

KPMG LLP
Advisory
15 Canada Square
London E14 5GL
United Kingdom

Tel +44 (0) 20 7311 1000
Fax +44 (0) 20 7311 3311

Private & confidential

Simon Adams
TfL
55 Broadway
Westminster
London
SW1H 0BD

Your ref

Our ref **jj/jlam/**

Contact **jm**
020 7311 1000

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8 March 2019

Dear Simon

Project 77: Chronology of delay and cost escalation events
Legally privileged and confidential

1 Background

Transport for London ('TfL') and the Department for Transport ('DfT') ('the Sponsors') are joint sponsors of the Crossrail project ('the Project') being executed by Crossrail Limited ('CRL'), a wholly owned subsidiary of TfL.

TfL, acting for itself and on behalf of the DfT, appointed KPMG to prepare an independent review of certain commercial, financial and governance matters in relation to the Project, through call-off notice TfL 94356 dated 21 September 2018.

This paper relates to your request in late November 2018 for KPMG to confirm the factual accuracy of certain of the events within a timeline prepared by the Joint Sponsor Team and provided to us ("the Larger Document"). This comprised dates, and event descriptions and covered certain events from June 2017 including those up to the announcement in late August 2018 that the opening of the central section of the Project would be delayed and thereafter through to the beginning of December 2018.

The specific events to be considered as part of our review were identified to us by the Project's Joint Sponsor Team ('JST'). The version of the document attached as Appendix 3 is after filtering so as to only include those events which we were advised by the JST should be the focus of our work ("the Document"). The fieldwork comprising the above confirmation of factual accuracy of certain of the events within the timeline provided to us was completed over the period up to 9 December 2018 and the outcomes discussed with you on that day. On 5 March 2019 you requested us to issue a paper summarising

the results of our work to 9 December 2018. This is the resulting paper. It has not been updated for events occurring or information made available after 9 December 2018.

2 Approach

As agreed with JST members, we focused our review on validating dates and event descriptions included in the Document. The sources which we were asked to have regard to, were copies of:

- Semi-Annual Construction Reports referred to as SACR;
- Sponsor Board Meeting Packs and Minutes;
- JST period reports;
- The Remedial Action Plan dated 18 September 2018 and Updated Remedial Action Plan dated 2 October 2018; and
- A very small number of selected documents provided to us by JST solely for the purpose of reviewing the Document; these included minutes of a specific BICC meeting, and specific letters;

In reviewing the event descriptions included within the Document, we have identified whether they were consistent with the relevant supporting document extracts to which we were directed, and then noted in Appendix 3 the source document and page or section reference to which we have had regard. We have also provided a brief commentary summarising our view on how the provided description in the Document aligns with the content of the relevant section of the documents to which we were asked to have regard. Where we concluded that the Document description was either incomplete or potentially inaccurate we have noted this in Appendix 2, and for those differences which were in our view more significant, these have also been set out below.

We have not been asked to consider or comment on the completeness of the population of events included within either the Larger Document or the Document nor to consider whether if we were to have regard to other potential source documents, whether the resulting descriptions of the relevant events within the Document would require material addition.

In addition, we have also recorded, as requested, the values for total expected Network Rail On Network Works ('ONW') outturn costs reported during the requested period, as noted within JST Period reports provided to us for this work. We have not been asked to consider any other source of information for the purpose of preparing this ONW summary which we have set out at Appendix 4.

The reader's attention is drawn to the Important Notice, attached as Appendix 1.

3 Our findings

We consider that the description of events in the timeline supplied by the JST and attached as Appendix 3, is consistent with the information included within the source documents to which we were asked to have regard, with the exception of the matters which we have listed at Appendix 2. Of those matters we have listed at Appendix 2, the more significant points are set out below for ease of consideration;

Date	Event	JST Event Description	KPMG Analysis
Nov 2017	Project Event	Failure of transformer equipment at Stratford, delays the start of train testing by 3 months	JST Report 8 2017_18 records that "The train which arrived on 28 th October 2017 did not carry out any dynamic testing because of the lack of traction power and because the software capability of the train fell well short of what was expected". We note that both the lack of traction power as well as software capability of the train were described as causes of the lack of dynamic testing.
22 Feb 2018	Sponsor Board 90	CRL present their scenarios to sponsors, which suggest an upper cost outturn of £283m above IP2 or £355m in the event of a 12 month delay.	The 12 months delay put forward by CRL assumed a software issue delay with no delay to the stations and other contracts.
22 Mar 2018	Sponsor Board 91	Sponsors ask [REDACTED] to present the initial findings of the independent review which suggests a range of £200m - £350m above IP2.	Jacobs noted that CRL's approach used to conduct the scenario analysis was "logical but relied on significant judgement from the senior members of the CRL Executive." Jacobs commented that £350m was not a bookend and recommended a further deep dive analysis on certain contracts. SB91A Minutes record that P Rep emphasised that they believe the schedule is ambitious, contains virtually no float and relies on first time delivery
19 Apr 2018	Sponsor Board 92	[REDACTED] (Jacobs) presents further work looking at specific contracts. Sponsors agree for Jacobs to work with	The agreed action was for Jacobs, as part of their cost review, to work with CRL to consider the revised upper end scenario which reflects

Date	Event	JST Event Description	KPMG Analysis
		<p>CRL to look at what the upper end scenario might be.</p>	<p>the potential 'tail' of activities following December 2018.</p> <p>We note that an exclusion / limitation in the resulting Jacobs report was that "The cost scenarios are based on the premise that all essential construction work is completed in time for Stage 3 opening on 9 December 2018."</p> <p>It seems therefore that the scenario to be explored was crucially not directed at also considering the probabilities of and the consequences of Stage 3 not being delivered in December 2018. See Appendices 2 and 3 for more information.</p>
<p>26 Jul 2018</p>	<p>Sponsor Board 95</p>	<p>Crossrail Ltd indicated further time was needed for testing and commissioning and they would be presenting a revised schedule to their board meeting on 29 August.</p>	<p>We did not see the minutes explicitly refer to further time was needed for testing and commissioning but they do refer to discussing "Great Western Main Line (GWML) transition testing as it's flagged as red in their Readiness Slides" and that Simon Wright noted (under resourcing) the need to supplement the testing and commissioning side for longer.</p> <p>In addition they report Simon Wright summarising a number of challenges CRL were experiencing that were impacting on schedule, "including an alert that's recently been received from Schneider related to faults in their equipment (which could delay energisation of low-voltage systems in stations); modelling of some attenuators on the ventilation system which predict oscillation; and specific challenges on stations."</p>



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The appendices attached deal with the following matters:

Appendix 1: Important Notice to which the reader's attention is drawn

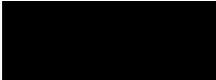
Appendix 2: A summary of all our findings being all KPMG observations on those events where we have an observation other than in essence "agreed"

Appendix 3: The full timeline of events prepared by JST which we were asked to review and which we have annotated our findings and the related sources

Appendix 4: A summary of NR ONW costs and how they were reported in the JST reports at the front of the JST report packs.

Please do not hesitate to contact us if you have any questions related to the contents of this letter.

Yours sincerely



Richard Powell
Partner



KPMG LLP

8 March 2019
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APPENDIX 1 : IMPORTANT NOTICE

This Report has been prepared on the basis set out in the Call-Off Agreement with Transport for London ('TfL') and the Department for Transport ('DfT') (collectively and individually 'the Client') dated as commencing 21 September 2018 (the 'Services Contract'), and should be read in conjunction with the Terms of Reference prepared by TfL.

Nothing in this report constitutes a valuation or legal advice nor an audit of the project.

We have not verified the reliability or accuracy of any information obtained in the course of our work, other than in the limited circumstances set out in the Terms of Reference and except where expressly stated.

This Report has not been designed to be of benefit to anyone except the Client. In preparing this Report we have not taken into account the interests, needs or circumstances of anyone apart from the Client, even though we may have been aware that others might read this Report. We have prepared this Report for the benefit of the Client alone.

This Report is not suitable to be relied on by any party wishing to acquire rights against KPMG LLP (other than the Client) for any purpose or in any context. Any party other than the Client that obtains access to this Report or a copy (under the Freedom of Information Act 2000, the Freedom of Information (Scotland) Act 2002, through the Client's Publication Scheme or otherwise) and chooses to rely on this Report (or any part of it) does so at its own risk. To the fullest extent permitted by law, KPMG LLP does not assume any responsibility and will not accept any liability in respect of this Report to any party other than the Client.

In particular, and without limiting the general statement above, since we have prepared this Report for the benefit of the Client alone, this Report has not been prepared for the benefit of any other local authority or transportation authority nor for any other person or organisation who might have an interest in the matters discussed in this Report, including for example those who work in the transportation sector or those who provide goods or services to those who operate in the transportation sector.

The contents of this document include matters which are commercially sensitive to TfL, CRL and potentially other parties and disclosure of this document would, or would be likely to, prejudice the commercial interests of TfL, its subsidiary companies and/or other parties.

APPENDIX 2: KPMG comments on specific spreadsheet rows as requested

Date	Event	JST Event Description	KPMG Analysis
June 2017	Intervention point Breached – confirmation	Crossrail Limited formally report to Sponsor Board that the project has breached the second Intervention Point, IP1 by £210m, and that this breach of IP1 triggered the start of a draw-down from the TfL contingency fund of £600m.	SACR17 notes the IP1 breach to be £209m.
Nov 2017	Project Event	Failure of transformer equipment at Stratford delays the start of train testing by 3 months	<p>JST Report 8 2017_18 records that "The train which arrived on 28th October 2017 did not carry out any dynamic testing because of the lack of traction power and because the software capability of the train fell well short of what was expected".</p> <p>We note that both the lack of traction power as well as software capability of the train were described as causes of the lack of dynamic testing. It is not clear from the JST report whether and if so, how much, train testing could have occurred, had there been no lack of traction power.</p>
23 Nov 2017	Sponsor Board no. 87	Sponsors ask CRL whether they should plan for a sub-optimal staged opening. CRL assured Sponsors that everything was in place to make sure there will be a timely and stable opening.	The event description broadly aligns with the reported discussion in Sponsor Board Meeting No. 87 part B, although the minutes record that discussion focused on questions raised and discussion around the potential of a 'sub-optimal or delayed' opening. Staged opening, as per the description, was not explicitly mentioned. CRL are recorded as commenting that it is too early to consider delays to stage opening and that CRL's CEO assured Sponsors that everything is in place to make sure there will be a timely and stable opening.
26 Jan 2018	Sponsor Board no. 89	CRL reported an increase in forecast costs	CRL discussed the increase in AFCDC of around £160m at period 9.
26 Jan 2018	Sponsor Board no. 89	Sponsors ask again on suboptimal opening. CRL say that if still significant	Agree that sponsors asked CRL at what point a suboptimal opening should be considered. CRL

