

# Agenda

## Meeting: Programmes and Investment Committee

**Date:** Thursday 11 October 2018

**Time:** 10.15am

**Place:** Conference Rooms 1 and 2,  
Ground Floor, Palestra, 197  
Blackfriars Road, London, SE1  
8NJ

### Members

Prof Greg Clark CBE (Chair)

Dr Nelson Ogunshakin OBE (Vice-Chair)

Heidi Alexander

Ron Kalifa OBE

Dr Alice Maynard CBE

Dr Nina Skorupska CBE

Dr Lynn Sloman

Ben Story

Copies of the papers and any attachments are available on [tfl.gov.uk How We Are Governed](http://tfl.gov.uk/How-We-Are-Governed).

This meeting will be open to the public, except for where exempt information is being discussed as noted on the agenda. There is access for disabled people and induction loops are available. A guide for the press and public on attending and reporting meetings of local government bodies, including the use of film, photography, social media and other means is available on [www.london.gov.uk/sites/default/files/Openness-in-Meetings.pdf](http://www.london.gov.uk/sites/default/files/Openness-in-Meetings.pdf).

### Further Information

If you have questions, would like further information about the meeting or require special facilities please contact: Jamie Mordue, Senior Committee Officer; Tel: 020 7983 5537  
Email: [JamieMordue@tfl.gov.uk](mailto:JamieMordue@tfl.gov.uk).

For media enquiries please contact the TfL Press Office; telephone: 0845 604 4141; email: [PressOffice@tfl.gov.uk](mailto:PressOffice@tfl.gov.uk)

Howard Carter, General Counsel  
Wednesday 3 October 2018

**Agenda  
Programmes and Investment Committee  
Thursday 11 October 2018**

**1 Apologies for Absence and Chair's Announcements**

**2 Declarations of Interests**

General Counsel

**Members are reminded that any interests in a matter under discussion must be declared at the start of the meeting, or at the commencement of the item of business.**

**Members must not take part in any discussion or decision on such a matter and, depending on the nature of the interest, may be asked to leave the room during the discussion.**

**3 Minutes of the Meeting of the Committee held on 3 July 2018 (Pages 1 - 10)**

General Counsel

**The Committee is asked to approve the minutes of the meeting of the Committee held on 3 July 2018 and authorise the Chair to sign them.**

**4 Matters Arising and Actions List (Pages 11 - 16)**

General Counsel

**The Committee is asked to note the updated actions list.**

**5 Investment Programme Report - Quarter 1 2018/19 (Pages 17 - 102)**

Director Major Projects and Managing Directors London Underground and Surface Transport

**The Committee is asked to note the paper.**

**6 Independent Investment Programme Advisory Group Quarterly Report** (Pages 103 - 112)

Director of Risk and Assurance

**The Committee is asked to note the IIPAG Quarterly Report and the management response.**

**7 Use of Delegated Authority** (Pages 113 - 114)

General Counsel

**The Committee is asked to note the paper.**

**8 Strategic Risk Management Update** (Pages 115 - 126)

General Counsel

**The Committee is asked to note the paper and the supplementary information on Part 2 of the agenda.**

**9 Barking Riverside Extension Main Works Contract Update** (Pages 127 - 132)

Director of Rail and Sponsored Services

**The Committee is asked to note the paper and the supplementary information on Part 2 of the agenda and delegate authority to approve an increase in Programme and Project Authority, and Procurement Authority to enable the award of the main works contract.**

**10 Tottenham Court Road Station Additional Procurement Authority** (Pages 133 - 134)

Chief Procurement Officer

**The Committee is asked to note the paper and the supplemental information on Part 2 of the agenda and approve additional Procurement Authority.**

**11 Surface Transport Asset Renewals Programme** (Pages 135 - 174)

Managing Director Surface Transport

**The Committee is asked to note the paper, approve a reduction of the existing Programme and Project Authority and note that Procurement Authority in respect of the various elements of the Programme will be sought at officer level in accordance with Standing Orders.**

**12 London Underground Four Lines Modernisation Programme** (Pages 175 - 180)

Managing Director London Underground

**The Committee is asked to note the paper and the supplemental paper included on Part 2 of the agenda.**

**13 London Underground Track Partnership contract** (Pages 181 - 182)

Managing Director London Underground

**The Committee is asked to note the paper and the supplementary paper on Part 2 of the agenda and approve an extension to the existing Track Partnership Contract with Balfour Beatty for programme of track renewal services.**

**14 Emergency Services Network** (Pages 183 - 186)

Chief Technology Officer and Director of Customer Experience

**The Committee is asked to note the paper and the supplemental information on Part 2 of the agenda and endorse a change in delivery approach to that approved in October 2017.**

**15 Crossrail Update** (Pages 187 - 188)

Managing Director London Underground

**The Committee is asked to note the paper.**

**16 Member suggestions for future agenda discussions** (Pages 189 - 194)

The Committee is asked to note the forward programme and is invited to raise any suggestions for future discussion items for the forward programme and for informal briefings

**17 Any Other Business the Chair Considers Urgent**

The Chair will state the reason for urgency of any item taken.

**18 Date of Next Meeting**

Tuesday 11 December at 10.15am.

**19 Exclusion of the Press and Public**

The Committee is recommended to agree to exclude the press and public from the meeting, in accordance with paragraph 3 of Schedule 12A to the Local Government Act 1972 (as amended), in order to consider the following items of business.

**20 Strategic Risk Management Update** (Pages 195 - 200)

Exempt supplementary information relating to the item on Part 1 on the agenda.

**21 Barking Riverside Extension Main Works Contract Update** (Pages 201 - 206)

Exempt supplementary information relating to the item on Part 1 on the agenda.

**22 Tottenham Court Road Station Additional Procurement Authority**  
(Pages 207 - 210)

Exempt supplementary information relating to the item on Part 1 on the agenda.

**23 London Underground Four Lines Modernisation Programme** (Pages 211 - 218)

**Exempt supplementary information relating to the item on Part 1 on the agenda.**

**24 London Underground Track Partnership contract** (Pages 219 - 222)

**Exempt supplementary information relating to the item on Part 1 on the agenda.**

**25 Emergency Services Network** (Pages 223 - 230)

**Exempt supplementary information relating to the item on Part 1 on the agenda.**

## Transport for London

### Minutes of the Programmes and Investment Committee

**Paddington Room, 11<sup>th</sup> Floor, Palestra,  
197 Blackfriars Road, London, SE1 8NJ  
10.15am, Tuesday 3 July 2018**

#### **Members Present**

Professor Greg Clark CBE (Chair)  
Ron Kalifa OBE  
Dr Alice Maynard CBE  
Dr Nina Skorupska CBE  
Dr Lynn Sloman

#### **Board Members also in Attendance**

Heidi Alexander

#### **In Attendance**

##### **Executive Committee**

Mike Brown MVO	Commissioner
Howard Carter	General Counsel
Stuart Harvey	Major Projects Director
Simon Kilonback	Chief Finance Officer

##### **Other Staff**

Michael Bridgeland	Head of Project Assurance
Christina Calderato	Head of Delivery Planning, Transport Strategy & Policy, Planning (for minute 39/07/18)
Tanya Coff	Finance Director, London Underground
Patrick Doig	Finance Director, Surface Transport
David Hughes	Director of Strategy and Service Development, London Underground
Sir Terry Morgan CBE	Chairman, Crossrail Limited
Rob Niven	Head of Major Projects Sponsorship, London Underground (for minute 41/07/18)
Will Norman	Mayor's Walking and Cycling Commissioner (for minute 39/07/18)
Ben Plowden	Director of Project & Programme Sponsorship, Surface Transport
David Rowe	Head of Major Projects Sponsorship, Surface Transport
Howard Smith	Operations Director, Crossrail (for minute 44/07/18)
Allan Thomson	Head of LU Enhancements (for minutes 42/07/18 and 43/07/18)
Lucinda Turner	Director of Spatial Planning (for minute 38/07/18)
David Wylie	Chief Procurement Officer
Jamie Mordue	Secretariat

#### **Independent Investment Programme Advisory Group (IIPAG) Attendance**

Colin Porter	Chief Spokesperson, IIPAG
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### **31/07/18 Apologies for Absence and Chair's Announcements**

Apologies for absence were received from Dr Nelson Ogunshakin OBE (Vice-Chair) and Ben Story. Gareth Powell, Managing Director Surface Transport, and Alex Williams, Director of City Planning, were also unable to attend the meeting.

The Chair welcomed Heidi Alexander, the Deputy Mayor for Transport.

### **32/07/18 Declarations of Interests**

Members confirmed that their declarations of interests, as published on [tfl.gov.uk](http://tfl.gov.uk), were up to date.

### **33/07/18 Minutes of the meeting of the Committee held on 16 May 2018**

**The minutes of the meeting held on 16 May 2018 were approved as a correct record and signed by the Chair.**

### **34/07/18 Matters Arising and Actions List**

Howard Carter introduced the paper. In response to the action on London Underground Major Stations Programme (Minute 09/02/18), a briefing and site visit on the Bank Station project had been arranged for the end of July; with an alternate date being sought for those Members that were not available.

**The Committee noted the actions list.**

### **35/07/18 Investment Programme Report – Quarter 4 2017/18**

Stuart Harvey introduced the paper, which summarised progress against the Investment Programme in Quarter 4, 2017/18. A key achievement had been a 43 per cent reduction in the number of injuries that led to employees taking more than seven days off work compared with the same time in the previous year. Best practice from industry was being put into practice and the leadership teams were more visible and having safety conversations with frontline teams.

Stuart Harvey provided an update on Major Projects. The new Hammersmith Service Control Centre had opened in May 2018; excavation work had been completed at the new Battersea Power Station and the Nine Elms sites, as part of the Northern Line Extension project; and the Secretary of State for Transport granted a Development Consent Order for the Silvertown Tunnel project in May 2018. The Major Stations Programme was amber against its 2017/18 budget milestone, due to a delay in completing the installation of lifts to the District and Circle line platforms at Victoria station. This was caused by contractor lift resource issue but good dialogue between the contractor and its lift supplier was underway to rectify this.



The Bond Street station upgrade was amber against its 2017/18 budget milestone due to commercial issues.

The Bank Bloomberg Place programme was red against its 2017/18 budget milestone because of issues with the manufacture and installation of the fire doors, and the delivery of the systems that monitor and control new station assets. TfL was working with the contractor to ensure the station would open on time. A cost review had been undertaken on the Bank station capacity and systems integration upgrade project, to ensure that there was a common goal on cost reduction. A paper would be submitted to the Committee on Bank station capacity at a later date.

**[Action: Stuart Harvey]**

The new pedestrian walkway at Paddington to link the Bakerloo line platforms with the new Elizabeth line station was amber against its 2017/18 budget milestone due to a delay in testing, caused by technical issues with the pump station works. Since the end of the quarter on 30 April, the milestone has been achieved and there was no impact on the overall estimated final cost.

David Hughes provided an update on London Underground projects. In March 2018, Bromley-by-Bow station became the 73<sup>rd</sup> step-free station on the network. In Quarter 1 of 2018/19 Buckhurst Hill became the 74<sup>th</sup> step-free station. The South Kensington station capacity upgrade listed building consent was granted by the Royal Borough of Kensington and Chelsea in January 2018. Civils feasibility work had been completed, the concept design had been started and the tender information for the design and build contract was being collated.

The Rolling Stock Renewals Programme was red against its 2017/18 budget milestone because of a delay as a result of IR35, which had caused an interim milestone to be missed. This milestone had been achieved after the quarter end on 18 April. Works to ensure the continued reliability of the Bakerloo line fleet had been completed on 20 of the 36 trains.

Ben Plowden provided an update on Surface Transport projects. The Healthy Streets Programme was amber against its 2017/18 budget milestone due to ongoing negotiations with landowners to secure the land required to deliver the Wandsworth gyratory proposals. The submission to the Board for a Compulsory Purchase Order had been postponed until late 2018 to allow time to finalise the land negotiations and to carry out highway survey investigations. In January 2018, the Mayor confirmed support for the Vauxhall Cross bus station planning application. Delivery of Cycle Superhighways was progressing well.

The Air Quality and Environment Programme was red against its 2017/18 budget milestone due to the early introduction of the central London Ultra Low Emission Zone. TfL was striving to achieve compliance with the Euro VI standard. Good progress had been made on retrofitting buses with NOx abatement equipment and building the network of Rapid Charging Points across London. The 100<sup>th</sup> Rapid Charging Point was installed in March 2018.

Public Transport and Asset Investment programmes were green against their 2017/18 budget milestones.

Milestones for the 2018/19 quarterly reports had been restructured and discussions were ongoing to determine how to make recovery processes more explicit.

The Committee asked about pedestrian and cyclists impacts during the construction of the North/South Cycle Superhighway. Guidance had been given to contractors, which included consideration of pedestrians and cyclists. This proactive approach was becoming embedded in how projects were planned and managed. A note would be provided to the Committee. **[Action: Ben Plowden]**

The Committee commended the Executive team's proactive and progressive measures on safety, which had contributed to the reduction of injuries that led to employees taking more than seven days off work.

**The Committee noted the paper.**

### **36/07/18 Independent Investment Programme Advisory Group – Quarterly Report**

Michael Bridgeland introduced the paper, which provided the quarterly report from the Independent Investment Programme Advisory Group (IIPAG) and TfL management's responses to the main issues raised.

With regard to telecoms, fair progress had been made on bought-in networks and third party exploitation but work on TfL owned networks was more difficult. The IIPAG was content with the management's response to its report and accepted work was ongoing on telecoms. A note on how telecoms issues would be resolved would be provided to the Committee. **[Action: Shashi Verma]**

**The Committee noted the paper.**

### **37/07/18 Use of Delegated Authority**

Michael Bridgeland introduced the paper, which set out details of the use of delegated authority by the Commissioner and the Chief Finance Officer. Since the meeting of the Committee on 16 May 2018, the Chief Finance Officer had approved Programme and Project Authority for one project within the Committee's remit.

There was one use of Chair's Action since the meeting of the Committee on 16 May 2018. This related to a supplemental paper to the Deep Tube Upgrade Programme item, which was sent to all Members of the Committee on 1 June 2018. On 4 June 2018 the Chair endorsed the additional recommendations that were agreed verbally at the meeting of the Committee on 16 May 2018.

**The Committee noted the paper.**

## **38/07/18 TfL Growth Fund**

Lucinda Turner introduced the paper. The TfL Growth Fund was targeted at unlocking housing and regeneration. The Growth Fund enabled TfL to: leverage third party funding; work with the GLA and boroughs to deliver higher density sustainable development and embed sustainable travel patterns in parts of London that would otherwise have low density, car dependent development; be agile and respond to opportunities that require early commitment to transport improvements to enable progress to be made; and align with the Mayor's Transport Strategy.

Successes of the Growth Fund included: the Woolwich Arsenal Elizabeth line station, which was on schedule to unlock 3,500 new homes and lead to wider regeneration of Woolwich town centre; a contribution to the Barking Riverside Extension scheme, which would enable the delivery of over 10,000 new homes; and Tottenham Hale and White Hart Lane stations were well advanced in being upgraded to increase capacity and accessibility. Four additional schemes had been confirmed this year, which would unlock 15,000 new homes and transport benefits.

The Growth Fund was able to closely interface with the GLA, primarily through the GLA Growth Board, and interaction with the GLA had been strengthened over the past year. This gave TfL more influence over the bidding process.

An active management approach was employed on the Growth Fund, which allowed TfL to assess proposed schemes against a set of agreed criteria. High ranking schemes were placed in the 'Priority Scheme list', where there was a higher chance of being allocated Growth Fund money, and lower ranking schemes were either placed on a 'Holding List' or determined as unsuitable for Growth Fund money. Specific milestones and timescales had to be met before Growth Fund money could be drawn down.

In December 2017, the Committee agreed to over programme the Growth Fund by £89m. The Growth Fund had 15 schemes competing for the remaining £80m of funding and it was calculated that, if all of the schemes receive funding, this would result in over programming to the agreed £89m.

The Committee thanked staff for the briefing and praised the design and delivery as exemplary. Members queried how TfL could ensure that monies were spent on projects that delivered efficient homes and transport. Members were informed that efficiency considerations would be built into schemes to ensure alignment with the Mayor's Transport Strategy but that buildings tended to be within the GLA's remit.

The transport mode share of schemes that received Growth Fund money was measured by surveys. The Growth Fund gave leverage to promote more car-free developments, such as in Colindale.

The Committee requested that future updates include details on how projects and the benefits derived were monitored and evaluated. **[Action: Alex Williams]**

**The Committee noted the paper and the supplemental paper included on Part 2 of the agenda.**

## **39/07/18 Healthy Streets Programme 2018/19 and 2019/20**

Ben Plowden introduced the paper. The Healthy Streets programme was central to the Vision Zero programme and increasing walking, cycling and public transport to 80 per cent of the transport mode share outcomes in the Mayor's Transport Strategy. In the year 2017/18, the programme met 39 out of 44 milestones. Members noted the progress made in the delivery of the programme in 2017/18, the ongoing work to embed the Healthy Streets approach and the Mayor's Transport Strategy outcomes to existing activities and investment, and the proposals for the future implementation of the programme.

Strong leadership and support, and developing strong relationships with the London boroughs were particularly vital to ensuring the success of the programme; the Liveable Neighbourhoods programme was an example of how TfL and London boroughs worked together and demonstrated how the Mayor's Transport Strategy objectives could be delivered at a local level. Liveable Neighbourhoods would likely be delivered in outer London, where it had a better potential for change.

The Committee noted that the requested authority would allow the programme to continue schemes from 2017/18 and proceed with schemes in 2018/19.

Will Norman, the Mayor's Walking and Cycling Commissioner, commented on the effectiveness of the work taking place on Mini-Hollands and Quietways to achieve the Mayor's Transport Strategy objectives. Quietways showed early signs of increasing cycling and, in areas with Mini-Hollands, people walked on average 32 minutes more than in other areas. Mini-Hollands were being monitored for safety or accessibility issues. Will Norman emphasised the importance of collaboration with the London boroughs and praised the TfL team for the outcomes of the work done so far.

The Committee praised the balanced approach to the needs of buses, pedestrians and cyclists and the increase in transport mode share to public transport, cycling or walking. Members reiterated the importance of understanding what modes of transport people had changed from.

Simon Kilonback told the Committee that the profile of spend was aligned with TfL Business Planning and Cash Flow Management, as agreed in the December 2017 Business Plan.

**The Committee noted the paper and approved additional Programme and Project Authority of £518m giving a total of £957m comprising:**

- 1 the already approved £155m from 2017/18;**
- 2 £313m to undertake all Healthy Streets Programme activities during 2018/19;**
- 3 £456m to undertake all Healthy Streets Programme activities during 2019/20; and**

- 4 up to £33m to undertake all Healthy Streets Programme activities for any project stage that is planned to commence in 2018/19 and 2019/20 but may extend into subsequent years.**

## **40/07/18 Silvertown Tunnel**

Ben Plowden introduced the paper. The Committee noted that the Mayor had confirmed support for the Silvertown Tunnel project and that the Mayor's Transport Strategy referenced delivery in a number of its proposals. The project was developed to address traffic congestion and unreliability at the Blackwall Tunnel, and would allow greater cross-river bus provision, including double decker buses. This would reduce the environmental impact of current traffic congestion. The scheme was designated a Nationally Significant Infrastructure Project in 2012 and a Development Consent Order came into force on 31 May 2018. The key project dates had been recently revised to allow for additional survey works to be carried out on the ground conditions.

The Committee asked what mechanisms could be utilised if air quality did not improve and was informed that a user charge could be altered by TfL to reduce the amount of traffic using the tunnel and that TfL would work with boroughs to monitor air quality in the surrounding area. Modelling had shown no overall impact on the Rotherhithe Tunnel or the Woolwich Ferry but, if necessary, TfL could implement mitigations.

Dr Lynn Sloman had concerns about the potential impact of the proposals on air quality, carbon emissions and transport mode share in outer London, given the risk that a future administration might come under pressure to set the toll for use of the tunnels below the level necessary to prevent an increase in traffic. She recorded her vote against approving Programme and Project Authority.”.

**The Committee noted the paper and the related paper on Part 2 of the agenda and:**

- 1 approved the increase in Programme and Project Authority from £50.5m to £65.0m to continue the project over the coming year, including the procurement process; and**
- 2 noted that the continuation of the procurement process and the intention to return to the Committee later this year seeking authority to award the Project Agreement.**

## **41/07/18 London Underground World Class Capacity Programme**

David Hughes and Rob Niven introduced the paper. The Committee noted that no additional Programme and Project Authority was being sought but the programme had been re-scoped, following the successful delivery of the Victoria line upgrade. The re-scoped programme aimed to deliver 32 trains per hour on the Jubilee line between West Hampstead and North Greenwich stations in the peak periods by the

end of 2021 and a minimum of 31 trains per hour on the Morden branch of the Northern line in peak periods in early 2020.

Members stated that the frequency of trains on the Victoria line was very good and welcomed increasing frequencies on other lines.

**The Committee noted the paper.**

## **42/07/18 London Underground Power, Cooling and Energy Programme**

David Hughes and Allan Thomson introduced the paper. London Underground was the largest consumer of electricity in London and TfL had a responsibility to reduce the cost and impact of that consumption. The authority requested would allow TfL to deliver a programme of essential asset stabilisation, obsolescence management and renewals to ensure the safety of customers and staff. The request was fully funded within the December 2017 TfL Business Plan.

The IIPAG had identified that a comprehensive project review of the SCADA renewal project should be conducted before contractual commitments were entered into. TfL acknowledged the valid concerns and recommended £8.14m of funding for SCADA obsolescence management be agreed, subject to a further review.

**The Committee noted the paper and:**

- 1 approved additional Programme and Project Authority of £44.39m for the London Underground Power, Cooling and Energy Programme, increasing total Programme and Project Authority to £89.58m; and**
- 2 noted that the drawdown of any sums relating to the Supervisory Control and Data Acquisition power control system would be subject to approval of the Managing Director of London Underground following a review of requirements.**

## **43/07/18 London Underground Stations Renewals and Enhancements**

David Hughes and Allan Thomson introduced the paper. The programme contributed to the 'healthy streets and healthy people', 'a good transport experience' and 'new homes and job's' strategic objectives in the Mayor's Transport Strategy and the 'improving public transport services' measure on the TfL Scorecard. The programme would: improve accessibility across the network, including increasing the number of stations with step-free access; enhance stations to respond to the growth in demand for travel; and ensure that stations, buildings and civil assets remained safe and operable. Of the Programme and Project Authority requested, £97.97m was for accessibility, £19.36m was for station enhancements, and £68.89m was for renewals. There were no assurance issues raised and the IIPAG supported the recommendations.

Members raised an issue regarding accessibility at Buckhurst Hill station. While the issues were within Essex County Council and the Highways Agency's remit, TfL remained engaged to help address them. Essex County Council was looking at what could be done and local residents and stakeholders were encouraged to keep reporting accessibility issues.

**The Committee noted the paper, approved additional Programme and Project Authority of £186.22m (gross) for the London Underground Stations programme and noted that the authorities requested had a duration beyond the end of the current business plan and future business plans would need to provide for the remaining authorities.**

#### **44/07/18 Crossrail Update**

Howard Smith introduced the paper and the exempt supplemental information on Part 2 of the agenda. Health and Safety performance remained within annual targets and progress had been made across all areas of the programme, despite cost and schedule pressures across the project. Testing continued in blocks of three to four days, interspersed with 10 days of construction work. Plans for the handover of the new infrastructure continued and had increased in momentum.

TfL Rail took over services between Paddington and Heathrow Terminals 2, 3 and 4 in May 2018. This service operated two Class 360 trains an hour and two additional Class 345 trains operated between Paddington and Hayes & Harlington.

The assembly and installation of six works of art had begun to be integrated into the new Elizabeth line stations in central London. Artists were working with architects and engineers to embed ambitious works into the structure of each station.

**The Committee noted the paper and the supplemental paper included on Part 2 of the agenda.**

#### **45/07/18 Member suggestions for future agenda discussions**

Howard Carter introduced the paper and the Committee's updated forward programme.

The Committee requested that the following information be provided at future Committee meetings:

- (a) information on the Northern and Bakerloo line extensions;
- (b) Oxford Street;
- (c) Rotherhithe to Canary Wharf Crossing;
- (d) the interactions between TfL and HS2 systems;
- (e) potential issues arising from the expansion of Heathrow Airport, particularly unforeseen cost for Surface Transport; and

(f) information on the overall schedule of work for TfL to be included in the Investment Programme Report.

**[Action: Secretariat]**

**46/07/18 Any Other Business the Chair Considers Urgent**

There was no urgent business.

**47/07/18 Date of Next Meeting**

The next scheduled meeting of the Committee would be held on Thursday 11 October 2018 at 10.15am.

**48/07/18 Exclusion of the Press and Public**

The Committee agreed to exclude the press and public from the meeting, in accordance with paragraph 3 of Schedule 12A to the Local Government Act 1972 (as amended), when it considered the exempt information in relation to the items on: TfL Growth Fund; Silvertown Tunnel; and Crossrail Update.

The meeting closed at 12.58pm

Chair: \_\_\_\_\_

Date: \_\_\_\_\_



## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** Matters Arising and Actions List

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### **This paper will be considered in public**

#### **1 Summary**

1.1 This paper informs the Committee of progress against actions agreed at previous meetings.

#### **2 Recommendation**

2.1 **The Committee is asked to note the Actions List.**

#### **List of appendices to this report:**

Appendix 1: Actions List

#### **List of Background Papers:**

Minutes of previous meetings of the Programmes and Investment Committee.

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## Programmes and Investment Committee Action List (reported to the meeting on 10 October 2018)

### Actions from the meeting of the Programmes and Investment Committee held on 3 July 2018

Minute No.	Description	Action By	Target Date	Status note
35/07/18	<p><b>Investment Programme Report – Quarter 4 2017/18</b></p> <p>A cost review had been undertaken on the Bank station capacity and systems integration upgrade project, to ensure that there was a common goal on cost reduction. A paper would be submitted to the Committee on Bank station capacity at a later date.</p>	Stuart Harvey	December 2018	An update will be provided in the LU Major Stations Update item to the next meeting.
35/07/18	<p><b>Investment Programme Report – Quarter 4 2017/18 – cycle and pedestrian safety</b></p> <p>Pedestrian and cyclist hazards in construction of the Cycle Superhighways: Clear guidelines had been issued to all contractors, which included consideration of pedestrians and cyclists. This proactive approach was becoming embedded in how projects are planned and managed. A note would be provided to the Committee.</p>	Ben Plowden	October 2018	Our contractors are clear on the importance of cycle and pedestrian safety both through our work sites and around them. Assessments are undertaken to ensure that the needs of cyclists and pedestrians of all abilities are taken into account when temporary road layouts are designed around roadworks. This includes cycle rides with local cycle groups through the area ahead of the planned works and also walking in the area with varying ages and abilities.

Minute No.	Description	Action By	Target Date	Status note
				<p>This helps identify potential issues early and the traffic management for the site can then be amended, while remaining compliant with regulations, to ensure our vulnerable users are catered for.</p> <p>Colleagues across Surface Transport have been working with our contractors to document best practice for traffic management for works on our road network. A draft document is already on the TfL website and a final version will be released in December 2018 with updated imagery.  <a href="http://content.tfl.gov.uk/temporarily-traffic-management-handbook-draft-v0.3.pdf">http://content.tfl.gov.uk/temporarily-traffic-management-handbook-draft-v0.3.pdf</a></p> <p>The Safety, Sustainability and HR Panel considered a paper on Safety at Roadworks on 27 September 2018.</p>

Minute No.	Description	Action By	Target Date	Status note
36/07/18	<p><b>Independent Investment Programme Advisory Group – Quarterly Report – Telecoms issues</b></p> <p>A note on how telecoms issues would be resolved would be provided to the Committee.</p>	Shashi Verma	October 2018	A note was being prepared. An update would be provided at the meeting.
38/07/18	<p><b>TfL Growth Fund</b></p> <p>The Committee requested that future updates include details on how projects and the benefits derived were monitored and evaluated.</p>	Alex Williams	December 2018	This action would be addressed in the regular Growth Fund update on the forward plan for December 2018.
45/07/18	<p><b>Member suggestions for future agenda discussions</b></p> <p>The Committee requested that the following information be provided at future Committee meetings:</p> <p>(a) Information on the Northern and Bakerloo line extensions;</p> <p>(b) Oxford Street;</p> <p>(c) Rotherhithe to Canary Wharf Crossing;</p> <p>(d) The interactions between TfL and HS2 systems;</p> <p>(e) Potential issues arising from the expansion of Heathrow Airport, particularly unforeseen cost for Surface Transport; and</p> <p>(f) Information on the overall schedule of work for TfL to be included in the Investment Programme Report.</p>	Secretariat	Ongoing	<p>(a) An informal briefing will be provided in October 2018. A paper will be submitted to the Committee in December 2018.</p> <p>(b) On forward plan</p> <p>(c) An informal briefing will be provided in October 2018.</p> <p>(d) Will be addressed in LU Stations paper in December 2018.</p> <p>(e) On forward plan</p> <p>(f) Included in the Report on the agenda.</p>

## Actions from previous meetings of the Committee

Minute No.	Description	Action By	Target Date	Status note
25/05/18	<b>London Underground Legacy Signalling and Information</b> The Committee requested a future discussion on the use of innovative technology for signalling upgrade works, such as 5G.	David Hughes	2019	This work is being progressed. An update will be provided to a future meeting.
28/05/18	<b>Member suggestions for future agenda discussions</b> Members were interested in whether the cause of the Jubilee line power failure had been determined and what lessons had been learned. TfL continued to investigate the cause and would report back to the Customer Service and Operational Performance Panel in due course.	Nigel Holness	CSOP September 2018	<b>Completed.</b> An update was provided to the Customer Service and Operational Performance Panel in September 2018.
09/02/18	<b>London Underground Major Stations Programme</b> Members would be offered a visit and a deep dive briefing on the Bank Station project.	David Hughes / Secretariat	May/June 2018	<b>Completed.</b> Members took part in a visit in July and September 2018.
13/02/18	<b>Member suggestions for future agenda discussions</b> Members were keen to better understand what mechanisms and procedures were in place to drive and demonstrate greater value in the delivery of its investment programme. TfL was undertaking an end to end review of project lifecycles to identify how it could identify opportunities and cultural changes to drive better value. An update would be provided to the Committee when this work was better developed.	Tony King	October 2018	This work is being progressed. An update will be provided to a future meeting.
19/03/17	<b>Member suggestions for future agenda discussions</b> Members requested that officers consider how investment and cost profiles, and the funding for them, best be shared with Members going forward.	Tony King	Ongoing	Work on this is ongoing and will be addressed in Board Business Planning discussions.

## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** Investment Programme Report – Quarter 1, 2018/19

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**This paper will be considered in public**

### **1 Summary**

1.1 The Investment Programme Report describes the progress and performance in Quarter 1, 2018/19 of a range of projects that will deliver world-class transport services to London.

### **2 Recommendation**

2.1 **The Committee is asked to note the report.**

#### **List of appendices to this report:**

Appendix 1: Investment Programme Report Quarter 1, 2018/19.

#### **List of Background Papers:**

None

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# Transport for London investment programme report

Quarter 1 2018/19



## About Transport for London (TfL)

Part of the Greater London Authority family led by Mayor of London Sadiq Khan, we are the integrated transport authority responsible for delivering the Mayor's aims for transport.

We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for All Londoners'. We are committed to creating a fairer, greener, healthier and more prosperous city. The Mayor's Transport Strategy sets a target for 80 per cent of all journeys to be made on foot, by cycle or using public transport by 2041. To make this a reality, we prioritise health and the quality of people's experience in everything we do.

We manage the city's red route strategic roads and, through collaboration with the London boroughs, can help shape the character of all London's streets. These are the places where Londoners travel, work, shop and socialise. Making them places for people to walk, cycle and spend time will reduce car dependency and improve air quality, revitalise town centres, boost businesses and connect communities.

We run most of London's public transport services, including the London Underground, London Buses, the DLR, London Overground, TfL Rail, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the Emirates Air Line. The quality and accessibility of these services is fundamental to Londoners' quality of life. By improving and expanding public transport, we can make people's lives easier and increase the appeal of sustainable travel over private car use.

We are moving ahead with many of London's most significant infrastructure projects, using transport to unlock growth. We are working with partners on major projects like Crossrail 2 and the Bakerloo line extension that will deliver the new homes and jobs London and the UK need. We are in the final phases of completing the Elizabeth line which, when it opens, will add 10 per cent to London's rail capacity.

Supporting the delivery of high-density, mixed-use developments that are planned around active and sustainable travel will ensure that London's growth is good growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

We are committed to being an employer that is fully representative of the community we serve, where everyone can realise their potential. Our aim is to be a fully inclusive employer, valuing and celebrating the diversity of our workforce to improve services for all Londoners.

We are constantly working to improve the city for everyone. This means freezing TfL fares so everyone can afford to use public transport, using data and technology to make services intuitive and easy to use, and doing all we can to make streets and transport services accessible to all. We reinvest every penny of our income to continually improve transport networks for the people who use them every day.

None of this would be possible without the support of boroughs, communities and other partners who we work with to improve our services. We all need to pull together to deliver the Mayor's Transport Strategy; by doing so we can create a better city as London grows.

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# Introduction

This investment programme quarterly performance report provides an update on a range of projects that will deliver world-class transport services to London.

It presents a progress update on the major projects and sub-programmes that seek authority each year (unless extraordinary approvals are needed) to the Programmes and Investment Committee.

