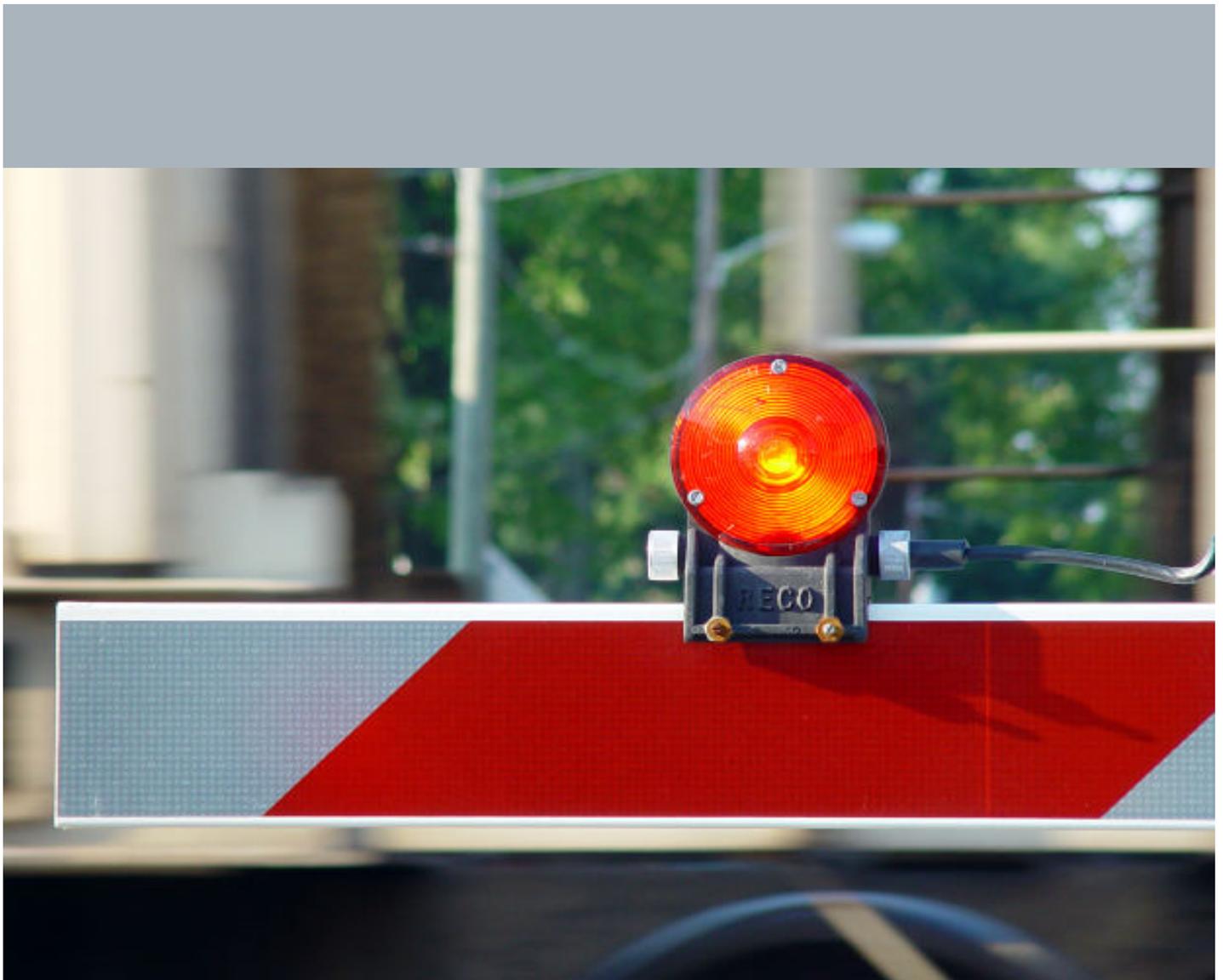


Transport for London's Signal Failure

March 2016



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The Budget and Performance Committee scrutinises the Mayor's annual budget proposals and holds the Mayor and his staff to account for financial decisions and performance at the GLA. The Committee takes into account in its investigations the cross cutting themes of: the health of persons in Greater London; the achievement of sustainable development in the United Kingdom; and the promotion of opportunity.

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Chair's foreword



As a commuter in London, you are probably used to cramped conditions and delays. Transport for London (TfL) is well aware of these issues, and is undertaking various improvement programmes to address them. So it is with dismay that I note that one of those programmes, the Sub-Surface Upgrade Programme (SSUP), is not going to be of benefit to you or I any time soon. This is because TfL has grossly mismanaged its signalling contract with Bombardier, which means that anyone taking the District, Circle, Metropolitan, or Hammersmith & City lines will have to wait five years longer than originally expected to see the improvements.

And there is a staggering cost associated with this mismanagement, which leaves TfL with £886 million less to spend on its capital programme than it thought it had. For those of you that are struggling to visualise what that kind of money can buy, you're looking at something the size of another Northern Line extension project that will have to at best be put on hold, and at worst won't happen at all.

Our report identifies the many failings of TfL's management of the SSUP, particularly by the TfL Board, chaired by the Mayor himself. TfL may comfort itself that the Mayor has gone on the record as saying "obviously, I take all responsibility for everything that happens on my watch,"¹ but since he is leaving in May, there is a question about where we go from here.

Our report provides clear advice to the next Mayor, and TfL, to think very carefully about the necessary skills for TfL's Board, its management team, and its assurance function. TfL's failings with the SSUP have serious ramifications for Londoners, for the wider economy, and for TfL's finances. All signals must go green for TfL, and right now they're red.

A handwritten signature in black ink, appearing to read 'John Biggs'.