Date	Event	JST Event Description	KPMG Analysis
		problems in May it would have to be considered.	responded by stating that if the programme reaches May and the train is stopping and emergency braking this would need to be considered – we did not find the phrase: "significant problems".
22 Feb 2018	Sponsor Board no. 90	Sponsors commission P-Rep review of the schedule. CRL present their scenarios to sponsors, which suggest an upper cost outturn of £283m above IP2 or £355m in the event of a 12 month delay.	Sponsors agreed to commission Jacobs to review the cost scenarios. We did not find details of a separate P-Rep review of the Schedule being referred to in the minutes of Sponsor Board 90 although we note the Jacobs Period 11 P-Rep report tabled at the 22 March Sponsor Board Meeting details the results of a request by JST to provide an assessment of the MOHS. The 12 months delay put forward by CRL assumed a software issue delay with no delay to the stations and other contracts.
22 Mar 2018	Sponsor Board 91	Sponsors ask [REDACTED] to present the initial findings of the independent review which suggests a range of £200m - £350m above IP2.	Jacobs noted that CRL's approach used to conduct the scenario analysis was "logical but relied on significant judgement from the senior members of the CRL Executive." Jacobs commented that £350m was not a bookend and recommended a further deep dive analysis on certain contracts. SB91A minutes record that P Rep emphasised that they believe the schedule is ambitious, contains virtually no float and relies on first time delivery
31 Mar 2018	Project Event – Leadership change	Andrew Wolstenholme leaves his role as Crossrail Limited CEO. Simon Wright takes up the combined CEO / Programme Director role.	Companies House records show Andrew Wolstenholme resigned as a director of CRL on 31 March 2018. We did not see within the minutes of meetings provided, a clear note of when the handover of CEO roles occurred.
19 Apr 2018	Sponsor Board 92	[REDACTED] (Jacobs) presents further work looking at specific contracts. Sponsors agree for Jacobs to work with CRL to	There is a report on Jacobs' emerging findings (their work is ongoing);

Date	Event	JST Event Description	KPMG Analysis
		<p>look at what the upper end scenario might be.</p>	<p>The agreed action was for Jacobs, as part of their cost review, to work with CRL to consider the revised upper end scenario which reflects the potential 'tail' of activities following December 2018.</p> <p>The resulting Jacobs Phase 3 (Completion Tail) report presented at the subsequent Sponsor Board meeting states the objective as to "Stress test the upper limit book-end numbers and provide JS with further reassurance and confidence surrounding the upper limit book-end value".... we note that an exclusion / limitation in the Jacobs report was that "The cost scenarios are based on the premise that all essential construction work is completed in time for Stage 3 opening on 9 December 2018."</p> <p>It seems therefore that the scenario to be explored was not directed at also considering the probabilities of and the consequences of Stage 3 not being delivered in December 2018 and to that extent was not an upper end.</p>
<p>18 May 2018</p>	<p>Sponsor Board 93</p>	<p>Following challenges with train software, testing, installation of signalling and communications software systems, as well as other issues, Sponsors ask CRL whether it is confident in a December 2018 opening.</p> <p>CRL said it remained focussed on opening in December which was still achievable and that it would review the Trial Running and Trial Operations periods and report back in June.</p>	<p>The minutes record: "The 2nd testing window had occurred on the previous weekend and had gone better than the first window. CRL remained "in the foothills of testing" with auto reversing not yet working but there was a detailed plan and spreadsheet mapping out the tests required.</p> <p>On installation CRL was late on signalling systems (C620) and communications and control systems (C660) cables which was scheduled to be installed by the end of May.</p> <p>CRL remained on schedule for dynamic testing in Zones 3&4 but this would not initially be under signalling control.</p> <p>Simon Wright noted that CRL needs to look again at the Trial Running and</p>

Date	Event	JST Event Description	KPMG Analysis
			<p>Trial Operations dates due to the need for more dynamic testing windows, combined with delays with non-traction power and cable installation. It was likely that Trial Running would be delayed and there were detailed discussions occurring with the Operators and Infrastructure Managers.</p> <p>Polly Payne asked if CRL still had confidence overall of delivering for December. Simon Wright said CRL was absolutely focussed on opening in December which was still achievable if everyone 'pulled their weight'."</p>
20 and 21 May 2018	Project Event	Stage 2 Phase 1 services commence. TFL take over Heathrow Connect services and new Class 345 trains commence running between Paddington and Hayes & Harlington.	Class 345 trains are reported as commencing on 21 May 2018. Class 360 trains from Heathrow began on 20 May 2018.
25 Jun 18	Sponsor Board Meeting no. 94	<ol style="list-style-type: none"> 1) Crossrail Ltd produced a new plan to combine Trial Running (testing of full train service) and Trial Operations (testing of operational scenarios); continued to assert December 2018 was challenging but deliverable. 2) Sponsors commission CRL review of delivery confidence in December and alternative options. 	<p>Agree with the comment of CRL providing and preparing a new trial running programme for a December completion date. Sponsors noted the increasing schedule risk and agreed to discuss the need for contingency / alternative options for stage 3 in the event that the 9 Dec 2018 date was not achievable. We did not identify explicit wording that the programme was challenging, however the meaning was implied by the comments / discussion during Sponsor Board meeting 94.</p> <p>The minutes record that: The second 'checkpoint' or review point had been brought forward to July. This would involve a peer review session with some CRL Non-Executive Directors on 10th July, the CRL Board on 19th July and the Sponsor Board on 26th July. Sponsors asked CRL to provide information for this checkpoint on: confidence in December delivery, alternative options to December, including a</p>

Date	Event	JST Event Description	KPMG Analysis
		3) [REDACTED] (Jacobs) Finance Report finalised.	delayed opening or a reduced frequency or partial opening. [REDACTED] presented on the final phase of Jacobs work.
24 Jul 2018	Announcement	Crossrail Annual Update to Parliament WMS published, announcing increase in funding envelope from £14.8bn to £15.4bn.	Agree with comment that WMS was published on 24 July and that it references the new funding envelope of £15.4bn. It doesn't refer to the previous value.
26 Jul 2018	Sponsor Board 95	Crossrail Ltd indicated further time was needed for testing and commissioning and they would be presenting a revised schedule to their board meeting on 29 August.	We did not see the minutes explicitly refer to further time was needed for testing and commissioning but they do refer to discussing "Great Western Main Line (GWML) transition testing as it's flagged as red in their Readiness Slides" and that Simon Wright noted (under resourcing) the need to supplement the testing and commissioning side for longer. In addition they report Simon Wright summarising a number of challenges CRL were experiencing that were impacting on schedule, including an alert that's recently been received from Schneider related to faults in their equipment (which could delay energisation of low-voltage systems in stations); modelling of some attenuators on the ventilation system which predict oscillation; and specific challenges on stations."
30 Aug 2018	CRL Letter	Sponsors informed of revised delivery schedule via Adverse Event Notice.	Sponsors are advised of an Adverse Event and an intent to work jointly with the Sponsors to create a RAP. The notice advises there is insufficient time to carry out the full range of integrated testing to allow introduction of the Elizabeth Line in December 2018
31 Aug 2018	Announcement	Crossrail Ltd press release publically announcing schedule delay to autumn 2019.	To be precise it is the Stage 3 opening which is announced as delayed to autumn 2019
3 Sept 2018	Sponsor Board 96	Crossrail Ltd discuss impact of schedule delay with Sponsors. Phase 1 of an	The draft independent Rannachan report was dated 21 Aug 2018. It was shared with Sponsors in

Date	Event	JST Event Description	KPMG Analysis
		independent schedule review, commissioned by Sponsors, is included in Board papers and used by Sponsors to question CRL.	advance of the 3 Sept meeting and then shared with CRL
18 Sept 2018	Remedial Action Plan	Remedial Action Plan circulated to Sponsors (JST received from CRL on 18 September 2018)	The date of RAP 2 is 18 September 2018, but we were unable to validate from documents provided when it was circulated to Sponsors.
20 Sep 2018	Sponsor Board 97	Sponsors require further work on the RAP by CRL to include a worst case, pessimistic view of costs and schedule.	The minutes record that Simon Kilonback requested the strategic risk assessment referred to under the MOHS section of the Remedial Action Plan should include a clear articulation of the pessimistic view of costs (Action 97b/05). It notes this will allow Sponsors to understand the risks and potential financial impacts of specific events.
9 Oct 2018	CRL Update (via email)	After a request by JST, clarification is received from CRL on the [REDACTED] date being December 2019. CRL confirm that the [REDACTED] date would take into account the findings of the two independent schedule reviews.	RAP2 had stated that it took account of the independent schedule assurance reviews.

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Appendix 3: Crossrail Timeline of key events – Annotated with KPMG comments

DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
2017				
June 2017	Intervention Point Breached - confirmation	Crossrail Limited formally report to Sponsor Board (through SACR17) that the project has breached the second Intervention Point, IP1 by £210m, and that this breach of IP1 triggered the start of a draw-down from the TfL contingency fund of £600m.	Documentation reviewed notes the magnitude of IP1 breach to be £209m - a difference of £1m from that in the JST event description. <ul style="list-style-type: none"> - Confirmation of the P50 AFDCDC breach in IP1. - The key driver items / projects driving these escalated costs are also listed. - Evidence viewed notes that the TfL contingency fund will need to be called upon in Period 10 	Semi Annual Construction Report (SACR) 17: <ul style="list-style-type: none"> - Section 2.1 Executive Summary, paragraph 2, page 10 of SACR17. - Section 3.4 Cost Status - page 25 of SACR 17. SACR 17 was included as a supporting paper to Sponsor Board Meeting no. 83
7 July 2017	Letter	Crossrail Limited issue an Adverse Event Notice to Sponsors due to uncertainty of the timely development of on board signalling and train management software.	Agree with the description.	Letter from CRL to Secretary of State for Transport
November 2017	Project Event	Failure of transformer equipment at Stratford delays the start of train testing by 3 months. This is reported at the November Sponsor Board.	The software capability of the train was also reported to be a reason for failure to carry out dynamic testing on 28 October 2017. JST Report 8 2017_18 records that "The train which arrived on 28th October 2017 did not carry out any dynamic testing because of the lack of traction power and because the software capability of the train fell well short of what was expected".	Crossrail JST Report 8 2017-18: 15 Oct to 11 Nov 17 – page 3 of pack
23 November 2017	Sponsor Board 87 SW and AW attend	Sponsors ask CRL whether they should plan for a sub-optimal staged opening. CRL assured sponsors that everything was in	The description broadly aligns with the reported discussion during Sponsor Board Meeting No. 87 part B, although evidence viewed focused on questions raised and discussion around the potential of a ‘sub-optimal or delayed’ opening. Staged opening (as per the description) is not explicitly mentioned. CRL	SACR 18 - Page 1, Summary section, section 4. SACR 18 was included as a supporting paper to Sponsor Board Meeting no. 87.

This contains information which is confidential and legally privileged. The disclosure of this document would, or would be likely to, prejudice the commercial interests of TfL, its subsidiary companies and / or other parties. KPMG document classification – Highly Confidential. Based on fieldwork performed up to 9 December 2018. To be read in the context of our letter dated 8 March 2019 for which this is an appendix.

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
		place to make sure there will be a timely and stable opening.	comments that it is too early to consider delays to stage opening. CRL CEO assured sponsors that everything is in place to make sure there will be a timely and stable opening.	
12 December 2017	Sponsor Board 88 SW and AW attend	Sponsors continued to challenge CRL on the deliverability of December 2018.	Agree with the description.	Sponsor Board Meeting Minutes no. 88 Sponsor Board Meeting no. 88 minutes: - Section 4 – Stage 3 Readiness. - Section 2 – Sponsor Risks
18 December 2017	BICC Meeting	Andrew Wolstenholme presented an update to BICC	Agreed with the description	BICC Meeting Minutes (meeting date 18 Dec 17). Note that the document reviewed and provided was an extract of the meeting minutes focussed on Crossrail. Meeting item is titled 'Item2: Crossrail update
2018				
26 January 2018	Sponsor Board 89 SW and AW attend	<ol style="list-style-type: none"> 1) CRL reported an increase in forecast costs. 2) It was agreed that CRL would develop scenarios to estimate potential cost outturn. 3) Sponsors ask again on suboptimal opening. CRL say that if still significant problems in May it would have to be considered. 	<ol style="list-style-type: none"> 1) Agree with the description – CRL discussed the increase in AFCDC of around £160m at period 09. 2) The minutes record CRL would provide the standard P50/P80 figures and scenario analyses on what would happen for example if there was a three month delay. The minutes do not explicitly say whether CRL offered to develop scenarios or whether Sponsors asked CRL to develop scenarios. 3) Agree that Sponsors asked CRL at what point a suboptimal opening should be considered. CRL responded by stating that if the programme 	<ol style="list-style-type: none"> 1) Sponsor Board Meeting no.89a Minutes – section 2 2) Sponsor Board Meeting no. 89b Minutes – section 5 3) Sponsor Board Meeting no. 89b – section 4, page 4.