For each major project or sub-programme, the financial and milestone data represents the position at the end of the quarter and we include commentary for key achievements and progress made. The report also contains, as far as possible, updates on any notable progress made after quarter end.

For a sub-programme and project with a defined start and end, we include when it is planned to be substantially complete and being used by customers. Works that are delivered in a prioritised sequence, such as road resurfacing or track renewal, are referred to as 'annual' as they are controlled and measured within each financial year.

Financial records of spend to date, authority and estimated final cost (EFC) represent the entire duration of each separate project or programme, except for annual portfolios where spend to date, authority and EFC figures represent the current financial year. Where

authority is significantly lower than EFC, it has been given for the current stage of works and further authority will be sought when appropriate.

The EFC of each sub-programme or project may display a red, amber or green (RAG) status, which represents the level of change in EFC from the previous quarter, such as:

EFC increase of two per cent or more:



EFC increase of five per cent or more:



EFC decrease of two per cent or more:



EFC decrease of five per cent or more:



Where no symbol is used, the EFC increase or decrease (if any) is less than two per cent.

We also include cumulative EFC movements for savings and efficiencies that have been embedded since our 2017 Business Plan, while protecting safety, services and reliability. Numbers in brackets represent an EFC increase and numbers without brackets represent an EFC decrease. Commentary is provided for cumulative movements greater than £2m.

This report does not contain commercially sensitive information and therefore some EFCs and authorities are marked with an asterisk until the main contract has been awarded. On schemes where there is commercial confidentiality, the EFC, authority and spend to date may also be withheld.

All financial figures are gross and may not appear to align with costs detailed in the TfL Budget, which are net of any third-party funding. In addition to the committed projects and programmes included in this report, we will be seeking to obtain capital spend authority for schemes such as the Bakerloo Line Extension and Crossrail 2.

Each sub-programme or project also has an overall RAG milestone status, which represents the average forecast date variance against plan for 2018/19 budget milestones:

On time or early:



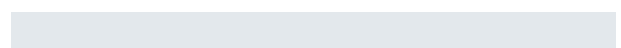
1-89 days late:



90 or more days late:



N/A (without 2018/19 budget milestones):



Budget milestones for 2018/19 – the key milestones listed in the TfL Budget – are detailed in Appendix A (page 80).



Our investment programme is delivered by the following areas of the business: Major Projects, London Underground, TfL Surface and Other. The report structure reflects this:

- Major Projects is responsible for our largest and most complex projects. It comprises line upgrades, Deep Tube Upgrade, network extensions, and major stations, which are covered in pages 20-39 of this report. Future Major Projects schemes will be reported in detail following financial authority approval
- London Underground comprises stations, accessibility, track renewals, infrastructure renewals, rolling stock renewals, and signalling and control, which are covered in pages 40-51
- Surface comprises Healthy Streets, air quality and environment, public transport, and asset investment. These are covered in pages 52-69
- Other comprises Technology and data, TfL Growth Fund, and the Elizabeth line (including Crossrail), which are covered in pages 70-79

# Mayor's Transport Strategy

The Mayor's Transport Strategy sets out a bold vision for a growing, welcoming London, where 80 per cent of journeys will be made by walking, cycling or public transport by 2041.

We are providing more trains on our busiest services and opening the Elizabeth line. We are also making local streets healthy, pleasant and productive places to stop at, travel through and live. Listening to, and acting on, the

suggestions of our customers will allow us to make walking, cycling and public transport the first choice for the vast majority of trips, and everyday operational excellence will unlock the new jobs and homes that our city needs.

This report looks at our investment programme in respect of the following themes from the Mayor's Transport Strategy:

**The Mayor's Transport Strategy themes that we are delivering through our diverse Investment Programme are indicated in this report as follows:**

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Healthy Streets and healthy people



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A good public transport experience



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New homes and jobs







We are supporting the Mayor's vision to encourage more journeys to be made by walking, cycling and public transport



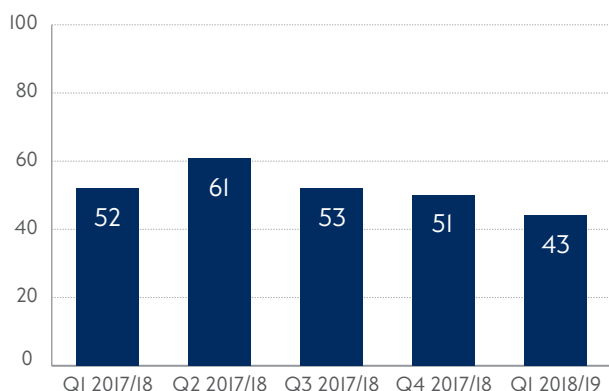
We work with our employees and contractors to ensure they have the necessary safety culture

# Safety

The safety of our customers, employees and contractors is our core value. To keep London moving, working and growing, we work with a wide range of suppliers to ensure they have the necessary culture and competence to safely deliver our capital investment and upgrade programmes.

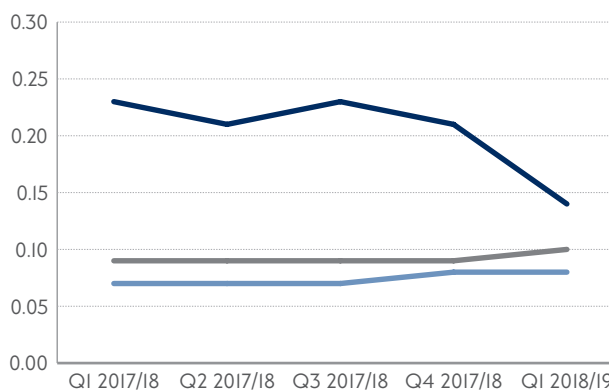
## Workforce safety

### Workforce accidental physical injuries



■ Major projects directorate

### Workforce RIDDOR incidents



■ LU renewals and enhancements  
■ Crossrail ■ Major projects

There were fewer injuries for both direct employees and our supplier's workforce compared to the same quarter last year.

Across London Underground, employee injuries have fallen by seven per cent compared to last quarter. Injuries in Major Projects Directorate have also reduced by four per cent from last quarter, while the long-term trend in Surface remains steady with significant reductions this quarter.

There were two high potential incidents in this quarter. Firstly, there was a power surge while disconnecting cables from an isolated power supply at Neasden on 26 April, 2018. Nobody was injured but the Jubilee line had to be suspended while the power supply was reinstated. Also, during controlled signalling testing on the Four Lines Modernisation (4LM) project on 21 June 2018, we discovered that the points didn't sufficiently lock. We are investigating what happened and addressing the root causes.

Through our campaign to make safety personal, we have identified a spike in injuries during the summer holiday season. We have been reminding people to be fully focused when they return to work after a break and ran a number of campaigns designed to re-establish routines and identify workplace hazards. We are also working with suppliers to develop back-to-work campaigns as part of their inductions.

We also held our first health, safety and environment (HSE) stand down of the year, in response to the number of minor injuries that resulted in people having more than seven days off work. The stand down involved conversations with our day and night teams about how they can ensure the wellbeing, safety and health of themselves and their colleagues by taking simple steps.

While our safe systems and processes are at an acceptable standard, cultural issues associated with consistently applying and following them could be improved. We are therefore trialling a behavioural based safety programme, supported by short films, which forms part of a consistent HSE induction pack. The initial focus is within Major Projects, but the programme will roll out across all capital projects.

The level of reporting incidents and near misses within Major Projects is good, but we need to improve how quickly we investigate and close such reports. To improve this we have:

- Coached our teams on the importance of timely and quality investigations, including what to look for and how to use the TfL reporting system
- Run a campaign featuring our senior leadership team to highlight their commitment to high quality investigation
- Increased the visibility of our incident close out rates and how we use the data to improve HSE performance
- Started to review our tools and forums to share lessons learnt

We have worked with our individual suppliers to identify local improvement actions, which have been fed into Major Projects improvement programme for 2018/19. In Quarter 2, we will also launch: a new HSE improvement programme, roll out a new reporting application, and improve our data collection, analysis and communication methods. The aim is to ensure we make HSE improvement decisions based on fact, from a robust, single, data set.

### **Sandilands**

We are continuing to address and meet the recommendations made by the Rail Accident Investigation Branch (RAIB) and SNC-Lavalin reports into the overturning at Sandilands.

Our thoughts remain with everyone affected and the Sarah Hope Line continues to be available to provide help with counselling and other support.

In May, we began the tender process for the installation of a new safety system on London Trams that will automatically apply the brakes should the speed limit be exceeded at high risk locations. The system would also automatically alert the operations control centre.

It will initially be configured to priority locations as suggested by the RAIB but will have the flexibility to be introduced elsewhere on the tram network. A contract notice was issued through the Official Journal of the European Union, inviting interest from companies that have innovative solutions. Following the qualification process, an Invitation to Tender was issued with the contract due to be awarded by the end of the year.

# Business at a glance

Keeping London moving, working and growing to make life in our city better

## How we report on our business



## Facts and figures\*

**940** Trains on the TfL network



**580km**

TfL-operated highways



**680km**

TfL-operated Rail and Underground routes



**9,550**

Buses on the TfL network



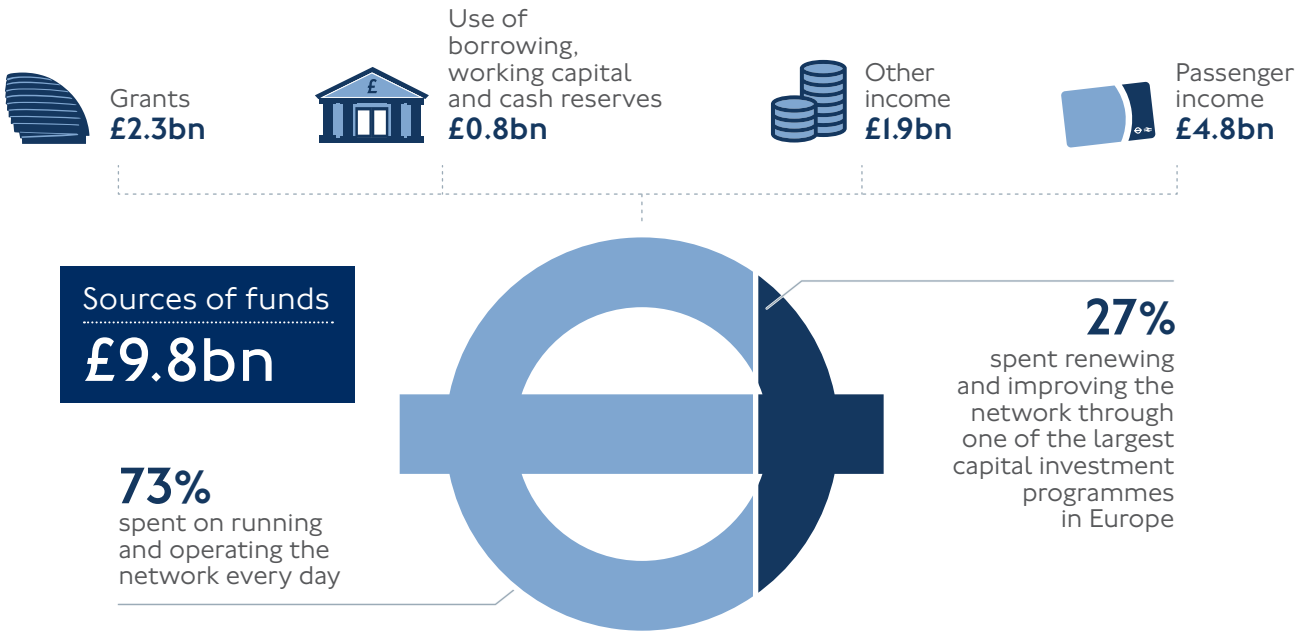
**6,350**

Traffic signals operated by TfL

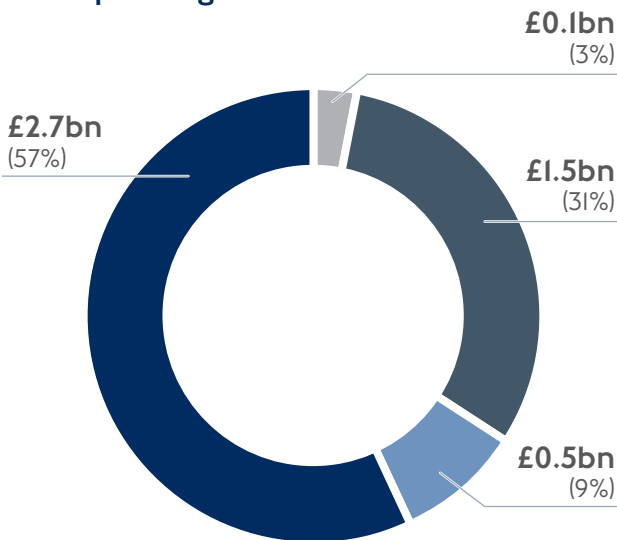


\*Based on full year 2017/18

## Budget at a glance



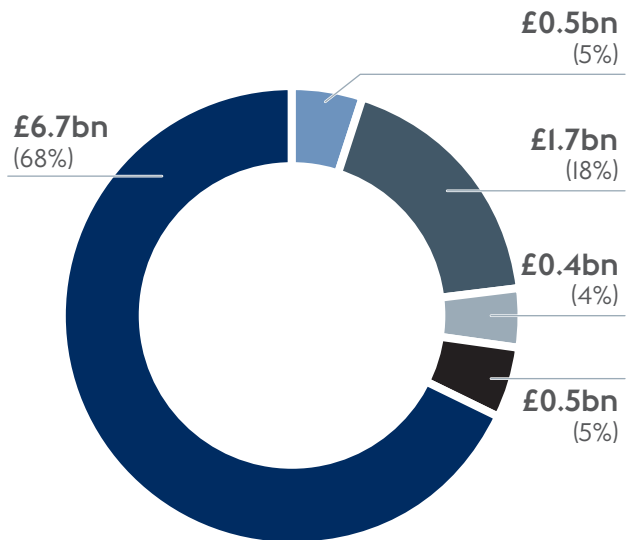
## Total passenger income



Total: **£4.8bn**

- Underground
- Rail
- Buses
- TfL Rail

## Total costs



Total: **£9.8bn**

- Operating costs
- New capital investment
- Capital renewals
- Crossrail
- Net financing

# Key achievements

## Line upgrades

We have fitted a new automatic train control system on 110 trains on the Circle, District, Hammersmith & City and Metropolitan lines. We have also fitted the new system on 13 engineering vehicles. Future fitment work is on schedule to improve services through higher frequency timetables.

## Network extensions

On the Northern Line Extension, we have excavated a 13-metre deep basement at Kennington Green shaft for the new head house, which will have a two-level basement.

## Stations and infrastructure

We opened a new gateline at Victoria station in the south ticket hall to provide an interchange with the Circle and District line platforms, and a link between the north and south ticket halls. Along with the new escalators, which opened in August 2018, this will help relieve congestion.

The Bank station project won the gold award and coveted Client and Principal Contractor City Mark award for our commitment to reducing road danger at the City of London's 30th Gold Awards ceremony.

The procurement strategy We have agreed the strategy for the next stage of work to procure a multi-disciplinary consultancy for the Camden Town station capacity upgrade project.

## London Underground track and civils

We have replaced 1.3km of ballasted track, 700 metres of drainage, five sets of points and more than 500 metres of deep Tube track, enabling smoother and more reliable journeys.

At Camden Town, we renewed four sets of deep Tube points over two weekends, including installing 100 metres of new track.

## London Underground stations

We completed all civils works at Finsbury Park, including two new lift shafts, reconstruction of two staircases and a new passageway linking the existing station to the future western station entrance.

The CCTV Phase 5 Project has delivered remote access to live and recorded CCTV footage at 119 stations, which significantly improves customer safety. All 119 locations have been successfully handed over for ongoing maintenance.

## Elizabeth line

Despite major disappointment from the Crossrail construction team that the opening has been significantly delayed, some progress is still being made. The first Class 345 train ran from Pudding Mill Lane to Westbourne Park on 11 June 2018.

Oyster and contactless payments went live for TfL Rail services to Heathrow in May 2018. There are also supporting agreements in place with Heathrow Express to start accepting Oyster payments later this year.





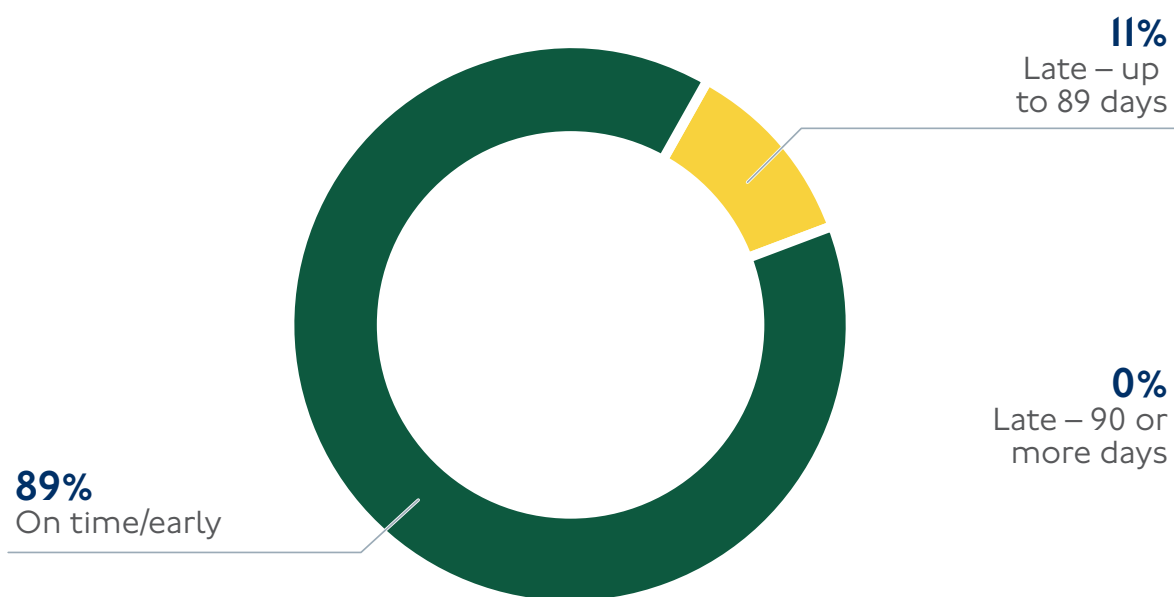
The Bank station project won a gold award for our commitment to reducing road danger



We work to keep London moving and growing

# 2018/19 Budget milestone performance summary

The overall performance for all TfL 2018/19 Budget milestones is summarised as follows:



The late milestone score of 11 per cent (up to 89 days late) is driven by the late milestones detailed in Appendix A.



Three depots will be upgraded to support maintenance of the new trains

# Major projects

Line upgrades   

## Four Lines Modernisation (4LM)

Forecast completion year

**2023**

Spend to date (£m)

**4,370**

Spend authority (£m)


**5,412**

EFC (£m)

**5,243**

EFC movement post plan (£m)

**15**

2018/19 budget milestone RAG 

**We have already introduced 192 new S-Stock trains on the Circle, District, Hammersmith & City and Metropolitan lines, and are working to complete the associated depot, station, siding and signal modifications to accommodate them. We are upgrading three depots to support new train maintenance.**

The new automatic train control signalling system will control train movements, allowing more frequent and reliable services. In addition to designing and installing the system, we are delivering related infrastructure works and fitting S-Stock trains and engineering vehicles with the in-cab signalling equipment. The new signalling provides 75 per cent of the programme's benefits, with the new trains providing 25 per cent.

The new Hammersmith Service Control Centre went live in May 2018. For the first time, the service control teams for the Circle, District, Hammersmith & City and Metropolitan lines were under one roof at the new Hammersmith Service Control Centre. This facility will deliver greater capacity, a faster more reliable service and better customer information.

Operational proving of the automatic train control system took place between Hammersmith and Latimer Road in May 2018.

The EFC has reduced by £1m from £5,244m as at Quarter 4. It is £15.6m lower than the Business Plan as a result of a number of scope reductions, including the removal of redundant assets based on a revised strategy and saving opportunities on accommodation decommissioning costs at Network Rail test track. Early indications suggest there is a cost challenge for the main contractor, which is currently under review.

---

Testing the new system in operation on the railway with the first engineering train started this quarter. We have fitted the system on 13 engineering trains, with 20 more planned by the end of March 2019.

Commissioning of the final signalling area between Rayners Lane and Uxbridge remains on schedule for March 2022, and we are exploring opportunities to accelerate this.

On the Circle, District and Hammersmith & City lines, 68 seven-car trains have been fitted with the system, with a further 42 eight-car trains on the Metropolitan line.

Platform works continue to reduce the gap between the train and the platform, making it safer for customers getting on and off trains. We recently completed work at Victoria and Whitechapel stations, and have completed 96 per cent of work at Sloane Square, South Kensington and East Putney, which is scheduled for completion this autumn.

Overall, the programme is below budget and financial authority. The EFC has reduced and is now £169m below financial authority at £5,243m.

### Assurance

Project Assurance completed an integrated assurance review on the 4LM programme submission to the Programmes and Investment Committee meeting in October 2017. Fifteen recommendations were made and accepted, including 10 by the Independent Investment Programme Advisory Group (IIPAG). A quarterly update was provided to the committee on 3 July 2018. All recommendations are now closed. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.



We are installing automatic train control software on trains for the Circle, District, Hammersmith & City and Metropolitan lines



## Capacity Optimisation – World class capacity

Forecast completion year

**2024**

Spend to date (£m)

**\*<sup>1</sup>**

Spend authority (£m)

**245**

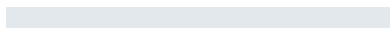
EFC (£m)

**245**

EFC movement post plan (£m)

**\*<sup>1</sup>**

2018/19 budget milestone RAG<sup>1</sup>



### Capacity Optimisation is a new portfolio that incorporates world class capacity and new DLR rolling stock.

Apart from mobilising this new portfolio, work has centred on procurement activity, including continuing the tender evaluation for the new DLR Rolling Stock programme and the contract for Beckton depot detailed design services.

Tender reviews for the Northern line power works have been completed and the contract is ready for award. The procurement process for the Morden Wheel Lathe project is progressing with contracts let for site establishment and shed demolition. The Northern Line Speed Improvement Works project has awarded the delivery contract to Thales.

#### Assurance

An assurance review was completed on the world class capacity programme submission to the Programmes and Investment Committee on 3 July 2018. Six recommendations were made and accepted, including three by IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including those made by IIPAG, as part of its continuous assurance.

<sup>1</sup> Following PIC paper submission in July, historical world class capacity costs will be available in Q2 2018/19.





## Capacity Optimisation – DLR rolling stock

Forecast completion year

**2023**

Spend to date (£m)

**9**

Spend authority (£m)

**22**

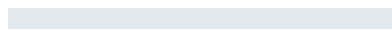
EFC (£m)

**\*<sup>2</sup>**

EFC movement post plan (£m)

**\*<sup>2</sup>**

2018/19 budget milestone RAG



### **New DLR trains and infrastructure are vital to support the ongoing regeneration of east London, including housing growth and business opportunities.**

The DLR Rolling Stock programme will replace rolling stock that is nearing the end of its design life and deliver additional trains, providing increased capacity to meet the projected growth in the Docklands area. An extension is required to the depot at Beckton, with further sidings for the new trains, a new maintenance facility and an extended automatic train operation test track. Works are also required to update the Thales automatic train operation signalling system and strengthen the traction power system.

Tenders for the replacement rolling stock were received on 1 June 2018, with evaluations due to finish by the end of 2018. The depot concept design has been accepted by stakeholders with tender documents completed for the next detailed design contract. Geotechnical and topographical surveys have been contracted and work has started on site. Operational planning workshops with Keolis Amey Docklands to plan how the operational service will be maintained during the depot works has begun.

Negotiations with UK Power Networks to secure additional power supplies have begun and a solution proposed. Negotiations continue with Thales to agree the scope of services for the signalling upgrade required to support the replacement rolling stock.

<sup>2</sup> This information is withheld until final contract is awarded



The Deep Tube Upgrade programme will boost capacity on the Bakerloo, Central, Piccadilly and Waterloo & City lines

# Deep Tube Upgrade programme

## Deep Tube upgrade programme – design phase

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
<b>2018</b>	<b>87</b>	<b>154<sup>3</sup></b>	<b>113</b>	<b>1</b>

2018/19 budget milestone RAG 

**The Deep Tube Upgrade programme will provide more capacity on the Bakerloo, Central, Piccadilly and Waterloo & City lines. There will be new signalling systems and a fleet of newly designed, high-capacity, walk-through, air-cooled trains to replace some of the oldest on our network.**

In Quarter 4 2017/18, we announced our intent to award the contract to design and build 94 new-generation Piccadilly line trains to Siemens Mobility Limited. Legal proceedings have commenced by the unsuccessful bidders in relation to the outcome of the the process. Award of the contract has been automatically suspended and we are defending the claims and hope to be able to award the contract shortly.

In April, the ‘invitation to negotiate’ was issued to three shortlisted bidders for the signalling and train control phase. Once responses are received in January 2019, evaluations of the bids can start.

Mobilisation of the Deep Tube Upgrade team continues on a strategy that looks to align resources with 4LM and other relevant line upgrade programmes, to ensure knowledge transfer and the embedding of lessons learned.

A market engagement day was held with prospective high-voltage power suppliers. The feedback gained was beneficial for the development of our Deep Tube Upgrade procurement proposals.

### Assurance

Project Assurance completed an integrated assurance review on the Deep Tube Upgrade programme submission to the Programmes and Investment Committee meeting in May 2018. A quarterly update was provided to the Committee on 3 July 2018 on the 10 recommendations that were made and accepted, including five by IIPAG. Five recommendations are closed and good progress is being made to close the remaining five. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.

<sup>3</sup> Following the 16 May 2018 Programmes and Investment Committee meeting, an additional Programme and Project authority of £3.1bn was granted. The original design and additional rolling stock and enabling works authority will be combined for the report in Quarter 2 2018/19.



The Northern Line Extension project will boost the regeneration of the area

# Network extensions



## Northern Line Extension

Forecast completion year

**2020**

Spend to date (£m)

\*<sup>4</sup>

Spend authority (£m)

\*<sup>4</sup>

EFC (£m)

\*<sup>4</sup>

EFC movement post plan (£m)

\*<sup>4</sup>

2018/19 budget milestone RAG



**This project provides a twin-tunnelled extension from Kennington to a new terminus at Battersea Power Station, via a new station at Nine Elms. This transport infrastructure is a catalyst for the regeneration of the Vauxhall Nine Elms Battersea Opportunity Area.**

Northern line Bank branch trains have not been stopping at Kennington since 26 May 2018, to enable the building of four passages between the station's platforms. The passages are necessary to improve passenger flow once the extension opens. Customer flow during construction has been manageable, as almost a third of passengers have found alternative routes.

Services resumed on 17 September 2018 as planned. We are now planning to ensure the electrical and mechanical fit-out is done in the most efficient manner. Work continues on the internal structure of Battersea station. Both platforms and overrun tunnels are progressing.

Construction work has started on the internal walls to form the rooms in the new station. Eastern and western service lift shafts, emergency stairs, ventilation and other services are due to be completed September 2018.

We are installing the running track and brackets to support power, signalling and communications cables in the northbound tunnel from Nine Elms to Battersea Power Station.

At the Kennington Green shaft we have excavated a 13 metre-deep basement for the new head house, which will have a two-level basement. At the Kennington Park shaft, the acoustic enclosure has been removed and work to excavate the basement has started.

Work at Nine Elms station continues, with the base slab cast and installation of pre-cast concrete station platforms about to begin. Other works include casting the secant piles' lining wall and encasing steel columns in concrete.

<sup>4</sup> This information is withheld for reasons of commercial sensitivity.

## Silvertown Tunnel

Forecast completion year

**2023**

Spend to date (£m)

**42**

Spend authority (£m)

\*<sup>5</sup>

EFC (£m)

\*<sup>5</sup>

EFC movement post plan (£m)

\*<sup>5</sup>

2018/19 budget milestone RAG



**We are providing a 1.4km twin-bore road tunnel under the Thames that connects Silvertown and the Greenwich Peninsula and which will relieve congestion at Blackwall Tunnel.**

We successfully gained the Development Consent Order from the Secretary of State on 10 May 2018, without challenge and ahead of the 22 June deadline.

We are developing design proposals with landowners affected by the works. Surveys being taken to assist with the bid process will be completed in autumn 2018. We are working with two bidders on the procurement process and are, aiming to award the contract in 2019.

An update report on the recent Development Consent Order decision and the procurement process was submitted to the Programmes and Investment Committee on 3 July 2018. We secured the £14.5m of additional authority to continue the project. We plan to return to committee later in the year before the main contract award.

### Assurance

Project Assurance completed an integrated assurance review on the Silvertown Tunnel programme submission to the Programmes and Investment Committee meeting on 3 July 2018. Ten recommendations were made and accepted, including six by IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.

<sup>5</sup> This information is withheld until the main contract has been awarded.

## Barking Riverside extension

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
<b>2021</b>	<b>21</b>	* <sup>6</sup>	* <sup>6</sup>	* <sup>6</sup>

2018/19 budget milestone RAG



**We are delivering a new rail link to serve the 10,800 new homes that are planned for the Barking Riverside development area. We will build a spur from the Tilbury Loop line east of Barking, to allow our service to extend to Barking Riverside. Train services are planned to start in 2021.**

In August 2017, the Secretary of State for Transport granted powers to deliver the Barking Riverside 4.5km extension. The required demolition works were completed in May 2018. Procurement has begun for the overhead line equipment sectioning and switching works that will be carried out over Christmas 2018. These works are critical to allow the possessions planned in 2019 to take place.


The invitation to tender for the main works contract was issued on the 13 April 2018. Since this date, bidders have submitted clarification requests and have attended mid-point tender reviews. A four-week extension was granted to bidders with submissions due in July 2018 and the contract award is currently planned for December 2018.

### Assurance

Project Assurance completed an integrated assurance review on the Barking Riverside Extension programme submission to the Programmes and Investment Committee meeting in May 2018. A quarterly update was provided to the committee on 3 July 2018 on the 10 recommendations that were made and accepted, including seven by IIPAG. Five recommendations are closed and good progress is being made to close the remaining five. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.

<sup>6</sup> This information is withheld until the main contract has been awarded.

↑ Way out

↑ National Rail  Trains to Gatwick ↑

↑ Victoria Coach Station  



Our work at Victoria station will ease congestion and provide step-free access



# Major stations

## Victoria station upgrade and finishes

Forecast completion year

**2018**

Spend to date (£m)

**564**

Spend authority (£m)

**660**

EFC (£m)

**583**

EFC movement post plan (£m)

**2**

2018/19 budget milestone RAG



**We have built a new north ticket hall and 300 metres of subways, and have increased the size of the south ticket hall by 50 per cent. Step-free access to all platforms will meet the needs of the 83 million customers who use the station each year.**

We opened the new gate-line in the south ticket hall, providing an interchange to the Circle and District line platforms, and a link between the south and north ticket halls. This will optimise congestion relief in conjunction with the new escalators that opened in August 2018.

We continue to rebuild the Duke of York pub, which was demolished to allow jet grouting works for the tunnels. Internal blockwork is complete and stud-wall framework installation has begun on all floors.

We are opening the new station in stages. We expect to open all new customer facilities this year, on time and budget, with overall completion planned for December 2018.

The EFC has reduced by £2m post 2017 Business Plan, due to reductions in risk as the project nears completion.

## Bank Bloomberg Place

Forecast completion year

**2018**

Spend to date (£m)

**52**

Spend authority (£m)

**58**

EFC (£m)

**58**

EFC movement post plan (£m)

**0**

2018/19 budget milestone RAG



**Alongside the Bloomberg Place site redevelopment next to Walbrook, we are building a new entrance for the Waterloo & City line, with connections to the existing concourse. The station 'box' was constructed by Bloomberg on our behalf.**

Early indications suggest there is a final account challenge with the main contractor, which is currently under review.

Good progress has been made on site, with all major works now completed. Installation of vitreous enamel finishes across the site is almost complete. Electrical systems such as lighting, speakers, cameras and other communications devices have been installed, with testing and commissioning underway.

A new gateline and a number of ticket machines have been installed. The roundel, customer information panels and wayfinding signage are being installed throughout the station entrance, as well a new piece of illuminated artwork referred to as the 'Hutton Panel'.

We expect the new entrance to open in late 2018, when new lifts will provide step-free access to the Waterloo & City line at Bank. We continue to work with the contractor to support and accelerate activities.

## Bank station upgrade

Forecast completion year

**2022**

Spend to date (£m)

**365**

Spend authority (£m)

**607**

EFC (£m)

**621** ▲

EFC movement post plan (£m)

**(0)**

2018/19 budget milestone RAG



**We are increasing capacity at Bank, providing a quicker interchange, new Northern line southbound tunnel, new entrance and introducing step-free access to the Northern line and DLR.**

We have identified potential opportunities to reduce the EFC that are being worked through. The remaining risks are also being actively managed to ensure they can be reduced or removed where possible.

Tunnelling work continues on the new Northern line and DLR cross passages. Primary spray concrete lining on the new Central line moving walkway tunnel and stair passage have been completed. Tunnelling on the new southbound Northern line running tunnel is approaching the first pile below 6-8 Princes Street. The installation and commissioning of pile monitoring fibre-optics is needed for continuation of tunnelling.

Progress on Whole Block Site (Cannon Street entrance) continues with basement level 2 elements complete, including the pile capping beam and slab pours. The steel truss that is required to temporarily support the box during construction is 50 per cent complete and the excavation of the next phase has commenced.