John Biggs AM
Chair of the Budget & Performance Committee

Executive summary

TfL's Sub-Surface Upgrade Programme (SSUP) is running five years late and is forecast to cost £886 million more than originally planned. This is nothing short of a disaster for London. The SSUP is central to London Underground's plans to increase capacity and help cope with a forecast growth in the city's population of 1.2 million by 2030. The delay and majority of the cost increase to the SSUP is on the Automatic Train Control (ATC) element of programme and is a result of TfL's failed contract with Bombardier Transport (Bombardier).

London Underground awarded the contract to Bombardier in June 2011, but in December 2013 took the decision to end it, pay a final settlement of £85 million and look for a new contractor. We estimate that £67 million of the settlement is wasted expenditure. In the summer of 2015, TfL appointed Thales to take over the programme and the full implications of the failed Bombardier contract came to light. The programme is now not expected to be completed until 2023 – five years late. Furthermore, TfL has increased the budget for the ATC element of the programme by £886 million.

Delays and cost increases will have significant consequences for both passengers and TfL's capital programme. TfL estimates that there will be 11 million fewer journeys a year and that this will cost it £271 million in lost fares income. The broader economy will also suffer, with TfL estimating damage in the hundreds of millions. There is also an impact on TfL's capital programme – it will have £886 million less to spend than originally expected. To put this figure into context, this is only slightly less than the total forecast capital cost of the Northern Line Extension.

From TfL's perspective, it was Bombardier's shameful performance that led to the programme's failure. As the Mayor explained, Bombardier "totally stuffed it up". Even more damning than Bombardier's inability to deliver the programme are claims by TfL that it was duped by Bombardier from the outset about its expertise and experience. TfL's strategy for delivering the ATC signalling programme was fundamentally wrong. TfL relied on Bombardier to provide an end-to-end solution. The market is not mature enough to take this approach now and it certainly was not five years ago.

TfL's external auditors, KPMG, conducted a lessons learned review that found that TfL's procurement process was not well thought out. Most significantly, TfL's scoring system for evaluating bids was flawed. This meant that by significantly underbidding its competition on price, Bombardier was almost certain to be taken forward, regardless of how it scored in the technical areas of the evaluation. Furthermore, TfL seemed to change its procurement process as it went along. If TfL had followed the process as outlined in the

Official Journal of the European Community notice, then neither Bombardier nor the firm that finished second would have made the cut.

If something sounds too good to be true it probably is. By the time the field had been narrowed to two bidders, Bombardier was offering a lot more and for a lot less. If Bombardier could deliver what it was offering, then the case for appointing Bombardier was compelling. Unfortunately, as KPMG noted “the capability of the supplier to deliver these benefits had not been adequately demonstrated or interrogated”.

TfL has openly admitted it agreed a “bad contract”. The payment and penalty regimes within the contract were aligned to spend, rather than progress. This meant that in ending the contract, TfL was required to pay Bombardier a sum based on how much it had spent on the programme and not on the value of the work it had produced. TfL acknowledges its failings in this area and has engaged external lawyers to assist with preparing the new contract with Thales. This, however, raises questions about the quality of the internal legal advice at TfL and whether management should have recognised the need for better legal advice in 2011 prior to agreeing the Bombardier contract.

Neither TfL nor Bombardier’s management teams were up to the task of managing the programme. We acknowledge that there are relatively few people with the required skill set, and that pulling together a team from either organisation with sufficient competencies was always going to be challenging. Nevertheless, the lack of suitably skilled people in the wider labour market should have been another indication of the high risk nature of the programme and therefore the importance of getting a good team in place to deliver the SSUP from day one, and of subjecting the programme to greater scrutiny.

On this programme, a culture seems to have grown whereby TfL’s management was only interested in presenting good news. The Assembly experienced this first-hand. As late as June 2014, TfL’s senior management continued to claim that the project could still be delivered by 2018 despite rail experts suggesting that this was impossible. The fact that TfL has now confirmed that the programme is running five years late suggests that TfL’s senior management team was ill-informed, in denial, or unprepared to provide the public with its honest view of the state of the programme. KPMG found a similar over-optimistic culture within the project management team. It suggested that a more realistic assessment by the project management team of the lack of progress by Bombardier may have led to corrective actions being taken earlier.

The programme’s failure raises questions over whether TfL’s Board has the right skills and experience for the job. TfL and its Board recognise that it does not have depth of expertise to deal with some of the complex infrastructure projects it is tasked with overseeing. The organisation is taking steps to

address this issue by mapping out the key skills that the next Board should have. We recommend that when the next Mayor appoints a new TfL Board, he/she should ensure that it has the breadth of skills and experience to effectively cover all aspects of TfL's operational and investment activity.

External reviews have been highly critical of both TfL's internal assurance function - provided by TfL's Project Management Office (PMO) – and its external assurance function – provided by the Independent Investment Programme Advisory Group (IIPAG). TfL failed to take a risk-based approach to its internal assurance work. The level and timing of assurance work was determined by the project's expected cost and where it was in its lifecycle, rather than on its risk. Given that the main purpose of assurance is to manage risk, this approach would seem ill-conceived. Furthermore, KPMG concluded that "the PMO does not possess the necessary technical expertise to produce a meaningful assurance of the project".

IIPAG's assurance work on the Bombardier contract was at best, minimal. We understand that IIPAG has constrained resources and therefore there is a limit to how much work it can do on each programme. However, the SSUP debacle is a clear sign that IIPAG is not providing the level of oversight of TfL's investment programme that was intended when it was set up. We recommend that the new Mayor should carry out a review of the role, remit, strategy, resource allocation and performance of IIPAG and how this fits with TfL's broader assurance and accountability framework. In particular, the review should set out what additional work it would do if it was given more resources and the value this would add.