This contains information which is confidential and legally privileged. The disclosure of this document would, or would be likely to, prejudice the commercial interests of TfL, its subsidiary companies and / or other parties. KPMG document classification – Highly Confidential. Based on fieldwork performed up to 9 December 2018. To be read in the context of our letter dated 8 March 2019 for which this is an appendix.

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
			reaches May and the train is stopping and emergency braking this would need to be considered – we did not see any direct recorded use of the words "significant issues".	
20 February 2018	Letter about Stage 2	Crossrail Limited write to Sponsors to confirm that Crossrail Stage 2 would be delivered in two phases due to uncertainty of the timely development of on board signalling and train management software.	Agree with the description.	Letter from CRL to Sponsors
22 February 2018	Sponsor Board 90 SW and AW attend	<p>Crossrail Ltd produced revised delivery schedule which concluded that the December 2018 opening schedule was challenging but deliverable.</p> <p>Sponsors commission P-Rep review of the schedule.</p> <p>CRL present their scenarios to sponsors, which suggest an upper cost outturn of £283m above IP2 or £355m in the event of a 12 month delay. These are summarised in a post-Sponsor Board note, alongside the minutes. Sponsors commissioned [REDACTED] (Jacob's) to conduct an independent review into cost estimates.</p>	<p>Sponsors agreed to commission Jacobs to review the cost scenarios.</p> <p>We did not find details of a separate P-Rep review of the Schedule being referred to in the minutes of Sponsor Board 90 although we note the Jacobs Period 11 P-Rep report tabled at the 22 March Sponsor Board Meeting details the results of a request by JST to provide an assessment of the MOHS.</p> <p>With regard to an independent review into cost estimates we note: 'Sponsors also agreed that the independent cost reviewers were not expected to validate the CRL numbers but to review how robust the processes were, whether they had been applied correctly and whether the judgements made by CRL are reasonable.'</p> <p>KPMG observation: The 12 months delay put forward by CRL assumed a software issue delay with no delay to the stations and other contracts.</p>	<p>Sponsor Board Meeting 90b Minutes – section 2, page 2.</p> <p>MOHS 2018 baseline Update - 22 Feb 2018. This was a supporting document to Sponsor Board Meeting no.90 – page 8.</p> <p>Independent review of Crossrail Cost Forecast – This was part of a post meeting briefing following Sponsor Board Meeting 90.</p> <ul style="list-style-type: none"> - Paragraphs 8 to 10; and Appendix 2.

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
22 March 2018	Sponsor Board 91 SW and AW attend	Sponsors ask ██████ to present the initial findings of the independent review which suggest a range of £200m-£350m above IP2. P-Rep review of the schedule concludes that the programme is possible but ambitious.	The Jacob's team presented that the approach used to conduct scenario analysis was "logical but relied on significant judgement from the senior members of the CRL executive". Jacobs commented that £350m was not a bookend and recommended a further deep dive analysis on certain contracts SB91A Minutes record that P Rep emphasised that they believe the schedule is ambitious, contains virtually no float and relies on first time delivery	Sponsor Board Meeting no. 91b Minutes – section 2 and no 91a Minutes JST Period Report – Period 13 2017-18. Programme and schedule section. JST Report - Period 13 2017-18 - P-Rep report Executive Summary: Schedule and progress section. The P-Rep report is included as a supporting document in the JST period report.
31 March 2018	Project Event – Leadership change	Andrew Wolstenholme leaves his role as Crossrail Limited CEO. Simon Wright takes up the combined CEO/Programme Director role.	Agreed, but no exact date for the handover of CEO responsibilities was identified in the documentation reviewed. 31 March 2018 is the date recorded at Companies House for the resignation of Andrew Wolstenholme as a director of CRL	Sponsor Board Meeting no. 91b Minutes – section 2, page 2.
19 April 2018	Sponsor Board 92 SW attends	██████ (Jacobs) presents further work looking at specific contracts. Sponsors agree for Jacobs to work with CRL to look at what the upper end scenario might be.	Jacobs' report on their emerging findings (their work is ongoing); The agreed action was for Jacobs, as part of their cost review, to work with CRL to consider the revised upper end scenario which reflects the potential 'tail' of activities following December 2018. The resulting Jacobs Phase 3 (Completion Tail) report presented at the subsequent Sponsor Board meeting states the objective as to "Stress test the upper limit book-end numbers and provide JS with further reassurance and confidence surrounding the upper limit book-end value"... we note that an exclusion / limitation in the Jacobs report was that "The cost scenarios are based on the premise that all essential	Sponsor Board Meeting no. 92a Minutes – page 2.

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
			<p>construction work is completed in time for Stage 3 opening on 9 December 2018.”</p> <p>It seems therefore that the scenario to be explored was crucially not directed at also considering the probabilities of and the consequences of Stage 3 not being delivered in December 2018 and, to that extent, was not an upper end.</p>	
<p>18 May 2018</p>	<p>Sponsor Board 93 SW attends</p>	<p>1) Following challenges with train software and testing, installation of signalling and communications software systems, as well as other issues. Sponsors ask CRL whether it is confident in December 2018 opening. CRL said it remained focussed on opening in December which was still achievable and that it would review the Trial Running and Trial Operations periods and report back in June.</p> <p>2) ██████████ presents the final stage of his review which suggests upper end converging to £400m. Jacobs understand this is the worst case scenario. Jacobs view has not changed that scenario A3 (£283m above IP2) is the most likely. On that basis Sponsors agree to provide a further £300m of funding.</p>	<p>The minutes record: “The 2nd testing window had occurred on the previous weekend and had gone better than the first window. CRL remained “in the foothills of testing” with auto reversing not yet working but there was a detailed plan and spreadsheet mapping out the tests required.</p> <p>On installation CRL was late on signalling systems (C620) and communications and control systems (C660) cables which was scheduled to be installed by the end of May.</p> <p>CRL remained on schedule for dynamic testing in Zones 3&4 but this would not initially be under signalling control.</p> <p>Simon Wright noted that CRL needs to look again at the Trial Running and Trial Operations dates due to the need for more dynamic testing windows, combined with delays with non-traction power and cable installation. It was likely that Trial Running would be delayed and there were detailed discussions occurring with the Operators and Infrastructure Managers.</p>	<p>1) Sponsor Board Meeting no. 93b Minutes – section 5, pages 4 and 5.</p> <p>2) Sponsor Board Meeting no. 93a Minutes – section 3, page 2.</p>

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
			Polly Payne asked if CRL still had confidence overall of delivering for December. Simon Wright said CRL was absolutely focussed on opening in December which was still achievable if everyone 'pulled their weight'."	
20 and 21 May 2018	Project Event	Stage 2 Phase 1 services commence. TFL take over Heathrow Connect services and new Class 345 trains commence running between Paddington and Hayes & Harlington.	Class 345 trains are reported as commencing on 21 May 2018. Class 360 trains from Heathrow began on 20 May 2018.	JST Period Report 2 2018-19 – page 2.
19 June 2018	ExCo	An update on the Crossrail programme was provided, focussing on schedule pressures. Simon Wright attended to provide an update on current progress and the key risks in advance of the planned opening of Stage 3 in December 2018. Simon stated that December was “an achievable aim, but faced risks which might affect delivery” and the ExCO members questioned Simon on these.	<ol style="list-style-type: none"> 1) Agree that an update of the project was given to ExCo focusing on the schedule. 2) Agree that a series of risks were noted during the briefing and that the project was reported to be at a critical point. 	19 June 2016 ExCo Item 2 - Crossrail Cost and Schedule
25 May and 25 June 2018	Intervention Point Breached	Crossrail Limited formally report to Sponsor Board (through SACR19) that the project has breached the third Intervention Point, IP2 by £211m . This breach of IP2 was the limit of current Sponsor funding for the project and triggered an additional funding request. SACR19 was shared with JST on 25 May 2018 and covered at Sponsor Board on 25 June 2018	<p>The means of communicating the breach of IP2 seems to have been SACR 19 - which seems to be undated.</p> <p>SACR19 was covered at the Crossrail Sponsor Board on 25 June 2018. However according to minutes of that meeting, SACR 19 was issued to Sponsors on 25 May 2018 and this was therefore the date of the first communication to JST of breach of IP2</p>	<p>SACR 19 – (a supporting document to Sponsor Board Meeting no.94) – Cost overview section; sections 6 – 8; and page 84 of the pack - paragraph 7.</p> <p>SACR 19, page 3 (page 101 of Sponsor Board Meeting no. 94 pack)</p> <p>Sponsor Board Meeting no.94 Minutes section 3.</p>

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
25 June 2018	Sponsor Board 94 SW attends	<p>1) Crossrail Ltd produced a new plan to combine Trial Running (testing of full train service) and Trial Operations (testing of operational scenarios); continued to assert December 2018 was challenging but deliverable.</p> <p>2) Sponsors commission CRL review of delivery confidence in December and alternative options.</p> <p>3) ██████████ (Jacobs) Finance Report finalised.</p>	<p>1) Agree with the comment of CRL providing and preparing a new trial running programme for a December completion date. The Sponsors noted the increasing schedule risk and agreed to discuss the need for contingency / alternative options for stage 3 in the event that the 9 Dec 2018 date was not achievable. We did not identify explicit wording that the programme was challenging, or the assertion of a December 2018 completion date; however the meaning was implied by the comments / discussion during Sponsor Board meeting 94.</p> <p>2) The minutes record that: The second ‘checkpoint’ or review point had been brought forward to July. This would involve a peer review session with some CRL Non-Executive Directors on 10th July, the CRL Board on 19th July and the Sponsor Board on 26th July. Sponsors asked CRL to provide information for this checkpoint on: confidence in December delivery, alternative options to December, including a delayed opening or a reduced frequency or partial opening.</p> <p>3) ██████████ presented on the final phase of Jacobs work.</p>	<p>Sponsor Board Meeting 94 –</p> <ul style="list-style-type: none"> - Paper 04 - Title ‘Sponsor confidence and assessment of operational readiness ahead of stage opening’. Programme assurance: sections 8 to 11 and sections 15 to 17. - Appendix B - CRL Test Window Plan <p>Sponsor Board Meeting no.94a Minutes sections 2 and 6.</p>
19 July 2018	Crossrail Limited Board		No evidence provided at the time of our fieldwork and no event detailed	
24 July 2018	Announcement	Crossrail Annual Update to Parliament WMS published , announcing increase in funding envelope from £14.8bn to £15.4bn.	Agree with comment that WMS was published on 24 July and that it references the new funding envelope of £15.4bn. It doesn’t refer to the previous value.	JST Period 4 report – Headline section