Works to relocate the Central line high-voltage transformers also continue, with the first power changeover successfully completed on 6 June 2018.

At the City of London's 30th Gold Awards ceremony, we won the gold award and coveted Client and Principal Contractor City Mark award for our commitment in reducing road danger on the project.

The Systems Integration Upgrade and Station Capacity Upgrade at Bank station are two separate projects. The EFC figure of £655m, which was quoted in the Q4 report, was a combination of both projects. The majority of Systems Integration Upgrade works have been completed and the contractor demobilised, so it is therefore no longer included in the financial figures outlined above.

We are undertaking a comprehensive EFC review to identify potential opportunities to reduce the EFC. The findings of this review will be reported to the Programmes and Investment Committee later this year.

## Bakerloo line link (funded by Crossrail)

Forecast completion year

**2018**

Spend to date (£m)

**65**

Spend authority (£m)

**67**

EFC (£m)

**68**

EFC movement post plan (£m)

**(1)**

2018/19 budget milestone RAG



**We are providing a new pedestrian walkway at Paddington to link the Bakerloo line platforms with the new Elizabeth line station.**

Testing and commissioning has started on all installed assets, although progress has been slower than expected due to ongoing performance issues with the cladding contractor.

Through Crossrail, we are working with Sellar Property Group to agree handover of the Royal Mail Group building. This is currently used as site offices for the developer for the Bakerloo line link works. Full handover of the building is expected in September 2018. Alternative working arrangements within Crossrail's working area have been agreed, to avoid impact to works. The project works are currently forecast to finish by the end of November 2018.

The EFC has increased by £1m post-2017 Business Plan to £68m, as a result of permanent power being delayed and delays to the cladding installation.

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## Holborn station capacity

Forecast completion year

**2028**

Spend to date (£m)

**4**

Spend authority (£m)

**5**

EFC (£m)

**410**

EFC movement post plan (£m)

**0**

**The proposed upgrade will see the station more than double in size, increasing capacity by around 140 per cent, as well as creating a new second station entrance and exit on Procter Street. Step-free access will also be provided as part of the plans, with the installation of three new lifts in the existing Kingsway entrance. Seven hundred metres of tunnel will create new interchange routes between the Central and Piccadilly lines, helping to cut down on crowding during peak periods.**

Following the positive feedback received from the public consultation that closed in November 2017 to improve capacity at Holborn station, we have consulted with the market and developed our procurement strategy. We have drafted the strategy and programme to take the project from concept design through to the Transport and Works Act Order (TWAO) application.

Work is being undertaken to prepare tender documentation to take the scheme forward through TWAO, design and construction. We are also exploring opportunities to reduce cost by looking at lessons learned from the wider stations programme. This ensures the competitive dialogue phase remains focused on delivering the scheme within budget constraints.

## Camden Town station capacity upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
<b>2026</b>	<b>9</b>	<b>24</b>	<b>200</b>	<b>0</b>

**The station upgrade will provide a new fully accessible station entrance to the north of the existing station, connected by tunnels to the existing platforms, scheduled for completion in 2026.**

We have completed the over-site development design ready for the planning application submission, which is supported by the London Borough of Camden.

To secure all the land required to build the project, we have purchased a property on Kentish Town Road and we continue negotiations on the purchase of the redundant Hawley Infants School.

The procurement strategy for the next phase of works to procure a multi-disciplined consultancy has been agreed. This will help to value engineer the scheme to meet budget constraints, and prepare the Transport and Works Act Order (TWAo) application for submission. We are exploring opportunities to reduce the cost by looking at lessons learned from the wider stations programme. Expressions of interest have been sought for the multi-disciplined consultancy contract and the invitation to tender is being prepared.

### Assurance

Project Assurance completed an integrated assurance review on the Major Stations programme submission to the Programmes and Investment Committee meeting in February 2018. A quarterly update was provided to the Committee on 3 July 2018 on the 15 recommendations that were made and accepted, including nine by IIPAG. Seven recommendations are closed and good progress is being made to close the remaining eight. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.

## Future projects



**We continue to develop major projects – currently at an early stage – that will deliver the new homes and jobs that London and the UK need.**

Following the Government's commitment to Crossrail 2 in the autumn 2017 Budget and the announcement of a review of the scheme's costs, an independent affordability review began in early February. Mike Gerrard, the former Managing Director of Thames Tideway Tunnel, has been appointed to chair the review, which we jointly commissioned with the Department for Transport. With the support of a panel of independent advisors, bringing expertise and experience from across the transport, property, economic and business sectors, the team will examine ways of improving the affordability of the scheme by looking at cost and risk, funding and finance. A draft report has been submitted to both the Mayor of London and Secretary of State, with options to improve the scheme's affordability.

Following the review outcome, which we expect to receive in autumn 2018, and subject to a positive decision by the Government on an updated business case, we will move Crossrail 2 project forward to the next stage and proceed with further formal public consultation. We have been working with Network Rail to undertake a programme of informal community engagement along the on-network sections of the route.

The Bakerloo Line Extension from Elephant & Castle to Lewisham will increase the capacity and resilience of the transport network, reduce journey times and support at least 20,000 new homes in the Old Kent Road Opportunity Area. Following our initial consultation response in mid-February, we are developing the route-wide concept design and published a further response in September 2018.

The aim of the Rotherhithe to Canary Wharf river crossing is to provide a connection for pedestrians and cyclists in east London, improve sustainable travel choices and support economic growth.

# London Underground

## Stations

Forecast completion year

**2021/22**

Spend to date (£m)

**1,947**

Spend authority (£m)

**3,140<sup>7</sup>**

EFC (£m)

**2,364**

EFC movement post plan (£m)

**(30)**

2018/19 budget milestone RAG 

**The targeted renewal of existing assets will also improve safety, reliability and ambience, and maintain resilience. Station enhancements will reduce congestion and improve customer journey times.**

### Integrated Stations programme

We are making improvements to a number of stations, including five that will interchange with the Elizabeth line.

Work continues at Liverpool Street and Moorgate to ensure a consistent station environment across the Elizabeth line when it opens.

### Station enhancements

At Finsbury Park we completed all civils works, including two new lift shafts, reconstruction of two staircases and a new passageway linking the existing station to the future western station entrance.

Tottenham Hale station has now completed works on all independent retail units.

The EFC that covers all projects that stations will deliver up to 2021/22, including existing and completed projects has increased by £30m, mainly owing to an increase in the Asset Resilience forecast in the years up to 2021/22.

<sup>7</sup> The figures cover all projects within the Stations programme that are planned until 2021/22, including existing projects where additional authority was not requested in June and closed projects. The spend authority includes £701m that was approved by the Programmes and Investment Committee in June



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We have completed civils feasibility works for the South Kensington station capacity upgrade and started the concept design. We are also collating tender information for the design and build contract for the entire project.

At Knightsbridge, we will provide step-free access and build two new entrances on Brompton Road and Hoopers Court in partnership with a developer, who will enable and part-fund the works. Enabling work continues and a contract for the main civil works construction has been let.

We continue to work on the redevelopment and upgrade at Tottenham Hale station. Following the relocation of staff facilities into temporary accommodation, works to non-public areas are now underway and due for completion in October 2018.

We brought Lift I into use at Canning Town station.

### Station capacity

Having completed the feasibility study for short-term improvements to address capacity issues at Stratford station, we are undertaking three new feasibility studies:

- Introduce an additional northern ticket hall entrance during events at the London Stadium in the Queen Elizabeth Olympic Park
- Relocate the western ticket hall lift to improve customer journeys through the station
- Construct a new entrance on Jupp Road to provide better access from the west

We are currently reviewing tender returns for the studies.

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### **Collaborative enhancements and third-party projects**

At Elephant & Castle, on the Northern line station capacity and accessibility upgrade, the developer has submitted a planning application for new housing and retail space. As part of the development, a station box will be built to expand access and enlarge the existing station to increase capacity. We are developing the documents needed to engage with the developer once the London Borough of Southwark has made a decision.

At Paddington, we are planning to build a new entrance, increase the size of the ticket hall, improve access and provide step-free access to the Bakerloo line platforms. We will do this in partnership with Great Western Developments as part of its redevelopment of an adjacent building, which has been granted planning approval. It has started demolition works and we are preparing to begin concept design for the new station entrance.

### **Systems**

The CCTV Phase 5 project has delivered remote access to live and recorded CCTV footage at 119 stations. This significantly improves customers' safety. All 119 locations have been successfully handed over to Asset Operations for ongoing maintenance.

### **Assurance**

Project Assurance completed an integrated assurance review on the Stations programme submission to the Programmes and Investment Committee meeting on 3 July 2018. Eight recommendations were made and accepted, including three by IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.



Work is progressing on the Northern line upgrade at Elephant & Castle



Work continues on a number of accessibility projects, including making 40 per cent of Tube stations accessible

# Accessibility



Forecast completion year

**2022/23**

Spend to date (£m)

**19**

Spend authority (£m)

**244**

EFC (£m)

**197**

EFC movement post plan (£m)

**0**

2018/19 budget milestone RAG



**We are working on a wide programme of accessibility improvements, customer service and information enhancements across the Underground network. We will make 40 per cent of stations accessible by providing new step-free access at a further 30 stations (38 in total with other programmes) by 2022/23.**

We have announced the 23 stations that will be step-free by 2022/23 and plan to announce a further seven later this year. All of these stations are now being designed.

At Harrow-on-the-Hill, the platform works are progressing. The old building on platforms 3 and 4 has been demolished to allow space for a lift. The first phase – to provide step-free access to all platforms and to the College Road side of the station – will be completed in early 2020.

Works continue on site at Newbury Park, where the lift tower steelwork is complete and cladding installation continues. The station is scheduled to become step-free in October 2018.

The increase in programme authority of £98m was approved at the Programmes and Investment Committee on 3 July 2018 to fund the detailed design and delivery of the final 12 stations.

# Track renewals

Forecast completion year

**Annual**

Spend to date (£m)

**26**

Spend authority (£m)

**104**

EFC (£m)

**104**

EFC movement post plan (£m)

**0**

2018/19 budget milestone RAG



**We are replacing our ballasted and deep Tube track, points and crossings, and track drainage infrastructure to improve reliability, reduce maintenance costs and allow capacity increases.**

Smoother and more reliable journeys have been achieved this quarter by replacing 1.3km of ballasted track, 0.7km of drainage, five sets of points and more than 0.5km of deep Tube track.

At Camden Town, we renewed four sets of deep Tube points over two weekends. This included installation of 100 metres of new track layout, breaking out and removing 200 tonnes of concrete spoil. We pumped over 100m<sup>3</sup> (250 tonnes) of fast setting concrete mix 230 metres from surface to track level, using a high pressure concrete pipeline.

On the Metropolitan line, in the northbound tunnel between Baker Street and Finchley Road, ongoing slab track installation continues to improve track drainage, reduce maintenance and increase track lifespan.

During the quarter, we have seen scope reductions due to ongoing unavailability of ballast wagons and tamping machines.

## Assurance

Project Assurance completed an integrated assurance review on the Track Renewals programme submission to the Programmes and Investment Committee meeting on 21 February 2018. A quarterly update was provided to the Programmes and Investment Committee on 3 July 2018 on the seven recommendations that were made and accepted, none by IIPAG. Two recommendations are closed and good progress is being made to close the remaining five. Project Assurance tracks progress against the recommendations made as part of its continuous assurance.

# Power, cooling and energy

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
<b>2021/22</b> <sup>8</sup>	<b>39</b> <sup>8</sup>	<b>90</b> <sup>8</sup>	<b>180</b> <sup>8</sup> ▲	<b>0</b>

2018/19 budget milestone RAG 

**Our renewals programme for lifts, escalators, power and ventilation assets aims to improve safety, reliability, customer accessibility, journey times and the environment, while reducing maintenance costs. We are also increasing the generation and use of low and zero carbon energy.**

## Lifts and escalators

We have completed escalator refurbishments at Charing Cross, Liverpool Street, Canning Town and Canary Wharf. Ongoing refurbishment of escalators at St Paul's, and replacement of the two station lifts at Brixton continues into Quarter 2.

## Power and energy

As part of the Mayor's pledge to make London a zero-carbon city by 2050, we have commissioned the new City Road mid-tunnel vent system and Bunhill 2 energy centre at Islington. Once ready, the energy centre will connect to the vent system for recycling waste heat. We are assessing the viability of implementing energy conservation measures, including solar panels across suitable TfL buildings. The Central Line Resilience project has completed the installation of the first transfer rectifier

at Bow and the project remains on target to reduce the risk of traction power failure at South Woodford.

We have commissioned power works for the Elizabeth line at Liverpool Street.

At Park Square Gardens and Hay's Mews, we continue major tunnel ventilation system upgrade works to reduce temperatures in Jubilee line tunnels between Baker Street and Green Park. We plan to complete these works in late-2018.

## Assurance

Project Assurance completed an integrated assurance review on the Power, Cooling and Energy programme submission to the Programmes and Investment Committee meeting on 3 July 2018. Thirteen recommendations were made and accepted, including eight by IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.

<sup>8</sup> The figures represent the lift and escalator renewals (until 2021/22), and power and energy projects (until 2018/19)

# Rolling stock renewals



Forecast completion year

**2029**

Spend to date (£m)

**178**

Spend authority (£m)

**612<sup>9</sup>**

EFC (£m)

**988<sup>9</sup>** ▲

EFC movement post plan (£m)

**(33)**

2018/19 budget milestone RAG



The EFC variance is driven by increased risk provision for the Central line improvement.

**We are modifying our passenger rolling stock to improve safety, accessibility, reliability and customer satisfaction, and reduce maintenance costs. We are also modifying or replacing some of our existing engineering vehicles that support track maintenance and infrastructure renewals.**

We are carrying out a series of improvements to ensure continued reliability of the Bakerloo line fleet until its replacement by the Deep Tube Upgrade programme. We completed structural weld repairs to carriages on 25 out of a first tranche of 36 trains.

We introduced a more intensive work programme, which is covered by the necessary resource levels to deliver the project to the revised plan. We are carrying out a detailed cost review to ensure that any revised delivery improvement options can be verified and delivered. The project is on schedule to be completed by August 2019.

On the Central Line Improvement programme, the new traction package contracts are progressing on plan. The passenger information system contract for the Central line fleet is in place and tender responses are currently being evaluated for flooring and LED lighting.

We continue to consider delivery options to maximise efficiency, mitigate risks and deliver installation works by March 2023.

On the Jubilee line, 28 refurbished trains out of 63 trains are back in service. The refurbishments include

<sup>9</sup> The spend authority is lower than the EFC as authority is sought in stages. £199m additional authority was granted by the Programmes and Investment Committee on 21 February, taking the total to £612m



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an Rail Vehicle Accessibility Regulation compliant wheelchair area, new flooring, refreshed interior (including grab-poles and handles), plus sealing to the roof and windows to address water ingress issues.

On our engineering and vehicle life extension and overhaul programme, we continue to work with CRRC, the world's largest supplier of rail transit equipment, to progress the detailed design of 71 new wagons. Six pre-production models will be delivered in late 2019 with the remaining 65 full production models to follow post-commissioning.

Mechanised Renewals Vehicle is progressing with the concept design phase, which will begin live trials in early 2020. Phase I of the machine is in the process of being 3D-modelled in virtual reality, allowing potential hazards to be identified and reflected in the final design. Once operational, the benefit of the Mechanised Renewals Vehicle compared to traditional methods of deep Tube slab/concrete renewals will include:

- Sizeable reduction in number of operatives on site
- Reduced manual handling
- Reduced impact on station facilities
- Increase in productivity
- Reduction in unit rate

The detailed design phase of the modular points and crossings delivery system is

progressing well. Once complete, the tilting wagons and rail mounted Kirow cranes will help to minimise disruption to the public, by reducing possession duration for the transport and installation of modular points and crossings units across the London Underground sub-surface network. The modular system will also have the ability to operate on National Rail infrastructure, where pre-assembled units will be collected. We are working closely with Ruislip Depot stakeholders to identify any modifications required to support the introduction and operation of these new engineering vehicles.

The Matisa tampers are nearing the end of the close out and commissioning stage, when they will be handed over for full operational use in the forthcoming track renewal possessions. They will be able to carry out complex tandem points and crossings tamping, along with standard plain line tamping operations.

Site works continue on the new train modification facility at Acton, which will be used for overhaul and heavy maintenance of rolling stock and engineering vehicles.

### Assurance

Project Assurance completed an integrated assurance review on the Rolling Stock Renewals Programme submission to the Programmes and Investment Committee meeting in February 2018. A quarterly update was provided to the Committee on 3 July 2018 on the eight recommendations that were made and accepted, none by IIPAG. One recommendation is closed and good progress is being made to close the remaining seven.

# Signalling and control



Forecast completion year

**2021/22**

Spend to date (£m)

**60**

Spend authority (£m)

**76**

EFC (£m)

**181**▲

EFC movement post plan (£m)

**0**

2018/19 budget milestone RAG



**We are extending the life of our track-based signalling and control assets until they are replaced with train-based systems by either the 4LM or the Deep Tube Upgrade programmes. This ensures that they can continue to support a safe, reliable and maintainable service until then.**

On the Central line, the technical requirements, specification and project assurance plan for signalling and control life extension works have been finalised and we are negotiating the NEC framework terms with Siemens. Aimed at promoting cost certainty and reducing risk, this project will be delivered in two phases. The first phase will deliver pilot scheme sites and a fully costed concept design. Once approved, phase two will see further implementation across the rest of the line.

The new Piccadilly line signalling control system continues to provide improved reliability, monitoring and management of the service between Cockfosters and Turnham Green. The last of the installation work is underway at South Harrow.

With construction works complete, phased commissioning at the new control centre in west London has begun with the operations team now controlling around a third of the line from this location.

At Northumberland Park depot, we have completed the pre-tender documentation for the new signalling and control system and works information for the agreed procurement strategy is also nearing completion.

## Assurance

Project Assurance completed an integrated assurance review on the Signalling and Control programme. This was submitted to the Programmes and Investment Committee meeting in May 2018. A quarterly update was provided to the Committee on 3 July 2018 on the 13 recommendations that were made and accepted, including six by IIPAG. One recommendation is closed and good progress is being made to close the remaining 12. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.



A new signalling system has improved reliability on the Piccadilly line



Cycle Superhighways are helping to encourage more people to travel by bike

# Surface

## Healthy Streets

Forecast completion year

**2021/22**

Spend to date (£m)

**253**

Spend authority (£m)

**957**

EFC (£m)

**1,821**

EFC movement post plan (£m)

**(7)**

2018/19 budget milestone RAG 

**The Healthy Streets Approach prioritises health and wellbeing, with the overall objective of delivering a transport system where everyone can travel safely by the healthiest and most resource efficient means, specifically walking, cycling and public transport. It is central to achieving the 80 per cent mode share target in the Mayor’s Transport Strategy.**

The EFC has increased from £1,814m at Quarter 3, mainly as a result of additional borough funding for 2018/19 as announced by the Mayor in Quarter 4.

### Cycle Superhighways

With the core route of the East-West Cycle Superhighway (CS3) fully opened in mid-December 2017, work on the remaining parts of the route has continued. Anti-skid and remaining footway works have been completed at Lancaster Gate, and resurfacing of Buckingham Gate has started. All anti-skid works have been completed within St James’s Park and Green Park, with finishing works for all sections of the route expected to be completed by late autumn 2018. The works have been successfully coordinated with major events including the London Marathon, the Commonwealth Heads of Government Meeting and Trooping the Colour.

North Carriage Drive within Hyde Park remains in concept design pending agreement with The Royal Parks. It is anticipated that build for this section will begin in early 2019, subject to approvals.

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Works at Trinity Square are progressing. The new signals at the junction were commissioned successfully on 22 June and the dedicated left turn into Trinity Square is now operational. Final resurfacing and demountable island installation will be completed by 31 August.

Delivery continues to progress well on the North-South Cycle Superhighway (CS6) Phase 2. We commissioned new signals at Clerkenwell junction on 15 June, introducing cycle lanes on Clerkenwell Bridge for the first time. We completed the cycling track on 20 August, seven weeks ahead of schedule. The route will be formally launched by the Mayor and the Walking and Cycling Commissioner in September.

Following the consultation for Cycle Superhighway 9 (Kensington Olympia to Brentford) and Cycle Superhighway 4 (Tower Bridge to Greenwich), the concept designs are nearing completion. We are aiming for the responses to issues raised to be published this autumn.

All surveys and investigations to inform detailed design on Cycle Superhighway 10 and the A40/Western Avenue from Kathleen Avenue to Wood Lane were completed in April, and the first phase of the design was completed in June. Detailed design for this section is due to finish in December 2018. Strategic modelling for the remainder of the route began in April and initial results were received in July.

Preparatory works started for Cycle Superhighway II (Swiss Cottage to the West End) in early May, following the local elections. However, the start of construction was delayed after we received an application for a judicial review from Westminster City Council. An injunction was granted preventing works from starting until after the outcome of the hearing on 6 September 2018. The Court upheld Westminster's objections and we are considering how to progress CSII.

### Mini-Hollands

Twenty-seven of the 103 Mini-Hollands schemes (98 infrastructure and five supporting measures) are complete. A further 21 schemes are currently under construction, including Kingston Station, Lea Bridge Road in Waltham Forest and the A1010 South in Enfield. Twenty-five schemes are currently going through design and consultation, including a number of Quietway Links and Quieter Neighbourhoods in Enfield.

Results of an academic study into the Mini Hollands Programme conducted by the University of Westminster has shown that people living near Mini Holland schemes are 24 per cent more likely to have cycled in the previous week than those in non Mini Holland Boroughs. The research goes on to show that within the Mini Holland boroughs there has been a 13 per cent increase in walking and an 18 per cent increase in cycling. This research is particularly encouraging given that many of the schemes are incomplete.

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The Mini-Hollands programme has won two more awards over the last three months. 'Enjoy Waltham Forest' won the ICE (Institute of Civil Engineers) People's Choice Award for London's Favourite Infrastructure Project in June, and Enfield's A105 Green Lanes scheme was awarded the prize for the Best New Cycling scheme by the London Cycle Campaign.

### Central London Cycling Grid

Thirty-nine kms of the 85km Central London Grid network has been completed. These include several sections of Quietway and Cycle Superhighway routes, such as Q13 (Broadway Market to Old Street) and Q15 (Earls Court to Belgravia). An additional 5km of network is currently under construction including a segregated cycle track at Finsbury Square. These routes are due for completion by the end of 2018/19.

A further 65km of potential Quietway routes have been identified and we have been working with boroughs to define more detailed plans. These include important routes such as the link between Cycle Superhighway 2 and 3 in Tower Hamlets, a link between Dalston and Bethnal Green via Queensbridge Road in Hackney and Kensington High Street to Notting Hill in Kensington and Chelsea.

### Cycling Quietways

In June the Walking and Cycling Commissioner opened a new 275 metre cantilevered pedestrian walk/cycle way along the Thames in Greenwich. Known locally as 'the missing link' this intervention has connected King Henry

Wharf and Warspite Road opening up a near uninterrupted pathway along the Thames from Greenwich to Thamesmead, meaning cyclists no longer have to take the alternative route along the A204.

The Walking and Cycling Commissioner also officially opened Quietway 2 (Bloomsbury to Walthamstow) in August with local councillors from Hackney and Islington.

Construction is complete or under way on 112km of a potential 250km network of routes. Open routes include Q1 (Waterloo to Greenwich and Greenwich to Bexleyheath), Q3 (Kilburn to Gladstone Park), Q5 (Oval to Clapham Old Town) and Q2 (Notting Hill to East Acton). Q14 Blackfriars Road to Tower Bridge Road, Q22 along the Newham Greenway and Q6 (Victoria Park to Barkingside) will be officially opened in September 2018.

Construction is still underway on Q4 (Clapham Common to Wimbledon), Q5 (Waterloo to Norbury), Q7 (Elephant and Castle to Crystal Palace), Q21 (Wandsworth to Teddington), Q23 (Ealing to Greeford), a Quietway linking Barking Town Centre to Cycle Superhighway 3, Greenwich to Kent House Quietway, Bermondsey to Catford Quietway and Woolwich to Lee Green Quietway. Wayfinding has been implemented across 17km of this network.

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### **Rotherhithe to Canary Wharf river crossing**

This project aims to relieve existing transport links, encourage more active travel and support growth in the Canada Water and the Isle of Dogs Opportunity Areas by providing a cross-river connection for pedestrians and cyclists.

We continue with design development work on our provisional preferred option of a navigable bridge. Progress has been made on developing the design options looking at all elements including opening mechanism, height and landing options together with associated impacts for all alignment variations. We have awarded contracts for constructability and marine advice to Costain and Marico Marine respectively to support us with this design development work.

We expect to undertake further consultation later this year before a consents application in 2019.

### **Transformational programme Westminster Bridge South**

At Westminster Bridge South, the planning application to alter the landscaped area around the Park Plaza Hotel to allow a pedestrian link along Westminster Bridge Road was approved by Lambeth Council. Construction works commenced at the end of May 2018 and are scheduled to be complete by December 2018. The main highway works were substantially completed in December 2017.

### **Lambeth Bridge North**

The project team continues to work with Westminster City Council and other stakeholders to find a design solution to mitigate the key consultation concern over proposed banned turns on the Lambeth Bridge north side junction whilst maintaining the benefits to vulnerable road users. The delay in agreeing the concept design has impacted the programme which means construction will now start in early 2020. The team has worked with two large utility providers to mitigate utility diversion costs within the north side junction which has reduced a large cost pressure and the proposed construction time. The design of the southern junction continues well and the Royal Palaces have been significant in their support of the scheme. We continue wider discussions with regard to major changes to Parliament Square which could have an impact should they progress.

### **Highbury Corner**

For the Highbury Corner roundabout removal project, we completed the highways concept design, progressed into detailed design and continued to refine the urban realm elements with our key stakeholders. We commenced the advance works in the arboretum in order to work collaboratively with emergency gas replacement works in the area, to achieve potential cost and programme benefits and to minimise impacts / disruptions to the road network and local residents.





We are working to improve river crossings for cyclists

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### **Wandsworth Gyratory**

Negotiations to purchase properties from landowners on Putney Bridge Road have commenced to secure part of the land required to deliver the Wandsworth Gyratory scheme. We plan to start on site in 2021.

### **Fiveways**

We have confirmed a revised option for our proposals for Fiveways Croydon. This will avoid the need to buy property, using the existing A23 road-over-rail bridge (previously expected to be demolished), together with a new adjacent bridge structure, saving both time and money. Significantly improved cycling measures are also included on the A23 as part of the revised option. A Compulsory Purchase Order to acquire the essential land is planned to be submitted to the Board in March 2020.

### **Vauxhall Cross**

We are finalising the concept design layout for the Vauxhall Cross scheme, which is due for completion in August 2018.

### **Old Street Roundabout**

We are investigating options to accelerate delivery of the Old Street gyratory removal scheme. Our main works contractor Morgan Sindall is finalising the concept design and we are now moving forward with a two stage approval for detailed design and build. Subject to approval, we could start the enabling works in November 2018 with the main works commencing in January 2019, three months ahead of the original plan.

### **Bus priority reliability and growth programme**

We have delivered four bus priority schemes across London this quarter, amending zebra crossings and relocating parking, which has resulted in cumulative bus journey time savings of 17 minutes. We expect to deliver 160 schemes in 2018/19. We have also commissioned pedestrian-call-cancel at traffic signals at seven sites, commissioned differential bus priority at eight sites and reviewed 104 signal timings.

### **Safer Junctions**

Site investigations and feasibility designs have started at 11 of the 19 Safer Junction locations. Construction work has started at Baker Street/Marylebone Road, as part of the Baker Street gyratory removal.

We completed the detailed design for Charlie Brown's Roundabout in South Woodford in June 2018. Advanced works for the pedestrian and cycling improvement scheme began in July 2018, with the main construction taking place throughout the school holidays.

### **Surface intelligent transport systems**

Following a commitment by the Mayor to make the TfL Road Network as efficient and reliable as possible, we are upgrading our current systems for traffic signal control and incident management. We have now appointed a design and delivery partner who is fully embedded with us, working alongside our Traffic Engineering team. We are currently early in the design phase and we are aiming to roll out these improvements within the next two years.

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### Crossrail complementary measures

We are working with boroughs, Crossrail Limited, Network Rail and Rail for London to develop and deliver a programme of improvements to 17 stations in outer London that will form part of the Elizabeth line when the full service starts operating.

Complementary measures around four stations (Romford, Chadwell Heath, Goodmayes and Manor Park) are almost complete. Detailed design and construction works are continuing on the remaining 13 stations.

### Liveable Neighbourhoods programme

This is a key part of the Mayor's Transport Strategy, which aims to deliver locally-led, attractive, healthy and safe neighbourhoods that encourage public transport use and reduce car journeys. The London boroughs of Ealing, Greenwich, Hackney, Haringey, Havering, Lewisham and Waltham Forest were all successful in their initial bids for funding and will now develop their proposals to secure implementation funding for their schemes. There will be another round of funding allocation in 2018, when other boroughs will be able to submit proposals for further Liveable Neighbourhoods funding.

### Borough Local Implementation Plan projects

Construction of the third phase of the Baker Street Two-Way scheme started in May, while construction also continues at Stratford, Bond Street, Beckenham

town centre and Tottenham Court Road. Work to improve pedestrian access between Kingston's riverside, station and town centre is substantially complete at the site where the former Royal Rowbarge, Gloriana, will be permanently moored. Gloriana was built to celebrate the Diamond Jubilee of Her Majesty, The Queen in 2012. It now helps young and underprivileged people enjoy the river and the sport of rowing.

On the Local Implementation Plan Corridors and Neighbourhoods programme for smaller schemes, Southwark has completed a walking and cycle junction safety improvement at the roundabouts in Crystal Palace Parade with Fountain Drive and Sydenham Hill. This included a segregated bypass so cyclists can avoid the roundabout, crossings for pedestrians and cyclists, and geometric changes to reduce speeds and asset renewal.

### Assurance

An integrated assurance review was completed on the Healthy Streets programme submission to the Programmes and Investment Committee meeting on 3 July 2018. Nine recommendations were made and accepted, including four by IIPAG. Good progress is being made to close the recommendations. We continue to track their progress as part of continuous assurance.

# Air quality and environment



Forecast completion year

**2021/22**<sup>10</sup>

Spend to date (£m)

**134**

Spend authority (£m)

**202**<sup>10</sup>

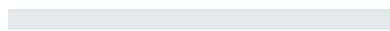
EFC (£m)

\*

EFC movement post plan (£m)

\*

2018/19 budget milestone RAG



**The Air Quality and Environment programme reduces transport's impact on air quality and climate change through a programme of measures targeted at vehicles in our contracted and regulated fleets, and at all vehicles driving in London.**

## Ultra Low Emission Zone update

From April 2019, the central London Ultra Low Emission Zone (ULEZ) will replace the T-Charge and operate in the same area, alongside the Congestion Charge. Unlike the T-Charge and Congestion Charge, which are only in place on weekdays, it will operate 24 hours a day, seven days a week, 365 days a year. In addition to the Congestion Charge, there will be two ULEZ charge levels: £12.50 a day for cars, vans and motorbikes and £100 a day for lorries, buses and coaches. We have finalised the high level and functional designs for the ULEZ, and the detailed design is almost complete.

## TfL fleet compliance

In Q1, we awarded two double-deck routes with ULEZ compliant buses which will deliver over 65 buses into service in 2019. Currently there are over 2,100 ULEZ compliant buses (both single and double deck) in service.

The EFC has moved by £9m owing to the transfer of two projects from Healthy Streets, as closely linked to delivery of the Ultra Low Emission Zone (£7m). A £2m reduction in ULEZ Central through risk reduction and savings on base costs.

<sup>10</sup> Programme authority of £202m was approved by the Programmes and Investment Committee in October to reduce emissions from vehicles in London. It covers financial years 2017/18 to 2021/22. Further authority will be requested in The programme finance is being restructured and will be available in Quarter 2.

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We continue to install nitrogen oxide (NOx) abatement equipment on buses. We have completed the A12 Eastern Avenue, A21 Lewisham to Catford, High Road to Green Lanes and A2 Camberwell to New Cross Low Emission Bus Zones, with more than 700 compliant vehicles now contributing significantly lower NOx emissions on these corridors. The A3 Wandsworth to St John's Hill corridor is more than 90 per cent complete and the A5 Edgware Rd corridor is 30 per cent complete. In addition to vehicles operating in the ULEZ, we are also retrofitting NOx abatement equipment on buses across corridors including Stratford, Uxbridge, Chiswick and Edmonton. More than 1,400 buses have been converted to date and these are directly delivering benefits for the Mayor's programme to improve air quality.

### **Ultra Low Emission Vehicles (Rapid Charge infrastructure)**

To support the growing number of Zero Emission Capable taxis and the increased use of electric vehicles, we are building a network of Rapid Charging Points (RCPs) across London. As of the 28 June, we had installed 111 RCPs of which 56 are dedicated for taxis. The RCPs have been installed mainly on our highways and land, with approximately half dedicated for taxi use. We continue to prepare sites for installation, and the number of live sites will increase to 150 by the end of December 2018 and to 175 by March 2019.

### **Assurance**

An integrated assurance review was completed on the Air Quality and Environment programme submission to the Programmes and Investment Committee meeting in October 2017. Eleven recommendations were made and accepted, including three by IIPAG. A quarterly update was provided to the Programmes and Investment Committee meeting on 3 July 2018. Two recommendations are closed and good progress is being made to close the remaining nine. We continue to track their progress as part of continuous assurance..