The SSUP ATC contract failure will have significant service and financial implications for many years to come and we must do all we can to try and ensure similar failures do not happen again. TfL's reaction to the lessons learned review has been positive and the way it has set up a new delivery partnership with Thales provides some confidence. However, the nature, scale and sheer number of mistakes that were made with this programme raises cause for considerable concern. TfL has been proactive and implemented the required procedural changes. However, the broader question about the quality of judgement shown by the senior management team remains. The next Mayor will have to assure themselves that TfL's management team is equal to the task of managing TfL.

1. Introduction

- 1.1 TfL's Sub-Surface Upgrade Programme (SSUP) is running five years late and is forecast to cost nearly £900 million more than originally planned. This is a disaster for London. The programme was the mainstay of TfL's plans to increase capacity on a network that is already heavily overburdened, and the five-year delay will not only be felt by the passengers but by the city's economy. Furthermore, TfL now has almost £900 million less to spend on other transport improvements than it previously thought, ensuring the consequences of this failure are not limited to passengers who use the District, Circle, Metropolitan and Hammersmith & City lines.
- 1.2 It is the London Assembly's job to hold the Mayor and TfL to account for this failure. Over the last two years, and as information has emerged, we have examined the circumstances behind the programme's failure and implications of its delay and cost increase. This report brings together the evidence the Assembly's Budget and Performance and Transport Committees have gathered at their public meetings as well as drawing on the information put in the public domain by TfL, including the lessons learned review carried out by KPMG in 2014.

2. Background

- 2.1 The SSUP is central to TfL's plans to increase capacity and help cope with a forecast growth in the city's population of 1.2 million by 2030.² The Sub-Surface rail lines are the District, Circle, Metropolitan and Hammersmith & City lines. They currently carry approximately 1.3 million passengers a day and make up nearly 40 per cent of the London Underground network (in terms of track length). Once the upgrade programme is complete, peak capacity should increase by 33 per cent and overall capacity by 40 per cent.³
- 2.2 The SSUP consists of two streams: the introduction of new trains and the associated track-enabling works; and the Automatic Train Control (ATC) signalling replacement contract. The majority of the first stream of work has now been completed with new walk-through, high capacity, S-Stock trains now in service on the Metropolitan, Circle and Hammersmith and City lines. This part of the programme is currently on target and all 191 trains should be in operation by December 2016 as originally planned.
- 2.3 The delay and majority of the cost increase to the SSUP is on the ATC element of programme and as a result of TfL's failed contract with Bombardier Transport (Bombardier). TfL awarded the original ATC contract to Bombardier in June 2011 with a target price of £354 million. The contract experienced delays culminating in TfL taking a decision in December 2013 to end its contract, pay a final settlement of £85 million to Bombardier and look for a new contractor.
- 2.4 In the summer of 2015, the full implications of the delay and budget increase emerged for the first time. TfL appointed Thales to take over the programme in August 2015 and the associated Board papers showed that the programme was now not expected to be completed until 2023 – five years late – and that TfL had increased the budget for the ATC element of the programme by £886 million.⁴
- 2.5 Since TfL ended its contract with Bombardier in December 2013, TfL and the Assembly have examined the causes and implications of the failed contract and the lessons that TfL needs to learn from it. TfL commissioned KPMG (its external auditor) to carry out a 'lessons learned review' of the ATC contract which reported its findings to the TfL Board in July 2014. TfL's Finance and Policy Committee set up a Special Purpose Sub-Committee which reviewed KPMG's report and TfL management's response to it and reported its findings to the TfL Board in September 2014. The Assembly's Budget and Performance and Transport Committees have used several of their public meetings to examine the failed ATC contract with representatives of TfL and the Independent Investment Programme Advisory Group (IIPAG). The Assembly's examination began in early 2014 following the news that TfL had ended its

contract with Bombardier. Further meetings took place over the next two years as TfL published more information on the cause of the failure and the scale of delay and cost increases became apparent. A full list of these meetings can be found in Appendix 1.

Implications of failed ATC contract

- 2.6 Delays and cost increases will have significant consequences for both passengers and TfL's capital programme. With the upgrade programme designed to increase capacity on the Sub-Surface lines by 40 per cent, the five-year delay will mean that the Tube will be more congested than planned for those that choose to use it and TfL will lose revenue from those who are put off. TfL estimates that there will be 11 million fewer journeys a year because of the delay, costing TfL £271 million in lost fares income. Furthermore, TfL estimates the benefits of the programme when fully implemented would be worth £180 million a year to the London economy and hence, while some of these benefits will emerge before the programme is 100 per cent complete, a five-year delay will cost the city's economy hundreds of millions of pounds.⁵
- 2.7 In terms of TfL's capital programme, TfL has £886 million less to spend than it thought it had. To put this figure into context, this is only slightly less than the total forecast capital cost of the Northern Line Extension. The budget for the ATC element of the SSUP has been increased by 64 per cent from £1,382 million to £2,268 million.⁶ The majority of this additional expenditure will not become due until 2021-23, after the current business planning period, and hence TfL has not had to cancel or scale back any investment programmes already underway. The impact of the cost increase will come in the mid-2020s as funding that was previously unallocated and available for other projects has now been committed to the SSUP.⁷
- 2.8 We estimate that £67 million of the cost increase could be classified as wasted expenditure. TfL told us in September 2015 that it has written off £103 million of its expenditure on the project —£85 million in final payment to Bombardier and £18 million of work carried out by TfL.⁸ When it first transpired that TfL had had to pay Bombardier to end the contract, the then Commissioner for Transport told us that "there is significant value within that £80 million [subsequently confirmed to be £85 million] that is transferable on to the finished signalling system".⁹ It transpired that this was untrue, or at the very least highly optimistic. In July 2015 TfL told us that a lot of Bombardier's work was of no value.¹⁰ This was because the majority of its work involved writing software coding for a system that did not work and a system totally different to the one that Thales is now using. In January 2016, TfL made it clear that the main value of the £85 million payment to Bombardier was that it allowed TfL to get on with finding a new contractor:

If we had not paid that money upfront to get out of the contract and we had not come to that deal, if you like, with the previous contractor, Bombardier, then we would have faced two or three years of protracted legal toing and froing that would have meant the overall cost would be much higher.¹¹

- 2.9 TfL's latest estimate is that its £85 million settlement with Bombardier has generated £36 million of direct benefits.¹² TfL argues that £4 million of direct benefit was achieved from Bombardier's work and a further £32 million from agreeing reduced fit-out fees for the new signalling equipment which will be installed on trains built by Bombardier. This would suggest that £67 million (the £103 million write-off less the £36 million benefit) of TfL's expenditure on the project is of no value.

