

**Date: 12 December 2017**

**Item: Investment Programme Report – Quarter 2, 2017/18**

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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 2, 2017/18 of a range of projects that will deliver world-class transport services to London.
- 1.2 Quarter 2, 2017/18 covers the months of July to September 2017, however, the report also contains, as far as possible, commentary on any notable progress post quarter end.

**2 Recommendation**

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

**List of appendices to this report:**

Appendix 1 – Investment Programme Report Quarter 2, 2017/18.

**List of Background Papers:**

None

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# Transport for London investment programme report

Quarter 2 2017/18

MAYOR OF LONDON



**TRANSPORT  
FOR LONDON**  
EVERY JOURNEY MATTERS

## 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 Docklands Light Railway, 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 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.

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

For each major project or sub-programme we include a progress update, the key achievements in the quarter and a summary of data at quarter end. We also include the forecast completion year for sub-programmes and projects with a defined start and end. Works such as carriageway resurfacing or track renewal that are delivered in a prioritised sequence are denoted as 'annual' as they are controlled and measured within each financial year.

Financial records of spend to date, authority and estimated final cost (EFC) are whole-life. This represents 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 in this report, authority has been given for the current stage of works and further authority will be sought when appropriate.

This report does not contain commercially sensitive information and therefore some EFCs and authorities are marked with an asterisk (see below) 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 in future for schemes such as the Bakerloo line extension and Crossrail 2.

Each sub-programme or project also has an overall red, amber or green (RAG)

milestone status, which represents the average forecast date variance against plan for 2017/18 budget milestones in line with the following key:

On time or early:



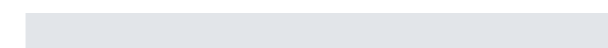
1-89 days late:



90 or more days late:



N/A (without 2017/18 budget milestones) are marked:



2017/18 budget milestones – the key milestones listed in the TfL Budget document – are detailed in Appendix A (page 62).

Our Investment Programme is now delivered by the following areas of the business: Major Projects, London Underground, Surface and Other, and the structure of this report reflects this.

- Major Projects is responsible for delivery of TfL's largest and most complex projects. It comprises the following delivery areas: Line upgrades; Deep Tube upgrade; Network extensions; Stations and infrastructure, which are covered in pages 12–25 of this report. Tottenham Court Road and Vauxhall station upgrades are both complete and are no longer reported. Schemes to be delivered by Major Projects in future will be reported in detail following authority approval
- London Underground comprises the following sub-programmes: Stations; Rolling stock renewals; Track and civils; Infrastructure renewals; and Signals, control and information, which are covered in pages 26–37
- Surface comprises the following sub-programmes: Healthy Streets; Air quality and environment; Public transport; and Assets, which are covered in pages 39–51
- Other comprises the following sub-programmes: Technology and data; TfL Growth Fund; and the Elizabeth line (including Crossrail), which are covered in pages 52–60

# Business at a glance

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

## How the Investment Programme is governed



## Investment Programme benefits



Trains run an hour on the Victoria line – a train every 100 seconds

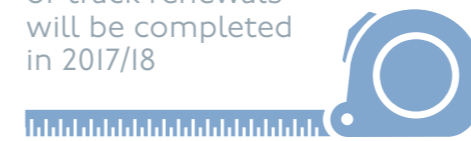
**3,000**



Hybrid buses in the fleet by the end of 2017/18 (from 2,330 in 2016/17)

**10,000m**

of track renewals will be completed in 2017/18



**680km**

TfL-operated Rail and Underground routes

**580km**

TfL-operated highways



## Finances at a glance\*



Sources of funds  
**£10.1bn**

**65%**

spent on running the network every day.



**35%**

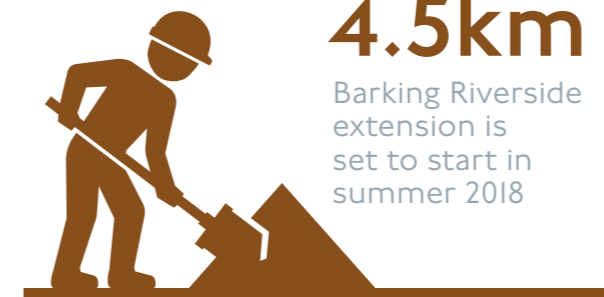
spent renewing and improving the network through one of the largest capital investment programmes in Europe.

\*Based on full year 2016/17

Construction of the

**4.5km**

Barking Riverside extension is set to start in summer 2018



Tunnelling between

**Battersea and Kennington**

will be completed as part of Northern line extension, which will open in 2020



# Key achievements

## Line upgrades

We achieved a significant step forward in October when multiple test trains ran on the new signalling system between Hammersmith and Latimer Road for the first time in London. In 2018, customers will see improvements to reliability and customer information on sections of the Hammersmith & City line.

## Network extensions

One of the Northern line extension tunnel boring machines completed tunnelling by breaking into the shaft at Kennington on 26 October and the other completed on 8 November. We are excavating to the second basement level on both the Battersea Power Station and Nine Elms underground stations.

We have completed two large step plate junctions at the Kennington loop, and during two 52-hour possessions we completed enabling works to prepare these to connect the existing Northern line with the new extension during a planned 10-day Christmas 2017 closure of the Kennington loop.

In August, the Secretary of State for Transport made the Order to allow us to build the Barking Riverside extension. We plan to start the main construction works in summer 2018.

## Stations and infrastructure

On the Bond Street station upgrade, we have completed the installation of four new lifts and two escalators. The new station entrance and ticket hall, and step-free access from the street to platform, opened to customers on 17 November. Tunnelling works to create a new

southbound Northern line tunnel and platform at Bank station are well under way and we have started the foundation works for the new ticket hall.

## LU stations programme

A second public consultation closed on 18 August for the Camden Town station capacity upgrade, with 97 per cent of the responses we received either partially or strongly supporting the project.

## LU track and civils

We completed almost 500m of ballasted track renewal at Alperton on the Piccadilly line, replacing wooden sleepers with more durable concrete ones. We also waterproofed two bridges in the area to increase their lifespan.

To improve track drainage, increase track life and reduce maintenance on the Metropolitan line, we have completed slab track installation in the southbound tunnel from Baker Street to Finchley Road.

## LU infrastructure renewals

We completed escalator refurbishments at Angel, Chancery Lane, Westminster, Holborn and North Greenwich on schedule and within budget. At Chancery Lane, we also replaced the central staircase, which marks the completion of a complex project that started in November 2016.

We replaced three lifts at King's Cross, enabling step-free access to this busy interchange station to be returned ahead of schedule to customers using the Circle, Hammersmith & City and Metropolitan lines.

## Healthy Streets

We have installed bus stop bypasses outside St Thomas' Hospital to provide cyclists with segregated cycle lanes that connect to mandatory cycle lanes across Westminster Bridge.

In September, we published a detailed report responding to the issues raised from the public consultation on initial proposals for the western section of Oxford Street, which closed in June.

We have completed a public consultation on the transformation of the area around Waterloo roundabout and Waterloo Road, and a consultation on the long-term transformation of Lambeth Bridge North and South.

A second public consultation on proposals for transforming Fiveways Croydon closed in September.

## Air quality and environment

We have completed the detailed design, development work and testing for the Emissions Surcharge, which launched as scheduled on 23 October.

Following consultation on the Mayor's proposal to bring forward the start date of the central London ULEZ to spring 2019, the Mayor is expected to make a decision in late autumn.

## Public transport portfolio

On 1 August, we completed the transition of all remaining services from Serco to the new cycle hire providers. Since transition, the new operation has been running through the busiest time of the year with no major technical incidents.

## Surface Assets portfolio

We installed the first half of the new bridge deck at Ardleigh Green Bridge, which was done both during a railway possession and during live operation of the railway beneath. We continue to build the road approaches to the new section of bridge and plan to switch traffic to them in December. We also demolished the first half of the existing Power Road Bridge on schedule in August.