# Asset investment



Forecast completion year

**2021/22**<sup>II</sup>

Spend to date (£m)

**188**

Spend authority (£m)

**352**

EFC (£m)

**631**<sup>II</sup>

EFC movement post plan (£m)

**0**

2018/19 budget milestone RAG



**We maintain our Surface assets in a safe condition through prioritised and planned works to replace refurbish or partially reconstruct them. This programme maintains and lengthens the useful life of a wide range of assets including carriageway, footway, lighting, drainage, bridges and tunnels, traffic signals, bus stations and river assets.**

## Structures and tunnels investment programme

On the two remaining road-over-rail bridge replacement schemes on our programme of major works to address high-priority risks, we:

- Completed the second of three phases of demolition of the existing Ardleigh Green Road Bridge during both a road and railway possession over the late spring bank holiday weekend. We are now building the second half of the new bridge ahead of its installation later in 2018 and plan to open all four lanes in spring 2019
- Continued to build the carriageway approaches to the new bridge at Power Road and remain on schedule to open all four lanes to traffic later in 2018

2018/19 is the first year without any Government operating grant. As a result, the programme of proactive capital renewals on the road network has been stopped in the short to medium term, although the safety of the network will be maintained. In the medium to long term, new and sustainable funding sources for London's roads will need to be identified.

<sup>II</sup> The forecast completion year and EFC relate to the Business Plan period until 2021/22.

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### **River schemes**

Construction of two replacement vessels for the Woolwich Ferry is progressing well. Construction of the new berths and mooring infrastructure began as planned and we remain on schedule for the new vessels to enter service later this year.

### **Coaches**

We continue to develop proposals and feasibility works for new coach facilities for London. We replaced the roof glazing at Victoria Coach Station as part of our maintenance of the existing station.

### **Assurance**

An integrated assurance review was completed on the asset investment programme submission to the Programmes and Investment Committee meeting in June 2017. A quarterly update was provided to the Committee on 3 July 2018 on the 10 recommendations that were made and accepted, including five by IIPAG. Eight recommendations are closed and good progress is being made to close the remaining two. We continue to track their progress as part of continuous assurance.

# Public transport

Forecast completion year

**2018/19**

Spend to date (£m)

**117**

Spend authority (£m)

**268**

EFC (£m)

**390**

EFC movement post plan (£m)

**(66)**

2018/19 budget milestone RAG 

**We maintain the safety, reliability and performance of London Buses, London Overground, DLR, London Trams, Emirates Air Line, Santander Cycles and London River Services through prioritised renewals and enhancements that support growth, housing and jobs, and improve travel choices.**

## London Overground

Access For All schemes are under way at West Hampstead and White Hart Lane stations. We are also acting as delivery partner to Crossrail to design and construct schemes at seven stations across the eastern and western sections.

In preparation for the introduction of the new London Overground rolling stock:

- We have completed platform extension works on the Gospel Oak to Barking line
- We have installed 'correct side door' equipment on the Gospel Oak to Barking line, all West Anglia lines and the Romford to Upminster line
- Works are under way at Willesden depot following award of the contract to electrify the sidings

We have installed the train protection warning system on the sections of the Euston to Watford line that are shared by London Underground and

Value engineering reductions were targeted in the 2017 Business Plan and the delivery of these is progressing into the 2018 Business Plan process also. The EFC covers the latest view of the five-year Business Plan period from 2017/18 to 2021/22.





We have completed a number of projects to prepare for the new London Overground trains

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London Overground (National Rail) services. We will install the system on the Richmond to Gunnersbury branch to complete these works and allow us to interchange the fleet between lines and improve reliability across the network.

We continue to discuss a potential scheme at Hackney Central with the London Borough of Hackney, from whom confirmation of a land transfer is required.

Other live projects include lift maintenance at Wapping station, retaining wall renewal works on the East London line, new security for the Thames tunnel and a new hot train wash facility at New Cross Gate depot.

#### **DLR**

We have appointed a contractor to refurbish the CT30 shunter locomotive. The works started in April 2018 and are progressing well. We continue repairs on the B2007 vehicle fleet.

We continue upgrade works to the Vehicle Control Centre to simplify the signalling borders around the central section of the railway. This removes conflicts that can occur when trains move from one section to another.

We have completed low-voltage renewal works in the new equipment room at Poplar and we have started works at Royal Albert and Pontoon Dock.

We have appointed contractors for drainage, bridge bearing, structural corrosion, noise barriers and station canopy drainage. Bridge repair works were completed at Abbey Road and fencing works continue, with one site at Canning Town remaining. We have finalised the technical specifications to provide systems that will allow the maintainer to work at height.

Radio resilience and public address system designs were submitted for acceptance and 50 per cent of the ticket-vending machines have been commissioned with new software.

At Limehouse station, the canopy, glazing and escalators have been installed and full testing of the escalators completed. Commissioning works remain before operational use can be granted.

At Custom House station, the roof and mezzanine beam installation is 85 per cent complete, and the paving is 95 per cent complete, with only the section between Crossrail and the DLR remaining. The mechanical, electrical and communications design approval is almost complete and we have started to install the cable management system.

We have started works on the London City Airport Visitor Centre and the structural designs have been submitted. We expect the works to be completed in late autumn 2018.

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## London Trams

This renewals programme consists of 17 projects across seven asset groups.

We installed new points controllers at New Addington, Arena and two at East Croydon in February.

We have overhauled 23 Bombardier CR4000 trailer bogies and we continue to overhaul the vehicle hydraulic power units and brake callipers on this fleet.

We completed two tramway track renewals during the planned Easter tram closure, which included replacing the rails, highway and associated components. We began preparations to replace the parafil catenary support wires, which hold up the overhead power lines, during this closure. We also repaved three tram stops in Croydon town centre. We are rebalancing the power outage to evenly distribute supply in the Tramlink depot.

As part of our commitment to make the tram network safer following the tragedy at Sandilands in 2016, we are continuing to address the recommendations from the RAIB. We have completed a number of initiatives and are now currently assessing options for track modifications, tunnel lighting and strengthening tram windows. The design of the iTram performance monitoring system is nearly complete, we are evaluating bids for tram emergency lighting and we have started the tender process for a system to physically prevent speeding.

Work is under way to improve the design of the Oyster card readers across the network to make it easier for customers to see and use them. Working in partnership with the tram operator, designs have been drawn up to provide additional validators and/or adjust or relocate the existing validators at a number of tram stops. Delivery of these improvements will be phased, starting early in the 2019 financial year.

Following changes to funding for the Dingwall Road loop extension, we continue to review the preferred option to ensure affordability.

Network Rail completed the majority of its high-voltage cable diversion works in March during a weekend closure of the tram facilities at Wimbledon. A revised programme for completing the outstanding works is awaited from Network Rail.

We have completed the outline design for a package of improvements at Elmers End station to add a second tram platform and double-tracking. This will improve journey times, reliability and resilience across the tram network and the interchange with Network Rail services. We are preparing for procurement of a design and build contract. Issues with land acquisition are currently delaying the project, which was granted full funding in January.

We have completed the outline design for the replacement of two Victorian

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bridges at Blackhorse Lane. We awarded the delivery contract to Morgan Sindall in February and detailed design/ acquisition of utility diversion estimates are in progress. The works are planned to start in 2019 and complete in 2020.

### **Sponsored services**

The Cycle Hire renewals programme includes payment software, on-street equipment, bike replacement, docking station relocation and map updates. The current payment solution support contract expires in November 2018. We have identified the desired replacement solution and have almost finished the detailed design for the new on-street keypads and payment software.

We completed cable renewals works to the Emirates Air Line during a planned maintenance closure in March.

### **Buses**

The delivery of the new Routemaster fleet has been completed and all 1,000 are now in service, with 694 using the ultra low emission Euro VI and the remainder Euro V.

Testing is under way on the potential components of the Bus Safety Standard, including emergency automatic braking and measures to make bus interiors more forgiving if passengers slip or fall. The outcome will be a safety specification that will be incorporated into contracts from January 2019 to ensure compliance among new buses

entering the fleet. Initial road trials for autonomous emergency braking were held in March and we are engaging with external stakeholders on the development of the remaining safety measures. We are planning a peer review of the safety measures, with vehicle industry experts chosen from an international pool.

The six bus operators who were allocated funding from the TfL Operator Safety Innovation Fund have all begun working on their safety trials, with the results expected in the autumn. The trials include fatigue detection devices and new driver safety training .

We are working with operators to understand and address driver fatigue and are in the process of commissioning independent research into this issue.

### **Assurance**

An integrated assurance review was completed on the public transport submission to the Programmes and Investment Committee meeting in December 2017. A quarterly update was provided to the Committee on 3 July 2018 on the eight recommendations that were made and accepted, none by IIPAG. Three recommendations are now closed. Good progress is being made to close the remaining five and we continue to track their progress as part of continuous assurance.



Our renewals programme includes payment software, bikes, docking stations and map updates



Customers can now pay for TfL rail services to Heathrow using Oyster and contactless

# Other

## Technology and data

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
<b>2019/20</b>	<b>n/a</b> <sup>12</sup>	<b>168</b>	<b>168</b>	<b>0</b>

2018/19 budget milestone RAG 

**The Technology and data programme provides the core infrastructure, services and technologies that allow us to deliver our strategic priorities.**

### Payments

Oyster and contactless went live on TfL Rail services to Heathrow on 20 May 2018. Alongside this, there are supporting agreements for the allocation of revenue with Heathrow Express now in place and ready to start accepting Oyster later this year.

The Oyster and contactless app was successfully extended to contactless cards on 15 June 2018, allowing contactless customers to easily see their journey history.

### Enterprise resource programme

We plan to move away from expensive investment programmes every five to eight years by upgrading our desktop hardware and software with a more 'evergreen' model of continually refreshing and updating. This will lower our overall total cost of ownership and reduce operational risks associated with technology obsolescence. It will also support our Smart Working initiative and enable employees to work more flexibly.

Key achievements in the quarter are:

- Express Route, a key enabler for Office 365, has been successfully implemented. This ensures all Office 365 traffic will have guaranteed bandwidth when connecting to cloud services (like emails, Skype for Business and SharePoint online)
- Phased migration of all users to Office 365 desktop suite will follow throughout November 2019
- A migration of mobile device management software to Microsoft Intune has started, with completion due by November 2018 to realise the savings in the Business Plan
- Multi Factor Authentication software has been rolled out to replace the RAS token fobs for remote connectivity to the TfL network. More than 6,000 users have been enrolled

<sup>12</sup> Total programme authority of £168m was approved by the Programmes and Investment Committee on 16 May. Spend to date will be reported from Quarter 1 2018/19 as there was no spend allocated this financial year against the authority granted

- Windows 10 and Office Pro Plus thick client build is now ready for testing
- A pilot of 100 applications was migrated to a Windows 10 environment to understand incompatibility issues

### Bus operating and monitoring systems

The Surface narrow band radio contract was signed on 23 March 2018 to replace the life-expired bus radio system. We have started to install infrastructure at a pilot testing location.

The project is on target with all milestones up to factory acceptance testing completed by the end of June 2018. Two base stations and more than 800 vehicles have been installed with the new technology. We continue a discovery phase with our preferred supplier for back-office-systems, FBS. This work has exposed major risks with the interface to the live bus tracking, performance management and real-time bus passenger information system (iBus). Appropriate plans are being put in place to address this.

### Hosting – data centre rationalisation and cloud migration

Hosting is how we organise, process, store and distribute large amounts of data. Work is under way to reduce the cost of hosting by reducing the size of our primary data centre by two thirds.

We continue to develop a hybrid hosting operating model, in which we have

extended our data centre core capabilities into the public cloud, AWS and Azure. We are expanding these capabilities to deliver stronger governance, operational controls and cost transparency to yield additional efficiencies.

With the successful pilot migration of four applications from on-premise to the public cloud and the build out of the enterprise service hub for the management of these services, we have implemented the foundations of a centralised Hybrid Hosting operating model. Future expansion of these capabilities is under way, which will deliver stronger governance, operational controls and cost transparency to bring about further efficiencies.

### Cyber security

The UK is implementing the European Union directive on the security of networks and information systems, known as the NIS Directive. In response to this, we have set up a working group with the Department for Transport and the National Cyber Security Centre.

### Data and analytics

We have made a number of changes to our reporting suite, including data updates to support the 4LM programme. These reports will identify the trains that are fitted with new computer-enabled signalling technology, to support our planning and operations.

We have continued developing a data storage solution for future Elizabeth line



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data, in preparation for the launch. These works will provide the ability to do future analysis of data once trains are in service.

We are providing analytic services that underpin London Underground's Visualisation programme, and we continue to work closely with the Performance Analysis and Improvement programme, having delivered various reports and system changes in the past quarter.

We are progressing on our self-service reporting project, and we are finalising a procurement exercise for a new self-service reporting capability for TfL. We expect to announce a preferred bidder soon.

### **Networks**

In December 2017, we signed a new contract with Capita to consolidate our above-ground network spend and deliver a standardised, simplified and more affordable network infrastructure. Preparation is under way to ensure a low-risk transition from the incumbent provider to Capita in August, after which the transformation work will start.

### **Contact centre operation**

We are retendering the two contracts for Contact Centre telephony services that meet our customer self-serve and helpline requirements, the latter expiring in mid-2019. We are engaging the market to understand potential industry developments and investigate if savings could be made by combining these into a single contract.

We have reviewed and updated processes in all contact centres to align to the new General Data Protection Regulations, which came into effect on 25 May 2018.

On 26 March, contact handling for Crossrail was transitioned into Contact Centre Operations. The Crossrail service will fall under the centralised management and align to the current standards and offering, which will provide efficiencies.

### **Assurance**

Project Assurance completed an integrated assurance review on the Technology and data submission to the Programmes and Investment Committee meeting in February 2018. A quarterly update was provided to the Committee on 3 July 2018 on the 11 recommendations that were made and accepted, including seven by IIPAG. Three recommendations are closed and good progress is being made to close the remaining eight. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.

# TfL Growth Fund



Forecast completion year

**2021/22**

Spend to date (£m)

**0**<sup>13</sup>

Spend authority (£m)

**200**<sup>13</sup>

EFC (£m)

**200**

EFC movement post plan (£m)

**0**

2018/19 budget milestone RAG



**The programme allocates funding to support the delivery of transport schemes that help to unlock housing and commercial developments and support regeneration opportunities in some of London's key growth areas.**

## Existing Growth Fund schemes

The Growth Fund contributes to 15 existing schemes that will support the delivery of more than 55,000 new homes and 30,000 new jobs. Recently completed schemes include the transformation of the northern roundabout at Elephant and Castle.

Significant progress has been made in upgrading and developing stations such as Woolwich (on the Elizabeth line), Tottenham Hale, White Hart Lane and West Ham, which all support new housing developments. Our investment in the transport infrastructure has been supported by financial contributions from developers and other sources, including the Greater London Authority (GLA).

## Sutton Tram extension

A detailed option selection process is under way and we have identified a shortlist of potential options. We will assess these in detail ahead of a public consultation planned to start in the autumn, which will inform a preferred option. Subject to confirming a full funding package, we plan to submit a Transport and Works Act Order application by early 2020.

## Rotherhithe to Canary Wharf crossing

Following positive results from the consultation, which concluded in January 2018, we are developing a more detailed design for further consultation later this year prior to a consents application in 2019.

<sup>13</sup> Programme authority of £200m was approved by the Programmes and Investment Committee on 28 June. In Quarter 1 2018/19, £400k has been spent on Walthamstow Central

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### Shortlisted schemes

We made recommendations to the Programme and Investment Committee in December to make a contribution to support four schemes that met our agreed criteria. These are:

- An upgrade at Elmers End station to provide double tracking, and a second platform to support growth along the Tramlink network
- A new southern entrance at Ilford station to address capacity issues resulting from growth in the area and to benefit bus passengers arriving at the station
- An upgrade at Colindale station in the first phase of a development programme to bring 10,000 new homes to the Colindale area
- An upgrade at Walthamstow Central station, with improved entrances and step-free access, to provide additional capacity to support new homes and jobs in Walthamstow town centre

We are working with the GLA to select the next set of projects to receive Growth Fund support and to seek funding for some schemes through the Government's Housing Infrastructure Fund and Business Rates Retention Pilot scheme.

### Assurance

Project Assurance completed an integrated assurance review on the Growth Fund submission to the Programmes and Investment Committee meeting on 3 July 2018. Eleven recommendations were made and accepted, including four by IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by IIPAG, as part of its continuous assurance.



Our Elizabeth line station improvement work focuses on improving the customer experience

# Crossrail

## Crossrail

Forecast completion year

**2019**<sup>14</sup>

Spend to date (£m)

\*

Spend authority (£m)

**15**

EFC (£m)

\*

EFC movement post plan (£m)

\*

2018/19 budget milestone RAG 

**The Crossrail project will deliver a new railway from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east. Crossrail Limited is managing construction, and will be known as the Elizabeth line when TfL-run services open through central London.**

On 31 August, Crossrail Ltd announced that it would not meet the December 2018 opening date for the central section of the Elizabeth line and that the central tunnelled section (between Paddington and Abbey Wood) will now open in Autumn 2019.

A revised schedule is needed to complete construction, which then allows for full testing and commissioning. The focus remains on opening the full Elizabeth line – from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east – as soon as possible after the central tunnels open.

<sup>14</sup> Crossrail is opening in five stages from mid-2017 until December 2019. The Elizabeth line (Stage 3) launches in December 2018.

# Elizabeth line



## On-network stations improvement programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
<b>2019</b>	<b>47</b>	<b>94</b>	<b>94</b>	<b>0</b>

2018/19 budget milestone RAG 

**This programme focuses on 22 existing stations, ensuring improved customer experience and step-free access, and a consistent stations environment across the Elizabeth line.**

On the Great Eastern section, step-free schemes (Maryland, Manor Park and Seven Kings), lifts have been installed and tested ahead of opening for customer use. All testing at Manor Park and platforms 1, 2 and 3 at Maryland was completed at the end of July 2018. We are aiming to complete the bridge structures and bring the lifts into use by winter 2018, by continuing to work with the contractor and manage slippages.

On the Great Western section lift design works at Hanwell, Iver, Langley and Taplow are continuing and IDCs (80 per cent design checks) were completed in June 2018. Site mobilisation has commenced with construction due to start in autumn 2018.

MTR is continuing its station refurbishment programme. The platform canopies at Chadwell Heath and Goodmayes have been repaired and decorated and 200 new benches have been installed at TfL Rail stations along the Elizabeth line route. New waiting shelters are due to be installed at some stations on the Great Eastern section from summer 2018. Work will also begin in the summer to refurbish the station buildings on the Great Western section that are not being upgraded by the Crossrail project and design for these works is progressing well.

## Rolling stock

Forecast completion year

**2019**

Spend to date (£m)

**846**

Spend authority (£m)

**1,149**

EFC (£m)

**1,017**

EFC movement post plan (£m)

**120**

2018/19 budget milestone RAG



### We are introducing the new Elizabeth line train fleet in phases by December 2019 and building a depot to provide train maintenance facilities.

Class 345 7-car trains are operating on the TfL Rail service between Liverpool Street and Shenfield and between Paddington and Hayes & Harlington. Some services out of Liverpool Street are still being operated by the older Class 315 trains. These will continue until the Class 345 nine-car trains are fully approved for passenger service which will also replace the seven-car trains running into Paddington.

The new depot at Old Oak Common is fully operational for driver training and is the base for Class 345 trains. The new nine-car Class 345 trains being delivered to Old Oak from Bombardier are being used to dynamically test the Elizabeth line tunnel infrastructure under the control of a new automatic train operation signalling system.

Dynamic testing of the Class 345 European train control system, needed for operation to Heathrow Airport, has continued to collect data in the first weeks of the quarter. The system is now awaiting updated train control software to progress to the next stage of testing.

The spend authority increase from £1,137m at Quarter 3 relates to an additional train required to extend the Elizabeth line service from Maidenhead to Reading. This train is fully funded by Crossrail Limited. The EFC has decreased this quarter, because of the strategic decision made in Quarter 4 2017/18, to sell and then lease back the new rolling stock fleet in the last quarter of 2018/19.

After the sale, the remaining rolling stock will be purchased directly by the lessor.

# Appendix A

## 2018/19 Budget milestone performance

The TfL 2018/19 Budget milestones for the projects or programmes covered in this report are listed below. The RAG status indicates delivery forecast against the current plan date in line with the following key:

On time or early
  1-89 days late
  90 or more days late

Commentary is provided on milestones that are forecast to be delivered significantly (more than 90 days) late. These milestones also indicate the history of forecast date movements by showing the RAG status and variance (the number of days difference) between the plan date and the forecast date at each quarter end. Programme impact and mitigations are also detailed.

Milestone description	Plan date	Actual/ forecast date	Status
<b>Major Projects</b>			
<b>Four Lines Modernisation</b> ■			
Train services on Hammersmith & City line use new signalling system between Hammersmith and Latimer Road	21-Oct-18	24-Jun-18	■
Train services on Hammersmith & City line use new signalling system between Ladbroke Grove and Paddington	18-Nov-18	22-Jul-18	■
<b>Deep Tube Upgrade programme</b> ■			
Preferred bidder for new Piccadilly line rolling stock contract determined	12-Jul-18	06-Jul-18	■
Tenders returned for Signalling and Train Control contract	15-Mar-19	14-Dec-18	■
<b>Network extensions</b>			
<b>Northern Line Extension</b> ■			
Nine Elms station civil works complete	26-Sep-18	01-Aug-18	■
Kennington station cross passage civil works complete	17-Sep-18	17-Sep-18	■
<b>Silvertown Tunnel</b> ■			
Preferred bidder selection	28-Jan-19	13-Mar-19	■
<b>Q1: 44 days late</b> ■			
<p>While we remain on track to receive the first submission of technical proposals for evaluation in July 2018, due to the late award of the Development Consent Order by the Secretary of State on 10 May 2018 and ongoing ground investigation works, we now expect the contract to be awarded in summer 2019. This revised date has been agreed with the shortlisted bidders and allows for work to begin later that year, with the new tunnel fully open to traffic during 2024.</p>			



Milestone description	Plan date	Actual/ forecast date	Status
<b>Barking Riverside Extension</b> ■			
Early works contract – completion of all early works	27-Jul-18	20-Jul-18	■
Main works contract – supplier evaluation and award recommendation complete	18-Jul-18	24-Aug-18	■

**QI: 24 days late** ■

Contract award delayed due to a four week extension being granted to both bidders

**Major stations** ■

Bank station: preparatory power works complete to allow the start of tunnelling for new escalators	03-Oct-18	25-Jul-18	■
All Victoria station passenger facilities available for use	03-Dec-18	18-Oct-18	■
Bakerloo line link passage ready for Crossrail trial running	30-Nov-18	26-Nov-18	■

**London Underground**

**Stations renewals and enhancements** ■

Improvement works complete at Underground stations that interface with the Elizabeth Line	09-Dec-18	15-Nov-18	■
Finsbury Park is a step-free station	20-Mar-19	30-Dec-18	■

**Accessibility** ■

Buckhurst Hill is a step-free station	09-May-18	04-May-18	■
Newbury Park is a step-free station	26-Oct-18	19-Nov-18	■

**QI: 24 days late** ■

**Issue:** Completion was forecast 11 days later than Tier I target date due to design integration between primary steels and cladding, which had impacted on the start date for Kone lift installation.

**Impact:** Delayed start to tower cladding, further delayed start of lift installation – both critical path activities.

**Mitigation:** Risk has been drawn-down to fund schedule compression for the lift installation, which commenced on 16 July 2018 and the Tier I milestone is forecast to complete on 16 October 2018. There are several other concurrent threats to Tier I Milestone including:

- Completion of concept design for two escape staircases
- Surge protection procurement for specialist design and installation

We are managing delivery risks and protecting the critical path through daily activity briefings linked to the programme, daily call of progress against plan, weekly visualisation of progress and regular site visits by the senior team.

Milestone description	Plan date	Actual/ forecast date	Status
South Woodford is a step-free station	15-Mar-19	29-Mar-19	■
<b>Q1: 14 days late</b> ■			
<b>Issue:</b> Additional site constraints have been identified, in connection with the station access ramps, which affect the ability to deliver the project by the Tier I Target date of 15 March 2019.			
<b>Impact:</b> The constraints identified have impacted the design programme and have caused delays to key design outputs including the concept design specification.			
<b>Mitigation:</b> Alternative design solutions are under consideration and the team are confident that the forecast two weeks delay can be recovered. In addition the team is exploring options to de-risk the critical path so that the project has the ability to mitigate potential future schedule threats. These options include sequencing the design to better integrate with construction and alternative ways of phasing the construction work.			
<b>Track renewals</b> ■			
Install 7.5km of new track across the Underground network	31-Mar-19	31-Mar-19	■
<b>Infrastructure renewals (Power, cooling and infrastructure)</b> ■			
23 lift and escalator replacement and refurbishments complete	31-Mar-19	21-Dec-18	■
<b>Rolling stock renewals</b> ■			
75% of Bakerloo line fleet refurbishment works complete	31-Dec-18	24-Oct-18	■
50% of Jubilee line fleet mid-life refurbishment works complete	31-Dec-18	02-Nov-18	■
<b>Surface</b>			
<b>Healthy Streets</b> ■			
Cycle Superhighway North South – Phase 2 complete, from Stonecutter Junction to Judd Street. This completes the CS6 route, running from Elephant and Castle to Judd Street	23-Dec-18	30-Sep-18	■
Old Street roundabout – start advance works on site	22-Feb-19	30-Nov-18	■
Mini-Hollands – 4.5km of segregated or semi-segregated cycle route complete across Kingston, Waltham Forest and Enfield	31-Mar-19	31-Mar-19	■
Cycle Quietways Borough – construction of 25km of the total 250km completed in 2018/19	31-Mar-19	31-Mar-19	■
Liveable Neighbourhoods – feasibility stage complete for three of the seven boroughs that received feasibility funding in 2017/18	31-Mar-19	31-Mar-19	■

Milestone description	Plan date	Actual/ forecast date	Status
<b>Assets</b> ■			
Highbury Corner gyratory – start construction	31-Aug-18	28-Jun-18	■
Highbury Corner bridge – construction complete	31-Aug-18	13-Jul-18	■
Sutton Tram extension – consultation launch	30-Nov-18	30-Nov-18	■
Bus retrofit – Four Low Emission Bus Zone routes complete: A2 Camberwell – New Cross A3 Wandsworth – St John's Hill A5 Edgware Road Edmonton – Seven Sisters	31-Mar-19	03-Mar-19	■
<b>Other</b>			
<b>Commercial development</b> ■			
Deliver a signed contract for the commercialisation of the telecommunications assets, including the delivery of public cellular services on the Underground	14-Dec-18	14-Nov-18	■
Submit planning application	29-Mar-19	25-Jan-19	■
<b>Elizabeth line integration</b>			
<b>Rolling stock</b> ■			
Elizabeth line passenger services start on central section between Paddington and Abbey Wood	Autumn 2019	Autumn 2019	■

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## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** Independent Investment Programme Advisory Group  
Quarterly Report

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### **This paper will be considered in public**

#### **1 Summary**

- 1.1 The purpose of this paper is to present the Independent Investment Programme Advisory Group (IIPAG) Quarterly Report.

#### **2 Recommendation**

- 2.1 **The Committee is asked to note the IIPAG Quarterly Report and the management responses set out below.**

#### **3 Background**

- 3.1 IIPAG produces quarterly reports for the Audit and Assurance Committee of its advice on strategic and systemic issues, logs of progress on actions and recommendations and the effectiveness of the first and second lines of project and programme assurance. IIPAG's quarterly report is attached as Appendix 1.
- 3.2 TfL's Management Response to the matters raised in the IIPAG's report is set out in section 4 below.
- 3.3 The IIPAG Quarterly Report and Management Response were noted by the Audit and Assurance Committee on 14 September 2018.

#### **4 Management Response**

##### **Effectiveness of the First and Second Lines of Project Assurance**

- 4.1 The Integrated Assurance Plan (IAP) is agreed between the Project Assurance Team, IIPAG and the Sub Programme Sponsor and Delivery teams. Following feedback from IIPAG, the Project Assurance Team has developed a new template to provide greater consistency and more clarity on the expected deliverables. The new template will be applied to all sub-programmes by the time of the October 2018 Programmes and Investment Committee meeting.
- 4.2 A process for reviewing and updating the IAPs each quarter has been initiated, and will be in place by the time of the October 2018 Programmes and Investment Committee meeting.

- 4.3 The arrival of an additional Assurance Portfolio Manager to the team will allow further improvements in consistency and effectiveness of the second line assurance functions, including developing and maintaining robust continuous assurance processes.
- 4.4 The process for managing the closure of assurance recommendations is being strengthened to provide IIPAG with the confidence that closure is appropriate. The eight recommendations highlighted by IIPAG will be subject to this improved process.

### **Strategic and Systemic Risks and Issues**

- 4.5 **Telecoms:** As described in the management response on 3 July 2018 presented to the Programmes and Investment Committee, we are following a strategy for telecommunication networks approved by the TfL Executive Committee in May 2016. This consists of three parts – bought-in networks, owned networks and commercial exploitation of our estate for third party use. There is a substantial amount of work going on with telecommunications and we are addressing issues that have not been addressed for a very long time and the issues will take some time to address.
- 4.6 **Transformation Programme:** As described in the management response on 3 July 2018, the Engineering Department and the Programme Management Unit have been transformed into a Professional Service structure, with business partnering and embedded staff, similar to the Commercial Department, Finance and other departments. We will provide a briefing to IIPAG now the new structures have been put into place.
- 4.7 **Risk and Estimated Final Costs:** As described in the management response on 3 July 2018, we welcome IIPAG's support in challenging Estimated Final Costs that are optimistic or unrealistic, as part of the assurance processes.

### **List of appendices to this report:**

Appendix 1: IIPAG Quarterly Report

### **List of Background Papers:**

None

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## Appendix 1

### Item: Independent Investment Programme Advisory Group – Quarterly Report (September 2018)

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#### This paper will be considered in public

## 1 Summary

- 1.1 This report sets out the advice of the Independent Investment Programme Advisory Group (IIPAG) on the strategic and systemic issues and risks that it has noted in its reviews of TfL's Investment Programme. It also sets out IIPAG's views on the effectiveness of the first and second lines of assurance.

## 2 Recommendations

- 2.1 IIPAG recommends that the Audit and Assurance Committee consider whether sub-programme reviews are delivering an appropriate level of assurance for the level of risk to which TfL is exposed.
- 2.2 IIPAG recommends that the effectiveness of the Integrated Assurance Plan (IAP) process be further strengthened by:
- (a) a process for reviewing and updating the IAPs themselves be set out clearly for each project/programme;
  - (b) the process for escalation of issues arising from the continuous monitoring process be clearly set out; and
  - (c) a regular timetable for second line review of the effectiveness of the process be established.

## 3 Background

- 3.1 IIPAG is required to produce quarterly reports of its advice on strategic and systemic issues, logs of progress on actions and recommendations and the effectiveness of the first and second lines of project and programme assurance for the Audit and Assurance Committee.
- 3.2 This will be the final report written by many of the current IIPAG members. The contracts of three of the five current IIPAG members, together with IIPAG's benchmarking specialist, expire in October 2018. This report sets out areas that remain important for continued focus, based on more than seven years of experience and effort by some of these individuals.

## **4 Strategic and Systemic Risks and Issues**

### **IIPAG view of areas for continued focus**

4.1 A number of themes have recurred in many IIPAG reports over the years, IIPAG's view of progress on the areas and actions that should be taken are set out below. Themes addressed are:

- (a) Telecoms: IIPAG set out its views of telecoms in its June 2018 AAC report. These remain its views.
- (b) Transformation: TfL has undergone a substantial reorganisation in the past two years, with many experienced staff leaving the organisation. While this has been necessary to deliver services to reduced budgets, in practice it has resulted in more junior staff running projects and in less experienced technical resources. Without enhanced assurance, this can increase the risk of significant errors on projects, which could lead to major overspends, non-delivery of benefits or even catastrophic failures.
- (c) Assurance: As noted above, IIPAG considers that the transformation of TfL introduces increased risks to the organisation. IIPAG has noted on many occasions that it considers the sub-programme reviews to be superficial, and remains concerned that they are insufficient to address the risks to which TfL is exposed.
- (d) Risk and Estimated Final Costs: IIPAG set out its views of this area in its June 2018 AAC report. These remain its views.
- (e) Political Pressure: TfL is led by politicians that have an understandable and valid desire to make clear changes in transport across London. This is most easily achieved by the delivery of one, or a small number of, highly visible capital projects. It is important that TfL sets out the benefits and risks of projects with high political profile in a balanced way, and does not undertake projects that are lower value without a clear Direction from the Mayor.

### **Notable and/or Issues identified since June 2018**

4.2 All of the issues noted above have been long-term concerns of IIPAG.

### **Suggested areas for attention**

4.3 IIPAG recommends that the Audit and Assurance Committee consider whether sub-programme reviews are delivering an appropriate level of assurance for the level of risk to which TfL is exposed.

## **5 Effectiveness of the First and Second Lines of Project and Programme Assurance**

5.1 In IIPAG's June 2018 report it stated that it would review the IAPs for the July 2018 Programmes and Investment Committee (PIC) and work with the second line of assurance, TfL Project Assurance to improve future IAPs.