Bombardier's role

- 2.10 Ultimately, the programme failed because Bombardier was unable to deliver what it said it would deliver. As the Mayor explained, Bombardier "totally stuffed it up".¹³ Bombardier committed to deliver a new signalling system, but 18 months into the upgrade programme it became clear to TfL and Bombardier that it would not be able to deliver the work within the budget or timeframe to which it had committed.
- 2.11 TfL has accused Bombardier of more than incompetence. Bombardier's inability to deliver the programme will be hugely damaging to its reputation as a world-class signalling supply company, but even more damning are claims of misrepresentation. TfL believes it was duped by Bombardier from the outset about its expertise and experience. As the former Managing Director of London Underground explained to the Transport Committee:

There is no doubt that Bombardier presented so-called experience and so-called expertise that they did not have, subsequently we found out, so there is no doubt that at the outset of the programme they did not have the capability of delivering it, although they said they did.¹⁴

- 2.12 Our focus must be on TfL, but we must not lose sight of the fact that, ultimately, the programme failed because Bombardier failed to deliver on its contractual commitments. TfL may have been naive to take Bombardier at face value, but as TfL argues, Bombardier was a well-respected company with experience in delivering train signalling systems around the world. From TfL's perspective, it was Bombardier's shameful performance that led to the programme's failure.

3. Learning lessons

- 3.1 The Mayor and Deputy Mayor for Transport are in agreement that TfL's strategy for delivering the ATC signalling programme was fundamentally wrong. Where other world metros have large in-house teams doing vast amounts of the signalling work and only rely on suppliers to build the technology to very specific, predetermined specifications, TfL relied on Bombardier to provide an end-to-end solution. As the Deputy Mayor for Transport explained, even now, the market is not mature enough to take this approach and it certainly was not 5 or 10 years ago.¹⁵ The KPMG review supports this view and suggests that TfL failed to understand the market's limitations prior to pushing on with the programme:

It is understood that LU were likely predominantly focussed on what they wanted and needed as a procurement solution and not what the market could actually provide and deliver.

- 3.2 The KPMG review goes further. It notes that the SSUP programme was significantly larger and more complex than most 'comparable' programmes and that there were known constraints in the UK signalling market in relation to its resource and abilities. Furthermore, TfL was experiencing significant issues with its signal upgrade programmes on the Victoria and Jubilee lines which were contracted out to other signalling suppliers. KPMG suggests that instead of setting alarm bells ringing and raising questions about the general capability of the signalling market, these factors added to the desirability of Bombardier's offer of an end-to-end solution. The situation meant that TfL was not looking for an outright best solution, but instead was willing to accept the "least-worst" proposal.
- 3.3 TfL has recognised this failure and corrected its approach. TfL carried out a global review of the communication-based train control market in 2013 and its findings have been fed into the strategy for the contract with Thales. Furthermore, we have been assured that TfL is taking a far more hands-on approach with the signalling work this time and that it has assumed responsibility for the delivery of some key elements of the programme.

Procurement process

- 3.4 KPMG's review found that TfL's procurement process was not well thought out. The selection criteria (used to establish a list of firms to invite to tender) and the award criteria (used to select the best tender) were fundamentally different with the former being 'backward facing' —looking at the suppliers' track record, and the latter 'forward facing' —looking at its ability to deliver the requirements. This meant that there was no opportunity to follow up on

any concerns identified at the first stage later in the process. By the time suppliers were invited to tender, it was therefore assumed, incorrectly, that all 'backward facing' requirements had been fulfilled.

- 3.5 Furthermore, TfL seemed to change its approach as it went along. At the initial stages of the Official Journal of European Union (OJEU) process, TfL planned to invite a maximum of four firms to tender, but somewhere between the evaluation and invitation to tender stages, TfL decided to invite seven tenders from five bidders. Neither Bombardier nor the firm that finished second were in the top three at the evaluation stage and hence would have missed out if the procedure outlined in the OJEU notice had been carried out. KPMG was unable to find any explanation for the change in approach.
- 3.6 TfL's scoring system for evaluating bids was flawed. The system was far too weighted towards the commercial and cost elements of bid submissions and not enough towards their technical and operational content. A review of the scoring system used to evaluate and compare bids carried out in 2013 found that Bombardier's bid was so much lower than other bids that it won 100 per cent of the points available for the cost element of the evaluation and thus 30 per cent of the overall score. This was inconsistent with other elements of the scorecard where no bidder was able to win 100 per cent of the points available. This meant that there was insufficient discrimination between the technical scoring of bidders and that by significantly underbidding its competition on price, Bombardier was almost certain to be taken forward, regardless of how it scored in the technical areas of the evaluation.
- 3.7 If something sounds too good to be true it probably is. By the time the field had been narrowed to two bidders, Bombardier was offering a lot more and for a lot less. Its price was substantially lower, its final delivery date was 21 months earlier, it would deliver 32 instead of 31 trains per hour and, unlike its competition, it could do all the work with zero line closures. If Bombardier could deliver what it was offering, then the case for appointing Bombardier was therefore compelling. Unfortunately, as KPMG noted "the capability of the supplier to deliver these benefits had not been adequately demonstrated or interrogated". KPMG's review makes several recommendations about how TfL should increase its due diligence work for future procurements — testing both the content and provenance of evidence provided by bidders. TfL has agreed to all these recommendations and hence the same mistakes look unlikely to be made again. Nevertheless, it is difficult to understand why the scale of disparity between bids did not raise a red flag at the time and prompt greater scrutiny of Bombardier's bid. As KPMG noted:

Confidence around the Bombardier product integrity and contractual recourse were assumptions key to the success of LU's decision [to appoint Bombardier] and these two areas should therefore have been identified as principal risks in the ongoing

scrutiny and assurance of the programme and have been subject to greater examination and testing prior to final selection.