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
26 July 2018	Sponsor Board 95 SW attends	Crossrail Ltd indicated further time was needed for testing and commissioning and they would be presenting a revised schedule to their board meeting on 29 August.	<p>We did not see the minutes explicitly refer to further time was needed for testing and commissioning” but they do refer to discussing “Great Western Main Line (GWML) transition testing as it’s flagged as red in their Readiness Slides” and they record that Simon Wright noted (under resourcing) the need to supplement the testing and commissioning side for longer.</p> <p>In addition they report Simon Wright summarising a number of challenges CRL were experiencing that were impacting on schedule, including an alert that’s recently been received from Schneider related to faults in their equipment (which could delay energisation of low-voltage systems in stations); modelling of some attenuators on the ventilation system which predict oscillation; and specific challenges on stations.”</p>	Sponsor Board Meeting no. 95b Minutes – sections 2 and 4.
30 August 2018	CRL Letter	Sponsors informed of revised delivery schedule via Adverse Event Notice.	Sponsors are advised of an Adverse Event and an intent to work jointly with the Sponsors to create a RAP. The notice advises there is insufficient time to carry out the full range of integrated testing to allow introduction of the Elizabeth Line in December 2018	Letter from CE of Crossrail to the sponsors
31 August 2018	Announcement	Crossrail Ltd press release publically announcing schedule delay to autumn 2019.	To be precise it is the Stage 3 opening which is announced as delayed to autumn 2019	http://www.crossrail.co.uk/news/articles/elizabeth-line-services-through-central-london-to-start-in-2019 link provided by JST team
3 September 2018	Sponsor Board 96	Sponsor Board meeting – Crossrail Ltd discuss impact of schedule delay with Sponsors. Phase 1 of an independent schedule review, commissioned by Sponsors, is	The draft independent Rannachan report was dated 21 Aug 2018. It was recorded as shared with Sponsors in advance of the 3 Sept meeting and then shared with CRL	Sponsor Board Meeting no. 96b Agenda Sponsor Board Meeting no.96b Minutes – section3, pages 2 and 3

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
		included in Board papers and used by Sponsors to question CRL.		
19 September 2018	Remedial Action Plan	Remedial Action Plan circulated to Sponsors (JST received from CRL on 18 September 2018)	We are able to confirm the date of the Remedial Action Plan is 18 September 2018, but unable to validate that the document was circulated to Sponsors on this date, as per the description.	Crossrail Ltd Remedial Action Plan - 18 September 2018
20 September 2018	Sponsor Board 97	<p>Crossrail Ltd provided an update on schedule and cost as part of their Remedial Action Plan (RAP). Draft findings from the Phase 2 of the independent schedule by John Boss was included in the Board papers to help Sponsors scrutinise Crossrail Ltd's Remedial Action Plan.</p> <p>Sponsors require further work on the RAP by CRL to include a worst case, pessimistic view of costs and schedule.</p>	<p>Agree that an update on the RAP was provided during the meeting. An updated version of the RAP document was included in the supporting documents for Sponsor Board Meeting 97. Draft findings from John Boss review were also included in the meeting pack. These papers are included in Items 2 (John Boss schedule review) and 4 (Remediation Action Plan, 18 September 2018) of the Sponsor no. 97 meeting pack.</p> <p>The minutes record that Simon Kilonback requested the strategic risk assessment referred to under the MOHS section of the Remedial Action Plan should include a clear articulation of the pessimistic view of costs (Action 97b/05). It is noted that this will allow Sponsors to understand the risks and potential financial impacts of specific events.</p>	<p>Sponsor Board Meeting 97a - Meeting Agenda</p> <p>Briefing Note: Independent Schedule Assurance Review - included in the documents supporting the meeting. (Only first page shown in the evidence column)</p> <p>Sponsor Board Meeting no. 97b - section 3, page 4</p>
2 October 2018	Remedial Action Plan update	CRL issue an update to their Remedial Action Plan (RAP 2) (a draft of which was provided to the Sponsor Board). No specific [redacted] date for Stage 3 opening is specified in RAP 2 (only an [redacted] date of October 2019) although it is possible to discern the [redacted] date from the information set out.	We agree that an update to the Remedial Action Plan was issued dated 2 Oct 2018. No specific date is clearly quoted as the "[redacted] date" for Stage 3 opening. However RAP 2 does state that "[redacted] date indicates a further delay in the Stage 3 opening and explains this is due to an assumed increase of 2 months in the period needed for dynamic testing along with an increase in the duration of Trial Operations from 12 to 15 weeks. We note that the [redacted] Date Opening for Stage 3 is shown as mid October 2019 on Page 4 of RAP 2 and adding just over 2 months to this would	Remedial Action Plan - Summary update 2 October 18

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
		The RAP 2 document confirmed it took account of the independent schedule assurance reviews.	give a [REDACTED] Date of late December 2019. We note Systemwide Trial Ops is shown as having a [REDACTED] Completion date of 31.12.19 The RAP 2 document stated that it took account of the independent schedule assurance reviews.	
9 October 2018	CRL Update (via email)	After being requested by JST clarification is received from CRL on the [REDACTED] date being December 2019. CRL confirmed that the [REDACTED] date would take into account the findings of the two independent schedule reviews as the RAP 2 Update had stated.	Agree that clarification was sought and CRL quoted Stage 3 completion as 31 Dec 19. CRL's response also quoted an [REDACTED] date of 15 Oct 19. The RAP2 document already stated that it took account of the independent schedule assurance reviews	Email confirmation of dates to Sponsors from CRL, and associated attachment. JST team provided copy of email and attachment.
15 October 2018	Sponsor Board 98	1) CRL provided an update on MOHS, noting that the principles had been agreed but the detail was still being finalised with contractors. Sponsors challenged CRL on its expectations of achieving these dates, particularly demobilisation of Tier 1 contractors. 2) CRL clarified its in year cash-requirement and Sponsors clarified the impact of further delay to the routeway works.	Agreed We noted a variety of points covered at the same time including: Chris Sexton explained the process for finalising the MOHS, noting that extra time was being taken to consult Tier 3 and 4 contractors. The [REDACTED] date for full dynamic testing (80 hours per week; 2 x 8 hour shifts per day, five days a week) was 22 January 2019. Under the [REDACTED] dates there was no change in the dynamic testing duration but a six week risk allowance, had been added. The [REDACTED] date schedule would see Stage 3 open in December 2019. Chris Sexton explained on station completion that the Tier One Substantial Demobilisation (TOSD) dates were not contractual dates but were the dates at which CRL expected nearly all the physical works to be	Sponsor Board Meeting no. 98b Minutes. MOHS Update for Sponsors - 15 Oct 18. This MOHS update was provided as part of a supporting paper for Sponsor Meeting 98. Sponsor Board Meeting no. 98B Minutes

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
			substantially complete and principal contractors to have demobilised most of their staff.	
2 November 2018	Announcement	Mark Wild appointed as new Crossrail Limited CEO to take up role from 19 November 2018.	Agree with description	https://tfl.gov.uk/info-for/media/press-releases/2018/november/mark-wild-to-join-crossrail-ltd link provided by the JST team
2, 15 and 19 November 2018	Letter from Sponsors to CRL Sponsor Board 99 Follow up meeting between Sponsors and CRL	(To be reviewed – 15 Nov minutes subject to approval on 10 December)) On 2 November 2018 Sponsors wrote to CRL noting the importance of a “comprehensive, robust and stable MOHS” and for it to be finalised by 30 November. At the Sponsor Board on 15 November CRL presented on the ongoing work to update the MOHS, noting that it still planned to be finalised on 30 November but with further work possibly needed to finalise the stage opening dates. (Note: A revised MOHS has yet to be issued to Sponsors but the matter is due for discussion at 10 December Sponsor Board). At the 15 November 2018 Sponsor Board, CRL also discussed its	Agree with the description. Sponsors (the DfT DG) wrote to CRL on 3 November noting the importance of a comprehensive, robust and stable MOHS. At Sponsor Board 99, CRL provided sponsors with an update on the timescales to completion, and said that it expects to finalise the schedule for the 5 Dec 18 CRL Board meeting. CRL also started to present its proposal for the commercial agreements. The presentation of proposals for commercial agreements with some contractors are dealt with in a follow-up meeting on 19 Nov.	Sponsor Board Meeting Minutes no.99b (Draft) – section 3 (page 2) and section 5 (page 4). Note, at the time of our fieldwork review the meeting minutes were currently in draft as they were not due to be finalised until Sponsor Board Meeting no. 100, due to take place on 10 Dec 18. Letter dated 2 November 2018 from Sponsor Board to CEO of CRL.

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DATE	EVENT	DESCRIPTION	KPMG Comments	Source reference
		proposal for [REDACTED] commercial agreements with some contractors to incentivise delivery and establish more certainty on the cost outturn. This was discussed in more detail at a follow-up meeting on 19 November at which Sponsor representatives said they had no objections to the approach.		
10 December 2018	Sponsor Board 100	To consider the revised schedule	Fieldwork performed up to 9 December 2019 and this meeting had not taken place at the time our fieldwork concluded.	

Appendix 4: On Network Works – Expected Outturn Costs as reported by JST

PERIOD	Extracts from JST Reports	Source reference												
2017-18														
1	<p><i>On Network Works Cost Position</i></p> <table border="1"> <thead> <tr> <th></th> <th>Period 1 (£m)</th> </tr> </thead> <tbody> <tr> <td>NR Reported AFC (inc VNs already agreed)</td> <td>2,296</td> </tr> <tr> <td>Variation notices (request for funding made)</td> <td>147</td> </tr> <tr> <td>Cost Pressures (request for funding made)</td> <td>49</td> </tr> <tr> <td>Forecast Final Outturn Cost</td> <td>2,492</td> </tr> <tr> <td>Headroom to DfT Intervention Price</td> <td>(192)</td> </tr> </tbody> </table> <p>The headline figures for the On Network Works remain unchanged from Period 13. On 6 April 2017 Bernadette Kelly made a written request on behalf of Crossrail Sponsors to NR and CRL to look again at their funding requirements for the ONW and to provide a revised position as soon as practicable. This followed advice taken from the Secretary of State. Since that time, NR and CRL have been working through the position, but a response to this request is still outstanding.</p> <p>Informal indications suggest that an additional £154m will be required to complete all works with around £46m additional funding required by 1 July 2017, and the remainder around 1 October 2017. However, a joint written position from NR and CRL is awaited and is being actively pursued by Sponsors.</p>		Period 1 (£m)	NR Reported AFC (inc VNs already agreed)	2,296	Variation notices (request for funding made)	147	Cost Pressures (request for funding made)	49	Forecast Final Outturn Cost	2,492	Headroom to DfT Intervention Price	(192)	JST Report Period 1
	Period 1 (£m)													
NR Reported AFC (inc VNs already agreed)	2,296													
Variation notices (request for funding made)	147													
Cost Pressures (request for funding made)	49													
Forecast Final Outturn Cost	2,492													
Headroom to DfT Intervention Price	(192)													
2	<p>On Network Works Cost Position</p> <p>The Forecast Final Outturn Cost has increased slightly in the period to £2,499m due to a slight increase in the forecast value of outstanding variation notices. CRL and NR have now formally reported a joint assessment to Sponsors that an additional £154m of funding is required to complete the full scope of the ONW. Up to £70m of funding solutions have been identified, leaving a residual pressure of £84m. Financial authority for this remaining amount is required by no later than 31 October 2017. In line with the requirements of the Crossrail Core Agreements, DfT is now considering funding options.</p>	JST Report Period 2												