## Technology and data

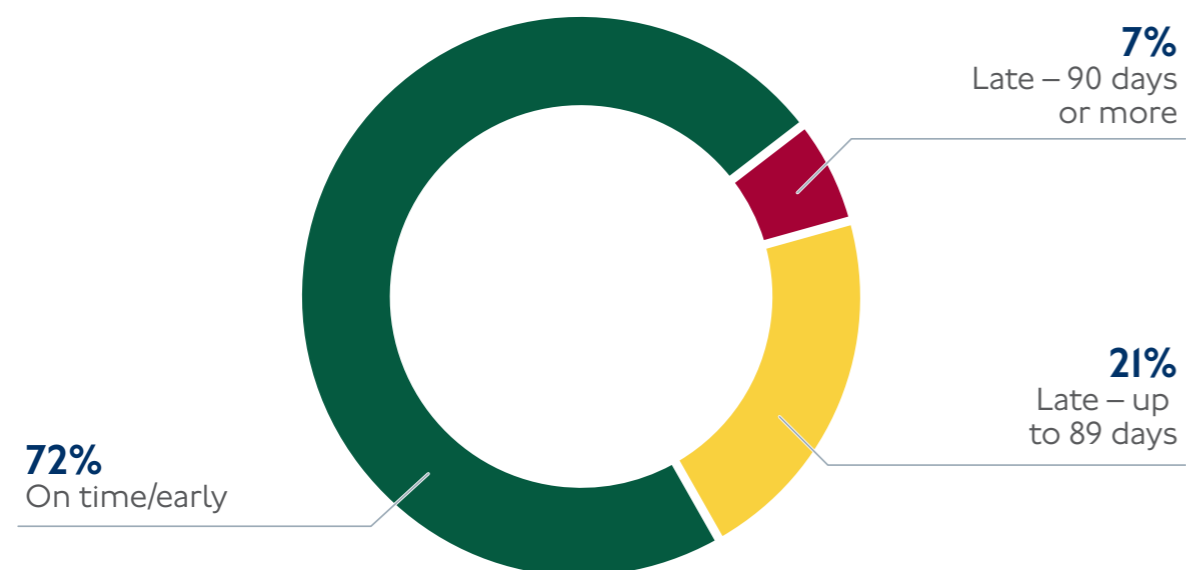
On our future ticketing programme, the Oyster ticketing app was launched to rail, tram and river customers on 7 September and was extended to bus customers on 26 October. We are now averaging 5,500 sales every day via the app.

## Elizabeth line

The Crossrail project is approaching 90 per cent completion. Several significant milestones were achieved during the quarter, including the completion of the track in the central section.

# 2017/18 Budget milestone performance

The overall performance for all TfL 2017/18 Budget milestones is summarised as follows:



The late milestone scores of seven per cent (90 or more days late) and 21 per cent (up to 89 days late) are driven by the late milestones detailed in Appendix A.

## Safety

The safety of our employees and customers is our core value. Across TfL, we work with our construction supplier delivery teams to ensure they have the necessary culture and competence to safely deliver our capital investment and upgrade programme.

We hold safety networking events to build an environment where all our suppliers share good practice and regularly host 'zero harm' forums. We set clear health and safety requirements within our contracts and monitor performance against them to make sure our suppliers continue to achieve high standards of health, safety and environmental (HS&E) management.

We recognise suppliers who demonstrate good practice in site management through our Beacon award scheme, which champions HS&E excellence through a structured assessment at site or team level. The Power Road Bridge delivery team received a Considerate Constructor Scheme Silver Award for completing the first phase of demolition without any incident resulting in time off work. On another of our road-over-rail bridge replacements, the first half of the new bridge deck bridge at Ardleigh Green was installed, also without incident.

We have launched our strategic HS&E improvement plan across our project community. A key element of this is our focus on wellbeing, in particular mental health. Our aim is for our staff and suppliers to recognise the signs of stress and anxiety in the same way as they would a physical injury, and seek the appropriate treatment and support.

During Quarter 2, we have seen an increasing trend of injuries within our construction teams that resulted in a person being away from work, or unable to perform their normal work duties, for more than seven consecutive days. We have reported this to the Health and Safety Executive and we are developing interventions to address this trend.

The Bus Safety Innovation Fund allows bus operators to implement safety initiatives that can benefit the whole bus network. Operators were invited to submit bids for funding and we are currently evaluating their submissions.

### Croydon tram derailment

Our thoughts remain with all those affected by the tragic derailment. We continue to do all we can to support them and the Sarah Hope line remains available.

Since the derailment, we have introduced further safety measures to the tram network, including additional speed restrictions and an upgrade of the CCTV recording system. We have introduced an in-cab protection system where any sign of driver distraction or fatigue will result in the driver being alerted immediately. Proposed industrial action in relation to this system has been suspended by ASLEF.

We have actively worked with the Rail Accident Investigation Branch (RAIB) and we will publish our own investigation report at the same time or soon after the publication of the RAIB report.

# Major projects

## Line upgrades

### Four Lines Modernisation (4LM) S-Stock Train Roll Out

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021</b>	<b>2,949</b>	<b>3,144</b>	<b>3,080</b>

2017/18 budget milestone RAG:\* 

We have introduced 192 new trains on the Circle, Metropolitan, District and Hammersmith & City sub-surface lines, together with associated depot, station, siding and signal modifications to accommodate them. We are upgrading three depots to provide long-term train overhaul facilities.

Of the 76 planned platform modifications to reduce the gap between the train and the platform, 61 are now complete, including Aldgate East which completed in the quarter. These modifications have reduced the number of incidents occurring when customers get on or off trains.

The Upminster depot project is close to completing design packages for the remaining works. Over the last six months the project has progressed with works to provide S-Stock maintenance facilities in the wheel lathe and cleaning shed, as well as installing a sand silo and modifying the de-icing system, which will keep the fleet running through the winter months.

We have completed site set-up works at Ealing Common depot including the provision of site office and welfare units. The contract for the first phase of works – demolition – has been awarded and work will start in Quarter 3.

Overall, the programme is ahead of schedule and below budget and there are no issues. The amber milestone RAG relates to the Ealing Common depot de-icing facility, which is behind schedule owing to the discovery of major structural damage to the building – this damage was not present at the time of the original site survey. This has required unplanned additional work to make the building safe for operational use and further modification. The delay to the Ealing Common depot works cannot be recovered and there is a consequential impact on the later Ealing Common works – however, these are not on the critical path and there is no impact on the completion of the overall 4LM programme. The additional cost is reflected in the EFC, which remains below authority for the programme.

Although the new S-Stock trains already significantly exceed their reliability target, a number of reliability enhancements are being implemented before final acceptance.

### 4LM Automatic Train Control (ATC)

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2020</b>	<b>1,131</b>	<b>2,268</b>	<b>2,196</b>

2017/18 budget milestone RAG:\* 

The new ATC signalling system will control train movements, allowing more frequent and reliable services. In addition to designing and installing the system, we are responsible for the delivery of related infrastructure works, and modification of the S-Stock trains and engineering vehicles to accommodate the signalling equipment. The new signalling provides around 75 per cent of the programme's benefits and the new trains the remaining 25 per cent.

The signalling supplier, Thales, has achieved the contractual milestone for the signalling system to successfully control the S-Stock trains. This was demonstrated by the new signalling system controlling multiple trains all running in automatic train operation for the first time during tests on our first new signalling area on the operating network between Goldhawk Road and Latimer Road in engineering hours.

We have fitted the ATC system to 24 S-Stock trains to date, ready to use once we start to commission the infrastructure – however, this is below our stretch target of 41 trains. We are working with Bombardier Transport (BT) and Thales to increase the ATC train fitment rate at the Derby factory so that the planned 53

trains will be ready for the go-live of the first migration area. The Director of Major Projects has escalated this to a senior level in BT and a joint recovery plan is being agreed and closely monitored.

We also completed track layout improvements at Tower Hill and Rayners Lane in preparation for ATC running, with 21 of the 29 revised layouts now complete, and we are ahead of schedule.

Overall, the programme is ahead of schedule and below budget and there are no issues. The in-year amber milestone RAG (which relates to the milestones detailed in Appendix A) represents delays since the 2017/18 budget milestones were set to activities in some of the later Migration Areas to prioritise work on the first Migration Areas. The target dates for these milestones were set using a stretch target that would deliver timetable uplifts in excess of one year earlier than the project authority dates, and help minimise project expenditure. The programme is forecast to deliver all the timetable improvements between six months – and one year earlier than the dates committed to by the project authority. The programme milestones will be rebaselined to reflect the current approach to early timetable delivery.

\* The milestone RAG relates to in-year (2017/18) budget milestones, which are listed in Appendix A.



## World class capacity

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2023</b>	<b>80</b>	<b>245</b>	<b>529**</b>

2017/18 budget milestone RAG:\*

Capacity upgrades increased the Victoria line peak service from 34 to 36 trains per hour (tph) in May. In 2018, we will extend the current 30 tph Jubilee line peak service to run for at least two hours in both the morning and evening, and introduce a new timetable on the Northern line.

We have reviewed investment priorities across the network to respond to the latest projections for demand on our services and to ensure we protect our plans to replace our older trains, starting with the Piccadilly line, which date back to 1973. As a result, we have decided to suspend the purchase of additional trains for the Jubilee and Northern lines.

We will however continue to improve the Northern and Jubilee lines by boosting capacity and extending the peak service on both lines. We will also provide extra capacity by further exploiting recent investment in signalling, track and power. We will introduce a new timetable on the Northern line in January 2018, extending the evening peak service frequency from one to two hours, and there will be a further timetable change in 2018. A new timetable on the Jubilee line will extend the morning and evening peak hour frequency by an hour from next summer. We are also reviewing how we can increase capacity from existing assets.

