all teams of the paramount importance of safety on the project.

### ***Are We Within Funding?***

Mathew Duncan presented a summary of financial performance for the Period. It was **NOTED** that:

- CRL was still awaiting TfL's annual letter confirming that CRL would remain its subsidiary for the next year and the financial statements and accounts would not be approved by the CRL Board until this annual letter was received;
- The AFCDC was at £12,810m, with an expected increase in Period 6 due to the large increase in Unresolved Trends (URTs) in the Period. To fund Delivery level cost increases, £2.8m of risk was utilised;
- URTs increased by £127.8m in the Period to £173.5m following a series of defined cost reviews for key contracts and were now £81m higher than the available risk. There were increases in URTs at [REDACTED]
- In the Period, CRL had spent £66.1m above the 2018/19 Business Plan, predominantly at: [REDACTED] and other net overspends (£21.7m) offset by unspent Programme risk due to cost being reported in the Sectors (£12.4m);
- The overall contingency budget of £87m was not sufficient to cover the risk exposure of £93m;
- The Checkpoint 2 forecast cash requirement at 31 March 2018 had increased by £307m since Period 4 and indicated that the £300m of additional funding that the Sponsors had committed to provide would be insufficient after Period 10, 2018/19 (i.e. December 2018). After this date, an extra £253m of funding (inclusive of P50 risk) would be required for the current financial year. In total, to complete the project, further funding of £468m was required; and
- By Period 8, CRL would have depleted its Investment Authority and any commitments entered into after that would be beyond CRL's budget.

The Board (i) **REQUESTED** that the key dates when CRL's current and the additional £300m funding would be exhausted should be circulated to Board members; and (ii) **AGREED** that the Sponsors should be reminded of these dates.

**Action:** (i) Mathew Duncan; and (ii) Lucy Findlay

### Commercials Update

Paul Grammer updated the Board on commercial performance in the Period. The Board **NOTED** that:

- The total gap between CRL's and its contractors' views of target had increased by [REDACTED] to [REDACTED] and the total forecast gap in forecast defined cost decreased by [REDACTED] to [REDACTED]
- Following the ongoing project defined cost reviews at [REDACTED] [REDACTED] signalling further cost increases in the overall AFDCD which would materialise in Period 6. These trends were a reflection of the ongoing schedule pressures that continued to be felt across the programme;
- There was a proposed Final Account Settlement strategy for Stations contractors and **NOTED** the current progress of discussions at Farringdon, Liverpool Street and Tottenham Court Road Stations;

### Network Rail On Network Works (ONW) and Funding

- The Forecast Final Outturn Cost (FFOC) was at £2,430m, unchanged from the previous Period. CRL assessed the grand total cost mid-point sensitivity to be +£35.2m;
- Total Funding was at £2,889.4m, the same as the previous Period. NR was currently discussing a further [REDACTED] cost pressures and non-achievement of planned recoveries. NR continued to target further recoveries of £9.3m for insurance claims, amounts owing relating to the NR (Crossrail) works after the Paddington derailment and other efficiencies still not achieved;
- NR's cumulative (gross) spend (excluding adjustments for traction power/ accelerated renewals) was £2,696.1m and represented 90.6% complete;
- Procurement activity for the Enhanced Stations (West) packages had progressed in the Period. However, with no solution yet agreed to address a stated [REDACTED] CRL was presenting a joint CRL/ NR paper to the Crossrail Sponsor Board in Period 6 outlining options. In the meantime, £19m of construction work remained underway to progress activities on site ahead of contract packages being awarded later in the year. CRL continued to work closely with NR on this; and
- The final contract award for Enhanced Stations at Ilford and Romford was anticipated for [REDACTED].

The Board considered it necessary to obtain confirmation that CRL had not added any scope to the NR Western Stations and **REQUESTED** that a reconciliation of NR's £290m funding and the additional funding that NR was seeking should be provided to Terry Morgan.