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PERIOD	Extracts from JST Reports	Source reference																					
	<table border="1"> <thead> <tr> <th></th> <th>Period 1 (£m)</th> <th>Period 2 (£m)</th> </tr> </thead> <tbody> <tr> <td>NR Reported AFC (inc VNs already agreed)</td> <td align="right">2,296</td> <td align="right">2,296</td> </tr> <tr> <td>Variation notices (request for funding made)</td> <td align="right">147</td> <td align="right">154</td> </tr> <tr> <td>Cost Pressures (request for funding made)</td> <td align="right">49</td> <td align="right">49</td> </tr> <tr> <td>Forecast Final Outturn Cost</td> <td align="right">2,492</td> <td align="right">2,499</td> </tr> <tr> <td>Headroom to DfT Intervention Price</td> <td align="right">(192)</td> <td align="right">(199)</td> </tr> </tbody> </table>		Period 1 (£m)	Period 2 (£m)	NR Reported AFC (inc VNs already agreed)	2,296	2,296	Variation notices (request for funding made)	147	154	Cost Pressures (request for funding made)	49	49	Forecast Final Outturn Cost	2,492	2,499	Headroom to DfT Intervention Price	(192)	(199)				
	Period 1 (£m)	Period 2 (£m)																					
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Headroom to DfT Intervention Price	(192)	(199)																					
3	<p>On Network Works Cost Position: CRL is now reporting a Forecast Final Outturn Cost of £2,450m which has been revised to bring it in line with the position jointly reported to Sponsors by Andrew Wolstenholme and Mark Carne on 9 June. This means that a further £154m of funding is required above the level currently provided.</p> <table border="1"> <thead> <tr> <th></th> <th>Period 3 (£m)</th> <th>Period 2 (£m)</th> </tr> </thead> <tbody> <tr> <td>NR AFC (exc VNs)</td> <td align="right">2,218</td> <td align="right">2,228</td> </tr> <tr> <td>Current funded variation notices allowance</td> <td align="right">68</td> <td align="right">78</td> </tr> <tr> <td>NR AFC (inc VNs)</td> <td align="right">2,296</td> <td align="right">2,296</td> </tr> <tr> <td>Additional unfunded variation notices</td> <td align="right">154</td> <td align="right">154</td> </tr> <tr> <td>Forecast Final Outturn Cost</td> <td align="right">2,450</td> <td align="right">2,499</td> </tr> <tr> <td>Headroom to DfT Intervention Price</td> <td align="right">(145)</td> <td align="right">(199)</td> </tr> </tbody> </table> <p>Up to £70m of funding solutions have already been identified comprising contributions by CRL, NR and DfT, and leaves a residual pressure of £84m to be funded. Financial authority for this remaining amount is required by no later than 31 October 2017. In line with the requirements of the Crossrail Core Agreements, DfT is now considering funding options and expect to put proposals for funding for approval by the Secretary of State in the first week of September.</p>		Period 3 (£m)	Period 2 (£m)	NR AFC (exc VNs)	2,218	2,228	Current funded variation notices allowance	68	78	NR AFC (inc VNs)	2,296	2,296	Additional unfunded variation notices	154	154	Forecast Final Outturn Cost	2,450	2,499	Headroom to DfT Intervention Price	(145)	(199)	JST Report 3
	Period 3 (£m)	Period 2 (£m)																					
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Forecast Final Outturn Cost	2,450	2,499																					
Headroom to DfT Intervention Price	(145)	(199)																					
4	<p>Cost The cost position remains unchanged since Period 3 with the Forecast Final Outturn Cost remaining at £2,450m, and requiring a further £154m of funding on top of the existing £2,296m.</p>	JST Report 4																					

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PERIOD	Extracts from JST Reports	Source reference
	<p>During the period, Sponsors confirmed that they were content for CRL and NR to terminate the delivery incentives arrangement and to re-direct £22m of funding attached to this arrangement to contribute to the £154m funding challenge. This £22m, alongside a further £28m grant payment from DfT and £20m from NR themselves are now cumulatively providing £70m of funding contribution by the end of August. Proposals for funding the remaining £84m pressure remain under development by the DfT, with financial authority for this amount required by the end of October.</p> <p>To achieve the overall FFOC of £2,450m NR must still deliver around £100m of recoveries, efficiencies and stretch savings. NR has previously given assurances that NR will absorb these sums within their funding without returning to Sponsors in the instances of non-recovery.</p> <p>The JST will be testing the position with these recoveries and this underpinning assumption, as part of any proposals and approval of the additional funding £84m.</p>	
5	<p>On Network Works Cost Position: There has been no change in the forecast cost for the On Network Works during the period, with CRL continuing to report a Final Forecast Outturn Cost of £2,450m. DfT made a £28m grant payment to NR on 8 September as a contribution to the additional funding of £154m required. Sponsors agreed to the termination of the NR CRL incentives agreement and the associated £22m to be released to NR, but this has yet to be formally effected by CRL. NR is providing a further £20m contribution themselves. Advice to the Secretary of State for the residual £84m is being prepared. This authority is required no later than 31 October.</p>	JST Period report 5 Executive Summary of the CRL Board report (as part of the JST report)
6	<p>Cost On Network Works Cost Position</p> <p>Period 6 reports that the On Network Works Final Forecast Outturn Cost remains at £2,450m. This includes £154m of forecast cost to pay for variation notices requiring instruction, which include the upgrade to west stations and Ilford.</p> <p>There is now a full funding commitment to this £154m. The three proposed contributions to find £70m of this pressure, have been completed or progressed, that is; a DfT grant payment made 8th Sept, £20m internal budget reallocation from NR, and the termination of CRL/NR incentives agreement and release of £22m associated funding. The Secretary of State has given approval to DfT funding the remaining £84m from Departmental resources. This will be formally confirmed to NR and CRL before the end of the month.</p>	JST Report Period 6

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PERIOD	Extracts from JST Reports	Source reference
	<p>However, an additional £80m of cost increases have now been reported by NR. Funding has been approved for this from DfT/NR governed Control Period 5 enhancements contingency, but this now means that the Final Forecast Outturn Cost of the ONW stands at £2,530m. It is expected that this higher FFOC will be reflected in SACR 18.</p>	
7	<p>On Network Works Cost Position: Period 7 reports that the On Network Works Final Forecast Outturn Cost has increased to £2530m. This reflects the additional £80m of cost increases reported by NR at Period 6. Funding has been approved for this from DfT/NR governed Control Period 5 enhancements contingency. This AFC also includes the £154m of forecast cost to pay for variation notices requiring instruction, which include the upgrade to west stations and Ilford.</p> <p>As reported last period there is now a full funding commitment to this £154m. The three proposed contributions to fund £70m of this pressure, have been completed or progressed, namely; a £28m DfT grant payment made on 8 September 2017, £20m internal budget reallocation from NR, and the termination of CRL/NR incentives agreement and release of £22m associated funding. The Secretary of State has agreed to fund the additional £84m but with a number of significant requirements regarding financial forecasting and project oversight. The JST are in discussion with CRL and NR on how to achieve this.</p>	JST Report Period 7
8	<p>Cost</p> <p>Period 8 reports that the On Network Works Final Forecast Outturn Cost has remained at £2,530m. Funding has been approved for this from DfT/NR governed Control Period 5 enhancements contingency.</p> <p>This AFC also includes the £154m of forecast cost to pay for variation notices requiring instruction, which include the upgrade to west stations and Ilford. There is a full funding commitment to this £154m. The three proposed contributions to fund £70m of this pressure, have been completed or progressed, namely; a £28m DfT grant payment made on 8 September 2017, £20m internal budget reallocation from NR, and the termination of CRL/NR incentives agreement and release of £22m associated funding. The Secretary of State has agreed to fund the additional £84m and the Department has written to CRL with a number of significant requirements regarding financial forecasting and project oversight. The JST are in discussion with CRL and NR on how to achieve this.</p>	JST Report 8

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PERIOD	Extracts from JST Reports	Source reference
9	<p>Cost</p> <p>The ONW Final Forecast Outturn Cost (FFOC) for Period 9 has reduced by £22m¹ to £2,508m. This does not reflect a reduction in the cost forecast but a reduction in the cost attributed to the FFOC following agreement by Sponsors, CRL and NR for £22m (from the delivery incentives agreement) to be funded from the AFCDC.</p> <p>As reported previously there is a full funding commitment to meet the reported forecast cost. Following the Secretary of State’s agreement to fund the additional £84m the Department wrote to CRL with a number of significant requirements regarding financial forecasting and project oversight. CRL have been working with NR to provide more detailed reporting on the forecasted recoveries and savings, and confidence assessments of the cost forecast for each contract. CRL have presented a draft proposal to the JST. The JST’s comments are being incorporated and at the end of January CRL and NR will present this to DfT and the Sponsor Board for consideration.</p>	JST Report 9
10	<p>Cost</p> <p>The Crossrail On Network Works cost forecast remains stable at Period 10. CRL have reported that the forecast to the Regulatory Asset Base (RAB) has reduced to £2,480m. This reflects that £28m has been cash funded by the Department and therefore is taken off the amount which NR can log to the RAB. CRL and NR have finalised their revised form of reporting and presented this to DfT and the JST at the end of January.</p>	JST Report 10
11	<p>Cost</p> <p>Network Rail’s cost forecast remains stable at Period 11. The forecast cost (AFC plus variations) remains at £2,530m (including £22m charged to the AFCDC). CRL launched their revised reporting in this period which provides confidence levels and a range of cost outturn for Sponsors. As part of this CRL now report on NR’s total funding and costs (including funding from other programmes) which is currently £2,818m², improving clarity and scrutiny. Commercial risks remain and the JST continues to assess CRL’s cost reports to provide assurance of the most likely outcomes.</p>	JST Report 11

¹ The JST has explained that the total AFC is £2,530m. This is because although £22m is being funded through the AFCDC, it remains an ONW cost and therefore, it is included in the NR total AFC number but then needs to be subtracted from the total programme AFC to avoid double counting it in the ONW AFC and AFCDC.

² The JST has explained that reporting focuses on the total AFC (which was £2,530m as at Period 11) and that there is also further funding from other programmes for the costs of works which support the requirements of those programmes (as opposed to the Crossrail ONW requirements) and which therefore is reported separately to the AFC.

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PERIOD	Extracts from JST Reports	Source reference
12	<p>Cost Network Rail’s cost forecast remains stable at Period 12. The forecast cost (Anticipated Final Cost plus variations) remains at £2,530m. NR’s total funding and costs (including funding from other programmes) remains at £2,818m³, though as the programme draws to a close, the opportunity to achieve the reported efficiencies and recoveries is diminishing and achieving the targeted savings will be extremely challenging.</p>	JST Report 12
13	<p>Cost The reported On Network Works Anticipated Final Cost (AFC) (including the variations) remained at £2,530m in Period 13. NR have now formally requested further funding of £54m, which represents a central case estimate based on a range of £32m-£76m of financial and commercial risks. NR intend to fund this from their contingency and this is due to be considered in correspondence following the DfT & NR Portfolio Board on the 26th April. DfT will hold a Director-level meeting with NR and CRL to scrutinise the cost range and the remaining financial and commercial risks.</p>	JST Report 13
2018-19		
1	<p>Cost The reported On Network Works Anticipated Final Cost (AFC) (including the variations) remained at £2,530m in Period 01. NR has indicated further risks in the range of £32m to £76m, with a funding request of £54m to be funded from NR contingency. DfT will hold a Director-level meeting in June with NR and CRL to scrutinise the cost range and the remaining financial and commercial risks.</p>	JST Report Period 1
2	<p>Cost The reported On Network Works Anticipated Final Cost (AFC) (including the variations) remained at £2,530m in Period 02. NR has indicated further risks in the range of £32m to £76m, with a funding request of £54m to be funded from NR contingency. DfT held a Director-level meeting with NR and CRL to review the cost range and the financial and commercial risks. NR have taken the action to mitigate these risks but some risks remain, in particular the procurement of the enhanced stations. JST continues to meet periodically with NR and CRL to review their mitigations.</p>	JST Report Period 2

³ The JST has explained that reporting focuses on the total AFC (which was £2,530m as at Period 12) and that there is also further funding from other programmes for the costs of works which support the requirements of those programmes (as opposed to the Crossrail ONW requirements) and which therefore is reported separately to the AFC.