## Deep Tube upgrade programme

### Deep Tube upgrade programme – design phase

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>75</b>	<b>154</b>	<b>114</b>

2017/18 budget milestone RAG:

The Deep Tube upgrade programme will provide more capacity on the Piccadilly, Bakerloo, Central and Waterloo & City lines. There will be new signalling systems and 250 newly designed, high-capacity, walk-through, air-cooled trains, replacing some of the oldest rolling stock on our network.

We are continuing with the procurement process for our new fleet of trains and the signalling and train control system for the Piccadilly line. We have reviewed the signalling and train control system invitation to negotiate and this is nearing completion.

Following the issue of an addendum to the invitation to negotiate for the rolling stock tender last quarter, bidder meetings have been held to aid the evaluation process. Post quarter end, the evaluation has completed except for some open qualifications.

We are adopting lessons learnt from other signalling programmes such as 4LM and we are preparing to issue the signalling and train control system invitation to negotiate.

Value engineering exercises have been undertaken across the whole Deep Tube programme that have resulted in a better alignment of the procurement schedules and will help to deliver savings. These efficiencies allow for capital funding to be provided in our new Business Plan, with our aim being to deliver the benefits to existing programme timelines.

\* The 2017/18 World class capacity budget milestones (detailed in Appendix A) are no longer relevant, however we will deliver committed works to introduce a new timetable on the Jubilee line from next summer. Revised milestone dates will be agreed once the full impact of the WCC residual works are confirmed

\*\*The impact of the programme pause is being worked through and updates will be available next quarter.

## Network extensions

### Northern line extension

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2020</b>	*	*	*

2017/18 budget milestone RAG: On Track

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

The southbound tunnel boring machine (TBM) completed its journey at Kennington on 26 October. The northbound tunnelling completed on 8 November. Both TBMs and their associated equipment will be removed via the Kennington ventilation shafts and the Battersea station crossover box; works to complete the crossover box, which will allow trains to enter and leave the station from either platform, can then start.

We have completed two large step plate junctions at the Kennington loop. During one 52-hour possession we removed all 218 existing northbound and southbound loop tunnel rings, exceeding our planned target of 120 tunnel rings for a single possession. During a second possession, we completed survey and enabling works to prepare to connect the existing Northern line with the new extension via the two junctions during a planned 10-day Christmas 2017 closure of the Kennington loop. Owing to this

success, we were able to cancel a third planned possession.

At the new Battersea underground station, we have completed the roof level capping beams and cross beams on schedule and this has allowed the excavation to the second basement level to start. Completion of the excavation to the base-slab level is planned for spring 2018.

At Nine Elms, excavation to the first basement level of the station box is also complete and we are now excavating to base-slab level.

While good progress continues to be made with the overall construction of the project, there remain significant challenges that could affect delivery: managing interfaces with Battersea Power Station Development Company, obtaining the necessary detailed planning consent for the design of above ground structures and resolving the main design and build contractor programme durations. To address the design and build programme issues, we have established joint working groups to review and optimise the programme for the fit-out, mechanical and electrical, and systems integration phases.



## Silvertown Tunnel

Forecast completion	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2023</b>	<b>31</b>	*	*

2017/18 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.**

The majority of the land and works agreements necessary to build and operate the scheme have been concluded with the relevant land owners. The remaining agreements are expected to be completed in Quarter 3.

We have made good progress on tender negotiations with the three shortlisted bidders for the 'design, build, finance, operate and maintain' public-private partnership contract. We also held several technical, financial and commercial meetings and are starting to understand some of the key issues they have raised. We are diligently working through each of these to keep momentum with this process. The tender period will run to the end of August 2018.

Post quarter end, following a written ministerial statement to Parliament on 11 October on behalf of the Secretary of State, the Development Consent Order (DCO) decision was initially delayed by one month until 10 November. This was to allow further consideration of the recent responses to the Secretary of State consultations on the scheme that relate to the updated UK plan for tackling roadside nitrogen dioxide concentrations published by the Government on 26 July 2017. However, a further announcement was made on 7 November, informing us of a further six-month delay in the determination of the DCO to 10 May 2018. On 14 November, the Department for Transport asked us to update the air quality assessment, relating to the DCO application and other matters and in response we have set out the work required. The procurement process continues as planned. We have notified the bidders and are working with them to assess any implications on the overall programme.

## Barking Riverside extension

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021</b>	<b>14</b>	*	*

2017/18 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. Our preferred option is to 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, the Secretary of State for Transport granted powers to deliver the Barking Riverside 4.5km extension and we plan to start the main construction works in summer 2018. Preliminary designs are with Network Rail for approval.

We continue the procurement process to deliver the extension with our shortlisted

bidders and we are reviewing tenders for the demolition works to be done during 2018.

The 'main works tender issued' 2017/18 budget milestone has been delayed by an extension to the design phase owing to unexpected complexities with traction power and topographical surveys. We have met with the designers to escalate this with senior management. The timescales for the Network Rail approval process are being closely managed. The tender for the main works contract will be issued on completion of the design, and the overall project completion date is not currently at risk.

## Stations and infrastructure

### Victoria station upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>538</b>	<b>677</b>	<b>585</b>

2017/18 budget milestone RAG: 

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

The tunnels between Cardinal Place and the District and Circle line platforms opened in May and we have since been fitting out the remaining tunnels that will link to the south ticket hall, and installing fire and communications systems.

Work also continues on the westbound pedestrian tunnel, the south ticket hall escalators and fit-out of the remaining lifts to provide step-free access to the Network Rail station and District and Circle line platforms.

We plan to open the new station in stages, with overall completion planned for mid-2018. We are rebuilding the Duke of York pub, which was demolished

to allow jet grouting works for the tunnels. The steel frame and floor slabs from basement to roof are complete and we are now removing the temporary steel frame for the building's Victoria Street facade.

We have completed the north ticket hall and provided step-free access to the Victoria line. However, the completion of step-free access to all platforms via lifts from the north ticket hall has been delayed by contractor lift resource issues, which is reflected in the amber 2017/18 budget milestone RAG. We are working with the contractor to mitigate further delay. The contractor is working with its lift supplier at a senior level to ensure adequate resources and appropriate management focus on achieving step-free access. The south ticket hall is planned to open before the end of 2017, around seven months early, and overall project completion remains on schedule.

### Bond Street station upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2017</b>	<b>304</b>	<b>308</b>	<b>312</b>

2017/18 budget milestone RAG: 

**We are increasing capacity in preparation for the opening of the Elizabeth line. This includes new lifts for step-free access, more escalators and a new entrance to the north side of Oxford Street.**

We have completed the installation of the four new lifts and two escalators, and have started testing and commissioning of the mechanical, electrical and piping services. The northern tunnels are undergoing a final inspection, after which all other works – the southern tunnels, new ticket hall and entrance – will be inspected.

Familiarisation activities to allow staff to manage the new facilities started on 9 October.

The project completed post quarter end on 17 November when the new station entrance and ticket hall, and step-free access from street to platform, opened to customers. The amber 2017/18 budget milestone RAG status reflects a non-critical delay to the 'Station back into full service' milestone.

### Bank Bloomberg Place

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>49</b>	<b>58</b>	<b>58</b>

2017/18 budget milestone RAG: 

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

We have completed the ceilings on three levels, removed the high-level scaffold and are now installing hard-wearing panels on the walls and columns.

We have achieved compliance to European standards on the two lifts that will provide step-free access to the Waterloo

& City line platforms and serve the new Walbrook entrance. We have also completed the maintenance access decks to all four escalators.

We continue final fit-out works in the non-public areas of the station and these are scheduled to complete in December.

Following issues obtaining fire doors with the correct certification, the entrance is now planned to open in February 2018, which is reflected in the amber 2017/18 budget milestone RAG status. We are reviewing the schedule, however, to identify if this can be brought forward.

### Bank station capacity and systems integration and upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2022</b>	<b>322</b>	<b>623</b>	<b>642*</b>

2017/18 budget milestone RAG: 

We are increasing the capacity at Bank station and providing a quicker interchange for customers. These works include a new Northern line southbound tunnel and a new station entrance on Cannon Street.

Tunnelling works to create a new southbound Northern line tunnel and platform are well under way and we completed 220 metres of sprayed concrete lining to the tunnels in the quarter. The existing southbound tunnel will become a pedestrian concourse.

The foundation works for the new ticket hall and the non-public areas of the station are complete and the main excavation works started in October.

We are installing new cable management systems within the station to prepare for the many service diversions that are needed at locations where the new tunnels connect to the existing station passageways.

Construction and fit-out of new switchrooms and a cable shaft are under way to allow the high-voltage transformer installation works to start in November.