Contract

- 3.8 TfL has openly admitted it agreed a “bad contract”.¹⁶ As we explained above, TfL had to pay Bombardier £85 million to get out of a contract that delivered no asset of value and put the programme back at least four years.¹⁷ As KPMG noted, the payment and penalty regimes within the contract were aligned to spend, rather than progress. This meant that in ending the contract, TfL was required to pay Bombardier a sum based on how much it had spent on the programme and not on the value of the work it had produced.
- 3.9 TfL acknowledges its failings in this area and has engaged external lawyers to assist with preparing the new contract with Thales. TfL’s response to the KPMG review notes that it has developed its contracting model and template. We hope this means that where contracts have to be terminated in the future, settlements are based on the value of the work carried out and not on how much the contractor has spent. We are pleased to see that TfL has engaged external lawyers, particularly to assist with the termination provisions in the new contract with Thales. However, this new approach raises questions about the quality of the internal legal advice on the original Bombardier contract and whether management should have recognised the need for better legal advice in 2011 prior to agreeing the Bombardier contract.

Programme management

- 3.10 Neither TfL nor Bombardier’s management teams were up to the task of managing the programme. Signalling contracts are highly specialised, complex and high risk. They require a team of experienced senior managers with a deep knowledge of the industry. We acknowledge that there are relatively few people with the required skill set, and that due to conflicts of interest, pulling together a team with sufficient competencies was always going to be challenging. Nevertheless, the lack of suitably skilled people should have been another indication of the high-risk nature of the programme and therefore the importance of getting a good team in place from day one and of subjecting the programme to greater scrutiny.
- 3.11 Bombardier did not provide the quality of management staff that TfL had expected. As the KPMG review noted, TfL “considered the Bombardier leadership team to be less directly engaged and influential in addressing the issues than it would have liked”. Furthermore, TfL thought that Bombardier had a far more cohesive and collaborative management setup across its global operations than it did in reality. While these may have been issues outside TfL’s direct control, TfL should have carried out greater due diligence on the capabilities and management arrangements at Bombardier prior to signing the contract. The KPMG review explains that once the project started

to go wrong, TfL did manage to get Bombardier to bring in some more experienced personnel, but by then it was too late to recover the programme.

- 3.12 TfL's project delivery team was also lacking the required experience and skills to deliver the complex programme. KPMG observed that "for the first year of the contract London Underground did not have the right balance of senior experience within the team". It was only after it became clear that the programme was not performing that more senior, experienced staff were brought in. In addition, KPMG questions why TfL chose to use a different team to manage the project to the team that had managed the bid and awarded the contract. It is unclear whether this was due to the original bid team failing to perform or because TfL did not understand the unique risks associated with such a complex project and the importance of continuity. Either way, the project management team was not good enough and this should have been recognised earlier.
- 3.13 Early signs are that TfL now understands the importance of ensuring it has a high quality team to deliver the programme. With regard to Thales' team, TfL has taken KPMG's advice and interviewed all key delivery personnel and ensured the retention of teams and specific individuals were set out in the contractual agreement. TfL has also bolstered its project management team. As well as keeping the external resources and expertise that were added in 2012 and 2013 when the Bombardier contract began to fail, TfL has brought in further staff with proven ATC signalling experience from the Victoria, Jubilee and Northern Line signalling projects.

Culture

- 3.14 Both internally and externally, there appears to have been a culture on this programme whereby TfL's management was only interested in presenting good news. Regardless of how the project was progressing, the importance of achieving the 2018 completion date appeared to overpower any professional scepticism or suggestion that things were not going to plan.
- 3.15 The Assembly experienced this first-hand. In June 2014, 18 months after the termination of the Bombardier contract and with a new supplier still not in place, TfL's senior management continued to claim that the project could still be delivered by 2018. This was despite many railway experts arguing the 2018 deadline would be impossible because it would take at least a year (and in the end 18 months) to engage a new contractor, and because the new contractor would effectively have to start from scratch. The fact that TfL has now confirmed that the programme is running five years late suggests that TfL's senior management team was ill-informed or unprepared to provide the public with its honest view of the state of the programme.
- 3.16 KPMG found a similar overly-optimistic culture within the project management team. A more realistic assessment by the project management

team of the lack of progress by Bombardier may have led to corrective actions being taken earlier:

A 'good news culture' was prevalent during the first year of delivery phase and although the project team's perseverance to deliver the project was admirable, it perhaps delayed LU's consideration and exploration of more immediate focused remedial measures.