- 5.2 IIPAG reviewed eight IAPs and found significant variation in the consistency and completeness of the plans and little indication of how they were being used. IIPAG recognizes that the process is maturing and commend the increased focus given by Project Assurance recently to improving both its consistency and effectiveness. Project Assurance has developed a new template, in consultation with IIPAG, to promote better consistency and more clarity on the expected deliverables and IIPAG understands that the new template will be applied to all sub-programmes by the time of the Programmes and Investment Committee meeting of 11 October 2018.
- 5.3 The test of the effectiveness of the new approach will be its application and IIPAG therefore recommends close monitoring for the next 12 months as the IAP process matures.
- 5.4 IIPAG recommends that the effectiveness of the IAP process be further strengthened by:
- (a) a process for reviewing and updating the IAPs themselves be set out clearly for each project/programme;
  - (a) the process for escalation of issues arising from the continuous monitoring process be clearly set out; and
  - (b) a regular timetable for second line review of the effectiveness of the process to be established.

## **6 Reviews and Actions**

- 6.1 IIPAG has been involved in a total of six sub-programme reviews and nine Integrated Assurance Reviews since its last report. IIPAG has also undertaken one Interim review.
- 6.2 Figure 1, below, sets out the number of recommendations that are closed, not yet due (or no date noted) or overdue in the recommendations tracker maintained by Project Assurance.

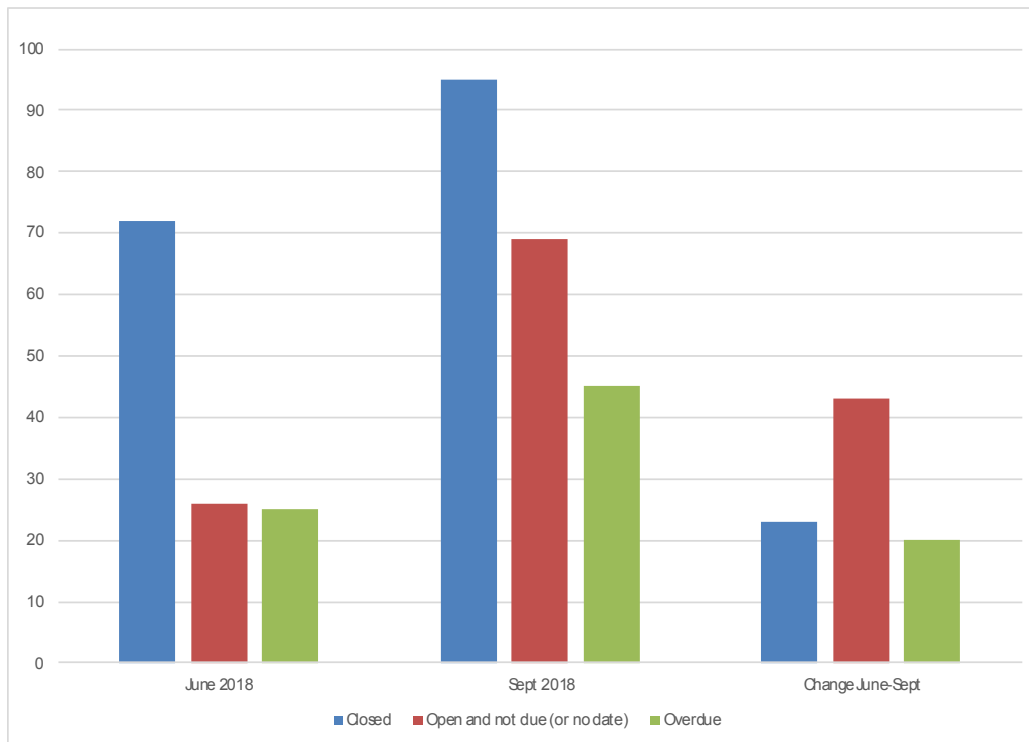


Figure 1: Status of IIPAG Recommendations

- 6.3 The total number of recommendations has increased from 123 to 209 in the past three months, with a total of 86 new recommendations made. Many of these were made for more in-depth reviews of the 4 Lines Modernisation and Deep Tube Upgrade programmes.
- 6.4 There has been an 80 per cent increase in the number of overdue recommendations in the last quarter, and chasing up these actions and ensuring that they are appropriately addressed should be a priority for Project Assurance in the coming months.
- 6.5 IIPAG has found it difficult to assess whether recommendations are agreed, or not, from the information in the management responses. Of the 209 recommendations, 115 are explicitly agreed (or the management response makes it clear that the recommended actions will be undertaken in full), while only eight are not agreed. It is unclear whether the remaining 86 recommendations, 41 per cent of the total, are agreed or not. In many cases the management response sets out steps that have been taken but does not commit to address the recommendation in full. TfL Assurance have undertaken to clarify the status of these management responses such that they can be properly escalated as necessary.
- 6.6 The eight recommendations that IIPAG has classed as not accepted are listed in Annex 1. Only one of these explicitly states that IIPAG's recommendation is not agreed. In most cases they indicate that the project team consider that sufficient has already been done on the subject of the recommendation, but there has been no further communication with IIPAG to ensure that this addresses the action. IIPAG will pursue these recommendations further in the next three months.
- 6.7 IIPAG notes that only one of these eight recommendations was classified as open. All of the remainder had been closed, although enquiries from IIPAG have

resulted in most of them being re-opened. IIPAG considers that it is inappropriate that its recommendations be closed without confirmation from IIPAG that it is content that they have been appropriately addressed, or escalated if they are not agreed. IIPAG recommends that this be built into the process for managing its recommendations.

**List of appendices to this report:**

Annex 1 – Recommendations that IIPAG considers have not been accepted

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**Annex 1 – Recommendations that IIPAG considers have not been accepted**

<b>Project Name</b>	<b>Recommendation</b>	<b>Management Response</b>	<b>IIPAG View</b>
Major Stations Sub-Programme	No further Supplemental Agreements or CAP arrangements are put in place until a detailed review of them has been undertaken which identifies any benefits that may have accrued from them and sets out their risks and disadvantages.	CAP is embedded in TfL standard forms of NEC3 contract. Any future Supplemental Agreements in this programme will consider the benefits that will materialise before seeking approval. This approach has been reviewed by IIPAG.	IIPAG remains of the view set out in its recommendation.
Major Stations Sub-Programme	The mechanism for escalating risks associated with claims is clarified and communicated to ensure that it provides appropriate information at all levels in TfL	A general TfL Dispute Management process is available on the Commercial Tool kit. However a specific strategy for each program will be developed as disputes arise. This may need to remain confidential and have restricted circulation to avoid prejudice.	IIPAG has not been provided with the stated information from the Commercial Toolkit and, in its interviews, no individual was aware of any defined process.
Major Stations Sub-Programme	No further Supplemental Agreements or CAP arrangements are put in place until a detailed review of them has been undertaken which identifies any benefits that may have accrued from them and sets out their risks and disadvantages	The benefits of the Supplementary Agreements are summarised below: 1) Compensations events to date are agreed. 2) Specific contentious issues are identified and plan of action agreed. 3) Contractors are incentivised using KPIs to deliver to milestones beneficial to passengers.  Any supplemental agreement would have the advantages and disadvantages set out, including the risk opportunities and	IIPAG remains of the view set out in its recommendation.

Project Name	Recommendation	Management Response	IIPAG View
		threats.	
Fiveways Junction A23/ A232	That the Project Team provides the evidence to support its view that the current scheme is the appropriate option to select.	The Project Team feels that sufficient evidence has been provided as part of the IAR that supports the view that the current scheme is the appropriate option to select.	No further information beyond that provided for the IAR received by IIPAG.
Network Access and WAN Services	There should be an independent review of the capex costs included in this contract. TfL's costs to manage this contract effectively should be estimated and also be subject to independent review.	TfL have no issue with sharing the Financial Model that underpins the preferred bidder's tender and capex cost broken down, the purpose of such a review is unclear.	No further information of any independent review received by IIPAG.
Cycle Superhighway 10	HSPB should consider the wider options for access to the rest of the Cycle Superhighway network from the West of London, for example considering whether routes might need to be linked such that there are fewer routes in more central areas.	Alignment of CS10 runs along 2 strategic cycling corridors identified in the Strategic Cycling Analysis (June 17). Opportunity for further routes in future to link other key destinations. Future Cycle Routes programme submitted to HSPB 5 Oct 17.	IIPAG does not believe that the issue was addressed in the Future Cycle Routes programme submission and has received no further information on this recommendation.
Rotherhithe Canary Wharf Crossing	IIPAG recommends that the option selection is deferred until greater certainty can be provided of the likely cost and programme of the navigable bridge and a comparison can be made on a more informed basis of the business case underlying both options.	Substantial work has gone in to the options analysis work based on benchmarking data to determine the preferred option. However, a reference design is required to establish a preferred bridge design and to narrow the cost range of the scheme. This will be subject to consideration by IIPAG and by the Healthy Streets Portfolio Board.	IIPAG understands that the bridge option is preferred by TfL and work on finalising cost estimates and seeking to close the significant budget shortfall continues, but the option of a ferry crossing has not yet been discounted.

<b>Project Name</b>	<b>Recommendation</b>	<b>Management Response</b>	<b>IIPAG View</b>
Rail and Underground Step Free Access	Any works not directly necessary for the SFA scheme be funded and managed outside of the SFA Programme.	Funding: Not agreed. We have committed to fund the wider Accessibility Works as part of the Whole Journey approach to accessibility.	IIPAG agrees with TfL's response.

## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** Use of Delegated Authority

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### **This paper will be considered in public**

## **1 Summary**

- 1.1 To inform the Committee of the use of any Chair's Action and of any Programme and Project Authority and Procurement Authority (in respect of matters within the Committee's remit) granted by the Commissioner and the Chief Finance Officer in accordance with delegated authorities under TfL's Standing Orders since the last meeting of the Committee on 3 July 2018. There has been no use of delegated authority since the last meeting.
- 1.2 A similar report will be submitted to the Finance Committee in respect of the use of any Chair's Action and of Procurement Authority and Land Authority granted by the Commissioner and the Chief Finance Officer in respect of matters within the Finance Committee's remit.

## **2 Recommendation**

- 2.1 **The Committee is asked to note the paper.**

## **3 Background**

- 3.1 Under TfL Standing Orders in situations of urgency, the Board delegates to each of the Chair and the Chairs of any Committee or Panel the exercise of any functions of TfL on its behalf, including the appointment of Members to Committees and Panels. Any use of Chair's Action is reported to the next ordinary meeting.
- 3.2 The Commissioner (and in his absence, the Chief Finance Officer) has delegated authority to approve Programme and Project Authority on programmes and projects up to a value of £50m that contain less than £25m of unbudgeted expenditure.
- 3.3 The Chief Finance Officer has delegated authority to approve Programme and Project Authority for programmes and projects under £25m that contain less than £10m of unbudgeted expenditure. Approval of authority for projects of less than £5m that contain less than £2m of unbudgeted expenditure is delegated to Chief Officers and is not reported here.
- 3.4 The Commissioner (and in his absence, the Chief Finance Officer) has delegated authority to approve budgeted Procurement Authority up to a value of £100m.
- 3.5 The Chief Finance Officer has delegated authority to approve budgeted Procurement Authority up to a value of £25m.

## **4 Use of Chair's Action since 3 July 2018**

- 4.1 Since the last meeting of the Committee, there has been no use of Chair's Action within the Committee's remit.

## **5 Programme and Project Authority Approvals since 3 July 2018**

- 5.1 To enable an appropriate level of governance, processes are in place for the authorisation, control and reporting of projects.
- 5.2 Programme and Project Authority will normally be granted by the Committee for all Programmes. Where any component part of a Programme has a value in excess of £50m and have not already received full approval as part of a Programme, requests will be submitted to the Committee for consideration. Those matters with an estimated final cost of £50m or below, which have been approved by the Commissioner or the Chief Finance Officer, will be reported to subsequent meetings of the Committee.
- 5.3 In certain cases the Financial Authority and Estimated Final Cost will not be stated because they are commercially confidential.
- 5.4 We have committed to report to the Committee will on any applicable Direction from the Mayor relating to TfL's Programmes and Projects. There is nothing to report for this meeting.

### **Approvals by the Commissioner**

- 5.5 Since the last meeting of the Committee, the Commissioner has not approved Programme and Project Authority for any projects.

### **Approvals by the Chief Finance Officer**

- 5.6 Since the last meeting of the Committee, the Chief Finance Officer has not approved Programme and Project Authority for any projects.

## **6 Procurement Approvals**

### **Approvals by the Commissioner**

- 6.1 Since the last meeting of the Committee, the Commissioner has not approved any Procurement Authority in respect of matters within the Committee's remit.

### **Approvals by the Chief Finance Officer**

- 6.2 Since the last meeting of the Committee, the Chief Finance Officer has not approved any Procurement Authority in respect of matters within the Committee's remit.

### **List of appendices to this report:**

None

### **List of Background Papers:**

None

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## Programmes and Investment Committee



Date: 11 October 2018

Item: Strategic Risk Management Update

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### This paper will be considered in public

#### 1 Summary

- 1.1 The purpose of this paper is to provide an update to the Programmes and Investment Committee on TfL's new Enterprise Risk Management Framework, the Enterprise Risk Assessment Matrix and the TfL strategic risks (Level 0), including the risks that will be reported to this Committee in future.
- 1.2 A paper is included on Part 2 of the agenda, which contains exempt supplemental information pertaining to the strategic risk deep dives. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business and financial affairs of TfL that is commercially sensitive and likely to prejudice TfL's commercial position. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

#### 2 Recommendation

- 2.1 **The Committee is asked to note the paper and the supplementary information on Part 2 of the agenda.**

#### 3 Background

- 3.1 Since early 2018, TfL has been carrying out a wide ranging review of its approach to Enterprise Risk Management, in liaison with the Board and senior management. This has included development of a consistent Enterprise Risk Management Framework (ERMF) and Enterprise Risk Assessment Matrix (ERAM), applicable across TfL, and a programme of deep dive reviews of TfL's strategic risks. Progress with this work has previously been reported to the Audit and Assurance Committee at its meetings in March, June and September 2018.
- 3.2 The ERMF sets out the overall structure through which Enterprise Risk Management is delivered in TfL. It stipulates the elements required for better decision making, sets out the risk management methodology used in TfL, the risk escalation hierarchy and the governance and assurance arrangements in place.
- 3.3 The ERAM provides a consistent approach to assessing the probability that a risk will materialise and measuring the impact of the risk by reference to four impact categories.

- 3.4 The final versions of the ERMF and the ERAM were approved by the TfL Executive Committee at its meeting on 8 August 2018. These are attached as Appendices 1 and 2.
- 3.5 We developed a template to capture strategic risk information on one page. This includes specific causes and consequences, quantification of financial impact ranges, provision for recording of insurance information, current and target risk assessments against risk tolerance levels using the ERAM, key risk indicators (KRIs) which provides a means of linking risk to performance of scorecard measures, preventative and corrective controls, assurance assessments and further actions required. The template is attached as Appendix 3.
- 3.6 We have concluded deep dive reviews on TfL's set of 16 level 0 strategic risks using this new template. The updated set of risks was presented to the Executive Committee on 8 August 2018 and is attached as Appendix 4.
- 3.7 Each strategic risk has now been assigned to a lead panel or committee, and progress on the management of strategic risks will be reported to the respective panels and committees. The lead committee / panel for each risk is shown in the list in Appendix 4.
- 3.8 The following risks will be reported to this Committee:
- (a) SR12 – Delivery of key investment programmes; and
  - (b) SR16 – Opening of the Elizabeth Line

## **4 Next steps**

- 4.1 This Committee already receives a significant amount of information which is relevant to the assessment of the risks assigned to it. The Committee is asked to consider the manner in which it would like senior management to present these risks to future Committee meetings and any additional information it would wish to receive to support its review of the risks.
- 4.2 Level 1 strategic risk deep dive reviews will commence in the Major Projects Directorate from October 2018.
- 4.3 A thorough review of Strategic Risk 16: 'Opening of the Elizabeth Line' will be conducted given the risk has materialised and the programme now has a revised delivery date.

### **List of appendices to this report:**

Appendix 1: Updated Enterprise Risk Management Framework (ERMF)

Appendix 2: Updated Enterprise Risk Assessment Matrix (ERAM)

Appendix 3: TfL's new Strategic Risk Template

Appendix 4: TfL's Strategic Risks

A paper containing exempt supplemental information is included on Part 2 of the agenda.

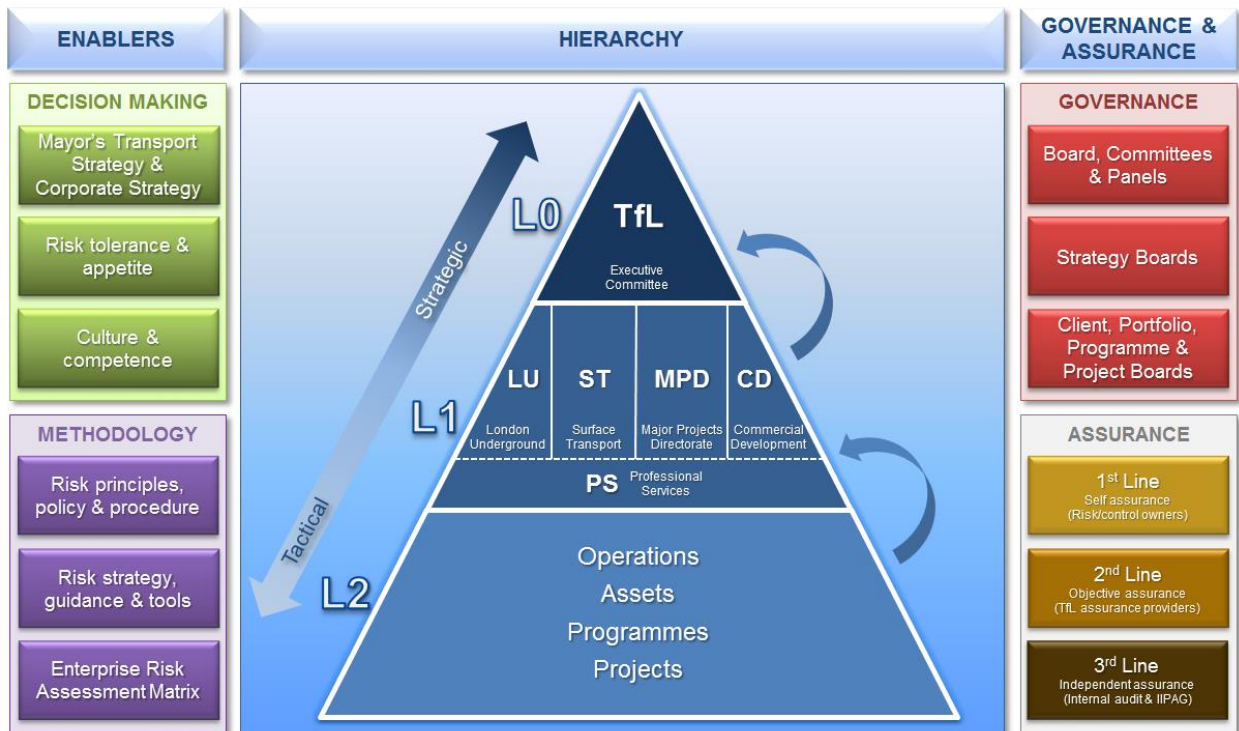
**List of Background Papers:**

None

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# Appendix 1: TfL's updated Enterprise Risk Management Framework (ERMF)



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## Appendix 2: TfL's updated Enterprise Risk Assessment Matrix (ERAM)

THREAT ASSESSMENT MATRIX	1. Very Low	2. Low	3. Medium	4. High	5. Very High
<b>Health, Safety &amp; Environment</b>	Minor health issue or Minor injuries or Minor localised environmental harm	Minor health issue with potential for regulatory action or Minor injuries with potential for regulatory action or Minor localised / short term environmental harm with potential for regulatory intervention	Moderate health issue leading to regulatory action or Major injuries leading to regulatory action or Moderate environmental harm leading to potential regulatory action	Significant health issue leading to adverse regulatory outcome or Single fatality leading to adverse regulatory outcome or Significant long-term/ large scale environmental harm leading to adverse regulatory outcome	Life changing/Multiple health issues leading to prosecution or Multiple fatalities leading to prosecution or Major long-term/ large scale environmental harm leading to prosecution
<b>Customer &amp; Stakeholder</b>	Small number of customers/stakeholders affected with minimal disruption to service delivery or impact to assets	Minor impact to: • service delivery • assets; or • delivery of the MTS	Moderate impact to: • service delivery • assets; or • delivery of the MTS	Major impact to: • service delivery • assets; or • delivery of the MTS	Catastrophic failure or gross negligence resulting in an inability to deliver multiple services and/or a total loss of assets or inability to deliver significant elements of the MTS
<b>Finance</b>	<£1m	£1m to <£5m	£5m to <£10m	£10m to <£50m	≥£50m
<b>Stakeholder Confidence</b>	Negative feedback from customers or stakeholders via the Customer Service Centre, media outlets, Twitter or blogs	Short term negative media coverage	Negative media coverage resulting in loss of confidence with regulator or stakeholder intrusion	Ongoing negative media coverage resulting in loss of confidence with significant regulator or stakeholder intrusion	Extensive ongoing negative media coverage resulting in major loss of confidence with significant regulator or stakeholder intrusion or loss of licence to operate

	1. Very Low	2. Low	3. Medium	4. High	5. Very High
<b>Probability</b>	<5%	5% to <25%	25% to <50%	50% to <80%	≥80%
<b>Frequency</b>	Less than once in 20 years	Less than once in 5 years	Between once in 5 and once in 2 years	More than once in 2 years	Once or more per year

OPPORTUNITY ASSESSMENT MATRIX	1. Very Low	2. Low	3. Medium	4. High	5. Very High
<b>Health, Safety &amp; Environment</b>	Negligible health, safety and environmental benefits	Minimum health and wellbeing benefits or Reduction in minor injuries or Minimum environmental benefits	Moderate health and wellbeing benefits or Reduction in major injuries or Moderate environmental benefits	Significant health and wellbeing benefits or Reduction in multiple major injuries/ single fatality or Significant environmental benefits	Sustained health and wellbeing benefits or Reduction in multiple fatalities or Sustained environmental benefits
<b>Customer &amp; Stakeholder</b>	Minor improvement to services.	Minor improvement to services.  Enhanced relations with local stakeholders for less than a month.	Moderate improvement to services.  Enhanced relations with local stakeholders for longer than a month.  An element of the MTS delivered quicker and over and above expectations.	Major improvement to services.  Significantly enhanced relations with key stakeholders for less than a month.  Some elements of the MTS delivered quicker and over and above expectations.	Exceptional improvement to services.  Significantly enhanced relations with key stakeholders for more than a month.  Significant elements of the MTS delivered quicker and over and above expectations.
<b>Finance</b>	<£1m	£1m to <£5m	£5m to <£10m	£10m to <£50m	≥£50m
<b>Stakeholder Confidence</b>	Positive feedback from customers or stakeholders via the Customer Service Centre, media outlets, Twitter or blogs.	Short term positive media coverage.	Positive media coverage resulting in temporarily increased confidence from regulator or stakeholders.	Ongoing positive media coverage resulting in temporarily increased confidence from regulator or key stakeholders.	Extensive ongoing positive media coverage resulting in sustained increased confidence from regulator or key stakeholders.

	1. Very Low	2. Low	3. Medium	4. High	5. Very High
<b>Probability</b>	<5%	5% to <25%	25% to <50%	50% to <80%	≥80%
<b>Frequency</b>	Less than once in 20 years	Less than once in 5 years	Between once in 5 and once in 2 years	More than once in 2 years	Once or more per year

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# Appendix 3: TfL's new Strategic Risk Template

Template version: 11  
Author: Nico Lategan

**III Confidential**

**RISK ASSESSMENT**

**RISK ASSESSMENT**

**RISK ASSESSMENT**

**RISK DETAILS**

Risk Level:

Risk Owner (Accountable):

Responsible Manager:

Risk Title:

Risk Description:

MTS / Corporate Strategy:

Panel / Committee oversight:

Objective:

Overall Control Effectiveness Rating:

Stakeholders:

Risk ID (AP/R):

Doc Version:

Last update:

**RISK ASSESSMENT**

	HSE	CUSTOMER / STAKEHOLDER	FINANCE	STAKEHOLDER CONFIDENCE
Impact	5	5	5	5
Probability	4	4	4	4
	3	3	3	3
	2	2	2	2
	1	1	1	1
	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4
	5	5	5	5

ASSESSMENT	Score
CURRENT Assessment	
TARGET Assessment	

ASSESSMENT RATIONALE

Probability: HSE  
Customer/Stakeholder: Finance (Em)  
Stakeholder Confidence:

Overall Risk Rating:

Key Risk Indicator:

Location:

**POST-RISK EVENT**

CONSEQUENCES	Description	Insurance Type	Excess	Quantified Financial Impact
Title		Minimum	Most Likely	Maximum

CONTROLS (corrective)	Description	Owner	Control Effectiveness	Assurance
Title			Design	1st/2nd/3rd line

ACTIONS	Description	Owner	Start Date	Due Date	Status

**PRE-RISK EVENT**

CAUSES	Description
Title	

CONTROLS (preventative)	Description	Owner	Control Effectiveness	Assurance
Title			Design	1st/2nd/3rd line

ACTIONS	Description	Owner	Start Date	Due Date	Status

**PRE-RISK EVENT**

CAUSES	Description
Title	

CONTROLS (preventative)	Description	Owner	Control Effectiveness	Assurance
Title			Design	1st/2nd/3rd line

ACTIONS	Description	Owner	Start Date	Due Date	Status

**PRE-RISK EVENT**

CAUSES	Description
Title	

CONTROLS (preventative)	Description	Owner	Control Effectiveness	Assurance
Title			Design	1st/2nd/3rd line

ACTIONS	Description	Owner	Start Date	Due Date	Status

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## Appendix 4: TfL's Strategic Risks

Changed risks	
Risk	Change description
SR1 – Safety standards	Renamed to SR1 – Achieving safety outcomes
SR4 – Foresight strategy	Closed as this is now a business as usual activity
SR5 – Technological or market developments	Responsible manager changed from Shashi Verma to Michael Hurwitz
SR6 – External stakeholder expectations	Renamed to SR6 – Loss of external stakeholder trust Responsible manager changed from David McNeill to Matt Brown
SR7 – Financial sustainability	Responsible manager changed from Tom Page to Sarah Bradley
SR8 – Delivery of commercial revenue targets	Renamed to SR8 – Inability to deliver predicted revenue growth
SR9 – Ability to meet changing demand	Risk owner changed from Mark Wild to Simon Kilonback Responsible manager changed from David Hughes to Shashi Verma
SR11 – Significant technology failure or major cyber security incident	Split into SR11 – Significant technology failure and SR4 – Major cyber security incident
SR14 – TfL's impact on the environment	Renamed to SR14 – TfL's environmental impact
SR15 – External environment impact on TfL	Renamed to SR15 – Resilience to climate change and extreme weather

List of Strategic Risks					
#	Risk	Owner	Manager	Mayors Transport Strategy / Corporate Strategy	Suggested Panel / Committee
SR1	Achieving safety outcomes	Gareth Powell	Jill Collis	MTS: Healthy streets and healthy people	SSHRP
SR2	Talent attraction and retention	Tricia Wright	Rachel Kerry	CS: People	SSHRP
SR3	Governance and controls suitability	Howard Carter	Andrea Clarke	MTS: All MTS outcomes	AAC
SR4	Major cyber security incident	Vernon Everitt	Shashi Verma	MTS: Healthy streets and healthy people	AAC
SR5	Technological or market developments	Vernon Everitt	Michael Hurwitz	MTS: All MTS outcomes	CS&OP
SR6	Loss of external stakeholder trust	Vernon Everitt	Matt Brown	MTS: All MTS outcomes	CS&OP
SR7	Financial sustainability	Simon Kilonback	Sarah Bradley	CS: Finance	FC
SR8	Inability to deliver predicted revenue growth	Graeme Craig	Ken Youngman	MTS: New homes and jobs	FC
SR9	Ability to meet changing demand	Simon Kilonback	Shashi Verma	MTS: New homes and jobs	FC
SR10	Catastrophic event	Mark Wild	Nigel Holness	MTS: Healthy streets and healthy people	SSHRP
SR11	Significant technology failure	Vernon Everitt	Shashi Verma	MTS: A good public transport experience	AAC
SR12	Delivery of key investment programmes	Stuart Harvey	Nick West	MTS: New homes and jobs	PIC
SR13	Operational reliability	Mark Wild	Nigel Holness	MTS: A good public transport experience	CS&OP
SR14	TfL's impact on the environment	Alex Williams	Sam Longman	MTS: Healthy streets and healthy people	SSHRP
SR15	Resilience to climate change and extreme weather	Alex Williams	Sam Longman	MTS: All MTS outcomes	SSHRP
SR16	Opening of the Elizabeth Line	Mark Wild	Howard Smith	MTS: New homes and jobs	PIC

Panels & Committees key:	
SSHRP	Safety, Sustainability & Human Resources Panel
AAC	Audit and Assurance Committee
FC	Finance Committee
CS&OP	Customer Services & Operational Performance Panel
PIC	Programmes and Investment Committee

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## Programmes and Investment Committee



Date: 11 October 2018

Item: Barking Riverside Extension Main Works Contract Update

This paper will be considered in public

### 1 Summary

LR-PJ316C Barking Riverside Extension				Total Authority
Existing Financial Authority	Estimated Final Cost (EFC)	Existing Programme and Project Authority	Additional Authority Requested	
In the paper on Part 2 of the agenda	In the paper on Part 2 of the agenda	£ 263.2m	In the paper on Part 2 of the agenda	In the paper on Part 2 of the agenda

**Authority Approval:** To increase the Programme and Project Authority and Procurement Authority in respect of the award of an agreement for the main works required for the construction of the rail extension and a new station at Barking Riverside in the sum set out in the paper on Part 2 of the agenda.

**Outputs and Schedule:** The Barking Riverside Extension project will deliver a new station and line, extending the London Overground Gospel Oak to Barking services. The target date for entry into service is 2021. This is a key enabler for the Barking Riverside site, providing up to 10,800 new homes and directly supporting the Mayor's Transport Strategy objectives on accommodating sustainable population and employment growth.

- 1.1 The Barking Riverside Extension (BRE) to the London Overground network project was granted Project Authority of £263.2m in February 2016 by the Finance and Policy Committee (under delegated authority from the Board) and subsequently secured planning authority through a Transport and Works Act Order (TWAO) by the Secretary of State in August 2017.
- 1.2 In May 2018, a paper was presented to the Committee updating on progress and seeking Procurement Authority for the main works contract (MWC), the award of which had been slightly delayed due to some emerging design issues and the reduction in the number of bidders to two, following the demise of Carillion plc. The Committee approved the paper and granted the authority sought, based on the prevailing cost and programme knowledge at that time (shortly after the tender documentation was issued but before the returns were received).
- 1.3 Bids were returned on 29 July 2018, and it became clear that there were significant cost pressures to the scheme delivery, which could be impactful to the overall programme of works.

- 1.4 Since the receipt of the initial bids, there has been intensive scope and value engineering discussions both with key stakeholders and internal experts to find a way to contain cost and programme pressures. This has resulted in a fruitful outcome and the re-issue of an extensive repricing document on the 21 September 2018. Bidders have agreed to return documents by mid October 2018, in order to safeguard the 2021 completion date for the BRE.
- 1.5 A paper is included on Part 2 of the agenda, which contains exempt supplemental information. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the financial or business affairs of TfL and tenderers. Any discussion of that information must take place after the press and public have been excluded from this meeting.

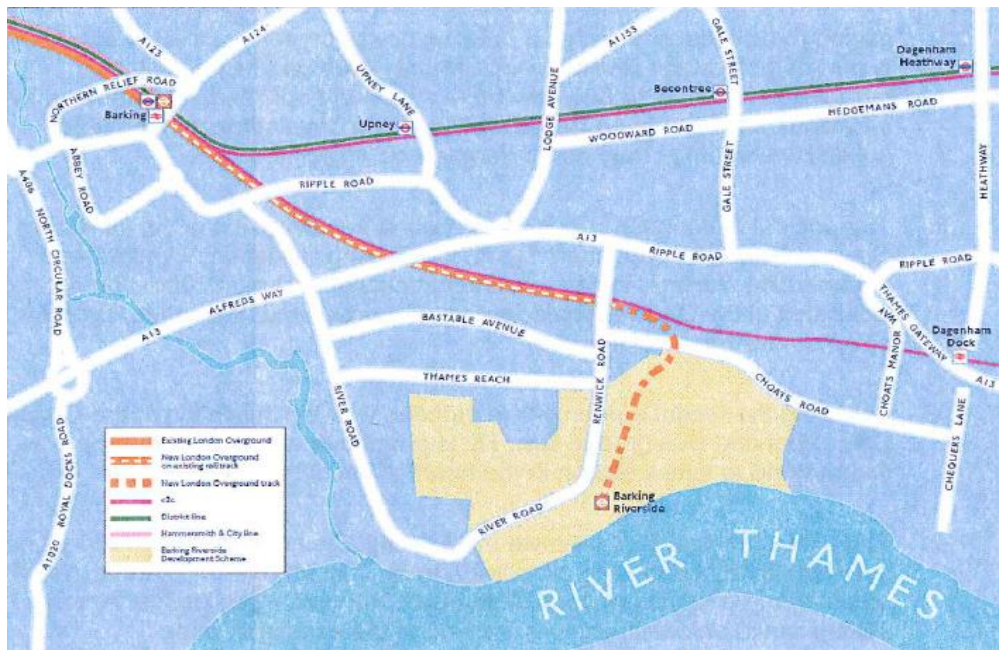
## **2 Recommendation**

### **2.1 The Committee is asked to:**

- (a) note the paper and the supplementary information on Part 2 of the agenda; and**
- (b) subject to Financial Authority being in place, delegate to Delegated Officers authority to approve an increase in Programme and Project Authority, and Procurement Authority to enable the award of the main works contract for Barking Riverside rail extension and new Barking Riverside station up to the maximum sum stated in the paper on Part 2 of the agenda.**

## **3 Background**

- 3.1 Barking Riverside is the largest brownfield development site in east London, with planning permission for 10,800 new homes. To unlock the full scale of the development, planning permission for the site was granted on the basis of significant investment in transport infrastructure.
- 3.2 An extension of the electrified London Overground (LO) Gospel Oak to Barking line, from its current terminus at Barking to a new station in Barking Riverside, will be 4km in length including 1.5km of new track. Four new LO trains per hour will operate from Barking station along the existing Tilbury Loop line and then via a new section of railway, heading south towards Barking Riverside.
- 3.3 Figure 1 below shows the plan of the new line which will reach right into the heart of the Barking Riverside development.