**Action:** Paul Grammer

### Are We on Time?

Simon Wright had presented an overview of delivery performance during the informal session held earlier in the day. The following current issues were **NOTED** by the Board:

- The known schedule pressures had been subject to a full forensic review in the Period and this had informed executive level discussions on the most likely outcome for the Project overall. Late completion of physical works, delays to the production of testing certificates and delays to the essential Communications & Controls Phase 3 integration testing had all contributed to the change in completion strategy;
- During Period, 7 anchor milestones were delivered, bringing the total to 44 against a baseline early plan of 83 anchor milestones. 14 out of 58 project milestones were delivered and a further 28 milestones were recovered from previous periods. The slower than planned progress continued to place further pressure on the provision of documentation essential to the testing & commissioning process;
- The 7 anchor milestones achieved in the Period included the completion of Platform Screen Doors in Zones 3 & 4 ready for dynamic testing; the fire main across stations, shafts and portals in Zones 1 & 2 ready for integration; the authorisation of CBTC for Pre-Trial Operations; and partial access granted to C610 at Plumstead;
- The Systemwide contractor remained focussed on the completion of their remaining linear works including fire mains, drainage and tunnel lighting. The progression of permanent tunnel ventilation works remained critical although this was now nearing completion;
- The ONW were 91% complete. Activities noted in the Period included Abbey Wood achieving substantial completion; and all works completed at Forest Gate ticket office, pending ongoing assurance;
- With regard to Signalling tests, Test Windows 7, 7x and 8 were completed. Across the three windows, a total of 65 tests were carried out. Of the 65 tests completed, 34 were passed, with 4 failures and 27 currently being analysed;
- With regard to non-Signalling tests, there were 308 of them, 58 of which had been successfully passed (unchanged from the previous Period). Test Windows 9, 10 and 11 would be carried out in the next Period. Further work to protect and maximise the use of these test windows was ongoing;
- Siemens' primary difficulty in contract C660 remained the recruitment of sufficient radio testing resources to meet the requirements of the schedule. The number of test engineers required had risen again by 34 from 110 to 144. There had been progress in the Period with 28 new starters but there remained about 56 vacancies that still needed to be filled. Emphasis remained on the handover of assets by Stations and Systemwide to Siemens to allow them to maintain their schedule to completion. The delivery of Siemens communications software remained challenging;
- In the Period, the critical testing of the signalling system across the Network Rail fringes was ongoing. Physical installation was complete with the exception of the permanent route marker boards and the RFID tags. On the Great Eastern Main Line (GEML), all static testing was complete

and shadow mode testing with the Class 345 was also completed as well as through testing to Romford. Further testing would be carried out in Test Windows 9 and 12 with additional test windows booked for 28-30 December 2018 and 5-6 January 2019. At Westbourne Park, on the Great Western Main Line (GWML), all Phase 2.1 and 2.2 testing was completed in the Period. The overall volume of testing required to be carried out on the fringes continued to exceed the current time available in the programme. As such, additional opportunities were being explored for 23-28 December 2018 and in early January 2019;

- Energisation of the non-traction power supply across each of the sites remained critical and under the scrutiny of the CRL Executive. However, steady progress was made in the Period at Liverpool Street, Paddington, Bond Street and Plumstead;
- The overall production of IRNs (as well as other key documents) to support handover of assets by the Tier 1 contractors remained critical. The review for Period 5 highlighted a very poor 4-week spell, with significant decrease in the amount of IRNs being delivered. Paddington, Bond Street, Farringdon, Liverpool Street, Whitechapel and Woolwich Arsenal were all showing significant slippage. The progress of physical work continued to be the main driving factor in the delay in production of IRNs. Close monitoring remained across all sites; and
- The provision of asset data, O&M manuals and training materials by contractors in time to meet the Infrastructure Managers' needs remained critical. The review carried out in the Period showed a steady rate of production in August 2018. All parties continued to work to accelerate the production of asset data and to make best use of it progressively as it became available.

### Operations

Howard Smith provided an update on key operations matters, highlighting current operations; the software programme; software and integration; and operational readiness.

The Board **NOTED** the following:

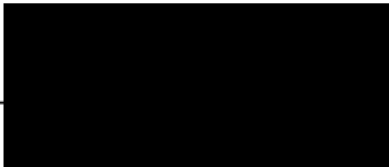
- Testing at Melton of CBTC 3.1.0 with TCMS R7.2.2.2 commenced on 6 August 2018 but with blocking defects in place which meant that a software patch was required from Siemens which had to be incorporated into an additional release of the CBTC (R3.1.x). The primary focus was now back on the testing at Melton and the completion of the CBTC "29" tests, followed by any fast-track modifications that were likely to be necessary. Testing in the Central Operating Section had highlighted issues with slow start-up of each unit as well as very slow and inconsistent train turn-around times. Work remained ongoing to identify and understand the root cause of these issues; and
- 35 Full Length Units (FLUs) were required for Stages 2 & 3 and 18 had been accepted. Although a total of 38 FLUs had been built so far, acceptance [REDACTED] pending TCMS and CBTC software upgrades and increased reliability of the existing fleet. Testing of Siemens CBTC 3.1.0 at Melton had allowed the blocking of faults and reissuing of software in preparation for the October 2018 start of dynamic testing.