- 3.17 To TfL's credit, it did face up to the facts in 2013 and take the difficult decision to terminate its contract with Bombardier. It recognised the scale of the issue and instead of pushing the difficult decisions into the long grass it took corrective action which probably saved TfL hundreds of millions of pounds and further delays to the scheme. The former Managing Director of London Underground explained this to the Transport Committee:

I am afraid too many times in the public sector we see a reluctance to do the right thing, which is stop a contract, stop money draining away from taxpayers [...] I am afraid I believe that to carry the can now, as I obviously am doing, for making this decision is the right thing to do in terms of getting a signalling system that worked, and it was definitely the right thing to do for taxpayers and fare payers.¹⁸

- 3.18 The key to ensuring that a 'good news culture' does not persist beyond the Bombardier contract is to improve TfL's independent assurance function. It needs to be given the capacity and capability to provide an unbiased view of project progress and be in a position to encourage a healthy degree of scepticism at all levels of management. We look at TfL's assurance function and the level and quality of the programme's oversight below.

TfL Board

- 3.19 The TfL Board is responsible for overseeing all TfL activity and the Mayor, as Chair of the Board, has taken responsibility for the programme's failings. He told us that he takes "all responsibility for everything that has happened on [his] watch" including the SSUP.¹⁹ It was the TfL Board that took the final decision to contract Bombardier, and as the programme got underway, the Board had an ongoing role in overseeing its management and monitoring its progress. The Board is therefore culpable to some extent and we must examine the lessons that can be learned at Board level as well as at officer level.
- 3.20 The programme's failure raises questions over whether the Board has the right skills and experience for the job. The Board is reliant on the quality of information and expert advice it receives to help it make its decisions. However, the Board must have sufficient skills and experience to synthesise

this information, recognise strategic faults and most importantly, recognise when it does not have sufficient information to be able to make an effective decision.

- 3.21 The GLA Oversight Committee carried out a review of TfL's Board composition and its corporate governance arrangements in July 2015. It found that the Board is short of expertise in the development and delivery of programmes that have a large IT component. Information technology is playing an increasingly large role in transport systems and TfL's investment programme now goes way beyond the construction of physical infrastructure. The Sub-Surface signalling contract is essentially an IT project and TfL is the first to admit that the Board would benefit from having more expertise in this area. As the Deputy Mayor for Transport explained:

We do not really have the depth of expertise on the Board to deal with some of these big signalling contracts, big information technology (IT) issues and also just the efficiencies that we could be delivering in the IT area. It has been a gap also partly within the organisation but certainly at Board level there is not anyone who really can get to grips with some of those issues.²⁰

- 3.22 TfL is taking steps to address the issue with the aim of filling these gaps when a new Board is appointed later this year. Following an independent review into the Board's effectiveness by Deloitte, TfL has agreed to introduce a process to identify and document the key skills that the Board should have.

Recommendation 1

When the next Mayor appoints a new TfL Board, he/she should ensure that it has the breadth of skills and experience to effectively cover all aspects of TfL's operational and investment activity. We look forward to seeing TfL's guidance on the key skills the Board should have and ask the Mayor to give it due consideration when making Board appointments.

Assurance

- 3.23 There are three lines of project assurance at TfL: the project team; the Project Management Office (PMO) and the Independent Investment Programme Advisory Group (IIPAG). We have looked at how the project was managed and the capabilities of the project team in the sections above and so will focus on the second and third lines of assurance. The second line is provided by TfL's PMO - a team of TfL employees, separate to programme delivery teams, who carry out independent reviews of all capital programmes. The third line of assurance is provided by IIPAG — a team of external experts who review programmes and report their findings to the TfL Board, the Mayor and Government.

Internal assurance – the PMO

- 3.24 External reviews have been highly critical of TfL’s internal assurance processes and capabilities. The KPMG review concluded that the assurance framework failed to reflect the scale of risk to which the project exposed TfL. The level and timing of assurance work carried out by TfL was determined by the project’s expected cost and where it was in its lifecycle, rather than on its risk. Given that the main purpose of assurance is to manage risk, this approach would seem ill-conceived. Furthermore, KPMG concluded that “the PMO does not possess the necessary technical expertise to produce a meaningful assurance of the project”.
- 3.25 An independent benchmarking review of TfL’s assurance processes carried out by consultancy firm EC Harris in 2014 came to similar conclusions to KPMG. EC Harris noted that TfL’s assurance approach was too focused on specific review points and would benefit from more risk-based reviews.²¹ It also concluded that there was a lack of technical capability in the PMO and that this led to an overreliance on external experts. Furthermore, and in support of a view presented by IIPAG, it suggested that there was a perception that the assurance activity carried out by the PMO was not independent as its Head reported to both the Head of the Capital Programmes Directorate and the Managing Director of Finance.
- 3.26 TfL has responded to the criticism of its internal assurance setup and made some significant changes. It has increased its project assurance function’s annual budget from £2.1 million to £3.3 million.²² From December 2014, the PMO stopped reporting to the Capital Programme Director and now reports solely to the Managing Director for Finance. It has bolstered the PMO’s technical capability through the recruitment of seasoned project professionals including a new Head of Risk and a new Head of Performance and Reporting. It now takes a far more targeted, risk-based approach to its work, with the PMO deciding the scope and depth of reviews based on an assessment of the risk and complexity of programmes. This new focus on high-risk, complex projects means that, where previously 132 reviews were carried out on 110 projects, TfL would now carry out 157 reviews but only on 91 of the 110 projects. Lower-risk projects will therefore no longer be reviewed and the higher-risk, complex projects will be subject to more comprehensive review. 40 of the 157 reviews are targeted reviews that fall outside the usual assurance and approval project lifecycle.

External assurance - IIPAG

- 3.27 IIPAG provides TfL’s third line of defence. It was established in May 2010 following the end of the Public-Private Partnership (PPP) contracts on the Underground to fulfill some of the monitoring functions previously carried out by the PPP Arbiter. The Group consists of a team of six or seven highly experienced engineers working on a part-time basis. It takes part in 40-50

assurance reviews a year as well as monitoring and advising the TfL Board on the effectiveness of TfL's first and second lines of assurance.