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PERIOD	Extracts from JST Reports	Source reference
3	<p>Cost £300m of additional funding is being made available to Crossrail Limited (CRL) with DfT and TfL contributing £150m each. Around £290m is being provided for completion of the programme of works on the national rail network and is being funded by DfT and Network Rail (NR). The increase in funding available for the project will be made public in the annual Written Ministerial Statement currently planned for the end of July before the summer recess of Parliament.</p> <p>The reported ONW AFC remained at £2,530m. DfT has agreed an additional funding request of £54m to be funded from NR contingency. JST continues to meet periodically with NR and CRL to review the risks to the AFC, in particular the procurement of the enhanced stations, and the proposed mitigations.</p>	JST Report Period 3
4	<p>Cost The reported On Network Works Anticipated Final Cost (AFC) (including the variations) has increased to £2,584m to reflect the additional funding request of £54m, which was provided from an NR/DfT Portfolio contingency budget.</p>	JST Report Period 4
5	<p>Cost The reported ONW AFC (including the variations) remains this Period at £2,584m, although cost pressures remain.</p> <p>TfL, CRL and NR continue to review available options in regards to the expected cost gap of [REDACTED] to deliver the western station upgrades. NR has prepared an options report to outline the available options and the priorities for the works.</p>	JST report Period 5
6	<p>Cost The reported ONW AFC (including the variations) remains this Period at £2,584m, although cost pressures remain.</p> <p>The review of available options in regards to the expected cost gap of [REDACTED] for the western station enhancement works continues. The need and options for additional funding were discussed at the DfT portfolio board on 13 September 2018 and the Network Rail (NR) Executive Committee on 3 October 2018. NR is pursuing funding options and will update Sponsors w/c 15 October 2018. NR is also continuing to explore value engineering options for potential efficiencies.</p>	JST Report Period 6

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PERIOD	Extracts from JST Reports	Source reference
	NR will commence enabling work at Ealing Broadway, West Ealing, Southall and Acton Main Line in October 2018 and continues to plan the use of the Christmas works period.	
7	Cost ONW AFC (including the variations) remains at £2,584m though there remain cost pressures across the programme including an expected cost gap of [REDACTED] m for the western station enhancement works. These cost pressures and the need and options for additional funding are being discussed by the NR executive.	JST Report Period 7



KPMG LLP
Advisory
15 Canada Square
London E14 5GL
United Kingdom

Tel +44 (0) 20 7311 1000
Fax +44 (0) 20 7311 3311

Private & confidential

Simon Adams
TfL
55 Broadway
Westminster
London
SW1H 0BD

OFFICIAL SENSITIVE

7 March 2019

Dear Simon

Project 77: Chronology of delay and cost escalation events – Phase 2
Legally privileged and confidential

1 Background

Transport for London ('TfL') and the Department for Transport ('DfT') ('the Sponsors') are joint sponsors of the Crossrail project ('the Project') being executed by Crossrail Limited ('CRL'), a wholly owned subsidiary of TfL.

TfL, acting for itself and on behalf of the DfT, appointed KPMG to prepare an independent review of certain commercial, financial and governance matters in relation to the Project, through call-off notice TfL 94356 dated 21 September 2018, as amended by certain variation notices.

This paper is prepared in response to your request for KPMG to confirm the factual accuracy of certain of the events within a draft timeline (the "timeline") prepared by the Joint Sponsor Team and provided to us ("the Larger Document"). This paper focuses on the Phase 2 items of this timeline, following an earlier paper, dated 9 December 2018 that focused on the Phase 1 items of the timeline.

The Phase 2 events included in the timeline to be validated, run from January 2014 to December 2018. The specific events to be considered as part of our review were identified to us by the Project's Joint Sponsor Team ('JST'). The version of the document attached as Appendix 2 comprises extracts from the Larger Document after filtering so that only events identified to us by JST as to be our focus during Phase 2, are visible.

2 Approach

As agreed with JST members, we focused our review on validating dates and event descriptions included in the JST prepared timeline identified for Phase 2 (i.e. those dates and events detailed at Appendix 2). We were asked to validate these events using the documents provided as part of the early stages of Project 77 and other specifically selected documents, providing to us by the JST solely for the purpose of reviewing the timeline, such as formal correspondence, letters and minutes from specific meetings.

In reviewing the event descriptions included within the timeline, we have identified whether they were consistent with the relevant supporting document extracts to which we were directed, and then noted in Appendix 2 relevant information. If helpful we can separately provide details of the documents and sources to which we have had regard.

You will find Appendix 2 comprises of 5 columns. The first four columns record information contained in the timeline provided. The fifth column records relevant facts which we have identified in documents provided to us by Sponsors.

We have not been asked to consider or comment on the completeness of the population of events included within the timeline nor to consider whether there may be other documents providing information about the events concerned, beyond those which we were asked to consider and which were provided to us.

The reader's attention is drawn to the Important Notice, attached as Appendix 1.

3 Our findings

We have considered the dates and description of events in the timeline supplied by the JST and to which we were asked to address our attention in Phase 2 being those included at Appendix 2.

We consider that the facts which we have identified and reported as relevant in the fifth column at Appendix 2, align with the event description and date in the second, third and fourth columns, other than in respect of event numbers 1, 2, 4, 5, 6, 9, 37, 38, 39, 40, 41, 44, 50, 51, 62. For these events, some change in the date and / or event description may be needed to ensure alignment with the underlying documents provided.



Please do not hesitate to contact us if you have any questions related to the contents of this letter.

Yours sincerely



Richard Powell
Partner

The appendices attached deal with the following matters:

Appendix 1: Important Notice to which the reader's attention is drawn

Appendix 2: A summary of all our findings including all KPMG observations on those events identified to us in the timeline provided to us by the Sponsors as phase 2, including where we have received / reviewed information which does not appear to wholly align with the date and / or event description and where the date and / or event description may therefore need to be changed.



APPENDIX 1 : IMPORTANT NOTICE

This paper ("Report") has been prepared on the basis set out in the Call-Off Agreement with Transport for London ('TfL') and the Department for Transport ('DfT') (collectively and individually 'the Client') dated as commencing 21 September 2018 and subsequent Variations (in aggregate the 'Services Contract'), and should be read in conjunction with the Terms of Referenced prepared by TfL.

Nothing in this Report constitutes a valuation or legal advice nor an audit of the project.

We have not verified the reliability or accuracy of any information obtained in the course of our work, other than in the limited circumstances set out in the Terms of Reference and except where expressly stated.

This Report has not been designed to be of benefit to anyone except the Client. In preparing this Report we have not taken into account the interests, needs or circumstances of anyone apart from the Client, even though we may have been aware that others might read this Report. We have prepared this Report for the benefit of the Client alone.

This Report is not suitable to be relied on by any party wishing to acquire rights against KPMG LLP (other than the Client once the final report is issued) for any purpose or in any context. Any party other than the Client that obtains access to this Report or a copy (under the Freedom of Information Act 2000, the Freedom of Information (Scotland) Act 2002, through the Client's Publication Scheme or otherwise) and chooses to rely on this Report (or any part of it) does so at its own risk. To the fullest extent permitted by law, KPMG LLP does not assume any responsibility and will not accept any liability in respect of this Report to any party other than the Client.

In particular, and without limiting the general statement above, since we have prepared this Report for the benefit of the Client alone, this Report has not been prepared for the benefit of any other local authority or transportation authority nor for any other person or organisation who might have an interest in the matters discussed in this Report, including for example those who work in the transportation sector or those who provide goods or services to those who operate in the transportation sector.

The contents of this document include matters which are commercially sensitive to TfL, CRL and potentially other parties and disclosure of this document would, or would be likely to, prejudice the commercial interests of TfL, its subsidiary companies and/or other parties.

1	24/01/2014 (not required for phase one)	NAO Review	NAO provide a strong endorsement of the project and its governance structure.	<p>The NAO does make positive statements regarding the current state of the Crossrail project and governance (see the key findings included in the NAO report). However we could not find the precise words "strong endorsement" within the NAO report. We did note a number of clearly positive findings such as:</p> <ul style="list-style-type: none"> - <i>It took three years to set up the programme, and the Department together with Transport for London and Crossrail Limited did so thoroughly, setting a strong foundation for the programme, which has stood it in good stead.</i> - <i>The information available allows both sponsors to monitor progress and to challenge Crossrail Limited.</i> - <i>The infrastructure element of the programme is well advanced but a number of significant risks and challenges remain.</i> - <i>Both sponsors and Crossrail Limited did well to reduce construction costs when they threatened to escalate in the early years of the programme, although they were facilitated in this by the Spending Review 2010 and the recession.</i> <p>We note a series of recommendations are made (some of which relate directly to governance) to further assist the project. In making its recommendations, the NAO notes that there is a "<i>strong foundation and good progress to date</i>" and in order to build upon these foundations, Crossrail should implement the recommendations made by the NAO. In total, seven recommendations are made.</p> <p>These recommendations include:</p> <ul style="list-style-type: none"> - <i>Finalising the plans for the development of governance arrangement as appropriate for the transition from construction to operations.</i> - <i>Work with TfL to continue to develop and implement a clear plan to monitor the delivery of expected benefits of Crossrail</i> - <i>Enhance scrutiny of NR programme management information to assure itself that information provide to CRL and onwards to Sponsors sets out a clear picture for progress and risk.</i> <p>Other more general recommendations include:</p> <ul style="list-style-type: none"> - <i>Do more to secure private sector funding contributions</i> - <i>Consider how to achieve greater continuity in departmental officials' oversight of major programmes</i> - <i>Monitor all costs of major programmes including development, start-up and sponsorship costs</i> - <i>Ensure that programme have sufficient cash available to provide security and flexibility.</i>
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2	20/11/2015 (not required for phase one)	Intervention Point Breached	<p>Crossrail Limited formally report to Sponsor Board that they are in breach of the first Intervention Point IPO by £94m.</p> <p>Intervention Points define conditions under which the Sponsors can intervene if costs rise above certain levels.</p>	<p>We note that a SACR is the formal means of communicating a breach of an Intervention Point. We have not seen on what date the SACR 14 report was shared with Sponsors which may have been earlier than the Sponsor Board Meeting on 20th November 2015.</p> <p>We have seen a letter from TfL to CRL dated 1 December 2015 referring to the IPO breach reported in SACR 14 and which had been discussed at the (Sponsor Board) meeting on 20th November 2015. The letter notes that on 20 November the Sponsor Board “considered the SACR 14 report and noted the position for the Crossrail Project.”</p> <p>The evidence therefore shows that the first Sponsor Board consideration of SACR 14, being the means of officially communicating the breach of IPO, was 20 November 2015. However we do not know if SACR 14 was received by Sponsor Board members earlier than 20 November 2015.</p>
3	01/12/2015 (not required for phase one)	Sponsor Board Action	<p>Ian Nunn, the Chair of the Sponsor Board, wrote to Andrew Wolstenholme, CEO of CRL, expressing the Board’s concern over the breach of IPO but recognising the actions CRL are undertaking in response. Sponsors made the decision not to request a Remedial Action Plan but requested that CRL present a further detailed update on the forecast cost position, including the emerging results from CRL’s cost management initiatives, at the Sponsor Board meeting in January 2016. (This was followed up by a further letter from Ian Nunn in February 2016 regarding future CRL reporting.)</p>	<p>This is consistent with the documents provided to us.</p> <p>The letter from the Chair of the Sponsor Board to the CEO of CRL dated 1 December 2015 advised that the Sponsors had concluded their review of SACR 14 and noted the breach of IPO.</p> <p>The letter notes:</p> <p><i>“This is the first occasion on which a formal breach of an Intervention Point has occurred and it is a situation which gives the Crossrail Sponsor Board serious concern. In considering the options available to Sponsors in light of the reported cost position at SACR 14, Sponsor Board has noted the action that CRL has been undertaking to reduce cost, in particular the focus on the Crossrail ‘costs to go’, and consideration of measures to reduce the P50 AFCDC to a level that is commensurate with IPO.”</i></p> <p><i>“On this basis, Sponsor Board has decided that it will not request a formal Remedial Action Plan as is set out in the Crossrail Project Development Agreement (PDA) at this stage, but will instead ask CRL to present a further detailed update on the forecast cost position, including emerging results from CRL’s cost management initiatives, in January 2016.”</i></p> <p>We agree that a formal RAP was not requested (due to the steps being taken by CRL), but a detailed update was requested on the forecast cost position including the emerging results from CRL’s cost management initiatives, at the January 2016 Sponsors Board meeting.</p>
4	01/02/2017 (not required for phase one)	Sponsor Board Action	<p>Sponsor Board reviewed all options open to the Board in the event of a formal breach of Intervention Point 1. Sponsors discussed the options, and agreed that alteration or reduction in scope was not a feasible option. The Board agreed to write to Sir Terry Morgan to take forward an</p>	<p>The SB81 Minutes (meeting date 16 February 2017) clearly record that options were considered in relation to what is described as the three broad themes set out in the project governing documents. The minutes record that:</p> <p><i>“Sarah Johnson introduced the paper SB 81-2 which sets out the Sponsors’ options in the event of a formal breach of Intervention Point 1 at SACR 17. She noted that the relevant provisions of the project’s governing</i></p>