\* The main contractor has recently submitted a cost forecast that puts the current estimated final cost (EFC) under pressure. This is now under review and the programme view is that working through the schedule and opportunities will largely mitigate this pressure. An update to the EFC will be provided next quarter.

## Bakerloo line link

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>60</b>	<b>67*</b>	<b>65*</b>

2017/18 budget milestone RAG: On Track

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

We have completed the installation of the lift, and testing and commissioning will begin in December. We have also completed the steps, mechanism, floorplates and handrails of the two new escalators on schedule.

The installation of the cable management system is almost complete in the new

tunnel links and the escalator. We are now installing the power cables that link the site to the Paddington Elizabeth line station.

The brackets and structure to support the ceiling tiles have been installed throughout the new areas and we have begun installation of the wall panels in the main tunnel link.

## 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.**

Crossrail 2 is at the heart of the new, emerging Mayor’s Transport Strategy and London Plan. Running southwest – northeast, it will transform the wider region’s transport network, reduce bottlenecks and unlock the delivery of 200,000 new homes and jobs. We submitted a business case in spring and we continue to work with several government departments to optimise the scheme and develop clear funding and delivery plans. We plan to run a major public consultation in 2018.

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. Public consultation on the extension closed in April and we published the results in July. We appointed design and engineering support in September to assist with completing a review of alternative proposals and detailed issues raised by the consultation and to further develop the scheme design. We plan to publish a response to the consultation in January 2018, a further response in April and also complete route-wide design work by April.

The Docklands Light Railway rolling stock replacement programme will replace life-expired rolling stock and deliver 10 additional units, providing capacity to meet the projected growth in the Docklands area. To support the new trains, an extended depot at Beckton will be required, comprising a new maintenance facility, additional sidings, and an extended automatic train operation (ATO) test track. Works to update the Thales ATO signalling system and strengthen the traction power system will also be required. We have prepared the invitation to negotiate for the replacement rolling stock and it was issued on 17 November to four pre-qualified bidders. The Beckton depot concept design is progressing well and we expect to issue the pre-qualification questionnaire for the design and build contract early in 2018.

The aim of the Rotherhithe to Canary Wharf river crossing project is to provide a connection for pedestrians and cyclists in east London, improve sustainable travel choices and support economic growth. Please refer to page 40 in the Healthy Streets section for further information on this project.

\* This is funded by Crossrail

# London Underground

## Stations

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021/22*</b>	<b>1,894</b>	<b>3,106*</b>	<b>2,795*</b>

2017/18 budget milestone RAG:

**We are improving customer accessibility by significantly increasing the number of stations that provide step-free access. 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.**

### Accessibility including step-free access

We are working on a wide programme of accessibility improvements across the LU network, including a range of customer service and information enhancements. We are also working to make 40 per cent of stations accessible by providing new step-free access at 30 stations by 2022. Procurement continues for a revised specification of accessibility lifts (as we have simplified requirements to encourage wider competition from potential suppliers) and for early delivery of the first eight step-free access schemes. We also continue feasibility studies for 13 schemes, to be delivered in phases.

### Integrated stations programme

We are making improvements to a number of stations, including five that will interchange with the Elizabeth line. We are currently completing works at Liverpool Street and Moorgate to ensure a consistent stations environment across the entire Elizabeth line when it opens between Paddington and Abbey Wood in December 2018.

Following the completion of the modernised Northern line ticket hall, a new entrance and retail unit opened at Charing Cross in June. We are continuing with improvement works in non-public areas of the station.

Liverpool Street and Moorgate stations remain open to customers while we continue improvements such as re-tiling, CCTV, lighting and stations systems works.

We continue replacement of the platform 5 and 6 canopy at Ealing Broadway following damage caused by Storm Doris in February.

### Camden Town station capacity upgrade

A second public consultation closed on 18 August. It followed feedback from a consultation in January and a review of the current station design to increase the value and reduce the cost of the capacity upgrade. Of the responses we received, 97 per cent either partially or strongly support the project.

We continue negotiations with the London Borough of Camden to buy Hawley Infants School, which is no longer required for educational purposes. The land that it occupies would be used for the construction of the project and would form a large proportion of the new station.

### Station capacity

We continue a feasibility study to address capacity issues at Stratford, both immediately and in the long term.

A first consultation to present proposals to improve capacity at Holborn station and obtain public feedback on the need for it started on 18 September and will continue until 17 November.

### Civils (bridges, structures and deep Tube tunnels)

We continue to replace the staircases at Barons Court and Piccadilly Circus and we expect to complete them both by the end of 2017.

### Other station projects

We have completed works to comply with Rail Vehicle Access Regulations (RVAR) on the Northern line, which is now fully RVAR compliant. We are currently finishing the last mobility boarding ramp location at Moorgate, having previously installed them at Finchley Road, Mornington Crescent, Hampstead and Mill Hill East.

\* 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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## Stations continued

### Collaborative Enhancements and Third Party Projects

Negotiations for a development agreement for the Elephant & Castle Northern line station capacity and accessibility upgrade requirements continue following Delancey's submission of a planning application last quarter to redevelop the Elephant & Castle Shopping Centre and integrate a new station entrance. We continue to develop the concept design.

At Finsbury Park, we continue southbound lift shaft works and we are in the process of tendering for fit-out works due to start at the end of 2017.

We are progressing with the ticket hall refurbishment and the installation of two lifts at Bromley-by-Bow.

At Tottenham Hale, we continue works to upgrade the ticket hall, station entrances and Network Rail interchange.

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 Sellar Property Group (SPG) as part of its redevelopment of an adjacent building, which has been granted planning approval. We are in discussion with SPG on the interface between its redevelopment and our station improvements.

### Assurance

Project Assurance completed an Integrated Assurance Review on the LU Stations programme submitted to the Programmes and Investment Committee meeting on 28 June. Thirteen recommendations were made and accepted, including six by the Independent Investment Programme Advisory Group (IIPAG). A quarterly update was provided to the Programmes and Investment Committee meeting on 13 October, and progress is being made to close the 13 recommendations. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.





## Track and civils

### Track and drainage renewals

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>Annual</b>	<b>69</b>	<b>139</b>	<b>139</b>

2017/18 budget milestone RAG: 

To continually improve reliability, reduce maintenance costs and allow capacity increases, we are replacing our ballasted and deep Tube track, points and crossings, and improving track drainage infrastructure.

We replaced 1.3km of deep Tube track, 0.9km of drainage and six sets of points in Quarter 2, which meets our targets for the year to date. We also replaced more than 1.9km of ballasted track, which was below our target of 2.5km as we could not start on site at South Woodford and Leytonstone owing to a trespasser on the track and a subsequent fire.

One of our deep Tube track renewal teams won a Beacon award for its management and safe completion of the renewal of Northern line track southbound at Waterloo.

We completed almost 500m of ballasted track renewal at Alperton on the Piccadilly line, replacing wooden sleepers with new concrete ones that are more durable and have a longer life expectancy. We also waterproofed two bridges in the area to increase their lifespan.

At Rayners Lane, we renewed points using new Surelock units to improve reliability.

To improve track drainage, increase track life and reduce maintenance on the Metropolitan line, we have completed slab track installation in the southbound tunnel from Baker Street to Finchley Road. In a world first for a metro system, we delivered more than 1,400m of slab track and 1,600 cubic metres of concrete in extended overnight working that started in May last year between Aldgate and Wembley Park. Work has now started on the northbound tunnel.

## Infrastructure renewals

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021/22*</b>	<b>371*</b>	<b>749*</b>	<b>600*</b>

2017/18 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. Through enhancements to existing assets, we are also increasing the generation and use of low and zero carbon energy.

### Lifts and escalators

We completed escalator refurbishments at Angel, Chancery Lane, Westminster, Holborn and North Greenwich. At Chancery Lane, we also replaced the central staircase and have started escalator refurbishment at Charing Cross.

We replaced three lifts at King's Cross, returning step-free access to the Circle, Hammersmith & City and Metropolitan lines ahead of schedule, despite some complex civil engineering lift shaft works.

Lift replacement is under way at Goodge Street, Wembley Park and Chalk Farm stations. All stations will remain open during the works.

To continue to provide step-free access while we refurbish lifts at Jubilee line stations, we are reviewing options to upgrade service lifts for customer use, reduce work durations or slightly delay the start of some of the refurbishments.

### Power and Energy

As part of the Mayor's pledge to make London a zero carbon city by 2050, we are making the most of waste heat from the Tube. Site work continues on Islington's Bunhill scheme, where waste heat from the Northern line will be piped into homes. At TfL buildings and offices we are implementing energy conservation measures, such as solar panels.

We continue major tunnel ventilation system upgrade works at Park Square Gardens and Hay's Mews to reduce temperatures in tunnels on the Jubilee line between Baker Street and Green Park. These works will take approximately one year.