**Figure 1: Barking Riverside and new line and station**

- 3.4 The BRE scheme is referenced throughout the Mayor’s Transport Strategy. The development itself is in line with the Mayor’s Healthy Streets approach and will contribute to 80 per cent of trips by cycling, walking or public transport. The Barking Riverside Masterplan Framework Travel Plan (2016) sets out interim sustainable mode share targets of 75 per cent by 2031. Examples of how they intend to achieve this are:
- (a) fully segregated cycle lanes (both sides of the road);
  - (b) cycle Hub at the Barking Riverside Station;
  - (c) only 0.7 car parking spaces per household on the estate; and
  - (d) two-thirds of the homes cannot be occupied before the station is operational.
- 3.5 A public inquiry into the scheme was held in October 2016 as part of the TWAO application process. The Secretary of State approved the TWAO application in August 2017, after a recommendation from the Inspector.
- 3.6 Successful early site preparation works have already taken place; including the demolition of several redundant Network Rail buildings and a disused ramp where the new viaduct will land. A further small package of overhead line electrical work is planned for Christmas 2018 in preparation for the mobilisation of the main works Contractor in early 2019.
- 3.7 Programme and Project Authority currently exists for £263.2m following approval by the Finance and Policy Committee in February 2016. The Project is at Pathway Stage Gate 3 and Network Rail GRIP stage 4 (single option development). Procurement Authority was granted by the Committee in May 2018 ahead of bids being received for the MWC in order to enable its efficient award to achieve entry into service by 2021.
- 3.8 An extended negotiation phase has been conducted with bidders for the MWC. Therefore, the Committee’s delegation of the decision to grant increased

Programme and Project Authority, and Procurement Authority to the Delegated Officers is sought, in order that the contract may be awarded before the next scheduled Committee meeting.

- 3.9 Should any changes to Financial Authority be required, these will be requested through the TfL Business Planning process, which is currently underway. This process will be concluded before any required increases in Programme and Project Authority and Procurement Authority are sought.
- 3.10 A quarterly update on progress and including any changes to authority required will be provided at the 11 December 2018 Committee meeting.

## 4 Proposal

### Preferred Option

- 4.1 The preferred option for the scheme has not changed. The scheme involves the construction of an electrified, twin tracked route between Renwick Road and Barking Riverside and the construction of a terminus station. The design of the alignment is significantly constrained by the geography of the site. The eastbound line, towards Barking Riverside, would spur directly from the Tilbury Loop passenger line, east of Barking Station. The westbound line (towards Barking) would merge with the westbound Tilbury Loop passenger line to the west of the Ripple Lane sidings.
- 4.2 Barking Riverside station will consist of a single, elevated, central island platform. The station will be served by four car electric trains, with passive provision for a future extension to five car trains. A concept design image of the new station can be seen below in Figure 2.
- 4.3 The station will be designed to accommodate passenger flows from the complete 10,800 home development. Two public consultations and a Public Inquiry have received good support from external stakeholders and no negative equality impacts are expected with the implementation of BRE. The station will increase the accessibility of London's transport network by providing full step free access to enable free and unassisted movement between the train and street level.



*Figure 2: Preliminary Design CGI of the new Barking Riverside station*



4.4 There is expected to be only very limited impact on LO operations during the implementation of the project. However, the project team is in regular contact with HS1, Network Rail, C2C (train operator) and the freight operating companies, who are key stakeholders as owners and users of the Tilbury line. Critical to the success of the project is the acceptance and productive use of the Network Rail possessions, where the line is closed for TfL construction work.

**Benefits (and Value)**

4.5 The purpose of the BRE is to meet the rail related planning obligations required to enable the full build out of BRL’s Barking Riverside development (10,800 homes). Planning obligations for the development limit Barking Riverside to no more than 4,000 occupied homes until the rail link becomes operational.

4.6 Therefore, BRE assists the enabling of the development of the largest brown field site in east London and will provide much needed housing, in line with the Mayor’s Transport Strategy.

**Delivery of Preferred Option**

4.7 TfL’s Surface Directorate is sponsoring the BRE project. It is being delivered through the Major Projects Directorate (MPD).

4.8 In November 2017, an early works contract was let, following a competitive process, to prepare the area north of the Barking Riverside site and adjacent to the operational railway. This included demolition of redundant Network Rail buildings and a discussed access ramp, which were completed ahead of schedule in April 2018.

4.9 The MWC is being procured competitively. There have been some changes to the initial procurement strategy including the removal of Carillion plc from the process following their entry into administration. There was an extension to the initial tender period due to design delays and a further four week extension to the tender submission date granted following a request from both remaining bidders. To mitigate the potential programme impacts, a small package of works will be let separately at Christmas 2018 for overhead line works that were previously part of the MWC.

4.10 The project still has a direct relationship with the Network Rail Gospel Oak to Barking electrification scheme where new trains are expected to be in operation shortly.

4.11 The key milestones associated with the MWC are shown below in Table 1:

Milestone	Target Date
Repricing Submission	October 2018
Main Works Contract Award Recommendation (PAM)	November 2018
Overhead Line Infrastructure Enabling Works	December 2018
First Possession of Network Rail Infrastructure	March 2019
Main Works Complete (PAM)	December 2021

**Table 1: Milestones**

4.12 The total risk value for the project included in the forecasted EFC is the amount stated in the paper on Part 2 of the agenda, at P50, and is calculated via a Quantifiable Risk Assessment (QRA), reviewed by the project team on a periodic basis. It will be reviewed immediately again following the receipt of repricing bids.

## **5 Financial Implications**

5.1 TfL has made provision for amount stated in the paper on Part 2 of the agenda in its Business Plan for the project and £172.0m has been secured through a funding agreement entered into with the developer, Barking Riverside Ltd (BRL). A further breakdown of this funding is set out in the paper on Part 2 of the agenda.

## **6 Assurance**

6.1 Following reviews in 2015 and 2016, the project received an IIPAG review and an IAR conducted by TfL Project Assurance in January 2018.

6.2 Their objective was to carry out an annual review for the Committee and assess the project's readiness to issue the ITT for the MWC.

6.3 No critical issues were identified through either the IAR or by IIPAG. All recommendations have been accepted and have been closed out by the project team.

6.4 A contract award IAR for the MWC will be undertaken in early November 2018 ahead of any request for an increase in authority. Further interim IAR's will be carried out in line with BRE's annual updates to the Committee.

### **List of appendices to this paper:**

A paper containing exempt supplemental information is included on Part 2 of the agenda.

### **List of background papers:**

Barking Riverside Extension Update and Procurement Authority Request, May 2018, TfL Programmes and Investment Committee

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## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** Tottenham Court Road Station Additional Procurement Authority

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### **This paper will be considered in public**

#### **1 Summary**

- 1.1 The purpose of this paper is to seek additional Procurement Authority to enable the final account with Taylor Woodrow Bam Nuttall (TWBN) for the Tottenham Court Road Upgrade (TCRSU) main works contract to be settled.
- 1.2 A paper is included in Part 2 of the agenda, which contains exempt supplemental information, mainly relating to the financial details of past and current licence agreements. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 because it contains legally privileged information and information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from any public meeting.

#### **2 Recommendations**

- 2.1 **The Committee is asked to:**
  - (a) **note the paper and the supplementary paper on Part 2 of the agenda; and**
  - (b) **approve additional Procurement Authority for the Tottenham Court Road Upgrade project following the final account agreement with the Main Contractor Taylor Woodrow BAM Nuttall JV (TWBN) for the sum set out in the Part 2 paper.**

#### **3 Background**

- 3.1 Tottenham Court Road station is located at St Giles' Circus, the intersection of Charing Cross Road, Oxford Street, Tottenham Court Road and New Oxford Street. This is in the centre of a major retail, leisure and commercial district, which is designated an Area of Intensification in the London Plan. The station is served by the Central and Northern lines, and will also be served by Crossrail. It has a strategic role in providing access to the West End, and for the LU network as a key interchange.
- 3.2 The number of passengers using the station was approximately 150,000 per day in 2007 (most recent count), this equates to 40 million passengers per year. Around 10 million of these are interchanging between the Central and Northern lines. Passenger numbers are forecast to increase to 50 million after planned commencement of Crossrail services. The implementation of the scheme reduces congestion and delay and improves the ambience for passengers and staff.
- 3.3 The Station Upgrade scheme comprises:
  - (a) constructing a new subsurface ticket hall underneath Charing Cross Road providing staff accommodation and a Station Operations Room;

- (b) constructing three new street entrances, two of which will include step-free access, and the refurbishment of one existing entrance;
- (c) platform and running tunnel upgrades to improve interchange;
- (d) the introduction of a new bank of three escalators, staircases and lifts leading to the Northern line platforms;
- (e) building a new passageway, lifts and stairways leading to the Central line platforms;
- (f) undertaking enabling works for Crossrail by providing an integrated station entrance plus means of interchange between Crossrail and the LU lines serving the station; and
- (g) modernising station assets.

3.4 The completion of this project is already fulfilling its key objective of reducing congestion at one of the busiest locations on the Tube network. It has also received numerous awards for safety and innovative construction.

## **4 Financial Implications**

- 4.1 TCRSU has Programme and Project Authority of £538m, which was approved in 2010 by the Board. This paper is not requesting any additional Programme and Project Authority. The Estimated Final Cost (EFC) for the project is currently £478m, therefore the project is being delivered for £60m less than the approved Programme and Project Authority.
- 4.2 An increase in Procurement Authority is required for the TCRSU project following the final account agreement with the Main Contractor Taylor Woodrow BAM Nuttall JV (TWBN) as detailed in the Part 2 paper. The increase will resolve changes that relate to:
- (a) asbestos removal in existing buildings;
  - (b) cladding to platforms;
  - (c) Night Tube;
  - (d) indexation; and
  - (e) takeover access.

### **List of Appendices:**

A paper containing exempt supplemental information is included on Part 2 of the agenda.

### **List of Background Papers:**

None

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## Programmes and Investment Committee



Date: 11 October 2018

Item: Surface Transport Asset Renewals Programme

This paper will be considered in public

### 1 Summary

Surface Assets Programme				
Existing Financial Authority	Estimated Final Cost	Existing Programme and Project Authority	Additional Programme and Project Authority Requested	Total Programme and Project Authority
£634m	£631m	£352m	£(49)m	£303m

**Authority Approval:** The Committee is asked to approve budgeted Programme and Project Authority of £303m to maintain the safety of Transport for London's Surface assets. This represents a decrease of £49m in Programme and Project Authority compared to last year's submission, in line with TfL's 2017 Business Plan and Budget. This authority covers financial years 2017/18, 2018/19 and 2019/20 – the programme will return annually to the Committee to renew and validate a rolling two-year approval. A two-year rolling approval complements the nature of the programme and streamlines the approval process.

**Outputs and Schedule:** The Surface Transport Asset Renewals Programme maintains the safety of highway, traffic, bus, coach and river assets through a prioritised programme of affordable reactive repairs and planned renewals. The renewals budget has been reduced as a consequence of the Government removing TfL's revenue grant. The Programme outputs and schedules reflect the reduced budget for 2018/19 and 2019/20 – it has reduced from £362m in the 2017 submission to the Committee to £134m in this submission (over 60 per cent reduction). This is part of our two-year pro-active renewals freeze, which includes the deferral of major proactive renewals on London's roads such as on Vauxhall Bridge and the Westway. This strategy will help ensure that funding is always available to repair defects, continue to provide industry best practice inspection regimes and maintain safety.

- 1.1 This paper presents the strategic case for the Surface Transport Asset Renewals Programme (the Programme), summarises the asset management strategy, and sets out the preferred option for 2018/19 and 2019/20.
- 1.2 The paper explains that the removal of TfL's revenue grant by central Government, has placed short term pressures on the Programme. While a long term funding solution is identified for the Programme, the focus, in the short term, will be to maintain safety and protect bus revenue. This will mean a managed reduction in the State of Good Repair (SOGR) of key assets compared to the levels achieved from previous investment and a corresponding impact on network operation and reliability, customer satisfaction and whole life costs.

## **2 Recommendation**

### **2.1 The Committee is asked to note the paper and:**

- (a) note that budgeted Programme and Project Authority of £352m exists for delivery of the Surface Assets Programme as detailed in this paper for financial years 2017/18, 2018/19 and 2019/20;**
- (b) approve a reduction of the existing Programme and Project Authority referred to in paragraph (a) above by £49m to a total of £303m, comprising £169m in 2017/18, £70m in 2018/19 and £64m in 2019/20; and**
- (c) note that Procurement Authority in respect of the various elements of the Surface Assets Programme will be sought at officer level in accordance with Standing Orders.**

## **3 Background**

### **Strategic Context**

- 3.1 The Mayor's Transport Strategy (MTS) puts transport at the heart of creating a city for all Londoners. The MTS has three key themes: healthy streets and healthy people; a good public transport experience; and new homes and jobs. TfL's Surface assets support all three of these themes, as almost all journeys on London's transport system start or finish on the road network.
- 3.2 The Programme had previously been supported by the revenue grant that TfL received from the Department for Transport. This ceased in 2017/18. The removal of this grant places short-term financial pressures on the programme while a long-term and sustainable funding solution is identified. The paper sets out the steps that are being taken to manage the short-term financial pressures.

### **Surface Assets**

- 3.3 The Surface assets covered by this paper include roads, footways, bus and coach stations, bus stops and shelters, river assets, Woolwich Ferry, traffic signals, bridges, tunnels, street lighting, drainage and trees. Appendix 1 provides a summary of the assets.
- 3.4 The Programme covers bus infrastructure and traffic signals on all London roads and highway assets on the Transport for London Road Network (TLRN). The TLRN is London's strategic road network – it is 580km long and carries over a third of all traffic. TfL is the statutory highway authority and traffic authority for the TLRN.
- 3.5 The Programme also covers Local Implementation Plan (LIP) funding for Borough principal road resurfacing and Borough bridge strengthening.

### **Asset duties and responsibilities**

- 3.6 TfL, as the highway authority for the TLRN, has a statutory duty under the Highways Act 1980, to maintain the public highway. The Traffic Management Act 2004 places a duty on TfL to 'manage the road network with a view to securing and

facilitating the expeditious movement of people and goods', which includes the provision and maintenance of assets (e.g. traffic signals) that support this activity.

- 3.7 These duties are further explained through industry guidance and codes of practice. The national code of practice, "Well-Managed Highway Infrastructure", places a requirement on the highway authority to have robust management practices in place. In the event of an accident or incident that is attributed to the design, condition or performance of an asset TfL must be able to demonstrate that reasonable and appropriate practices were adopted, and that these were suitably documented and implemented. The asset management practices (for example, asset strategies, inspections, maintenance and renewal) that achieve this are illustrated in Appendix 2.

### **Supporting the Mayor's Transport Strategy**

- 3.8 Maintaining and renewing assets is vital to the success of the Mayor's Transport Strategy (MTS). In particular Surface assets support:
- (a) Healthy Streets and healthy people – maintaining assets in a good condition will help create streets that are appealing and safe places to walk, cycle and spend time; and
  - (b) A good public transport experience – maintaining assets in a good condition will encourage customers to use public transport and to make walking and cycling their preferred choice.
- 3.9 Table 3.1 highlights specific MTS policy statements that are supported by maintaining assets in a good condition.

**Table 3.1: Mayoral and TfL Outcomes**

MTS Policy Statements supported by assets	Relevant assets and impact on outcomes
Policy 1 - Make London a city where people choose to walk and cycle more often by improving street environments, making it easier for everyone to get around on foot and by bike	Carriageway, cycle routes and footways – the increasing number of defects and reduced condition on roads and footways may discourage walking and cycling, and may act as a barrier to new cyclists
Policy 2 - Adopt Vision Zero for road danger in London	Carriageway and cycle routes – with more defects and a generally reduced condition there is an increased likelihood that asset condition may be a contributory factor in accidents and injuries
Policy 3 - Ensure that crime and the fear of crime remain low on London’s streets and transport system	Street lighting, bus shelters and bus stations – lights out, poorer condition bus shelters and a “run down” feel to bus stations may create a “broken window” feel on parts of the network
Policy 8 - Ensure that London’s transport is resilient to the impacts of severe weather and climate change	Carriageway and highway drainage – carriageway in poorer condition will deteriorate more rapidly in severe winter (freezing-thawing) conditions, and more highway flooding as there are no regular drainage renewals to deal with failed and substandard pipes
Policy 12 – Enhance London’s streets and public transport network so as to enable all Londoners, including disabled and older people, to travel spontaneously and independently, making the transport system navigable and accessible to all.	Carriageway, cycle routes and footways – as per impact on Policy 1 above, also, the reduced condition of the footway may become a barrier to some less able users as they require a higher State of Good Repair to support movement
Policy 13 - Transform the quality of bus services so that they offer faster, more reliable, accessible, comfortable and convenient travel by public transport	Traffic signals, bus stations, shelters and stops – reduced condition of traffic signals will lead to more outages which will impact bus reliability, and reduced condition of bus stations, shelters and stops will reduce the quality of the customer experience
Policy 15- Use of the full potential of the Thames to carry passengers, to integrate river services with the public transport system, walking and cycling networks.	River piers – a reduced programme of renewals may require piers to be restricted or taken out of use to maintain passenger safety. This can mean piers being out of service for extended periods if dry-docking is required to undertake the repairs.



## Maintaining assets in a State of Good Repair

- 3.10 State of Good Repair (SOGR) describes the condition in which TfL seeks to maintain assets in order to provide a safe and reliable network that minimises whole life costs and, where appropriate, meets customer expectations – each asset has a target SOGR range.
- 3.11 SOGR, where possible, is based on industry standard condition measures – however, these are not consistent across asset types, for example the standard that describes the condition of a bridge is very different to the condition survey for carriageways which in turn is different to the regime for street lighting columns. TfL has mapped these industry measures to a consistent five category scale of asset condition – the condition categories are Very Good, Good, Fair, Poor and Very Poor. The percentage of assets in these categories is used to calculate SOGR, namely:
- (a) SOGR – the sum of the percentages in the Very Good, Good and Fair categories. These assets, in general, do not require planned asset renewal in the next one to three years, although in some instances it does reduce whole life costs to intervene when an asset is in the Fair category.
  - (b) Not in a SOGR – the sum of the percentages in the Poor and Very Poor categories. Typically these assets should be considered for a renewal within the next one to three year period.
- 3.12 The target range differs by asset type, Table 3.2 provides some examples.

**Table 3.2: State of Good Repair ranges**

Asset	SOGR target range ( per cent)	Current SOGR ( per cent)
Carriageway	90 to 95	92
Footway	91 to 96	95
Bridges	88 to 92	85*
Street lighting	90 to 95	91

\*The bridge stock is safety managed; the SOGR is below the preferred range and reflects the need for renewals investment to deliver a reliable network and reduce the risk of restrictions and closures. Assets that may require restriction in the coming years due to deferred works include the Westway, Vauxhall Bridge and Lambeth Bridge.

- 3.13 Therefore, a carriageway SOGR of 92 means 92 per cent (or 534km) is not in need of renewal based on the latest condition data, however the remaining eight per cent (or 46km) should be considered for renewal. There is not an immediate safety concern or need for an urgent intervention, however based on an overall assessment of safety, reliability, whole life costs, customer satisfaction and future performance, these parts of the network should be considered and planned for renewal in the coming years.

3.14 Important points to note from Table 3.2 are:

- (a) None of the target ranges go up to 100 – the upper bounds of the target ranges are set using customer expectations (based on customer surveys) and whole life costs (constraining higher standards). Whole life costs analysis has shown that it is uneconomical and provides poor value for money to deliver a SOGR above the upper bounds of these ranges – and it should be added, that face-to-face surveys with customers have illustrated that they do not expect a “perfect” asset, and accept that from time to time repairs are required.
- (b) Starting position – TfL has, over the last 10 years, invested in a gradual improvement in asset condition to bring assets into the acceptable SOGR range. Table 3.2 shows that this has been achieved for carriageway, footway and street lighting, whereas further investment is required for bridges. This means the former assets have a reasonable starting position for a period of reduced investment, however it does present a challenge for bridges (and tunnels), and increases the risk of restrictions in the short term.

3.15 This approach provides a sound basis for monitoring, modelling and comparing condition across asset types. This allows past trends to be analysed and future condition to be modelled, reflecting the impact of a range of factors on asset condition, including investment scenarios, severe weather and alternative management strategies – where the latter includes alternative mixes of maintenance and renewal (preventative, planned and reactive).

3.16 Together, an effective regime of asset maintenance and renewal minimises whole life costs while maximising the benefits provided by the assets. The distinction between maintenance and renewal is:

- (a) Asset maintenance – the activities required to keep an existing asset in good condition, or working order, for example, repairing potholes, removing graffiti, replacing broken panels in bus shelters and fixing traffic signal faults. This is operating expenditure.
- (b) Asset renewal – interventions that lengthen the useful life of an asset, either by replacing it with a new one (typically like-for-like or modern equivalent) or through reconstruction or refurbishment, for example, resurfacing a road or replacing and modernising the signals at a junction. This is capital expenditure.

3.17 This paper seeks approval for the capital expenditure on asset renewals, however it is important to bear in mind that asset maintenance and renewals go hand-in-hand and changes to one directly influences the other. Additional asset operational expenditure is required to ensure safety, for example, enhanced inspection regimes and more defect repairs. Appendix 3 provides a more detailed description of the range of renewal activities delivered by the programme and why they are necessary.

## **Alignment and dependencies with Healthy Streets**

- 3.18 The relationship and difference between the Surface Assets Programme and the Healthy Streets Programme can be described as:
- (a) Healthy Streets – enhances existing benefits and provides new benefits to customers, for example Cycle Superhighways; and
  - (b) Surface Assets – protects and maintains benefits and prevents them from being eroded over time – for example, maintaining the condition and ride quality on Cycle Superhighways.
- 3.19 The links and dependencies between the programmes are well understood, in particular the role of the Surface Assets Programme to maintain benefits delivered by Healthy Streets. The following activities are undertaken to ensure good ongoing alignment between the programmes:
- (a) coordination – the timing and delivery of renewal projects are flexed, where appropriate, to provide better coordination with Healthy Streets; this may mean deferring or bringing forward renewals works to deliver them before, at the same time as or after Healthy Street projects;
  - (b) financial contributions – frequently a Healthy Streets project will result in the early replacement/renewal of an asset when compared to a risk based renewals intervention. However, the asset may have been showing some signs of degradation and, if appropriate, the Surface Assets Programme will make a financial contribution to the Healthy Streets project to reflect asset betterment; and
  - (c) whole life costs – to deliver the agreed benefits it may be necessary for Healthy Streets to implement higher quality materials, non-standard materials and/or provide a higher level of on-going service, for example Cycle Superhighways. These are identified in the Healthy Streets Business Case, and if deemed material, the Business Case must make an appropriate provision for on-going maintenance and renewal costs that are transferred to the Surface Assets Programme at project completion.

## **4 Delivery in 2017/18**

### **Summary**

- 4.1 The Programme achieved excellent delivery in 2017/18 both in terms of meeting, and in some cases exceeding, outcomes, while also delivering significant value engineering savings and deferring activities to respond to TfL's financial challenges. The Programme had an original approved budget of £186m against an actual outturn cost of £169m.

### **Delivery in 2017/18**

- 4.2 A summary of the programme outcomes and benefits for 2017/18 are shown in Table 4.1.

**Table 4.1: 2017/18 Outcome measures**

Outcome measures	2014/15 Actual	2015/16 Actual	2016/17 Actual	2017/18 Target	2017/18 Actual (Q3)
State of Good Repair (SOGR) of carriageway	91	91	91	90.0	92
Customer Satisfaction with carriageway condition	72	65	66	66	66
State of Good Repair of footway	93.1	93.5	94.0	93.0	95.0
Customer Satisfaction with footway condition	67	62	63	64	64
Availability of Traffic Signals	96.3	98.3	99.5	99.1	99.5
Customer satisfaction with Traffic Signal condition	79	73	73	73	72
Bus stations – Customer Satisfaction	87	87	88	78	80

- 4.3 Slower than predicted asset deterioration, in particular due to recent mild winters, coupled with a well targeted renewals programme delivered an improvement in both carriageway and footway State of Good Repair. Also, the Programme budget was reduced by circa £17m in order to contribute to TfL savings targets – this was comprised of project (value engineering) savings of circa £8m (against a target of £4m) and deferrals of circa £9m, delivered across a large number of projects within the Programme. Value engineering savings were achieved by reviewing the entire programme, in collaboration with the supply chain, and challenging all aspects of activities, from the utilisation of technology to the coordination of works to the removal of “nice to haves”.
- 4.4 The State of Good Repair of carriageways and footways remains within the acceptable range (90 to 94 per cent for carriageway and 92 to 96 per cent for footway) that was set through customer consultation and whole life costs analysis. Customer satisfaction with footway and carriageway condition has remained broadly constant, although it is important to bear in mind that:
- State of Good Repair is a lagging indicator, and is more a reflection of work undertaken in past years rather than the current year; and
  - State of Good Repair does not show the whole profile of asset condition, it shows those assets assessed to be in Very Poor (Red) condition; it does not show if there is a growing backlog of works in Poor (Amber), that will soon move into the Red category. The presentation of State of Good Repair data is being reviewed to determine if additional metrics should be presented to aid understanding of trends.

4.5 Key outputs for 2017/18 included:

- (a) opening new East Deck of the Ardeigh Green Bridge to traffic;
- (b) completion of main carriageway bridge demolition at Highbury Corner;
- (c) over 407,000 m<sup>2</sup> carriageway resurfacing;
- (d) over 19,000 m<sup>2</sup> footway repairs; and
- (e) completion of Greenwich Pier renewal scheme.

4.6 Table 4.2 provides a summary of the key programme outputs, including a comparison of the original and final allocations and outputs.

**Table 4.2: Original and final 2017/18 budgets and outputs**

Sub-programme	Original allocation (£k)	Final allocation (£k)	Original output	Final output	Commentary on variance
Carriageway	17,373	18,621	404,000m <sup>2</sup>	406,944m <sup>2</sup>	Increased costs on a number of schemes due to access and traffic management
Drainage	1,717	4,198	281,000m <sup>2</sup>	449,372m <sup>2</sup>	Additional major relief channel works at Yeading Brook
Footway	3,535	1,669	36,400m <sup>2</sup>	19,693m <sup>2</sup>	Deferred works to contribute to TfL savings
Lighting	4,490	4,992	900 columns	880	1451 LEDs installed
Structures	13,786	7,083	9 schemes	7 schemes	Works deferred and additional investigations required on complex structures
Tunnels	5,080	2,457	15 schemes	9 schemes	Works deferred to contribute to TfL savings
Traffic Signal Modernisation	14,141	12,847	180 sites	110 sites	650 sites retrofitted with energy efficient LEDs
Pump Stations	909	1,136	7 schemes	6	One scheme deferred and cost increases
Restraint Barriers	3,492	622	14,900m	968m	Works deferred pending further investigation
Bus Stations and Stands	5,555	3,709	12 schemes	13 schemes	Amended to deliver lower cost schemes
Bus Stops and Shelters	5,050	6,092	350 No.	351 No.	Accounting adjustment between 16/17 and 17/18
River Piers	1,414	2,242	1 scheme	1 scheme	Increased project costs due to additional defects
Highbury Corner Bridge	11,214	14,191	-	-	Accelerated work, reducing costs in 2018/19
Ardleigh Green Bridge	10,215	10,724	-	-	Work progressed to programme
Upper Holloway Road Bridge	1,992	1,276	-	-	Reduced risk
Power Road Bridge	8,207	7,580	-	-	Reduced risk
Woolwich Ferry	14,539	15,708	-	-	Increased costs brought forward
Borough roads	20,000	20,338	-	-	Minor adjustment to account for underspend on bridge strengthening programme
Borough bridges	5,900	5,652	-	-	
Other	37,006	27,351	-	-	Includes operations assets renewals
<b>Total</b>	<b>£185,616</b>	<b>£168,487</b>	-	-	

## 5 Asset investment strategy

### Funding context for asset renewals

- 5.1 London, as a global city, makes a significant contribution to the UK economy. It has around 12.5 per cent of the UK population and contributes around 22 per cent of UK GDP. This growth in productivity and opportunity is facilitated by the efficient movement of goods and people on the city's transport network, of which streets are a fundamental part.
- 5.2 To allow London to continue to grow and meet the future challenges to the UK economy it is essential that the transport network remains effective and efficient. A sustainable funding model for London's streets is a key component of maintaining London's status as a global city.
- 5.3 Prior to this year TfL had received Government funding for the maintenance of its highways which are, under the Highways Act 1980, maintainable at public expense. This year has seen the £700m operating grant from Government cease. Prior to the Spending Review in 2013 TfL received an operating grant from Government of just under £2bn.
- 5.4 To meet the financial challenge this has presented, we have delivered record efficiencies but this is not enough. TfL has also had to significantly reduce the programme of proactive road maintenance on both our roads and borough roads (70 per cent reduction in the short term). This creates significant financial pressures as TfL does not derive a revenue from the direct use of the TLRN.
- 5.5 Despite not receiving any public funding from Government for 2018/19 for the maintenance of the highways, TfL remains committed to achieving an operating surplus by 2021/22. This would make London the first major global city to do so without public funds.
- 5.6 In the short-term, funding changes associated with the proposed Major Roads Network could provide a route to financial support for London's roads, but to do so it will need to be set up in a way that works for London and other urban transport authorities.
- 5.7 Londoners pay in excess of £500m per year in Vehicle Excise Duty, which will be ring-fenced for investment in roads from 2021, but only funding for highways outside London has so far been confirmed.
- 5.8 TfL requires an effective and sustainable funding model for London's roads to ensure that London keeps moving; remains open to business and investment; and continues to bring significant benefits to the wider UK economy.
- 5.9 TfL will maintain the safety of the network while recognising the risk of major bridge and tunnel restrictions will increase due to the reduced renewals investment.

## Business Plan allocation for assets

5.10 The impact of the TfL financial challenges on the Programme budget is shown in Table 5.1. It shows the 2016 Business Plan figures presented to the Committee for approval in June 2017 and the 2017 Business Plan figures. Table 5.1 shows the change in the profile of renewals investment in 2018/19 and 2019/20 in this approval, which represents a 45 per cent reduction over the three year period and a 60 per cent reduction over 2018/19 and 2019/20 compared to the previous Business Plan.

**Table 5.1: Historic Spend on Surface Assets**

	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>	<b>Total</b>
<b>2016 Business Plan</b>	£186m	£173m	£189m	£548m
<b>2017 Business Plan</b>	£169m	£70m	£64m	£303m

5.11 Over the period 2010 to 2018, TfL sustained an appropriate level of renewals investment in assets. Investment of £170m - £180m per annum allowed a steady state renewals investment strategy that maintained a safe and reliable network, while also refurbishing a number of bus stations and river piers and removing major renewal backlogs (such as Woolwich Ferry, Hammersmith Flyover, Ardleigh Green Bridge and Highbury Corner Bridge). This strategy also minimised whole life costs.

5.12 Analysis of the asset base has indicated that as a consequence of TfL's historic investment, a two year reduction in proactive renewals can be managed safely, while accepting impacts on customer satisfaction, increased whole life costs (circa 5 to 10 per cent) and an increased risk of asset restrictions and closures to maintain safe network operation. Restrictions may be necessary on some major assets within the next five years due to the deferral of works; these include Vauxhall Bridge, the Westway and Rotherhithe Tunnel (over 20 bridges have special inspections and monitoring in place to ensure appropriate steps are taken, including possible restrictions, if changes occur). Continuation of the reduction beyond 2019/20 is very likely to result in greater impacts and maintaining network safety will require asset restrictions and closures, resulting in significant network disruption.