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			<p>option to review executive remuneration arrangements and ensure alignment with Sponsors’ interests.</p>	<p>documents were written to account for Intervention Point 1 being breached much earlier in the project, not at 80% completion. The provisions of the project documents allow for action to be taken around three broad themes.</p> <ul style="list-style-type: none"> - Changes to management and governance, such as calling for more frequent meetings or consciously altering the format or nature of the meeting. - An alteration or reduction in scope. There is considered to be no or limited opportunity in this respect given the advanced and committed nature of the project. - Key Performance Indicators (KPIs) – a potential streamlining of the KPIs against which the remuneration of the CRL Executive Committee are measured to be more narrowly focussed on those areas of Sponsors concern which are, health and safety, programme and cost”. <p>We have seen a copy of paper 81-2 which considers each of the above categories and explored a number of options within each including in relation to the potential cost savings which may have been able to be achieved from changing the approach or scope. We are not able to confirm that the Sponsor Board reviewed “all” options open to the Board as it is not possible to definitively say if paper 81-2 addressed “all” options although it clearly addressed many options. For example in relation to management and governance 4 potential types of options were briefly considered in the paper comprising</p> <ul style="list-style-type: none"> i. Replace the Chief Executive Officer and /or Chairman of CRL; and/or ii. Remove or replace the Crossrail Delivery Partner or make a material change to the incentivisation framework for the Delivery Partner; and/or iii. Accelerate the integration of CRL into TfL and therefore TfL would take more direct management of the Crossrail Project; and/or iv. Amend the governance of Crossrail such that TfL has a more direct influence on the Project. <p>With regard to evidence for the balance of the description in the draft timeline provided by Sponsors (the “timeline”), we note that the SB81 minutes record discussions as follows:</p> <p><i>“Sponsors discussed the options, and agreed that alteration or reduction in scope was not a feasible option. BK queried the details of the current remuneration arrangements of the Executive Committee. Sarah Johnson outlined that Sponsors are aware that there is a split between in-year bonus and Long Term Incentive Provision. The in-year arrangements are managed on the basis of a set of Key Performance Indicators which are agreed by the CRL Board on an annual basis. It is understood that the CRL Board is due to consider the KPIs for 17/18 year with a view to approval by the end of March.</i></p> <p><i>Sponsors agreed that a letter should be sent to Sir Terry Morgan, Crossrail Limited chairman, setting out that, in the context of a potential and likely breach of IP1, Sponsors would like to understand what the incentives</i></p>
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				<p><i>plan for the senior team looks like and how the Remuneration Committee will seek to ensure that those arrangements remain properly aligned with the Sponsors’ priorities at this stage of the project.”</i></p> <p>Sponsor Board NOTED the contents of this paper; and AGREED to take forward an option to review executive remuneration arrangements and ensure alignment with Sponsors’ interests.</p> <p>The recorded action was for Sarah Johnson to draft and coordinate a letter to send to Sir Terry Morgan on behalf of Sponsors.</p>
5	31/03/2017 (not required for phase one)	Review Finalised	<p>Final Report of Crossrail Limited’s Independent Commercial and Cost Review.</p> <p>This report was commissioned by Sir Terry Morgan on 13 March 2017 and was written by David Orr and Dick McIlhattan.</p>	<p>The report states it was commissioned by CRL’s non-executive Chairman who, at the time, was Sir Terry Morgan.</p> <p>The report is entitled “Independent commercial and cost review”. The report was written by David Orr and Dick McIlhattan. The report is dated 31 March 2017.</p> <p>The Executive Summary states inter alia that its purpose was to: “review the CRL management processes in place to control direct and indirect costs; comment on the robustness of the Anticipated Final Crossrail Direct Cost (AFDCD); and comment specifically on the cost to go for the C610 Systemwide and C512 Whitechapel Station projects.” <i>The Review was undertaken between 13 and 24 March 2017, and comprised pre-reading of key documents, attendance at formal programme delivery and cost management meetings, site visits and interviews with a wide range of key Crossrail people.”</i></p> <p>We have not been able to establish from the document the date when the report was actually commissioned by Sir Terry Morgan although note the date quoted in the timeline is the same as the starting date of the period over which the Review was undertaken. Clearly the commissioning date may have preceded the date of the start of the review.</p>
6	01/05/2017 (not required for phase one)	Project Event	<p>Stage 1 of Crossrail was delayed by one month to June 2017. This was the introduction of Class 345 trains between Liverpool Street and Shenfield and was delayed due to issues with technical, software and approval issues. A Lessons Learned report was commissioned to ensure that similar issues would not affect later stages.</p>	<p>We are unclear as to the significance of the timeline date of 1 May 2017.</p> <p>A Lessons Learned report entitled “Programme Partner Independent Review into Lessons Learned during Stage 1 Testing and Commissioning and Bringing into Use” was issued in draft and dated 27 July 2017. Authored by John Boss it explains in the Executive Summary that: “<i>Stage 1 is the progressive introduction of new Crossrail rolling stock on existing suburban services into Liverpool Street from Sheffield. The target date for start of commencement of Stage 1 was 21 May 2017. Many industry partners and contractors have been involved in developing Stage 1 and significant challenges were encountered. The date when the first Class 345 was taken into service was 22 June 2017, a month later than planned.</i>”</p> <p>In noting the report’s conclusions it is important to reflect that the author explains the “<i>report focuses on the “right hand side of the V”, and makes no mention of any specification, design or design integration activities.</i>”</p>

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				<p><i>This is not intended to indicate that these “left hand side of the V” activities are no longer important, they are simply not the focus of this review.”</i></p> <p>The report notes the four activities that drove the delay were:</p> <ul style="list-style-type: none"> - DOO CCTV delivery; - TCMS Software development; - Technical File submission; and - Operations acceptance. <p>This is not precisely strictly the same as “technical, software and approval issues” as explained in the timeline.</p> <p>We note that a presentation to Sponsor Board SB86 on Lessons Learned noted the following programme wide actions:</p> <ol style="list-style-type: none"> 1. CRL to become more focussed on delivery of each Stage 2. Appoint Programme Integration Manager Stages 2, 4 & 5 3. Strengthen Systems Integration role through creation of Programme Integration Team 4. CRL to develop integrated programme for Stages 2,4 & 5 5. Co-locate Programme Integration Team & Operational Readiness Team to improve communication 6. Enforce project management fundamentals e.g. on time means ‘on time’ and guard against optimism bias.
8	27/07/2017 (not required for phase one)	Review	Final Lessons Learned Report into Stage 1 completed by John Boss having been commissioned by Crossrail Limited.	The date quoted aligns with the date on the copy of the Draft Report provided to us. This report is the same report which was referred to at ID6 above. We have noted at ID6 above, that it states it was commissioned by the non-Executive Chairman of CRL.

9	01/10/2017 (not required for phase one)	IPA Review	IPA Review gives project an amber/green delivery rating.	<p>Agree with the description, in that the IPA conducted a review of the project. We also agree that the project was given an "amber / green" rating from this review. The report states <i>"The Review Team finds that Crossrail has been a well-run project and has demonstrated the ability to overcome significant construction issues as they have arisen, but still has significant challenges ahead in the integration of the necessary systems to hand over a working railway to TfL"</i>.</p> <p>The review took place between 16 and 20 October 2017. The report is dated as issued to the SRO, Matt Lodge, on 6 November 2017. These dates do not directly match to those in the timeline provided.</p> <p>The Executive Summary states: <i>"Overall, to date, the Crossrail Project has been very successful with only very minor (in comparison to the overall project) delays and overruns. The strong, well-motivated, leadership across both the Sponsors and the delivery organisations impressed the Review Team. The project is substantially on programme and has every possibility with appropriate management attention of delivering on time. It appeared to the RT that there was some likelihood of the project remaining within the spending envelope of £14.8Bn, however the RT did see evidence of emerging cost pressures that will put this spending envelope under threat.</i></p> <p><i>The construction phase of the central tunnels has been well managed and on its own could be held up as an exemplar of a major project with public sector sponsors. The relative success of the project up to the introduction of services on Stage 1 (Shenfield to Liverpool St) has led to exceptionally high expectations as to how the project will run into its completion phases. What has become clear to the Review Team is that these expectations mean sponsors are requiring better, wider and accessible visibility of forecast progress, overrun costs, risk management and risk mitigation.</i></p> <p><i>The project is now substantially complete (87% at time of writing) and the entire nature of the project is changing. The important construction phase is substantially in the past and the emphasis must now move onto systems integration and readiness for operation. This report recommends that change is required in how the project is managed to focus more forensically on the 13% to go rather than reporting the 87% complete. This will require something of a culture change within CRL and the Sponsors and a change in the relationship between the two groups."</i></p>
12	07/12/2017 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes
15	11/01/2018 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes

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17	01/02/2018 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes
20	01/03/2018 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes
22	29/03/2018 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes
25	26/04/2018 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes
28	24/05/2018 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes
30	21/06/2018 (not required for phase one)	Crossrail Board Meeting		Agreed to CRL Board Minutes