3.28 We have had mixed information about IIPAG's involvement in the failed contract and IIPAG takes no responsibility for the failed Bombardier contract. TfL has told us that "IIPAG's involvement was to take part in the Bombardier contract award review in November 2010 to identify actions and to recommend contract award in March 2011 once it was satisfied those actions had been addressed".²³ IIPAG's 2011 annual report supports this view and notes that it carried out a review of the SSUP in 2010 and has helped TfL's project management team to "set itself up for success during delivery".²⁴ However, the Chair of IIPAG told the Committee that IIPAG had not carried out any work on the Bombardier contract itself and its only involvement in 2010 was in looking at the competing bids. Given the high-risk nature and importance of signalling to the success of the whole programme, it is difficult to understand why IIPAG's review of the SSUP did not involve looking at the Bombardier contract. To add further confusion to the matter, the Chairman of IIPAG told the Transport Committee that in his view IIPAG came out "exceedingly well" with regard to the Bombardier contract as it was only because of IIPAG's involvement that a cap was placed on the total cost to TfL and without this, the cost of exiting the contract would have been even bigger.²⁵ This is scant consolation for the fact that IIPAG failed to prevent TfL from entering into such a bad contract.

3.29 What is clear is that IIPAG's assurance work on the Bombardier contract was at best, minimal. We understand that it has constrained resources: with a team of six or seven part-time staff working 450 days a year and carrying out reviews on 40 projects, there is a limit to how much work it can do on each programme. This point was picked up by KPMG which described IIPAG's reviews as "superficial":

At present IIPAG carries out infrequent reviews which are carried out at a high level and remain superficial due to the limited time constraints in which they are completed (two days). Whilst providing a strategic picture, this is insufficient time to get to the core issues.

3.30 The SSUP debacle is a clear sign that IIPAG is not providing the level of oversight of TfL's investment programme that was intended when it was set up. The purpose of IIPAG is to minimise the mismanagement of TfL's investment programme and where possible, stop incidents such as the Bombardier contract failure from happening. We recognise that with such a small team and a £17 billion capital programme to oversee, IIPAG is not going to be able to safeguard TfL's entire programme and mismanagement will still take place.²⁶ However, given the size, complexity and level of risk associated

with the SSUP signalling programme, we would have expected IIPAG to have picked up on this programme's mismanagement sooner.

- 3.31 IIPAG has been heavily involved in the re-tender of the SSUP ATC contract and is taking a more risk-based approach to its review work. IIPAG increased its work programme from a planned 450 days in 2014/15 to 535 in 2015/16.²⁷ IIPAG planned to use 25 of the extra days on the ATC contract retender and the remaining 60 to carry out more targeted and continuous assurance reviews of the larger, higher-risk programmes. IIPAG has also recognised that it needs to diversify its skills set. It needs to have skills and experience in its team that go beyond traditional engineering and cover areas including software management and commercial contracting.
- 3.32 The broader question, however, still remains – does IIPAG have the resources it requires to effectively carry out the task it is charged with? Assurance is not a guarantee against failure and we have to be realistic about what we can expect from IIPAG, but there may be value in giving it more resources. With an annual budget of just over £0.5 million, yet the potential to save TfL hundreds of millions, we need to understand how the quality and value of its work would be increased if it was given more resources. In May, London will have a new Mayor in charge of overseeing TfL's activities. One of their first tasks will be to appoint the TfL Board and this would seem a perfect opportunity to review TfL's oversight more broadly and to decide whether IIPAG's remit, role and allocation of resources are appropriate.

Recommendation 2

The new Mayor should carry out a review of the role, remit, strategy, resource allocation and performance of IIPAG and how this fits with TfL's broader assurance and accountability framework. In particular, the review should set out what additional work it would do if it was given more resources and the value this would add.

Conclusion

The SSUP ATC contract failure has significant service and financial implications and we must do all we can to try and ensure similar failures do not happen again. The five-year delay to the programme will add further congestion to an already overcrowded network, reduce TfL's fares revenue and have a knock-on effect on TfL's investment programme and the wider London economy. TfL's reaction to the lessons learned review has been positive and the way it has set up a new delivery partnership with Thales provides some confidence that the same mistakes are unlikely to be repeated on this particular programme. Broader lessons are also being learned about how TfL can improve its procurement, risk assessment, project management and controls environment. While it is clearly right to look at each mistake and the lesson that needs to be learned from it, the nature, scale and sheer number of mistakes that were made with this programme raises cause for considerable concern:

- Adoption of a delivery strategy which failed to understand the market, learn from the experience of other ATC signalling work or recognise the complexity of the task;
- Oversight and management of an inconsistently-applied and deeply-flawed procurement process;
- A light-touch approach to due diligence despite confidence in the product's integrity being key to the decision to contract the chosen supplier;
- Signing up to a "bad contract" which culminated in TfL having to pay £85 million for work of little or no value despite the supplier failing to deliver on its contractual commitments;
- Delegating responsibility to a project team with insufficient skills and experience to manage the delivery of such a complex, high risk project;
- Allowing a "good news" culture to foster, professional scepticism to be suppressed and potential issues to be overlooked instead of being escalated and addressed; and
- Acceptance of a controls and assurance environment that gave inadequate consideration to risk and had insufficient resources to fulfil its role.

It is difficult to understand why some of the issues that arose were not anticipated and safeguarded against by senior management. Moreover, when considered in combination, we can only conclude that TfL's senior management showed poor judgement. They underestimated the scale of risk

associated with the programme and therefore failed to develop a suitable strategy, management and controls environment to safeguard its success.

TfL's review has identified a series of lessons and processes that its senior management team needs to implement to try and prevent similar failures from happening in the future. Early evidence suggests that TfL has been proactive and implemented the required changes. However, the broader question about the quality of judgement shown by the senior management team remains. The next Mayor will have to assure themselves that TfL's management team is equal to the task of managing TfL.