At Queensbury, we completed the transformer room fit-out on schedule and we successfully commissioned a new transformer at Stratford Market depot.

\* The figures represent the lift and escalator renewals (until 2021/22) and power and energy projects (until 2018/19)

## Infrastructure renewals continued

### Assurance

Project Assurance completed an Integrated Assurance Review on the LU Infrastructure renewals programme submitted to the Programmes and Investment Committee meeting on 28 June. Twelve recommendations were made and accepted, including six by IIPAG. A quarterly update was provided

to the Programmes and Investment Committee meeting on 13 October where three recommendations were closed and progress is being made to close the remaining nine. Project Assurance tracks the progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

## Rolling stock renewals

Forecast completion	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2024</b>	<b>135</b>	<b>445*</b>	<b>746</b>

2017/18 budget milestone RAG: 

**We are modifying passenger rolling stock to improve safety, accessibility, reliability and customer satisfaction, while reducing maintenance costs. We are also modifying our existing engineering vehicles that support track maintenance or procuring replacement vehicles to reduce the cost of infrastructure renewals and minimise line closures.**

We are carrying out a series of improvements, including works to comply with Rail Vehicle Accessibility Regulation (RVAR) requirements, to ensure continued reliability of the Bakerloo train fleet until its replacement during the Deep Tube upgrade programme. We have completed the first phase of this, involving car body structural repairs, on 13 out of a total of 36 trains. As part of the RVAR works, we have awarded the contract for LED lighting, which will reduce power consumption and therefore reduce cost.

The tenth refurbished Jubilee line train out of 63 is back in service. The refurbishments include a separate RVAR-compliant wheelchair area, new flooring, refreshed interior decoration, plus sealing to the roof and windows to address water ingress issues.

We have converted a passenger train into two rail adhesion trains for the Piccadilly line to prevent wheel wear during the 2017 leaf-fall season.

We have awarded the contract for the design, manufacture and supply of a passenger information system for the Central and Bakerloo lines. We expect to complete the award recommendation for the saloon carriage CCTV for the Central line fleet in November.

Life extension works are complete on all of the 29 battery locomotives. We are also carrying out improvement works on our engineering vehicles – eight have had traction equipment overhauls and all 29 have been upgraded to 750 volts.

On our Trains Modification Unit workshop project, we completed the



evaluation of bids for the design and build contract, which we awarded in late October.

The milestone RAG status relates to a delay to the weld repairs to extend the life of Bakerloo line trains. The original completion date for our project to overhaul Bakerloo line trains was April 2020. We have introduced a more intensive work programme and have reduced our reliance on agency staff. This means that the work is now scheduled to be completed by April 2019, allowing passengers to benefit from quicker, more reliable journeys.

The contract for the manufacture and supply of a replacement Central line fleet propulsion system started five months behind schedule following a legal challenge from an unsuccessful bidder. A court date of May 2018 has been confirmed.

In addition to preparing for the court case, we are revising the delivery model for the Central line improvement programme (CLIP) to remove the current cost pressure. This will impact the overall programme duration but the work will be delivered within the available £314m in the Business Plan. It will also reduce the number of trains needed to be taken out of service by fitting the propulsion system in parallel with other upgrade works and avoid the

need for rework. Programme options are being considered to maximise delivery efficiency and minimise cost (subject to consultation and agreement) and deliver the programme by October 2023.

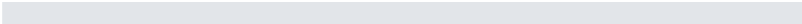
#### Assurance

Project Assurance completed an Integrated Assurance Review on the Rolling stock renewals programme submitted to the Programme and Investment Committee meeting in March. Eighteen recommendations were made and accepted, including eight by IIPAG. A quarterly update was provided to the Programmes and Investment Committee meeting on 13 October where 14 recommendations were closed, and good progress is being made to close the remaining four. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

## Signals, control and information

### Information communication technology transformation

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>32</b>	<b>36</b>	<b>73</b>

2017/18 budget milestone RAG: 

**We are improving capability to support delivery of our priorities of safety, reliability, capacity, and transformation of customer service, including the upgrade of operationally critical and safety-related systems.**

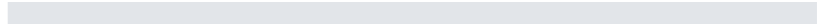
We continue works to enhance our ability to remotely view CCTV from more stations. Detailed designs and installations are 95 per cent complete, with CCTV enhancements in use at 42 per cent of stations.

We are improving customer information at Circle, District, Hammersmith & City and Metropolitan line stations. Twenty stations are complete and works at the remaining 34 stations are on schedule.

To improve customer safety by enhancing one-person operation CCTV views for train operators on busy platforms, we are relocating equipment and painting end barriers on platforms. Works completed in the quarter include the installation of yellow platform edge barriers and the relocation of signage. Works to relocate cameras continue, with some stations at detailed design stage and the remainder at tender stage.

### Piccadilly line interim upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>32</b>	<b>47</b>	<b>45</b>

2017/18 budget milestone RAG: 

**We are taking an interim step to replace the life-expired Piccadilly line control system and control centre ahead of a full line upgrade planned as part of our Deep Tube upgrade programme.**

We are improving the signalling reliability to better monitor and manage the Piccadilly line. The installation and commissioning of the infrastructure to extend the line signalling control system to Turnham Green is complete and we are preparing to start installation works on the Rayners Lane branch. Phased commissioning is planned to start in 2018 and will be completed in early 2019.

The new Piccadilly line control centre in West London continues on schedule. We have built the equipment room for the Connect radio system and it is ready for equipment delivery and fit-out.



# Surface

## Healthy Streets

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021/22*</b>	<b>66*</b>	<b>439*</b>	<b>1,780*</b>

2017/18 budget milestone RAG: On Track

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.

### Cycle Superhighways

On the East-West Cycle Superhighway, we have completed all infrastructure works within St James's Park. We have started to resurface Birdcage Walk and, once complete, we will resurface the roads within St James's Park that are close to Buckingham Palace.

The public consultation on Cycle Superhighway 9 (Kensington Olympia to Brentford town centre) started on 21 September. The public consultation for Cycle Superhighway 4 (Tower Bridge to Greenwich) started on 28 September. The proposals have been designed to make cycling and walking easier, safer and more appealing.

We continue to design for CSII and Phase 2 of the North-South Cycle Superhighway. Phase 2 construction is expected to start in November.

### Mini-Hollands

Of the 102 schemes (97 infrastructure and five supporting measures), 20 are complete. Two started on site this quarter including the A1010 South and the A10 Great Cambridge Road/Salmon's Brook crossing schemes, both in the London Borough of Enfield.

In total, 19 schemes are under way including the Kingston Station scheme, A105 Green Lanes and the Lea Bridge Road scheme in Waltham Forest.

### Central London Cycling Grid

Construction of the core network continues, with 59 per cent (50km) complete or under way. Construction is under way in the boroughs of Hackney, Islington, Lambeth, Southwark and the City of Westminster. Wayfinding is being introduced in the City of London, the Royal Borough of Kensington and

\* The forecast completion year and financials relate to the Business Plan period until 2021/22 and do not include any historic spend.

## Healthy Streets continued

Chelsea, and the boroughs of Hackney, Islington, Southwark and Lambeth.

As part of the future Grid programme, 62km of additional Grid routes have been identified, which we are prioritising for delivery.

### Cycling Quietways

Construction is complete or under way on 90km out of a potential c. 250km of routes. Of this, 53km are the first seven Phase 1 routes. The remaining 37km is Phase 2, where construction continues on 10 routes: Q14 Thames Path, Q16 Grand Union Canal, Newham Greenway, Ealing Broadway to Greenford, Notting Hill to East Acton, Wandsworth to Teddington, Greenwich to Bexleyheath, Wimbledon to Raynes Park, Bermondsey to Catford and Woolwich to Lee Green.

### Oxford Street

We have carefully considered feedback from a public consultation that closed in June on initial proposals for the transformation of the western section of Oxford Street and we published a detailed report responding to the issues raised in September.

A public consultation on our proposals for the transformation of Oxford Street and the effects they are likely to have began on 6 November and will close on 17 December. Subject to the result of this consultation, main construction works could start in spring 2018.

### Rotherhithe to Canary Wharf river crossing

As part of the strategic outline business case development, we have reviewed the options for a new river crossing from Rotherhithe to Canary Wharf, looking at costs, benefits, risks and other considerations. The project's aim is to provide a connection for pedestrians and cyclists in east London, improve sustainable travel choices and support economic growth. A paper recommending the provisional selection of a bridge as the preferred option to be developed in more detail was approved by the Programmes and Investment Committee on 13 October.

Work is under way on the design options for the bridge, considering core parameters such as landings, alignment and spans, heights and clearances above water, access arrangements and lifting mechanisms. A public consultation on the options for the new crossing began on 8 November and will close on 8 January 2018.