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32	06/07/2018 (not required for phase one)	Sponsor Board Action – SACR letter	Ruth Hannant/Polly Payne as Chairs of the Sponsor Board write to Simon Wright, noting Sponsors’ serious concerns with regard to the deteriorating overall cost position and on the increased schedule risk to the staged opening plan.	<p>We note the letter inter alia says:</p> <p>“Sponsors noted with serious concern the significant deterioration in the Anticipated Final Crossrail Direct Costs (AFDCD) position over recent SACR periods, with the AFDCD increasing by £845m over an 18 month period, exhausting the TfL contingency.”</p> <p>“Sponsors noted the increased schedule risk to the staged opening plan. It was also noted that CRL should provide further clarity at the July Sponsor Board on confidence related to Stage 3 preparation and readiness for the December 2018 opening as well as options for alternative stage opening strategies should they be required. As discussed at the Sponsor Board, our collective focus now needs to forward looking – ensuring that all parties work closely together to manage emerging risks to staged opening.”</p> <p>“Sponsors note that while the focus for all parties should remain on Stage 3 opening, the importance of Stage 2 Phase 2 and Stages 4 and 5 should not be forgotten. We ask that CRL continues to work with RfL, LU, NR, BT, HAL, MTRC and others, to ensure their programmes are supportive of the Master Operational Handover Schedule (MOHS) and the Sponsors are provided with the best possible view of the risks to each Stage.”</p>
33	09/07/2018 (not required for phase one)	Sponsor Board Action – Funding letter	Ruth Hannant/Polly Payne as Chairs of the Sponsor Board write to Simon Wright regarding an additional £211m funding for the programme (reflecting CRL’s current cost forecast outturn) and noted their concern over the significant cost deterioration and the need for close-cost management and improved oversight of trends and cost management.	<p>We note the letter inter alia says:</p> <p>“Sponsors have allocated £211m of further funding for Crossrail (CRL), which reflects CRL’s current cost forecast outturn (the Anticipated Final Directs Costs (AFDCD) as at Period 2).”</p> <p>“Sponsors expect CRL to maintain close cost-management and economic use of all funds to deliver as far possible within the current cost forecast (£211m above Intervention Point 2). In Sponsors’ response to the Semi-Annual Construction Report (SACR) 19, dated 6 July 2018, we again note our concern about the significant deterioration over recent SACR periods, with AFDCD increasing by £845m over an 18 month period.” The letter also goes on to mention reporting of trends.</p>
37	27/07/2018 (not required for phase one)	Review	At the Elizabeth Line Readiness Board Mike Brown requested an independent peer review of Crossrail’s schedule.	<p>From the 27 July 2018 ELRB meeting, one of the actions (17/050) noted was "Identify how further assurance of the programme can be provided". The target date for this action to be resolved was 3 Sept 2018. The status of this item within the meeting actions list was "Schedule assurance review agreed with Sponsors and underway".</p> <p>There is no record in the actions list as to who requested the assurance review. We also note that the recorded action is for a “schedule assurance review” and it does not specifically use the words “independent peer review”. We understand that the only official record of the ELRB meeting is a note of the actions arising and not minutes of the detailed discussion. We are not therefore able, based on the documents provided, to confirm that Mike Brown requested the review. We do note from the agenda for this meeting, that Mike Brown was recorded as chairing this meeting.</p>

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38	07/08/2018 (not required for phase one)	Meeting	Bernadette Kelly meeting with Mike Brown, Mark Wild, Sir Terry Morgan and Simon Wright	<p>We have been provided with an email and a briefing paper which in aggregate refer to the proposed content of and two proposed meetings to be held on 7 August 2018. The first meeting was to be between Bernadette Kelly and Mike Brown, followed by a second meeting between Mike Brown, Sir Terry Morgan and Simon Wright. We requested copies of minutes of these meetings so as to confirm attendance and that the meetings took place on the date planned. We were advised by Sponsors that no formal minutes were recorded.</p> <p>We have reviewed the minutes of the preceding and subsequent Sponsor Board meetings and did not find any reference to a proposed meeting with Bernadette Kelly. We also looked for publically available records between the DfT’s Permanent Secretary and third parties but could not find details publically available for meetings post June 2018 at the time of our review work.</p>
39	10/08/2018 (not required for phase one)	Review	Terms of Reference for independent schedule review agreed – Ian Rannachan to undertake the review.	<p>The terms of reference for the review were dated 17 August 2018, and not 10 August 2018. We have not seen evidence of the ToR being agreed at an earlier date. We do however note that Ian Rannachan’s report was dated 21 August 2018 which was only 4 days after the date on the ToR implying the terms of reference may have been agreed earlier.</p> <p>It should also be noted that the scope (section 2 of the document) makes particular mention to this work providing "assurance" in two stages with the intent that Ian Rannachan will deliver the first stage. The ToR states "It is proposed that the SAR (Schedule Assurance Review) is in two stages. The first will focus on providing assurance, to the Sponsors Board on 3 September, that CRL’s forecast dates for the start of dynamic testing are realistic. The second will provide assurance that any revised schedule can be relied upon. Both stages should consider all aspects of the project including the works delivered by Crossrail Ltd, Network rail, Bombardier and MTR Crossrail." The Ian Rannachan stage was not specifically described as an independent "schedule review" in the ToR although we note he used those words as the title of his report and that his review was the first of two stages in the ToR entitled "Schedule Assurance Review".</p> <p>The ToR stated that "Stage 1 is to focus on current construction, installation and static testing activity to determine realistic dates for the start of dynamic testing, trial running and trial operations, relative to the current control schedule".</p>

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				John Boss was to deliver Stage 2 of the Schedule Assurance Review ToR.
40	21/08/2018 (not required for phase one)	Review	Ian Rannachan provides his draft schedule peer review to Sponsors.	<p>As noted at ID39 it was not strictly described as a “schedule peer review” in the ToR although we note that Ian Rannachan uses this phrase as the title to his report. We note that the scope as summarised in Rannachan’s report was to address the following:</p> <ol style="list-style-type: none"> 1. What confidence do you have that 21 October 2018 start of 5x2 Dynamic Testing can be achieved? 2. When do you believe Stations will complete Phase 3 Testing? 3. Are the durations for Trial Running and Trial Operations supported by a logical plan and defined scope of trials ? <p>The date 21 August 2018 was the date on the draft copy of the report which we have seen.</p>
41	29/08/2018 (not required for phase one)	Crossrail Board	Met to discuss and agree revised delivery schedule.	The CRL Board Minutes record that the Board received a paper presenting the conclusion of the Checkpoint 2 review and a proposed revision to the Opening Strategy for the Elizabeth line covering Stages 3, 4 & 5, including potential cost implications and the resourcing impact. The Meeting APPROVED the proposed revision to the Stage 3 Strategy to adopt the Scenario 2 schedule as the revised baseline for the Master Operational Handover Schedule up to the start of Trial Running; and NOTED that further work was required to the Stages 4 & 5 schedule before a conclusion could be made on those stages. The description in the timeline is not therefore completely aligned with what actually happened at the meeting if the phrase “delivery schedule” is meant to cover all stages as opposed to just Stage 3.

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44	01/09/2018 (not required for phase one)	Review	John Boss review to take place and will consider any revised plan submitted by CRL, the implications for Stages 4 and 5, along with a more detailed assessment of operational readiness.	<p>John Boss conducted an "Independent Schedule Assurance Review (SAR)" and provided "an opinion on the integrity of the revised schedule proposed by CRL for the Stage 3 opening, as well as plans for the commencement of Stages 4 and 5".</p> <p>The evidence provided does not give exact dates for when the review took place, so the date given in the timeline could not be validated, except for the briefing note being dated 17 September 2018. We note that the JST paper to the 3 September 2018 Sponsor Board confirmed that the Stage 2 review by John Boss would commence in September implying it had not already started on 1 September 2018 although we note an interview schedule provided, details interviews occurring between 28 August and 17 September 2018.</p> <p>We note the JST briefing paper to the Sponsor Board of 3 September explains that John Boss' review will include a detailed assessment of "operational readiness" which is consistent with the wording in the DfT timeline. However, we note that the ToR for the review uses different language and talks of examining the "revised schedule for static and dynamic testing, assurance / approvals, trial running, trial operations and bringing into service, and look for evidence that those plans are supported by the third parties concerned."</p>
46	13/09/2018 (not required for phase one)	Crossrail Board		Agreed to CRL Board Minutes
49	24/09/2018 (not required for phase one)	Review	Commencement of DfT/TfL/IPA working group established to discuss funding options.	Email details seen of the actions arising from a meeting on 24 September 2018 which has been confirmed to us as the first meeting of the working group.
50	24/09/2018 (not required for phase one)	Review	Commencement of Crossrail Financial & Commercial Independent Review – to be undertaken by KPMG	The Services Contract between KPMG and TfL / DfT for the "Independent Review of Crossrail - Financial and Commercial" was dated as commencing 21 September 2018 and the KPMG report also refers to that date.
51	24/09/2018 (not required for phase one)	Review	Commencement of Crossrail Governance Review – to be undertaken by KPMG	The Services Contract between KPMG and TfL / DfT for the "Independent Review of Crossrail – Governance" was dated as commencing 21 September 2018 and the KPMG report also refers to that date.
54	11/10/2018 (not required for phase one)	Crossrail Board		Agreed to CRL Board Minutes

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56	26/10/2018 (not required for phase one)	WMS	WMS on short term £350m financing made available to the Mayor: https://www.gov.uk/government/speeches/crossrail-delay	Agree with the description of there being a Written Ministerial Statement on this subject on this date.
57	26/10/2018 (not required for phase one)	CRL Board		Agreed to CRL Board Minutes
59	02/11/2018 (not required for phase one)	Letter	Sponsors write to CRL confirming £350m of financing and expressing concerns over the delay to the finalising of the schedule, delay to key schedule dates, and to request that visibility is provided and the schedule is finalised by 30 November ahead of submission to the CRL Board.	Confirmed in line with letter
60	08/11/2018 (not required for phase one)	CRL Board		Agreed to CRL Board Minutes
62	05/12/2018 (not required for phase one)	Crossrail Board	To consider the revised schedule	<p>The event descriptor aligns with what Sponsors explain they understood to be the intent of the meeting on 5 December 2018 namely to consider a revised schedule. We note that the minutes of the Crossrail Board Meeting on 5 December 2018 record a verbal MOHS Update and note: <i>“The Board received a briefing on the unmitigated revised MOHS which specified the schedule for the fully compliant railway. The Board DID NOT APPROVE the unmitigated revised MOHS and considered that it was necessary for an alternative plan to be prepared”</i>.</p> <p>It seems therefore that a “revised schedule” (if it means a new schedule suitable for replacing the pre-existing schedule), was not available for consideration at the meeting on 5 December 2018. We also note the Crossrail Board on 5 December 2018 considered other business in addition to this update on schedule.</p>

The first four columns record information contained in the timeline provided by the JST. The fifth column records relevant facts which we have identified in documents provided to us by Sponsors. We have considered the dates and description of events in the timeline supplied by the JST and to which we were asked to address our attention in Phase 2 being those included in this Appendix.

We consider that the facts which we have identified and reported as relevant in the fifth column, align with the event description and date in the second, third and fourth columns, other than in respect of event numbers 1, 2, 4, 5, 6, 9, 37, 38, 39, 40, 41, 44, 50, 51, 62. For these events, some change in the date and / or event description may be needed to ensure alignment with the underlying documents provided.

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