## Asset strategy and prioritising asset renewals

5.13 Well established asset management practices (shown schematically in Appendix 2) are used to set asset strategies and prioritise asset renewals. The strategy for the past ten years has been to provide safe and reliable assets while improving customer experience and delivering good value for money. Renewals have been prioritised by assessing and comparing risks in terms of:

- (a) safety – assessing the impact the asset condition/performance has on customer and worker safety;
- (b) function – assessing the impact the asset condition/performance has on availability, accessibility, customer satisfaction and load carrying capacity; and



- (c) environment – will doing/not doing the renewals have a positive or negative impact on the environment, for example, traffic delays and diversions, tree planting, and energy efficient lights.
- 5.14 The value (or benefit) of the risk mitigation is assessed against the cost of doing the intervention – the initial capital costs and the whole life costs. The interventions that provide the best risk reduction (and best value) receive the highest priority in the programme.
- 5.15 The short term funding constraints mean an amended strategy for the assets programme is required – while still using the aforementioned principles to prioritise where appropriate. The strategy is comprised of:
- (a) maintain safety – ensure appropriate asset management practices (inspections, assessments, staff competency, essential renewals etc.) are in place to maintain a safe network and allocate the renewals budget on a reactive safety critical basis;
  - (b) protect bus revenue – prioritise investment in assets that protect bus patronage and revenue, including bus stops and shelters, bus stations and traffic signals (to protect bus speeds and bus priority);
  - (c) immediately reduce operating costs – consideration will be given to allocating renewals budget where it will immediately offset operating budget pressures, e.g. recurring asset failures/faults; and
  - (d) MTS priorities – when comparing competing safety needs, consideration will be given to those that also contribute to MTS outcomes, for example, those which provide greater benefits to pedestrians, cyclists and public transport will be given a higher priority.
- 5.16 The asset management practices described in Appendix 2 will continue under the new funding arrangements, with appropriate changes made to account for reduced asset renewals, for example enhanced inspection regimes. Asset strategies are currently being updated to define triggers for when practices need to be reviewed/amended for each asset type.
- 5.17 The implications of any issues identified through asset inspections and surveys will be assessed on a case-by-case basis using the criteria set out in paragraph. 5.15 (safety, bus revenue, reduced costs and MTS priorities). A reduced level of renewals funding means that it will not be possible to implement a renewal in all instances. Where a safety risk has materialised the mitigation options that will be considered are:
- (a) make safe though operational maintenance – increase asset operational activities and expenditure (e.g. inspections, minor repairs, monitoring) to maintain an appropriate level of safety;
  - (b) asset renewal – renew the asset if it is affordable within the available budget, and is considered necessary (where this represents a significant proportion of the renewals budget care will be required as it may limit budget available to address future concerns);
  - (c) asset restrictions – place temporary restrictions on the asset, e.g. width, height, weight, close to certain users; and
  - (d) asset closure – fully close the asset to use.

- 5.18 The process for assessing and prioritising reactive renewals, referred to as the Minor Capital Interventions (MCIs), has been reviewed and updated to reflect the above.
- 5.19 The governance arrangements under option (b) in paragraph. 5.17 (asset renewal) will be: works under £500k will be considered by the Head of Asset Investment/Asset Managers, works between £500k and £2m will be considered by the Asset Programme Board, and works over £2m will be escalated to the Surface Transport Investment Board for consideration.

### Major renewal projects

- 5.20 Major renewal projects typically involve works like bridge and tunnel refurbishment and recently the Woolwich Ferry. The Programme takes a long term view (10 years plus) to prioritise and plan major asset renewal works of this sort. This smooths the investment profile and avoids peaks and troughs in expenditure. These projects are typically in the region of £25m to £100m each, for example Hammersmith Flyover.
- 5.21 The top priorities for major renewals investment (in current priority order), their current authority and their estimated renewal costs are shown in Table 5.2.

**Table 5.2: Major renewal projects**

	<b>Current project authority £m</b>	<b>Estimated renewal costs* £m</b>
Vauxhall	3	40 – 75
Rotherhithe Tunnel	3	60 – 120
Westway	12	150 - 350
Blackwall Tunnel	3	35 – 60
Brent Cross	5	60 – 90
Lambeth	3	25 – 50
<b>Total</b>	<b>29</b>	<b>370 - 745</b>

\* cost variations are due to the potential options, scope of work and the use of different traffic management options, e.g. extended closures vs. nightly/weekend closures.

- 5.22 Detailed investigations and feasibility studies have either been completed or, in the case of Rotherhithe and Blackwall tunnels, are in the process of being finalised. The current Business Plan allocations do not enable full renewal projects to be progressed for these assets at this time. Therefore, a review of the ‘do minimum’ interventions is currently underway to ensure that the assets are safe.
- 5.23 A series of workshops are being held with representatives from across TfL to agree the inspections, monitoring and mitigations that must be implemented in the short term for all these assets. This will include the development and implementation of Emergency Preparedness Plans that set out the actions that will be taken (e.g. restrictions or closures) should a condition or performance trigger be breached. This replicates the approach that was adopted for Hammersmith Flyover.

5.24 The deferral of these projects increases the risk of asset restrictions, and potentially closures, in the next five years in order to maintain a safe network. For example, further deterioration of bridge components may require load restrictions to be imposed, or increasing faults on ageing tunnel equipment may necessitate short term closures for repairs or restrictions to reduce traffic volumes.

## **6 Proposal**

### **Preferred Option**

- 6.1 The preferred option is to deliver the programme detailed in Table 6.1. This will include a managed reduction of State of Good Repair, adopting a reactive strategy to asset renewals and completing contractually committed works that are on site, e.g. Woolwich Ferry and Ardleigh Green Bridge. A proportion of the 2018/19 and 2019/20 budget will be held as a reactive risk budget for MCIs; see first row of Table 6.1. MCIs are renewal works that arise during the year and are reviewed on a case-by-case basis; a renewal is implemented if the work is approved via the process described in Section 5.
- 6.2 A proportion will be allocated to planned works on bus infrastructure and traffic signals in order to protect bus revenue.
- 6.3 The first row of Table 6.1 details the allocation of the budget in 2018/19 and 2019/20. The reactive risk allocation for MCI in 2018/19 is circa £8m from a budget of £70m; circa £50m of the 2018/19 budget is contractually committed (including completion of on-site capital renewal projects, major bridge renewals, Woolwich Ferry, Victoria Coach Station, a proposed New Coach Terminal for London and third party projects) and a further £10m is allocated to borough roads and bridges. The reactive risk allocation for MCI increases to £20m in 2019/20 as the volume of contractually committed works reduces.
- 6.4 Circa £12m will be allocated in 2019/20 to protect bus revenue. The programme will be developed over the coming months. The recommended allocations and outputs for bus shelters, bus stations and traffic signals will be presented to the Asset Programme Board for review and approval by the relevant officer.
- 6.5 This strategy will increase the risk of asset restrictions and closures, increase whole life costs, reduce asset State of Good Repair and result in reduced levels of customer satisfaction.

### **Alternative options considered**

- 6.6 Alternative options considered for prioritising the budget were:
- (a) reactive strategy (preferred);
  - (b) plan and deliver based on highest priority – allocate all non-committed budget to the highest priority projects and proceed with delivery, leaving no budget (risk allocation for MCI) to deal with issues that arise in-year. This option is not recommended because there would be no ability to deal with asset issues/risks that arise in year; and

- (c) Stop/defer committed works, e.g. major bridge renewals and Woolwich Ferry and hold funds for risks that arise in year. Works are contractually committed and on-site (most well over 50 per cent complete). There would be abortive costs and compensation events, plus increased project costs due to elongated programmes and de/remobilisation. This option is not recommended based on poor financial value.

**Table 6.1: Assets Programme – Constituent projects and programme and Project Authority requested from PIC**

Activity	Description	Financial Authority £m	Cumulative Authority Request £m			
			17/18	18/19	19/20	Total
Asset Capital Renewals Programme	Programme of renewals – maintain a safe network (risk allocation for Minor Capital Interventions, MCI) and support bus income. The risk allocations for MCI are: <ul style="list-style-type: none"> <li>2018/19 - £8m for MCI and £6m for committed works</li> <li>2019/20 - £20m for MCI and £12m to support bus revenue</li> </ul>	282	80	14	32	125
Borough roads and bridges	Carriageway renewals on the Borough Principal Road Network (BPRN) and borough bridge strengthening	106	26	10	10	46
Major Asset Renewals	A programme of major renewals works to address high priority risks. On-going committed works include; Ardleigh Green, Upper Holloway Road, Highbury Corner and Power Road. The next set of assets include Rotherhithe and Blackwall tunnels, the Westway, Vauxhall Bridge and Lambeth Bridge.	176	37	19	15	72
River schemes	Includes the life extension of Woolwich Ferry through the provision of new vessels and berths, Embankment Pier extension to support the growth of river services - Bankside and Westminster Pier are complete.	29	16	16	0	32
Coaches	Includes the development of proposals and feasibility works for new coach facilities and works to maintain the existing Victoria Coach Station	20	4	6	4	13
Over programming and value engineering	All projects are tasked with achieving Value Engineering savings and these are all being reinvested in the portfolio	(6)	-*	-	-	-
Third party projects	Authority to enable TfL to work with developers to safeguard and enable infrastructure improvements as part of their developments; also supports TfL Commercial Development to generate revenue and benefits	26	6	5	4	15
<b>Total</b>		<b>634</b>	<b>169</b>	<b>70</b>	<b>64</b>	<b>303</b>

\* £8m of Value Engineering and £9m of deferrals delivered across a large number of projects within the portfolio as shown in outturn

## Benefits and Value

- 6.7 The asset strategy for the last ten years has seen a gradual and well planned improvement in asset condition based on a “steady state” of renewals investment. This means the assets are in a good “starting position” for entering a period of reduced funding and is a key factor in why a short term reduction in asset renewals is manageable. However, the short term reduction in renewals and corresponding reduction in asset condition will have a number of impacts, including:
- (a) a decline in the SOGR;
  - (b) increased number of defects requiring minor repairs and interventions placing more pressure on asset operational budgets;
  - (c) increased risk of asset restrictions and closures to maintain safety;
  - (d) increased risk of assets being a contributory factor in accidents and injuries (e.g. foot way falls);
  - (e) reduced customer satisfaction due to declining asset condition, in particular this is expected to impact cyclists and pedestrians (which means a potential negative impact on Healthy Streets because of the impact of asset condition on active travel); and
  - (f) increased whole life costs of between five and ten per cent.
- 6.8 The predicted SOGR for some asset groups is shown in Table 6.2. The changes in SOGR are relatively low over the two year period of reduced investment. The following is a description of what the change in carriageway SOGR means:
- (a) a one per cent drop in carriageway SOGR equates to 6km (one per cent) or road moving into Poor/Very Poor condition;
  - (b) those sections categorised as being in a SOGR will also reduce in condition, but remain within the overall SOGR categories of Very Good, Good and Fair;
  - (c) the reduction in condition, along with no planned renewals in 2018/19, means a predicted increase in the number of defects (e.g. potholes, minor cracks) across the whole road network of circa 10 per cent per – defects increase disproportionately as carriageway and footway condition decline; and
  - (d) this will mean around 2,000 more defects requiring minor interventions compared to a year when a full renewals programme is planned (renewals removes the need to undertake minor interventions) - there are typically around 20,000 reported defects a year.
- 6.9 The table shows the additional impact that severe winters can have on the road network. Based on experience from 2009 and 2010 (the last severe winters in London), an additional £5m to £10m of carriageway repairs were required to rectify the damaged caused.

**Table 6.2: Predicted State of Good Repair**

State of Good Repair		2016/17	2017/18	2018/19	2019/20
Carriageway	Mild winters	91	92	91	90
	Severe winters			90	88
Footway		94	95	94	93
Structures		83	85	84	83
Traffic Signals (availability)		99.5	99.5	99.1	99.1

- 6.10 As well as increasing the likelihood of defects forming, the reduction in the condition of the assets will also have an impact on the overall impression given by the state of London's surface transport assets, e.g. visual appearance, multiple defects repaired in the same location, restriction or removal of assets from operational use.
- 6.11 The declining condition of bridges and tunnels, and the deferral of major works on assets like Vauxhall Bridge, Westway and Rotherhithe Tunnel, increased the risk of restrictions and closures. These are likely to start with the restriction of abnormal loads, then HGVs, extended to buses and other motorised vehicles if the condition reduces further. The immediate highest risk of restriction is Vauxhall Bridge which is currently undergoing its latest load assessment, the findings are due later this year and will be acted upon accordingly.

## 7 Management case

### Assets Programme Oversight

- 7.1 The oversight structure for the Programme includes a well defined hierarchy of boards (covering projects and sub-asset programmes) with consistent terms of reference, clear accountabilities and authorities, and coordinated meeting cycles. These boards monitor and review delivery progress and either take or escalate decisions (for example on costs, risks, milestones, priorities and policies) as defined in their terms of reference. The overarching Assets Programme Board has additional responsibilities which include:
- (a) considering the allocation of the programme budget between projects and sub-asset programmes using the asset planning and prioritisation information;
  - (b) providing strategic direction on asset policies and strategies and ensuring they align with Mayoral strategies and TfL priorities;
  - (c) considering the release of Programme and Project Authority, granted by the Programmes and Investment Committee, for individual projects within the Programme;
  - (d) reviewing project progress by exception (based on agreed parameters);
  - (e) reviewing escalated delivery risks;
  - (f) considering escalated change requests (based on agreed thresholds and decision rules); and
  - (g) considering appropriate risk drawdown.

In each case, any approvals are given by the relevant officer, considering the submissions to and views of, the board.

7.2 Members of the Assets Programme Board include the Surface Transport Directors of Strategy and Network Development, Network Management, Projects and Programme Delivery, as well as representatives from City Planning, Engineering, Legal and Finance. The board will provide quarterly delivery progress reports to the Committee that will include:

- (a) Project Assurance and IIPAG commentary;
- (b) commentary on asset risks and network safety;
- (c) any significant changes (for example in scope, milestones or cost) and associated authority requests relating to the projects and sub-asset programmes; and
- (d) when individual projects require decisions on procurement, for example, contract award.

### **Impact on Operations**

7.3 The reduction in investment in asset renewals will have two primary impacts on operations:

- (e) increased financial pressure on Asset Operational budgets– the additional defects, inspections and interim measures required by asset operations due to the reduction in asset renewals will place considerable pressure on existing budgets. Separately, recommendations have been made on which areas of the Asset Operations budgets need to be reviewed and potentially increased to deal with these pressures, including defect repairs and bridge interim measures; and
- (f) asset restrictions and closures – the implementation of asset restrictions and closures to maintain safety has the potential to have a major impact on network operations. The emergency preparedness plans that are being developed for major bridge and tunnel assets will assess the network impact of restrictions and closures and this will help inform decisions on the appropriate mitigations to adopt.

7.4 Adopting a reactive strategy will reduce the opportunity for consultation on proposed works with neighbouring highway authorities. This may increase the likelihood that an emergency repair or restriction is required on the TLRN whilst a neighbouring authority has works planned. TfL will continue to consult regularly with its neighbouring authorities to mitigate the effects of any potential clashes of works.



## Programme risks

7.5 The top risks associated with the Programme are shown below.

**Table 7.1: Top risks from Surface Assets Programme**

Risk No	Risk Description	Mitigation Actions
1	Increased risk to safety	<ul style="list-style-type: none"> <li>• Inspections regimes are being maintained and enhanced where necessary</li> <li>• Defect intervention levels and response times are being maintained</li> <li>• Safety critical budgets (Asset Operations) have been protected to a degree by making larger reductions to asset renewals</li> <li>• Restrict/close assets to maintain safety</li> <li>• Defects and incident trends will be monitored and appropriate actions taken</li> <li>• There is an increasing risk profile which is being managed in line with industry best practice and Health and Safety Executive 'As Low As Reasonably Possible' principles</li> </ul>
2	Increased risk to network reliability	<ul style="list-style-type: none"> <li>• Emergency preparedness plans being developed to help plan/mitigate impacts – and as a minimum, inform where constrained resources will deliver the best benefits</li> <li>• Accepted that here is an increasing risk to network reliability</li> <li>• Priority given to higher usage bus routes</li> </ul>
3	Customer satisfaction	<ul style="list-style-type: none"> <li>• Standard lines of response developed to help explain to customers why TfL has adopted this short term strategy</li> <li>• Customer correspondence trends being monitored to help inform decisions</li> <li>• Accept a reduction in customer satisfaction</li> </ul>
4	Increased whole life costs	Accepted that the short term strategy for the programme will result in higher whole life costs
5	Supply chain performance and sustainability	Close working with contractors to understand their pressures and help mitigate the impact of reduced capital investment

7.6 Previously the Programme did not include a risk allowance. It has typically been comprised of over 100's of schemes that, experience has shown, enable risk to be managed across the Programme. However, the reduced 2018/19 and 2019/20 budget changes the make-up of the Programme and as a consequence a re-active risk budget for MCI will be held (circa £8m in 2018/19 and £20m in 2019/20). This will be allocated as described in Section 5.

## Programme milestones

7.7 The programme milestones are shown in Table 7.2. Additional milestones for 2019/20 are currently being set.

**Table 7.2: Programme Milestones**

Project	Milestone	Budget	Project	Target Date	Actual Date
Highbury Corner Bridge	Construction Complete	P	P	31-Aug-18	17-Aug-18
Ardleigh Green Bridge	West Bridge Deck Demolition Complete		P	24-Jul-18	29-May-18
	Start West Bridge Deck Launch		P	11-Nov-18	
Healthy Streets Local Schemes	75 per cent of the top 15 to be Substantially Completed		P	31-Mar-19	
Power Road Bridge	Complete concrete pour of deck east		P	31-Aug-18	04-Jun-18
	Open 4 Lanes to Traffic		P	11-Jan-19	
Woolwich Ferry Life extension Phase 2	Woolwich ferry - Boats arrive at Woolwich		P	03-Dec-18	
	Woolwich Ferry - Reopen Ferry		P	28-Jan-19	
Bus Priority TRLN	Construction complete for 70 per cent of London Bus Priority schemes delivered via PPD		P	31-Mar-19	
New Coach Terminal for London Victoria Coach Station Roof & Canopy	Primary Hub Gate 2 Approval		P	22-Feb-19	
	Completion of Roof & Canopy Works on Site		P	25-Jun-18	15-Jun-18

## 8 Financial Implications

8.1 A summary of the proposed Budget for 2018/19 is show in table 9.1. Appendix 10 summarises the approaches to cost estimating and risk allocation.

**Table 8.1: Summary of the costs and funding**

Assets Portfolio		Actuals	Budget*	2017 Business Plan			Total
Rounded to £m		17/18	18/19	19/20	20/21	21/22	
Portfolio Total		169	70	64	133	195	<b>631</b>
Budget or Plan	TfL element	157	66	61	130	191	<b>605</b>
	Third party funding	12	3	3	3	3	<b>26</b>
2017/18	PIC Approved	179		-	-	-	<b>179</b>
	Not Approved	- 10		-	-	-	<b>- 10</b>
2018/19	PIC Approved		173	-	-	-	<b>173</b>
	Not Approved		- 103	-	-	-	<b>- 103</b>
2019/20	Additional approval			64	-	-	<b>64</b>
Progr and Proj Auth	<b>PIC approved</b>	179	173	-	-	-	<b>352</b>
	<b>Additional authority requested</b>	- 10	- 103	64			<b>- 49</b>
<b>Total Progr and Proj Auth</b>	<b>This request</b>	<b>169</b>	<b>70</b>	<b>64</b>	<b>-</b>	<b>-</b>	<b>303</b>
<b>Future Authority Requests</b>			<b>-</b>	<b>-</b>	<b>133</b>	<b>195</b>	<b>328</b>

\* incl. c. £3.m from projects reprofiled from 17/18 into 18/19

## 9 Health and safety

- 9.1 The safety of our customers remains our top priority. The asset management practices in place, and their ongoing review, will ensure we continue to provide safe assets.
- 9.2 Adopting a reactive strategy for maintenance may have a detrimental impact on road worker safety. This is due to increasing number of emergency repairs being carried out under emergency traffic management, rather than under planned schemes with traffic management fully in accordance with industry practice (Chapter 8 of the Traffic Signs Manual).
- 9.3 The potential increased risk to road worker safety will be closely monitored and, where considered appropriate, emergency repairs will be undertaken using full asset closures to ensure safety of road workers and road users. This will have a consequential effect on journey time reliability.

## 10 Equality and inclusion

- 10.1 TfL has an obligation under the Equality Act 2010 not to discriminate, either directly or indirectly, against those with the protected characteristics listed in the Act. An Equality Impact Assessment has been undertaken for the Programme with the focus on the impact that the two year reduction will have.

- 10.2 The majority of the Programme is like-for-like renewals and, as such, maintains the existing provisions. However, the assessment indicates that a lower SOGR may have a negative impact on two groups: older and disabled customers. It is accepted that the number of minor defects (e.g. potholes, rocking slabs) will increase on the network. This will be managed and mitigated by retaining existing defect intervention standards and response times; however the increased number of defects/repairs on the network may have a negative impact.
- 10.3 The impact will be monitored by reviewing and analysing customer correspondence, looking for specific trends that indicate an abnormal impact on these groups.
- 10.4 All works that are undertaken are designed to minimise disruption to mobility impaired and visually impaired users, this includes:
- (a) access ramps where the footpath cannot be used to assist mobility impaired users change levels;
  - (b) phasing works so most disruptive works are completed at night - where safe, practicable and permitted;
  - (c) checking that alternative pedestrian routes are fully accessible; and
  - (d) using gatemen on sites to ensure no-one encroaches into the worksite, or to escort residents (including visually impaired) to their property through a worksite where this cannot be avoided – for example, a scheme on Kennington Park Road used gatemen for a number of reasons including a mobility impaired resident who required assistance.

## **11 Assurance**

- 11.1 TfL Project Assurance conducted an Integrated Assurance Review (IAR) on the Programme in August 2018.
- 11.2 The objective of the IAR is to assess the Programme's readiness to deliver its outcomes. The IAR followed nine lines of inquiry to answer the challenge of "Is the Programme sufficiently well managed for the Programme and Investment Committee to award authority (and delegated authority where appropriate)?" There were no critical issues identified through the IAR.
- 11.3 There were seven recommendations by the IAR, five by IIPAG and no critical issues identified through the review. One recommendation (IIPAG), regarding Business Planning and links to external funding, was not accepted; an explanation is provided in the Management Response.
- 11.4 An agreed Integrated Assurance Plan (IAP) for the Programme, covering the next 12 months, has been produced under the Programme Review. The IAP sets out those projects within the Programme that are expected to be reviewed in the next 12 months. The IAP will be reviewed and updated quarterly.

**List of appendices to this paper:**

Appendix 1: Transport for London Assets

Appendix 2: Asset renewal activities

Appendix 3: Asset Management System

Appendix 4: Costs estimation and risk

**List of Background papers:**

IIPAG and TfL Project Assurance Reports

Management response to IIPAG and TfL Project Assurance Reports

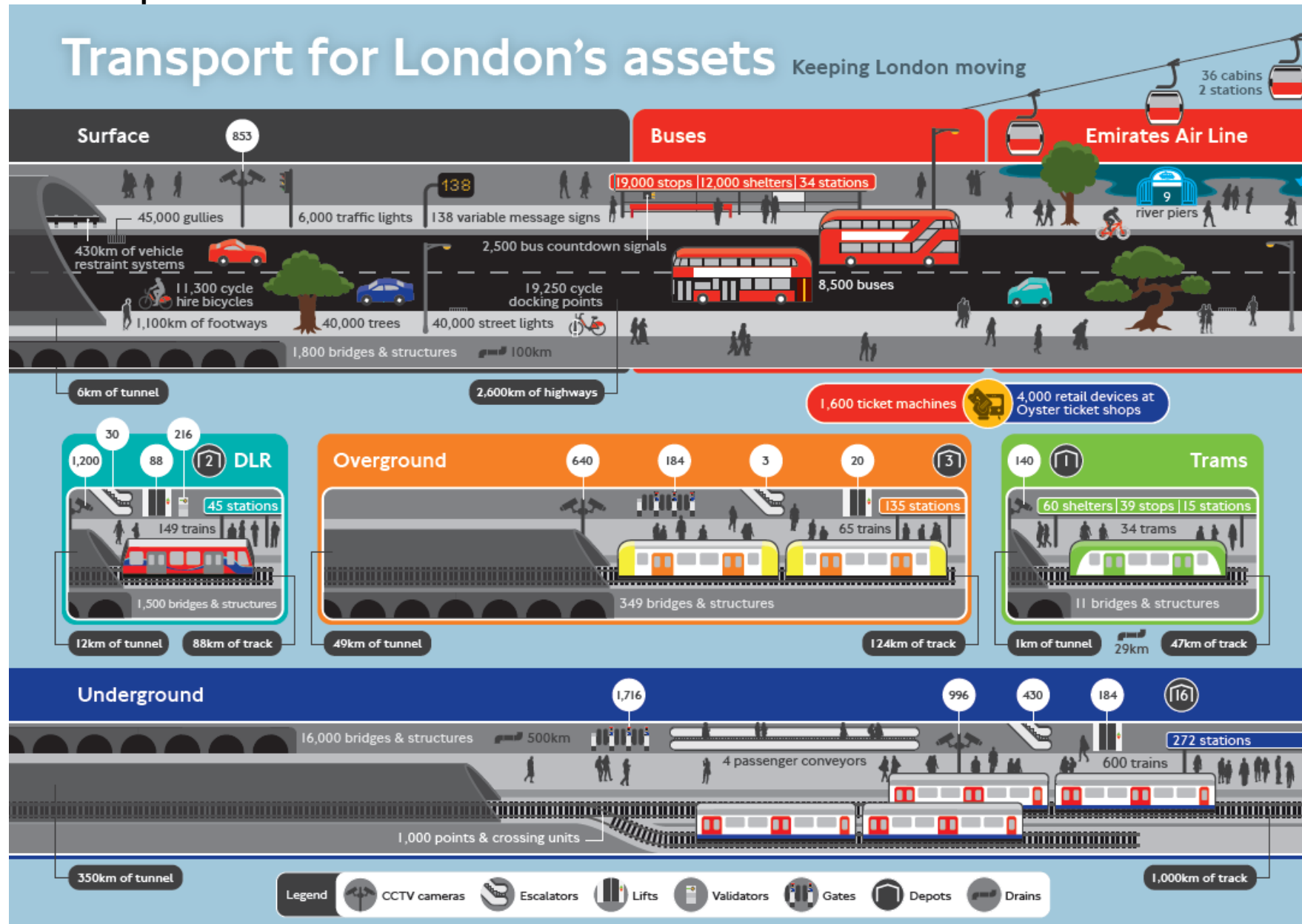
Well-Managed Highway Infrastructure

Traffic Signs Manual

Contact Officer: Gareth Powell, Managing Director Surface Transport  
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# Appendix 1: Transport for London Assets



Asset	Quantity	Definition
Carriageway	580 km	The part of the highway primarily used by vehicular traffic and cyclists, except where the latter are restricted from use, for example, on high speed routes.
Footways	1,422 km	Those parts of the highway used by pedestrians and/or cyclists – a shared use footway is for cyclists and pedestrians and will be clearly signed.
Traffic signals	Over 6,000 (pan London)	Electrical equipment placed at interchanges (including pedestrian crossings, crossroads and large roundabouts) to manage the interaction between pedestrians and traffic.
Bridges and structures	Approximately 1,800	Any bridge or other structure within the footprint of the highway or that materially affects the support of the highway or land immediately adjacent to it.
Bus shelters	12,000 (pan London)	Small structures, typically on footway, that provide shelter for waiting bus passengers and information on local buses.
Bus stations	34 major stations	Stations dedicated to managing the boarding and alighting of buses. These may also include staff facilities, information and sales hubs, waiting areas and retail outlets.
Drainage gullies	Over 45,000	A system of gullies, drains and pumping stations that capture and transport water away from the carriageway and footway.
Street lighting	Over 40,000	Lighting specifically provided to illuminate the highway, the most common form being lamp posts, but also includes lighting attached to buildings, subway lighting and tunnel lighting.
Green estate	40,000 trees & over 700 acres of grass, woodland & verges	Trees, hedges, shrubs, grassed areas and verges associated with the red routes.
Vehicle restraint systems	430 km	Installed on a road to provide a level of containment for an errant vehicle.



Asset	Quantity	Definition
River piers	9	River piers dedicated to managing the boarding and alighting of river boats. These may also include staff facilities, information and waiting areas.
CCTV	853	Used across the network to monitor traffic and support network management.
Road tunnels	12	An enclosed length of 150 metres or more through which a road passes.
Boroughs	Roads and bridges	Through LIPs we fund Borough Principal Road resurfacing (over 1000km) and bridge strengthening, e.g. Hammersmith Bridge.



## Appendix 2: Asset renewal activities

Asset type	Renewal Activity	Reason for renewal
Carriageway	Removal of surface layers, and if required sub-layers, and replacing them with new materials. This may also include repairs to carriageway drainage and ironwork.	<p>Deteriorated and defective surface layers that are causing one or more of the following impacts:</p> <ul style="list-style-type: none"> <li>• safety concerns, e.g. due to low skid resistance;</li> <li>• increase in third party claims due to property damage;</li> <li>• poor ride quality for cyclists and motorists due to potholes, cracks and rutting;</li> <li>• water ponding on carriageway impacting on pedestrians and cyclists; and</li> <li>• increasing whole life costs as more minor defect repairs are required and sub-surface layers become damaged if surface layers are not renewed at the optimum time.</li> </ul>
Traffic signals	Replace all or part of the signals, poles, cabling and controllers at a junction or crossing	<p>Deteriorated and defective signals that are causing one or more of the following impacts:</p> <ul style="list-style-type: none"> <li>• safety concerns, e.g. due to a high frequency of failures, or deteriorated signal poles;</li> <li>• increased times to repair failures due to obsolete equipment; and</li> <li>• associated network disruption.</li> </ul>
Drainage	Investigation and initial clearance of drainage systems and relining or excavation and replacement of structurally unsound sub-surface piping.	<p>Deteriorated and defective drainage systems cause one or more of the following impacts:</p> <ul style="list-style-type: none"> <li>• safety concerns due to presence of flooding on the highway;</li> <li>• where flooding occurs the network capacity is reduced;</li> <li>• pollution risk to environment where highway runoff is not diverted to appropriate waste systems and contaminates surrounding areas; and</li> <li>• reduce TfL's ability to deliver sustainable drainage systems in line with sustainable drainage guidance.</li> </ul>

Asset type	Renewal Activity	Reason for renewal
Footway	Removal of defective slabs or surfacing material. Slabs are either cleaned and reset or new slabs or surfacing material installed. This may also include decluttering and accessibility works.	Footways damaged due to vehicle overruns, tree roots, and deteriorated due to ageing and weathering cause one or more of the following impacts: <ul style="list-style-type: none"> <li>• safety issues due to tripping hazards and rocking slabs;</li> <li>• increase in third party claims due to personal injury;</li> <li>• poor ride quality for cyclists (shared use cycle tracks) and people using mobility devices;</li> <li>• water ponding on the footway; and</li> <li>• increasing whole life costs as more minor defect repairs are required.</li> </ul>
Furniture	Review and subsequent (if applicable) removal/installation of Pedestrian Guard Rail (PGR) and Street Furniture	PGR is reviewed against specific standards to assess the impact its presence has on safety and pedestrian movement
Landscaping	Removal and replanting of trees	Trees removed due to age, damage, disease or structural concerns. New trees planted to meet agreed targets.
Street Lighting	Remove structurally defective lighting columns and replace with new. Conventional high intensity discharge luminaires (or defective lamp assets) are replaced with energy efficient LED units	Deteriorated and structurally unsound columns cause the following impacts: <ul style="list-style-type: none"> <li>• safety concerns, e.g. due to potential of collapse;</li> <li>• poor public perception where units are removed and affected area is no longer illuminated; and</li> <li>• increasing whole life costs as more reactive repairs are required to make units safe.</li> </ul> Utilising LEDs reduces the following operational costs: <ul style="list-style-type: none"> <li>• energy consumption and associated costs are up to 35 per cent less; and</li> <li>• bulk lamp changing is reduced from a frequency of an average of once every 3 years to once every 15 years.</li> </ul> Also, there is reduced disruption to the network due to less operational activity on the highway
Vehicle Restraint	Replace structurally defective barriers with new or permanent removal where it is no longer	Deteriorated and defective barriers cause one or more of the following impacts: <ul style="list-style-type: none"> <li>• safety concerns, e.g. asset failure during vehicular impact;</li> </ul>

Asset type	Renewal Activity	Reason for renewal
Systems	required	<ul style="list-style-type: none"> <li>• increasing whole life costs as more minor defect repairs are required; and</li> <li>• associated network disruption.</li> </ul> <p>Where a barrier is reviewed and deemed to be no longer be required through the road restraint risk assessment process (RRRAP), its removal reduces ongoing lifecycle costs.</p>
Structures	Repair and maintain all the different types of elements, components and materials on bridges and structures	<p>Deteriorated structural elements increase the following risks to the road network:</p> <ul style="list-style-type: none"> <li>• safety – element failures may cause injuries to road users and/or pedestrians in the vicinity of the structure;</li> <li>• network disruptions and delays due to element failures and/or restrictions to safeguard road users; and</li> <li>• increased future maintenance costs and increased disruption to road users if repairs are not carried out at the optimum time.</li> </ul>
Tunnels	<p>Replacing mechanical, electrical or communications and control equipment like-for-like or with a modern equivalent (e.g. lighting upgraded to LED), or, installation of new equipment that improves tunnel safety, resilience and whole life cost.</p> <p>Asset examples: CCTV, incident detection, tunnel lighting, drainage equipment, fire and safety equipment.</p>	<p>Deteriorated and defective mechanical, electrical or communications and control equipment that cause one or more of the following impacts:</p> <ul style="list-style-type: none"> <li>• safety concerns, e.g. potential asset failure that could impact on road user safety;</li> <li>• reduced tunnel availability - the Minimum Operating Requirements (MOR) define thresholds of acceptable equipment performance for the operation of each tunnel;</li> <li>• environmental concerns, e.g. pollution risk; and</li> <li>• increasing whole life costs as more defect/fault repairs are required.</li> </ul> <p>Other examples could include:</p> <ul style="list-style-type: none"> <li>• utilising technology to reduce the operational/maintenance costs, e.g. LED; and</li> <li>• installing new equipment that detects incidents, improves safety, reduces tunnel closure time and disruption.</li> </ul>
Bus garages	Repair to structural building elements or associated civil asset areas which are under lease to operators	Works are carried out in order to satisfy our duties as landlords. These are generally undertaken between leases.