### Transformational programme

We continue construction of new cycling and pedestrian infrastructure at Westminster Bridge South. Bus stop bypasses outside St Thomas' Hospital opened on 14 September, providing segregated cycle lanes that connect to mandatory cycle lanes across Westminster Bridge. We expect to complete construction by the end of 2017.

In partnership with the London Borough of Lambeth, we have completed a public



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## Healthy Streets continued

consultation on the transformation of the area around Waterloo roundabout and Waterloo Road. Our proposals would create a larger, greener and more accessible public space for local communities, pedestrians, bus passengers and cyclists. We are now considering the consultation responses and we will publish a report detailing our responses to the issues raised and a way forward for the scheme in due course.

Public consultation on proposals for the long-term transformation of Lambeth Bridge North and South closed on 20 August and we are preparing the consultation report.

A second public consultation on proposals for transforming Fiveways Croydon closed on 18 September. Working in partnership with the London Borough of Croydon, we are proposing major changes to the road layout in Waddon, Croydon including simplifying the junction, increasing capacity and improving conditions for walking and cycling. We are reviewing the consultation responses before a way forward for the scheme is announced.

We held several public engagement events on proposals for improvements to Vauxhall gyratory and bus station. We plan to submit a planning application to the London Borough of Lambeth later this year.

We have finalised a preferred land acquisition option for Wandsworth

gyratory removal and have started negotiations with landowners. We plan to seek in principle approval from the Board in spring 2018 to make a Compulsory Purchase Order.

We issued a detailed design and build invitation to tender for Old Street to our new civils project framework contractors in June and we appointed a contractor to carry out design and construction work in September, with main works scheduled to begin in autumn 2018.

### Bus priority reliability and growth programme

We delivered 47 bus priority schemes across 15 London boroughs this quarter, with nine schemes delivered on the TLRN. This included the creation of an extra lane by realigning existing lanes on the northbound approach to Rotherhithe Tunnel, which is estimated to save 2.5 minutes of journey time for each bus in both directions.

To date, 82 schemes have been completed this year, achieving 34 per cent of the target and representing a bus journey time saving of approximately 13 hours in the morning peak.

### Multi-modal network improvements

This includes other schemes on the TLRN and borough networks that support delivery of Healthy Streets outcomes.

Design continues for improvements at key TLRN junctions and corridors, including the A205 at Tulse Hill and Bruce Grove, and along the A23 at Streatham

Hill. Proposals will bring safety, cycling, walking and urban realm benefits.

A public consultation on our proposals to improve connectivity at Charlie Brown's roundabout in South Woodford closed on 4 August. The proposals would introduce new pedestrian and cycle crossings. We are reviewing the consultation responses before a way forward for the scheme is announced.

### Technology programme

We are providing the technology, tools and processes to manage London's road space more efficiently and effectively as demand for road space increases. The Surface Intelligent Transport System programme will reduce delays and improve journey times for all road users. This will be achieved through faster, automated responses to live road conditions using an enhanced Urban Traffic Control (UTC) system, which operates the traffic signals using centrally controlled timing plans.

We continue the procurement of replacement UTC and Split Cycle Offset Optimisation Technique systems. We have completed the invitation to negotiate and bidder dialogue initial stages. Final submission and contract award is planned for December.

We also continue preparation for a replacement system for managing incidents on the road network. Data pilots are under way to define and plan the full procurement activity for this.

## Other programmes and projects

Construction of Crossrail complementary measures continues with 11 out of 17 schemes under way and two completed at Chadwell Heath and Romford.

### Assurance

Project Assurance completed an Integrated Assurance Review on the Healthy Streets programme submitted to the Programmes and Investment Committee meeting in March. Nine recommendations were made and accepted, including three by IIPAG. A quarterly update was provided to the Programmes and Investment Committee meeting on 13 October where six recommendations were closed and good progress is being made to close the remaining three. Project Assurance tracks the progress against the recommendations made (including by IIPAG) as part of its continuous assurance.



## Air quality and environment

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021/22*</b>	<b>17</b>	<b>202*</b>	<b>428*</b>

2017/18 budget milestone RAG:  

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

### Emissions Surcharge

We have completed the detailed design and development work for the Emissions Surcharge, where drivers of the oldest, most polluting vehicles will pay £10 in addition to the existing Congestion Charge. Integration, regression testing and performance testing were also completed on schedule ahead of the 'go live' on 23 October.

### Vehicle compliance zone

Having finalised the requirements that we will use with our suppliers to build the system for the central London Ultra Low Emission Zone (ULEZ), we are finalising high level and functional designs and will start detailed design once these are complete.

We are reviewing the results of the consultation on the Mayor's proposal to bring forward the start date of the central London ULEZ to spring 2019. The Mayor is expected to make a decision in late autumn.

### TfL fleet compliance

During Quarter 2, through contract tendering we selected nine double-deck

bus routes that will deliver more than 200 ULEZ compliant buses into service by July 2018. Also through contract tendering we selected three single-deck routes on which more than 50 zero emission electric buses will come into service between 2018 and 2019. Currently, there are 1,500 single-deck and double-deck ULEZ compliant buses in service.

We continue to install NOx abatement equipment on buses along the Brixton/ Streatham corridor and we have fitted it on 144 buses so far, which is more than 60 per cent of the Low Emission Bus Zone. We have started to install it on the A12 Eastern Avenue, which is the third corridor in London to benefit from the Mayor's programme to improve air quality.

### Ultra Low Emission Vehicles (Rapid Charge Infrastructure)

We are prioritising delivery of Rapid Charge sites on TfL land and the TLRN and expect to achieve the target of 75 sites by the end of December and 100 by March 2018. The first two sites were commissioned in October.

\* Programme authority of £202m was approved by the Programmes and Investment Committee during Quarter 2 to reduce emissions from vehicles in London. It covers financial years 2017/18 to 2021/22.



## Public transport portfolio

### Cleaner and greener buses

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2017</b>	<b>347</b>	<b>347</b>	<b>347</b>

2017/18 budget milestone RAG: 

A total of 983 New Routemasters (out of 1,000) are now in service and 659 are using the cleanest Euro VI engine.

Opening windows have been fitted to all New Routemasters in service and those on the production line.

### London Overground stations capacity programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>22</b>	<b>29</b>	<b>31</b>

2017/18 budget milestone RAG: 

We are increasing capacity at some of our busiest London Overground stations. This includes work to reduce peak period congestion and improve accessibility at West Hampstead and Dalston Kingsland stations.

We continue the design for West Hampstead station to improve the entrance, accommodate future growth in customer numbers and provide step-free access to both platforms via lifts on a new, wide footbridge. The design also incorporates a widened pavement and integration with the Ballymore housing development and public square. The over-track footbridge is currently

forecast to complete two months behind schedule owing to access and logistics issues being agreed between Network Rail and the contractor prior to the start of the piling works. Discussions are under way with the contractor on how the station building works can be synergised to reduce the overall delay.

We have completed night-time sheet piling works, about which we liaised at length with the local residents owing to their proximity to West Hampstead station. Bore piling has started in day-time hours only.

### London Road User Charging (LRUC) and Traffic Enforcement Notice Processing (TENP) Contract Re-let

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2017</b>	<b>75</b>	<b>77</b>	<b>75</b>

2017/18 budget milestone RAG: 

We have re-let the TENP and LRUC contracts to consolidate and simplify the services after the expiry of the current contracts. The new service offers enhancements and increased self-service capability to customers.

Customers continue to benefit from being able to view historic transactions online. We are planning a November release date for our mobile app, which will be a new payment channel under this contract. This is the final element of scope to be delivered, after which the programme will close.

### Cycle Hire re-let

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>30</b>	<b>52</b>	<b>41</b>

2017/18 budget milestone RAG: 

We are delivering an improved Cycle Hire operating model. All contracts have transferred to the new suppliers, and service enhancements such as Single Sign On are planned for go live in 2018.

We have completed the transition of all remaining services from Serco to the new providers. This included the finance and payment systems and on-street management and cleaning of the docking stations. Since transition on 1 August, the

new operation has been running through the busiest time of the year with no major technical incidents.

In the final phase of the programme, we have started preparations to deliver a discount scheme for users of other TfL services and further integration with our technology services, including Single Sign On. We are also designing a new app.

## Assets

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021/22*</b>	<b>58</b>	<b>352</b>	<b>905*</b>

2017/18 budget milestone RAG: On Track

We maintain our strategic road network assets in a safe and reliable condition through prioritised and targeted renewals and refurbishment. This programme delivers a wide range of asset renewals including carriageway, footway, lighting, drainage, bridges and tunnels, traffic signals, bus stations and river assets.

### Asset renewals programme

Renewals are the day-to-day planned works that maintain and lengthen the useful life of an asset, either by replacing, refurbishing or partially reconstructing it.