Appendix 1 – Recommendations

Recommendation 1

When the next Mayor appoints a new TfL Board, he/she should ensure that it has the breadth of skills and experience to effectively cover all aspects of TfL's operational and investment activity. We look forward to seeing TfL's guidance on the key skills the Board should have and ask the Mayor to give it due consideration when making Board appointments.

Recommendation 2

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Appendix 2 – Assembly meetings where SSUP ATC contract was discussed

Date	Committee	Guests
9 January 2014	Budget and Performance Committee	Deputy Mayor for Transport (Isabel Dedring) Transport Commissioner (Peter Hendy) Managing Director, Finance, TfL (Steve Allen)
12 March 2014	Transport Committee	Transport Commissioner (Peter Hendy) Managing Director of London Underground and London Rail, TfL (Mike Brown)
19 March 2014	Budget and Performance Committee	Chair of Independent Investment Programme Advisory Group (David James)
4 June 2014	Transport Committee	Managing Director of London Underground and London Rail, TfL (Mike Brown) Chair of Independent Investment Programme Advisory Group (David James)
8 January 2015	Budget and Performance Committee	Deputy Mayor for Transport (Isabel Dedring) Transport Commissioner (Peter Hendy) Interim Chief Financial Officer, TfL (Andrew Pollins)
15 June 2015	Budget Monitoring Sub-Committee	Director of Major Programme Sponsorship, London Underground – (David Hughes) Capital Programmes Director,

		London Underground (David Waboso) Interim Chief Financial Officer, TfL (Andrew Pollins)
10 December 2015	Transport Committee	Transport Commissioner (Mike Brown)
7 January 2016	Budget and Performance Committee	Deputy Mayor for Transport (Isabel Dedring) Transport Commissioner (Mike Brown) Chief Finance Officer, TfL (Ian Nunn)
12 January 2016	Budget and Performance Committee	Mayor of London (Boris Johnson) Chief of Staff and Deputy Mayor, Policy and Planning (Sir Edward Lister) Executive Director of Resources, GLA (Martin Clarke) Assistant Director, Group Finance, GLA (David Gallie)

Appendix 3 – Endnotes

- ¹ The Mayor speaking to the Budget and Performance Committee, 12 January 2016.
- ² Population is expected to grow from 8.7 million in 2015 to 9.9 million in 2030 – *GLA 2012 Roundup Population projections, Intelligence update*, Feb 2013
- ³ *Sub-Surface Upgrade Programme Automatic Train Control Contract – Lessons Learnt*, TfL Board paper, 17 July 2014
- ⁴ *Modernisation of the District, Metropolitan, Circle and Hammersmith & City lines, and Automatic Train Control Contract*, TfL Board paper, 1 July 2015
- ⁵ “when it [SSUP] is fully implemented, the benefit of this programme is around £180 million per annum”, David Hughes, Director of Major Programme Sponsorship, London Underground, speaking at the Budget Monitoring Sub-Committee meeting, 15 July 2015
- ⁶ *Modernisation of the District, Metropolitan, Circle and Hammersmith & City lines, and Automatic Train Control Contract*, TfL Board paper, 1 July 2015
- ⁷ David Hughes, Director of Major Programme Sponsorship, London Underground, speaking at the Budget Monitoring Sub-Committee meeting, 15 July 2015
- ⁸ “£103 million was the actual write-off”, Andrew Pollins, Interim Chief Finance Officer speaking at the Budget Monitoring Sub-Committee meeting, 15 July 2015
- ⁹ Sir Peter Hendy, the then Commissioner for Transport, TfL
- ¹⁰ David Waboso, Capital Programmes Director, London Underground speaking at the Budget Monitoring Sub-Committee meeting, 15 July 2015
- ¹¹ Mike Brown, Commissioner for Transport, speaking at the Transport Committee meeting, 15 December 2015
- ¹² Letter from Mike Brown, Commissioner of Transport to Committee, 25 February 2016
- ¹³ The Mayor speaking at the Budget and Performance Committee meeting, 12 January 2016
- ¹⁴ Mike Brown, the then Managing Director, London Underground and London Rail speaking at a Transport Committee meeting, 4 June 2014
- ¹⁵ Budget and Performance Committee meeting, 7 January 2016
- ¹⁶ Mike Brown, the then Managing Director, London Underground and London Rail speaking at the meeting of the TfL’s Finance and Policy Committee’s Special Purpose Sub-Committee, 20 August, 2014
- ¹⁷ There are four years between the June 2011 when the original contract was agreed with Bombardier and August 2015, when a new contract was agreed with Thales.
- ¹⁸ Mike Brown, the then Managing Director, London Underground and London Rail speaking at the Transport Committee, 4 June, 2014
- ¹⁹ Budget and Performance Committee meeting, 12 January 2016
- ²⁰ Isabel Dedring, Deputy Mayor for Transport speaking at the GLA Oversight Committee meeting, 9 July 2015
- ²¹ *Transport for London, Assurance Benchmarking Summary Report*, EC Harris, 23 October 2014
- ²² *Review of the Assurance and Approval Processes applicable to Investment Projects – Progress Update*, TfL Finance and Policy Committee meeting, 17 June 2015
- ²³ Letter from Mike Brown, Commissioner of Transport to Committee, 25 February 2016
- ²⁴ IIPAG Annual report 2010-2011, July 2011, page 23
- ²⁵ David James, Chair of IIPAG speaking at the Transport Committee, 4 June, 2014
- ²⁶ TfL’s planned capital expenditure over the current business planning period (2014/15 – 2020/21) is £17 billion. *TfL Business Plan, 2014*

²⁷ *IIPAG 2015/16 Budget and Work Plan*, TfL Finance and Policy Committee paper, 17 June 2015

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