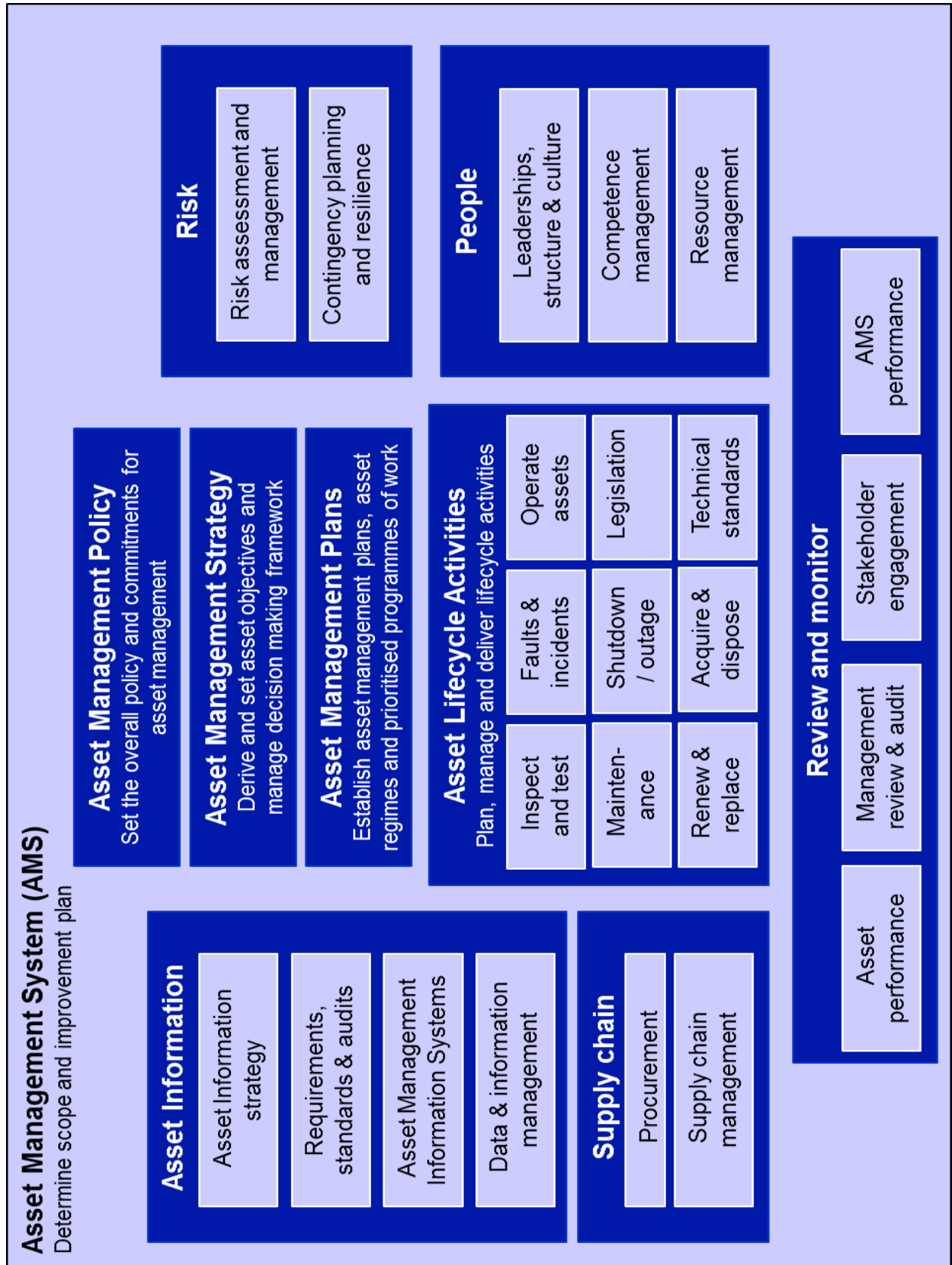
Asset type	Renewal Activity	Reason for renewal
Vehicle Message Signs (VMS)	Replace all or part of the sign, pole, cabling and controller of a Overheight Vehicle Detector or Variable Message Sign	<p>Deteriorated and defective message signs cause one or more of the following impacts:</p> <ul style="list-style-type: none"> <li>• safety concerns, e.g. asset failure;</li> <li>• inability to rely on an asset to function when required; and</li> <li>• associated network disruption.</li> </ul>
Pump Stations	Replacing mechanical or electrical equipment such as pumps, pipes, valves, power supply, or, installation of new equipment that improves pump station safety, resilience, whole life cost, such as standby pumps and telemetry.	<p>Deteriorated and defective mechanical and electrical equipment that are causing one or more of the following impacts:</p> <ul style="list-style-type: none"> <li>• safety concerns, e.g. due to flooding on the network;</li> <li>• associated network disruption; and</li> <li>• increasing whole life costs as more defect/fault repairs are required.</li> </ul>
Bus stations and stands	<p>Partial or full renovation of buildings, including mechanical and electrical equipment, building fabric, commercial, public and staff areas, as well as structural elements.</p> <p>Resurfacing of bus standing areas, relaying of pedestrian footways and/or associated civils works, e.g. drainage or lighting.</p>	<p>There are a number of potential triggers for undertaking bus station renewals or upgrades:</p> <ul style="list-style-type: none"> <li>• poor condition of buildings or civil assets which either pose safety hazards or risk the function of the site for the bus network;</li> <li>• expensive maintenance activity to keep site open and safe;</li> <li>• changes to the function of the bus network, e.g. additional standing required;</li> <li>• changes to passenger use of the site;</li> <li>• poor configuration of the site either in terms of customer usage or bus operations; and</li> <li>• commercial opportunities in combination with one or more of the above.</li> </ul>
Bus stops and shelters	Replacing bus shelters and installing new shelters. Where necessary upgrades/downsizing are done at the same time	<p>Poor condition of shelters (e.g. leaking roofs, damaged or rusted frames, faulty electrical supplies) which may result in either a safety risk or the shelter no longer being usable.</p> <p>A road traffic accident where the bus shelter has been damaged beyond repair and needs replacement.</p>
River assets	Repair/maintain components of river piers, including mechanical	<p>Deterioration of the river pier elements pose the following risks to river services:</p> <ul style="list-style-type: none"> <li>• safety risk – increased risk of failure which may cause injuries to travellers and/or</li> </ul>

Asset type	Renewal Activity	Reason for renewal
	and electrical components AND Replacement of the life-expired Woolwich ferries with modern, vessels providing improved capacity and lower operating costs; which by law TfL is required to operate free of charge	operatives of river services; <ul style="list-style-type: none"> <li>• delays to travellers in the event of pier closure;</li> <li>• loss of revenue to TfL in the event of pier closure; and</li> <li>• litigation from boat operators for loss of revenue in the event of pier closure.</li> </ul>

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## Appendix 3 – Asset Management System



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## **Appendix 4: Cost estimation and risk**

Cost estimates are based on an assessment of the project requirements and data collected from past delivery, with appropriate risk allowances and optimism bias. For example, for standard renewal schemes the average unit rates are derived from an assessment of past delivery, e.g. the cost to renew carriageway per m<sup>2</sup>, or the average cost of a signal modernisation.

Project specific cost estimating and risk assessment exercises are undertaken for the more unique projects, for example Woolwich Ferry, bus station reconstructions and STIP works. Recent experience on STIP and other civil works has helped to build a database of costs which are used to inform project estimates.

There will not be a strategic risk budget for the Programme. All risks will be held at the project or sub-programme level and, in accordance with agreed arrangements, will be considered for drawdown at Project Board or Programme Board level depending on value. The exception is the Asset Capital Renewals sub-programme. This sub-programme, and the projects within it, will not have risk budgets; instead risks will be managed within the overall sub-programme allocation which is made possible by the sub-programme being comprised of around 1,000 individual projects.

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## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** London Underground Four Lines Modernisation Programme

**This paper will be considered in public**

### 1 Summary

<b>London Underground Four Lines Modernisation Programme (4LM):</b>				
Existing Financial Authority*	Estimated Final Cost (EFC)	Existing Programme and Project Authority	Additional Authority Requested	Total Programme and Project Authority
£5,235m	£5,243m	£5,412m	£0m	£5,412m

\*Note: Existing Financial Authority is prior year actual costs, 2018/19 Budget and the 2017 Business Plan to 2022/23. This is lower than EFC due to expenditure forecast beyond the current business plan period.

- 1.1 The purpose of this paper is to update the Committee on progress with delivery of the London Underground (LU) Four Lines Modernisation Programme (4LM) Programme.
- 1.2 A paper is included on Part 2 of the agenda, which contains exempt supplementary information. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from the meeting.

### 2 Recommendation

- 2.1 **The Committee is asked to note the paper and the supplementary information on the Part 2 agenda.**

### 3 Background

- 3.1 The LU Sub-surface Railway (SSR) consists of four lines – the Metropolitan, District, Hammersmith & City and Circle lines. It carries 1.3 million passengers per day which is 25 per cent of the overall LU ridership.
- 3.2 The 4LM Programme is in the process of replacing, modernising and integrating life-expired assets (Signalling, Rolling Stock, Track, Power and Depots) on the SSR. This will add capacity (through improved train frequency) and improve journey time. The 4LM Programme is the largest single upgrade in the history of the network. Due to its scale and interoperation with other LU lines, Train Operating Companies and Network Rail it has a high level of complexity. In fact,

the scale and complexity of upgrading these four lines in one programme is a global first and will transform the overall experience for our customers.

- 3.3 In July 2015, the Board approved Programme and Project Authority of £5.4bn to undertake the Programme, with the full benefits realised by 2023. The authority consists of 192 new trains, infrastructure changes, upgrades to three depots which will maintain the trains and new signalling (and associated signalling works). With the completion in 2016 of the introduction of the new fully walk through, air conditioned trains (known as the S7 and S8 fleets); most of the work is complete except for the signalling works.
- 3.4 A contract was awarded in July 2015 to Thales Rail Signalling Solutions to signal the SSR with an automatic, modern signalling system. The system is similar to the one that has been successfully installed on the Jubilee and Northern lines. Given the scale, the SSR has been split into 15 sections (known as Signal Migration Areas) for the purpose of introducing the new signalling system. Work is well advanced in the design and installation of the new signalling system and the delivery of the supporting infrastructure. The first Signal Migration Area between Hammersmith and Latimer Road is expected to be commissioned before the end of this year with trains on the Hammersmith & City line operating automatically on that section of the route.
- 3.5 The table below shows the planned timetable improvements set out in the July 2015 Board paper. Current service levels are between 22 and 27 trains per hour (tph) on the central area (Circle line) of the SSR.

Description	Planned Timetable Date
Journey time improvements on central area sections	May 2021
30tph in central area for 90 minute peaks	December 2021
32tph in central area for 90 minute peaks	May 2022
32tph in central area for three hour peaks	December 2022
32tph in central area and 28tph on Metropolitan trunk for three hour peaks	May 2023

- 3.6 The programme is currently on track to deliver an initial 30 trains per hour service over the south side of the central area in 2020. Further increases to 32 trains per hour are then planned to be in service by the dates shown in the table above.

## 4 Benefits and Value

- 4.1 The introduction of the 192 new trains has delivered 25 per cent of the programme benefits, which include:
- (a) the first step up in capacity while maintaining the current train service frequency as the new trains are longer and carry more passengers;
  - (b) an improved customer experience with walk through gangways, in-car CCTV, air conditioning, a Rail Vehicle Accessibility Regulations compliant saloon and improved Customer Information Systems; and
  - (c) the opportunity to recover energy through regenerative braking.

- 4.2 The introduction of the new signalling will deliver 75 per cent of the programme benefits, which include:
- (a) the ability to run trains closer together increasing service frequency; and
  - (b) speed increases which reduce journey times between stations.

## **5 Progress in the last year**

- 5.1 The programme is on schedule to deliver the timetable dates in paragraph 3.5 and is below budget.
- 5.2 We have completed track layout changes in 23 out of 29 areas. These changes allow trains to run faster and deliver maintenance cost savings by installing modern track. We have built 22 signal equipment rooms ready for Thales to install the signalling equipment. There are 15 more in progress, and five yet to begin. There are a total of 146 kilometres of new cable route management system to be installed of which 101 kilometres have been installed to date.
- 5.3 Nosing stones on platform edges are being moved to reduce the gap between the train and the platform, making it safer for customers to board and alight trains. We have recently completed nosing stone moves at Victoria and Whitechapel stations. 96 per cent of planned nosing stone moves are now complete with just three platforms at Sloane Square, South Kensington and East Putney remaining to be modified; these works are scheduled for completion by November 2018.
- 5.4 We are planning to make further 'Platform Train Interface' improvements at Baker Street, where most customer incidents occur. These include a trial of extending the hours of when public address announcements are made and improving the reliability of the blue under-platform lighting to warn customers of the gap. Additionally, we have begun to explore the feasibility of introducing a longer term solution to reduce the gap between the train and the platform. Under the proposal a section of platform extends and retracts to meet with the doors of a train (referred to as 'active-gap-fillers'). This is being investigated off-site; if the system is deemed feasible a non operational trial could be conducted in 2020.
- 5.5 Good progress has been made at Ealing Common depot where changes are required to the depot and track to accommodate the new trains. This work is well underway and is expected to complete to schedule in early 2019.
- 5.6 We have completed the final stage of the upgrade to the power supply. Combined with the work undertaken on regenerative braking across the network, these changes support full train performance under Automatic Train Control once the new signalling is fully installed.
- 5.7 We have brought together the service control teams for the four sub-surface lines at the new Hammersmith service control centre. This will deliver more capacity, a quicker and more reliable service and better customer information.
- 5.8 Of the 192 trains, 68 seven-car trains for the Circle, District and Hammersmith and City lines and 42 eight-car trains for the Metropolitan line have also now been fitted with the new Automatic Train Control system. The plan for future fitment work is scheduled to meet the number of trains required to deliver the phased timetable improvements set out in paragraph 3.5 above. Furthermore, 17 Engineering Trains have been fitted out of a total fleet of 29 trains.

5.9 LU carefully monitors the use of weekend closures in order to ensure that each closure is used as efficiently as possible for installation and testing of the new system and infrastructure. Weekend closures are also subject to change in order to secure the earliest delivery of new timetables and to avoid unnecessary closures, when plans change.

## **6 Assurance**

6.1 A TfL Project Assurance and Independent Investment Programme Advisory Group (IIPAG) Assurance Review of the Programme took place in August 2018. There were no critical issues identified. All the recommendations from the reports are being addressed, as detailed in the management response.

### **List of appendices to this report:**

Appendix 1: Table of capacity increases

A paper containing exempt supplemental information is included on Part 2 of the agenda.

### **List of background papers:**

IIPAG and TfL Project Assurance Reports

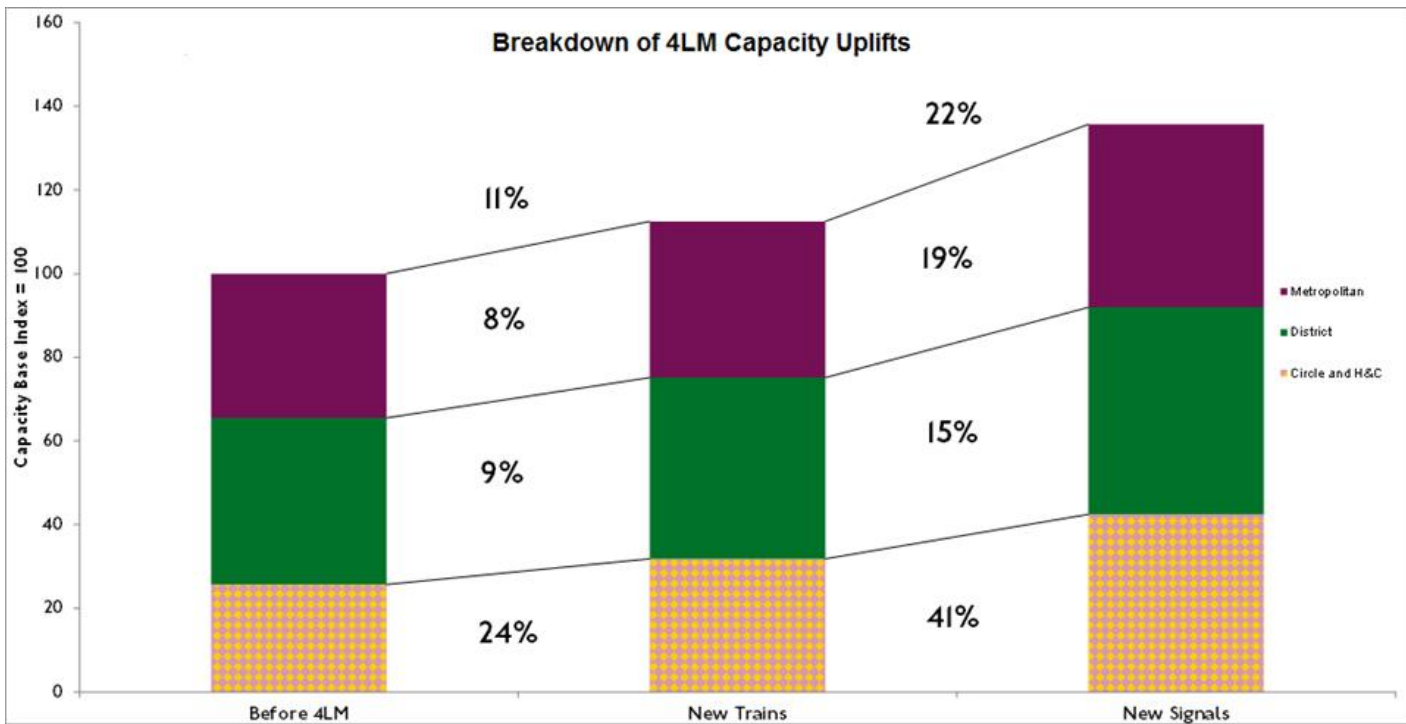
Management response to IIPAG and TfL Project Assurance Reports

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## Appendix 1: Capacity Increase

The table below shows the breakdown of capacity improvements provided by the 4LM programme. The chart shows the increased contribution of trains and signalling for each line group compared to the pre-upgrade capacity. The Metropolitan line (Purple) has growth of eight per cent and 19 per cent, the District line nine per cent and 15 per cent. Whilst, the Circle and Hammersmith & City lines will respectively gain capacity growth of 24 per cent and 41 per cent.



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## Programmes and Investment Committee



Date: 11 October 2018

Item: London Underground Track Partnership contract

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### This paper will be considered in public

#### 1 Summary

- 1.1 The paper seeks approval for an extension to the existing Track Partnership Contract.
- 1.2 A paper is included on Part 2 of the agenda, which contains exempt supplementary information. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from the meeting.

#### 2 Recommendation

- 2.1 **The Committee is asked to note the paper and the supplementary paper on Part 2 of the agenda and to approve an extension to the existing Track Partnership Contract with Balfour Beatty for programme of track renewal services (including design, planning and construction) as set out in the supplementary paper on Part 2 of the agenda.**

#### 3 Track Partnership Contract

- 3.1 The Track Partnership contract with Balfour Beatty was signed in December 2010 and expires on 31 December 2018. London Underground is part way through the process of replacing the existing delivery partner contract with an expected award date of early 2019.
- 3.2 It is proposed to extend the current contract for a limited period pending completion of the current procurement process. Further details relating to the proposed commercial, financial and future delivery arrangements are included in the paper on the Part 2 agenda.

#### List of appendices to this report:

A paper containing exempt supplemental information is included on Part 2 of the agenda.

#### List of background papers:

None

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## Programmes and Investment Committee

Date: 11 October 2018



Item: Emergency Services Network

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This paper will be considered in public

### 1 Summary

- 1.1 The purpose of this paper is to provide the Committee with an update on the progress of the Home Office funded Emergency Service Network (ESN) project and request approval for a change in delivery approach.
- 1.2 Following the Committee meeting on 13 October 2017 the Committee approved (via a Chairs Action) the Financial Authority and Programme and Project Authority for the delivery and operation by TfL of a neutral host 4G infrastructure to support the new ESN service within our below ground estate. This approval was conditional on TfL receiving assurances of grant funding from the Home Office and the capital works being delivered in two phases, where procurement of any work beyond the first phase would be subject to a Home Office commitment to fund the whole life costs of the project.
- 1.3 Subsequent to the approval given by the Committee, the Home Office's Emergency Services Mobile Communication Programme (ESMCP) has undertaken a major review and re-planning exercise. As a consequence of this review, the Home Office has now requested that a revised approach be adopted for the delivery of ESN services within the TfL estate.
- 1.4 A paper is included on Part 2 of the agenda which contains exempt supplementary information. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

### 2 Recommendation

- 2.1 **The Committee is requested to note the paper and the supplemental information on Part 2 of the agenda and in accordance with the delegation granted by the Board on 19 September 2017 to endorse a change in delivery approach to that approved at the October 2017, namely;**
  - a) **an extension of the Phase 1 infrastructure installation works (subject to full grant funding from the Home Office being agreed for that scope of circa £10m); and**
  - b) **a commensurate reduction in the scope of Phase 2, for the delivery and operation by TfL of neutral host 4G infrastructure to support the new ESN service in the below ground areas of the TfL estate, in the absence of a funding commitment for the whole life costs of ESN.**

### **3 Background to ESN on the Underground**

- 3.1 The Government created the ESMCP in 2011 to replace the Airwave service (used by the emergency services) with an alternative solution based on a commercial 4G network provided by EE. The Home Office's contract with EE does not cover the below ground areas of our estate.
- 3.2 We have been working with the ESMCP since 2015 to develop a solution to extend ESN into the below ground areas of our estate; 127 stations (including three DLR and three London Overground stations) and 197 tunnel sections. The ESMCP originally targeted completion of the TfL solution by December 2018 to support the start of London's transition to ESN from January 2019.
- 3.3 In order to meet the challenging timescales it was deemed necessary to deliver the solution in two phases; a Phase 1 for some limited scope enabling works, and a Phase 2 for the majority of the supply and installation works. This approach allowed installation work to continue seamlessly following completion of the feasibility activities and also provided time to run a competition for Phase 2 works.
- 3.4 In October 2017 the Committee approved Financial Authority and Programme and Project Authority for the ESN installation works to commence, subject to TfL receiving assurances of full grant funding from the Home Office, which was outstanding at that time. The Committee delegated the granting of any approval in relation to the ESN project to the Chair of the Committee, subject to securing appropriate funding commitments from the Home Office.
- 3.5 TfL subsequently signed a Grant Agreement with the Home Office covering the Phase 1 installation works and the necessary Financial Authority and Programme and Project Authority was approved through a Chair's Action. In the absence of a commitment to fund the whole life project costs, the Permanent Secretary of the Home Office provided a "letter of comfort" setting out a commitment to fund all reasonable costs incurred by TfL should the approach to ESMCP change.

### **4 Activity since October 2017**

- 4.1 Phase 1 began installing cabling (leaky feeder and fibre optics) within stations and tunnels in November 2017. In parallel we prepared an ITT for the Phase 2 infrastructure delivery and service commissioning for release in December 2017.
- 4.2 However, in November 2017 the Home Office announced that the ESMCP would be delayed and embarked on a major review of the programme. As a result, the Home Office requested that TfL pause the Phase 2 procurement process pending completion of its review. In addition, the Home Office agreed to our recommendation to reduce the Phase 1 delivery pace and extend the overall schedule to December 2018. Completing Phase 1 to this revised timeline mitigates the risk and impact of gaps between delivery phases, and the attendant additional cost and delays that would result from subsequently re-starting any work.

- 4.3 Within the 422km of in-scope tunnels we have now installed fibre optic cable in 173km and placed leaky feeder in a temporary position in 251km (of which 30km has been fixed into its final position). Cabling works at the first 25 stations is 70% complete. In addition, the project has continued to trial the design, as part of which the British Transport Police were able to make the first 4G calls on a platform and within a train in May 2018.
- 4.4 The Home Office completed its ESMCP review in August with a recommendation that the programme continue but with an incremental approach to delivering functionality and to a revised timetable. This revised timetable now requires ESN coverage throughout our below ground estate by March 2021. The Home Office expects to obtain ministerial approval for its revised business case by December, after which it will be able to commit to fund the full whole life costs of the project. As a consequence, we have not yet issued our ITT for Phase 2 and will not do so, pending that approval and funding confirmation.

## **5 Airwave on the Underground**

- 5.1 The Home Office now expects to retire the Airwave service by the end of 2022 and is accordingly extending the current Airwave contract by three years (plus options for a further two year extension). On the Underground, Airwave operates over TfL's Connect radio infrastructure.
- 5.2 We have recently signed a new contract with Thales for the management and upgrade of our Connect infrastructure from expiry of the PFI in November 2019. Our current upgrade plans for Connect do not include the requirement to maintain Airwave (as this was expected to be retired by the end of 2019) and our planned hardware upgrades from 2021 will not support the current Airwave service. We are working with the Home Office on a number of different options to address this and aim to conclude by end-2018. The Home Office will be required to fund this work, which will be managed separately from the ESN project.

## **6 Revised delivery approach**

- 6.1 While the Home Office is unable to commit to funding the whole life cost of the project until their revised business case has been approved, it has asked us if a further increment of enabling installation work could be added to the current Phase 1 scope. The aim of this would be to maintain delivery activities until the Home Office can commit to the whole life project cost, thus avoiding any demobilisation and remobilisation dis-benefits in the interim.
- 6.2 We consider that the most appropriate scope for an extension to Phase 1 would be the delivery of additional cabling infrastructure within further tunnel sections and stations. The Home Office has agreed to this proposed scope and has committed to funding the additional work (which will need to be documented) in the amount of circa £10m.
- 6.3 The award of a contract, for what would now be a reduced Phase 2, remains dependent on a Home Office commitment to fund the remaining whole life project costs. Our current assumption is that the Phase 2 contract will be awarded by end-July 2019. To protect the overall delivery schedule we envisage that a further (currently unfunded) extension to the Phase 1 scope will be required to align

completion of Phase 1 activities with the start of Phase 2 installation works. We expect that the next funding commitment from the Home Office (following approval of their business case) will commit to the full delivery cost of the project, including both the Phase 2 works and any required additional extension of Phase 1 activities.

**List of Appendices:**

Exempt supplementary exempt information is included in a paper on Part 2 of the agenda.

**List of Background Papers:**

None.

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## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** Crossrail Update

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### **This paper will be considered in public**

#### **1 Summary**

1.1 This paper provides an update on the status of the Crossrail Project.

#### **2 Recommendation**

2.1 **The Committee is asked to note the paper.**

#### **3 Crossrail update**

3.1 Crossrail Limited announced in August 2018 that the central section of the Elizabeth line (Paddington through to Abbey Wood) will now open in autumn 2019, instead of December 2018. The revised schedule is needed to complete the final infrastructure and extensive testing required to ensure the Elizabeth line opens as a safe and reliable railway.

3.2 Both the Department for Transport (DfT) and TfL (Sponsors for the Crossrail Project) remain committed to the successful delivery of the Crossrail Project and the focus remains on opening the full Elizabeth line, from Reading and Heathrow in the west to Shenfield and Abbey Wood, in the east as soon as possible after the central tunnels open.

3.3 TfL and Government continue to work through the financial and other implications of the delay in CCOS opening. Pending completion of this work Crossrail Limited requires interim funding. This relates to the £300m additional funding previously announced in July 2018, funded by TfL and DfT. Interim funding arrangements were approved by the Finance Committee (acting under delegated authority from the Board) at a meeting on 27 September 2018.

3.4 As reported to the 19 September 2018 meeting of the Board, the Sponsors have commissioned independent reviews of programme schedule, costs and governance. The findings of the reviews will be shared with the Committee when available.

3.5 Health and safety performance remains good and within annual targets. Crossrail Limited is now planning the 'Finish Safe' campaign to ensure the remainder of the programme is delivered with the same focus on Health and Safety as during the main construction phase.

#### **List of Appendices to this paper:**

None

**List of Background Papers:**

None

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## Programmes and Investment Committee



**Date:** 11 October 2018

**Item:** Members' Suggestions for Future Discussion Items

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### **This paper will be considered in public**

#### **1 Summary**

- 1.1 This paper presents the current forward programme for the Committee and explains how this is put together. Members are invited to suggest additional future discussion items for the forward plan. Members are also invited to suggest items for the Committee's induction session and for future informal briefings.

#### **2 Recommendation**

- 2.1 **The Committee is asked to note the forward programme and is invited to raise any suggestions for future discussion items for the forward programme and for informal briefings.**

#### **3 Forward Plan Development**

- 3.1 The Board and its Committees and Panels have forward plans. The content of the plans arise from a number of sources:
- (a) Standing items for each meeting: Minutes; Matters Arising and Actions List; and any regular quarterly reports. For this Committee these are the quarterly Investment Programme Report, the regular Project Monitoring Report and the regular report on the Crossrail project.
  - (b) Programmes and Projects at a level requiring Committee approval. These include the annual review of the 20 sub-programmes in the Investment Programme and other approvals sought following advice from the operating businesses.
  - (c) Items requested by Members: The Deputy Chair of TfL and the Chairs of all of the Committees and Panels will regularly review the forward plan and may suggest items. Other items will arise out of actions from previous meetings (including meetings of the Board or other Committees and Panels) and any issues suggested under this agenda item.

#### **4 Current Plan**

- 4.1 The current plan is attached as Appendix 1. Like all plans, it is a snapshot in time and items may be added, removed or deferred to a later date.

**List of appendices to this report:**

Appendix 1: Programmes and Investment Committee Forward Plan.

**List of Background Papers:**

None

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## Programmes and Investment Committee Forward Planner 2018/19

**Membership:** Prof Greg Clarke CBE (Chair), Dr Nelson Ogunshakin OBE (Vice Chair), Heidi Alexander, Ron Kalifa OBE, Dr Alice Maynard CBE, Dr Nina Skorupska CBE, Dr Lynn Sloman and Ben Story

Tuesday 11 December 2018		
Quarterly Programmes and Investment Report	Finance	To note high-level progress update against the 20 grouped Investment Programme and Major Project items and any specific approvals required in relation to programmes not on the deep-dive list for that meeting.
Use of Delegated Authority	General Council	Standing item
Growth Fund - Update	D. City Planning	Six month update: use of fund and application of the evaluation criteria.
LU Track & Civil Programme	MD LU	Annual approval
LU Major Stations Programme	MD LU	Annual approval
LU Northern Line Extension	MD LU	Update
Air Quality and Environment Programme	MD ST	Annual approval  Action 54/10/17: The Committee sought updates, to include the programme delivery outcomes and air quality monitoring data to verify if the measures in the programme were achieving the overall goal. Information on carbon emissions and support for electric vehicles (number and location of charging points, impact on the electricity grid) would be shared with the Safety, Sustainability and Human Resources (SSHR) Panel
Public Transport Portfolio	MD ST	Annual approval
Road User Charging (primarily ULEZ)	MD ST	New programme requiring authority
Surface technology projects.	MD ST	New programme requiring authority – incorporating elements from existing programmes
DLR Rolling Stock	MD ST	Approval of authority request
Crossrail update	MD LU	Regular update on progress

## Programmes and Investment Committee Forward Planner 2018/19

<b>Wednesday 6 March 2019</b>		
Quarterly Programmes and Investment Report	Finance	To note high-level progress update against the 20 grouped Investment Programme and Major Project items and any specific approvals required in relation to programmes not on the deep-dive list for that meeting.
Use of Delegated Authority	General Counsel	Standing item
Crossrail 2	MD CR2	Authority request
Technology and Data Programme	MD CC&T	Annual approval
LU Lifts & Escalators	MD LU	Annual approval
LU Signals and Control	MD LU	Annual approval
LU Rolling stock renewals	MD LU	Annual Approval
Crossrail update	MD LU	Regular update on progress

<b>TBC May 2019</b>		
Quarterly Programmes and Investment Report	Finance	To note high-level progress update against the 20 grouped Investment Programme and Major Project items and any specific approvals required in relation to programmes not on the deep-dive list for that meeting.
Use of Delegated Authority	General Counsel	Standing item
Deep Tube Programme	MD LU	
Crossrail update	MD LU	Regular update on progress

## Programmes and Investment Committee Forward Planner 2018/19

TBC July 2019		
Quarterly Programmes and Investment Report	Finance	To note high-level progress update against the 20 grouped Investment Programme and Major Project items and any specific approvals required in relation to programmes not on the deep-dive list for that meeting.
Use of Delegated Authority	General Counsel	Standing item
LU Stations (SFA, LU Crossrail)	MD LU	Annual Approval
World Class Capacity Programme	MD LU	Annual Approval
Power, Cooling & Energy	MD LU	Annual Approval
Crossrail update	MD LU	Regular update on progress

### Regular items:

- Quarterly Monitoring Report – to include:
  - high-level progress update against the 20 grouped Investment Programme and Major Project items;
  - and specific approvals required in relation to programmes not on the deep-dive list for that meeting;
  - identification of programmes about to issue tenders so Members can input;
  - IIPAG and Project Assurance commentary;
  - use of delegated authority by Commissioner and CFO.
- 4/5 deep dive papers each meeting from the rolling programme of Investment Programme / Major Project items. Papers to seek annual approval for the programme.
- Crossrail 2 – updates and authorities (if kept separate from the Major Project list).
- IIPAG Quarterly Reports Work Plan and Budget (current year).
- Crossrail Sponsor Board updates

### Items to be scheduled

- Oxford Street – awaiting submission and evaluation of proposals from Westminster City Council
- Potential issues arising from the expansion of Heathrow Airport, particularly unforeseen cost for Surface Transport

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