In Quarter 2, we completed more than 54,000 square metres of road resurfacing at locations including the A3 Clapham Road (phase one – Hazelbourne Road to Cathles Road), A2 Old Kent Road (Mina Road to Rotherhithe New Road) and A10 Stamford Hill (Craven Park Road and Lynmouth Road).

We also replaced more than 1,900 square metres of pavement including Hanworth Road to Bromwells Lane on the A312 Harlington Road East.

We completed three bridge refurbishment projects, which included two weekend closures of the Staples Corner flyover on the A406 North Circular Road in September to replace the bridge joints. We also started bearing replacement

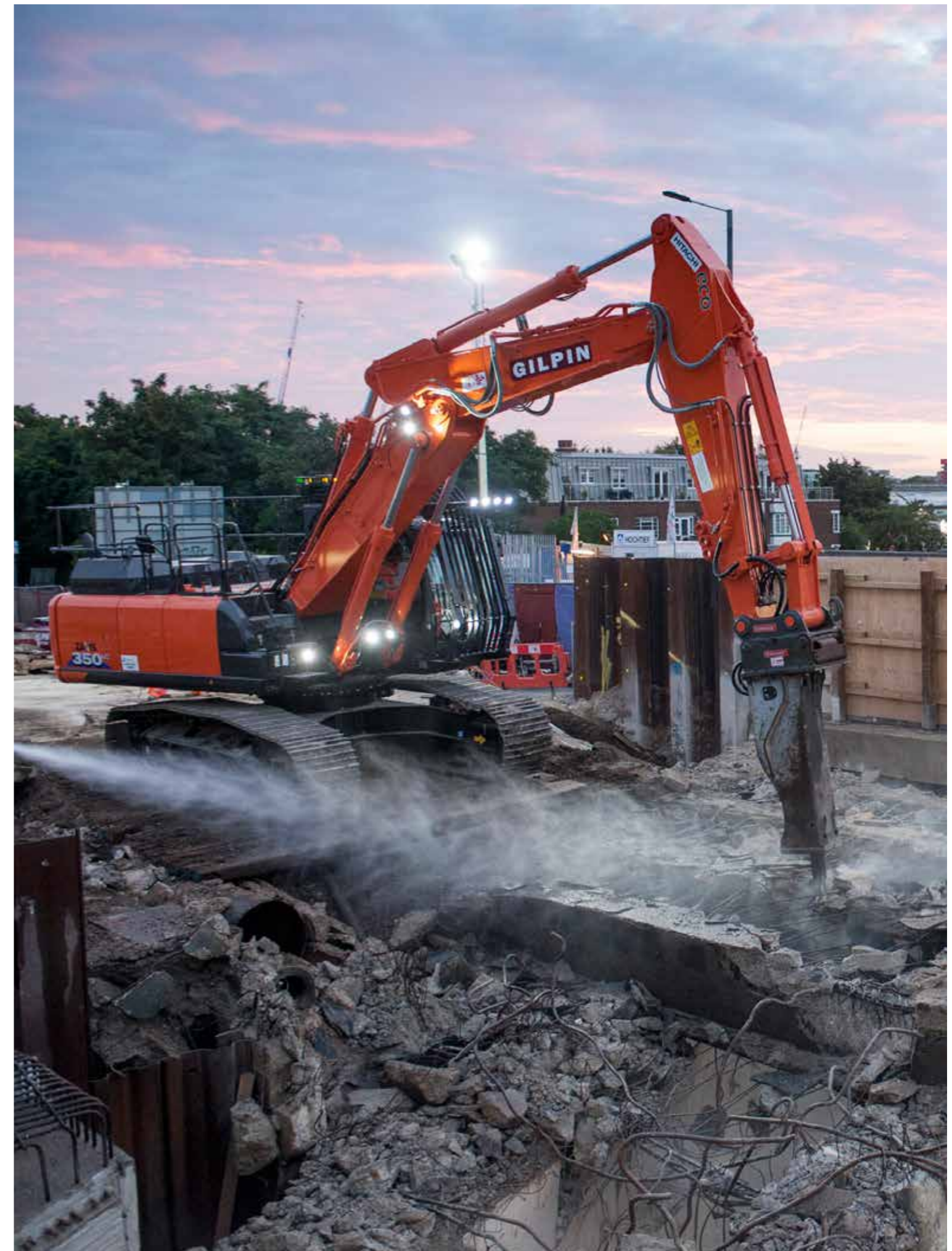
works at Greenford Roundabout, which are scheduled to complete in May 2018.

Several pump station renewals, including one at Trinity Road underpass, are under way and are planned to finish next quarter.

We have awarded a tender for the refurbishment of the staff facilities at the A12 Hackney Wick bus station. We also awarded a tender for bus information and booking window installations at three bus stations: Stratford, Harrow-on-the-Hill and Hammersmith (upper).

Other works included replacement of 105 bus shelters, 22 signalled junctions and more than 200 conventional lights with energy-efficient LEDs. We replaced 11 signalled crossings at locations including Gravel Hill tram crossing, Burdett Road/Bow Common Lane, Edgware Road/Marylebone Road, and the A3212 Chelsea Embankment/Royal Hospital Road.

\* The forecast completion year and EFC relate to the Business Plan period until 2021/22.



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### Structures and tunnels investment programme

This is a programme of major works to address high-priority risks. On the four road-over-rail bridge replacements that are currently under way, we:

- Continued utility diversion works at Highbury Corner, which involved several phased changes to the traffic management arrangements. These works are planned to complete ahead of the final demolition and rebuilding of the bridge this Christmas
- Installed the first half of the new bridge deck at Ardleigh Green Bridge, which was done both during a railway possession and during live operation of the railway beneath. We continue to build the road approaches to the new section of bridge and plan to switch traffic to them in December
- Demolished the first half of the existing Power Road Bridge on schedule during

a co-ordinated August bank holiday weekend railway closure. We were able to maintain one-lane traffic in each direction on the A406 during these works

We are also carrying out investigations to define the works required on other bridges and tunnels:

- Surveys, investigations and testing continue on Marylebone Flyover and the Westway
- Structural investigations to inform a feasibility study for the Brent Cross project continue and we expect to complete these next quarter
- We continue inspections and investigation works to inform a feasibility study for the Blackwall and Rotherhithe Tunnels

The data from the investigations will be used to determine priorities, based on risk, as well as preliminary options and costs.

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### River schemes

We continue construction of the two new replacement Woolwich Ferry vessels. Following a competitive tender, our contractor and its subcontractors began early contractor involvement, and the final berth designs are now complete. The majority of berth construction works are within the scope of the civils contractor, BAM, which was awarded the contract in August. We remain on schedule to enter the new vessels into service in winter 2018/19.

### Coaches

At Victoria Coach Station, we continue to develop proposals and feasibility works both for new coach facilities and to replace the roof glazing as part of our works to maintain the existing coach station.

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### Assurance

Project Assurance completed an Integrated Assurance Review on the Surface Assets programme submitted to the Programmes and Investment Committee meeting on 28 June. Ten recommendations were made and accepted, including five by IIPAG. A quarterly update was provided to the Programmes and Investment Committee meeting on 13 October where two recommendations were closed and progress is being made to close the remaining eight. Project Assurance tracks the progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