	<p><b>Are We Ready for Closeout?</b></p> <ul style="list-style-type: none"> <li>Ongoing transition concerns remained around changes to the timescales for the activities required to complete delivery and handover, while securing and maintaining the necessary resources. The timescales of the various transitions were originally defined and had been agreed against asset handover and the key delivery milestones of the programme. Ongoing transition arrangements for support functions would need to be assessed and updated against any revisions to the programme and the potential changes to the load and duration of these arrangements; and</li> <li>Following a brief review of the functions and activities which had already transitioned from CRL to TfL, it was recommended that the current and ongoing assumptions of accountability between the CRL and TfL Boards are confirmed at Board level. Transitions of responsibility for the functions and activities had been clearly understood, agreed and arrangements put in place with ownership aligned to the relevant TfL directors. However, Board level accountabilities across most of these activities remained assumptions until further work was undertaken. The goal for the next Period was to confirm CRL or TfL Board accountability for transitioned functions and activities and ensure governance arrangements are clear for future transitions.</li> </ul> <p>The Board <b>NOTED</b> the Board Report for Period 5.</p>			
23/19	<p><b>CRLB 23/19 – Reallocation of Investment Authority</b></p> <p>The Board received a paper requesting approval of £25.9m of Investment Authority for a number of contracts and informing the Board of the reallocation of £99m of Investment Authority from contracts with a forecast surplus to those with a forecast deficit.</p> <p>The Board:</p> <ul style="list-style-type: none"> <li><b>APPROVED</b> the grant of Investment Authority of £25.9m for the contracts; and</li> <li><b>NOTED</b> the reallocation of £99m of Investment Authority between contracts.</li> </ul>			
24/19	<p><b>CRLB 24/19 – Re-appointment of Non-executive Director</b></p> <p>The Board <b>APPROVED</b>, subject to agreement by the Sponsors, the reappointment of Phil Gaffney as a director of Crossrail Ltd from 1 January 2019 to 31 December 2019 on the same terms and conditions as before.</p>			
25/19	<p><b>CRLB 25/19 – Project Representative Report (P-Rep) Period 4</b></p> <p>The Board reviewed and <b>NOTED</b> the P-Rep Report for Period 4.</p> <p>Simon Wright provided a verbal summary of the issues that were expected to be raised in the Period 5 report which were <b>NOTED</b> by the Board. These included matters relating to: health and safety; financials; ONW; Stage 2; Stage 3 Opening (Infrastructure &amp; Systems and Handover &amp; Operational Readiness); and Stages 4 and 5 Openings.</p>			
	<p><b>Minutes of Board Committees for Reference</b></p> <p>The Board received the following minutes for reference:</p> <table border="1" data-bbox="359 2027 1369 2101"> <tr> <td data-bbox="359 2027 842 2101"><b>Executive and Investment</b></td> <td data-bbox="842 2027 1106 2101"><b>EIC D 180711</b> <b>EIC D 180808</b></td> <td data-bbox="1106 2027 1369 2101">Simon Wright</td> </tr> </table>	<b>Executive and Investment</b>	<b>EIC D 180711</b> <b>EIC D 180808</b>	Simon Wright
<b>Executive and Investment</b>	<b>EIC D 180711</b> <b>EIC D 180808</b>	Simon Wright		



	Committee	EIC D 180813	
<b>Verbal Updates of Recent Board Committee meetings</b>			
<b>AOB</b>	There was no other business.		
<b>NEDs Only Session</b>	Non-executive Directors provided feedback on the day's meeting.		
	<p><b>Executive and Investment Committee 5 September 2018</b> Matters covered by the Committee were:</p> <p><b>Board agenda items:</b></p> <ul style="list-style-type: none"> <li>• Accommodation Update</li> <li>• Reallocation of Investment Authority</li> </ul> <p><b>Other items:</b></p> <ul style="list-style-type: none"> <li>• Risk Management Report</li> <li>• Transfer of Commercial and Change Sub-committee Duties</li> </ul>		Simon Wright

Signed by:



**Terry Morgan**  
Non-executive Chairman