# Other

## Technology and data

### Future Ticketing Programme Phase 3, 4 and 5

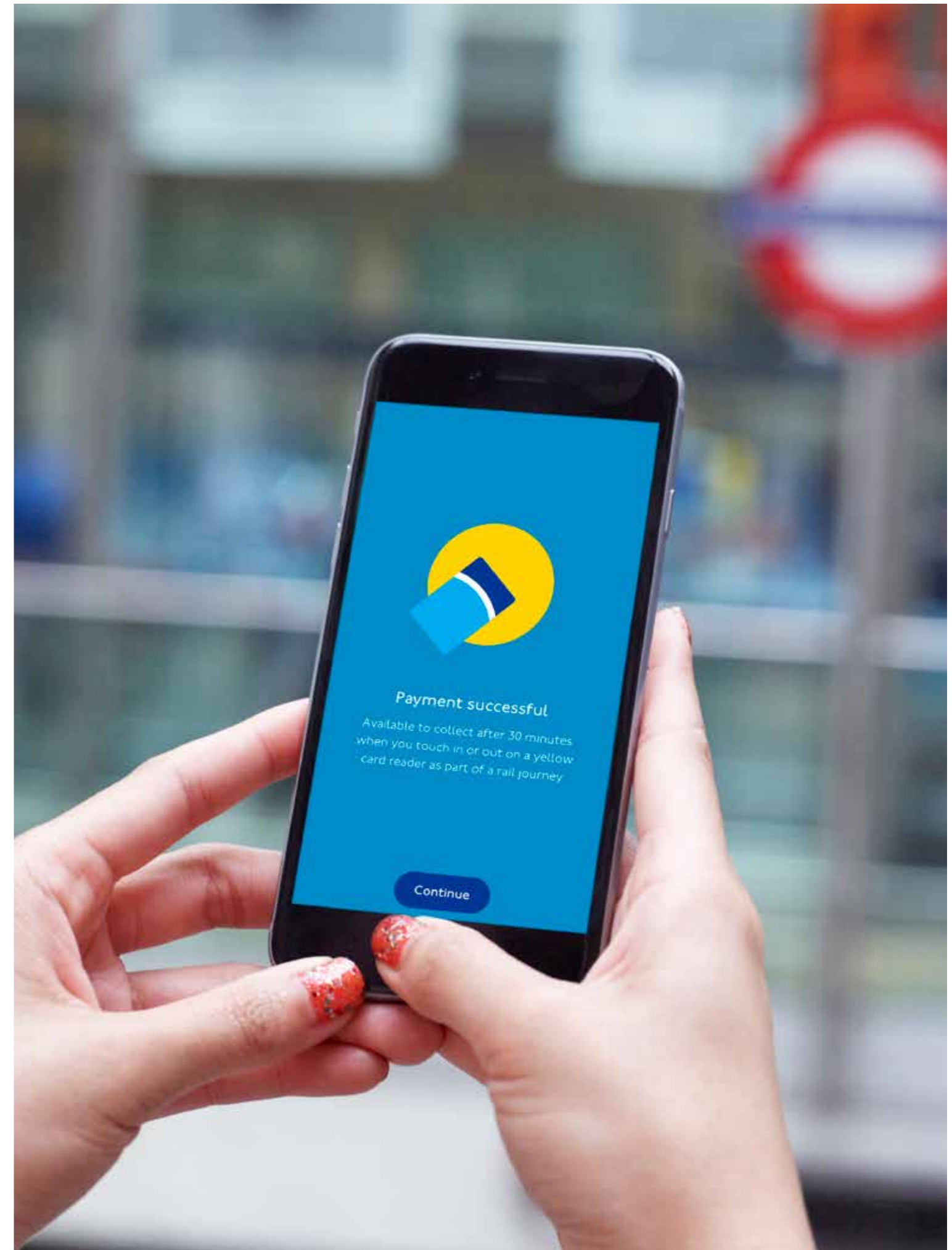
Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2018</b>	<b>26</b>	<b>44</b>	<b>43</b>

2017/18 budget milestone RAG:

We are making ticketing more convenient for our customers while reducing fare revenue collection costs. We are providing further benefits for Oyster and contactless customers, including a new mobile ticketing app and improved online processes.

Following implementation of the revised card scheme rules for Visa EU as part of Phase 3, we continue development work on the remaining card schemes.

Phase 4 saw the Oyster ticketing app launched for rail, tram and river customers on 7 September. This was extended to bus customers on 26 October. Since the launch, there have been more than 300,000 downloads and in excess of £3.6m travel products purchased. We have also started initial testing on weekly capping for Oyster customers and will soon begin testing multiple Bus Hopper functionality ready for deployment in 2018.



## TfL growth fund

### TfL growth fund programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2021/22*</b>	<b>n/a*</b>	<b>200*</b>	<b>200*</b>

2017/18 budget milestone RAG: 

Transport is vital to supporting growth and unlocking housing potential in London. Six million more journeys are forecast each day by 2041 and this growing population means more travel – whether for work, education, leisure or goods and construction traffic.

This programme allocates funding to support the delivery of transport schemes that help to accelerate housing delivery and unlock development and 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. Completed schemes include the transformation of the northern roundabout at Elephant and Castle.

The Barking Riverside extension project was successfully secured through a Transport and Works Act Order (TWAO) (refer to page 19). We can now proceed with the construction of the extension, which is planned to open in 2021, and will enable the delivery of 10,800 new homes at Barking Riverside, of which 50 per cent could be affordable.

We have begun a five-week consultation on plans for two potential new London Overground stations that would provide a link to the Elizabeth line and High Speed 2 and support the regeneration at Old Oak and Park Royal in west London. This improved transport infrastructure would also support plans for 25,000 new homes and 65,000 new jobs.

#### Sutton Tram extension

We are working with the London Borough of Sutton, the London Borough of Merton and the Greater London Authority (GLA) to identify a funding package for an extension to the Tram network at Sutton. Subject to the availability of a full funding package, we plan to submit a TWAO application by 2020.

#### Rotherhithe to Canary Wharf crossing

We began a public consultation on the options for this crossing in November (refer to page 40).

#### Shortlisted schemes

We continue to assess potential schemes that, together with the GLA, we have identified against agreed criteria, and we hope to announce more details later in the year. Funding is also currently being sought for some schemes through the Government's Housing Infrastructure Fund.

#### Assurance

Project Assurance completed an Integrated Assurance Review on the Growth Fund programme submission to the Programmes and Investment Committee meeting on 28 June. Eleven recommendations were made and accepted, including four by IIPAG. A quarterly update was provided to the Programmes and Investment Committee meeting on 13 October, where one recommendation was closed and progress is being made to close the remaining 10. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

\* Programme authority of £200m was approved by the Programmes and Investment Committee during Quarter 1 for developing and contributing towards the Sutton Tram extension and Rotherhithe to Canary Wharf crossing projects and for developing and delivering shortlisted schemes. This is not budgeted for spend until 2020/21.



## Elizabeth line

### On-network stations improvement programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2019</b>	<b>30</b>	<b>94</b>	<b>94</b>

2017/18 budget milestone RAG:

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

We continue to build the new footbridges and lifts at Maryland, Manor Park and Seven Kings. We installed the lift shafts at Manor Park in August and steelwork installation will continue during planned railway closures until Christmas 2017.

Following the issue of the tender for the detailed design and build of the lifts at the western section of the line last quarter, contract award remains planned for November 2017. Completion is planned for mid-2019, ahead of the introduction of full Elizabeth line services in December 2019.

We continue to finalise the scope of the refurbishment works for the first package of stations within this programme that are west of Paddington. We will tender for these packages later in 2017, with work starting on site in early 2018.

## Rolling stock

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
<b>2019</b>	<b>503</b>	<b>1,091</b>	<b>1,091</b>

2017/18 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.**

The first train began service in June between Liverpool Street and Shenfield, following acceptance of the first two trains from Bombardier Transportation. At the end of September, eight trains had been accepted, supporting passenger service and driver training.

Initial testing by Network Rail of the new European Train Control System on the Heathrow branch is complete, in readiness for Class 345 testing next quarter ahead of Heathrow to Paddington services starting in May 2018.

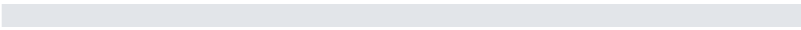
Testing of the first section of the new Crossrail tunnel infrastructure is planned to start by the end of 2017 using a Class 345 train.

Work continues at Old Oak Common depot to bring the first section into use in November.

The amber 2017/18 budget milestone RAG relates to the new fleet of 11 Class 345 trains being introduced into TfL Rail passenger service on the Great Eastern section from Liverpool Street to Shenfield later than planned because of software issues. These issues are being addressed but have delayed full fleet deployment until the end of 2017.

## Crossrail

Forecast completion year	Spend to date (£m)	Spend authority (£bn)	Estimated final cost (£m)
<b>2019*</b>	<b>*</b>	<b>14.8</b>	<b>*</b>

2017/18 budget milestone RAG: 

**Europe's largest infrastructure 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 when TfL-run services open through central London in December 2018 it will be known as the Elizabeth line.**

The project, which is now approaching 90 per cent complete, remains on time and within its funding of £14.8bn. There are, however, cost and schedule pressures on a small number of contracts which will continue to be actively managed by Crossrail Ltd. In addition, software development by Bombardier for the new rolling stock, its testing and availability for delivering Paddington to Heathrow services in May 2018 and the services under central London in December 2018 remains a high concern and is being closely monitored at senior level.

A number of significant milestones were achieved this quarter, including:

- Completion of all track in the central section

- Completion of the final spray concrete lining on the project
- Completion of all the final design overviews excluding Plumstead contracts
- Installation of the fibre backbone in the south eastern section of the route and connectivity with the Route Control Centre
- Network Rail commissioning of the auto transformer feeder sub-station at Kensal Green, ready to be integrated with the traction power in early 2018
- Completion of the Tottenham Court Road east ticket hall to enable handover to the over-site developer

There is intense focus on energising the central route to enable dynamic testing to start using the new rolling stock in the south eastern section this autumn. The installation of overhead lines that will power the trains continues along with the cabling that will carry signalling, communications and power for the train operation. Station fit-out continues, with half of the platform screen doors, more

\* Crossrail is opening in five stages from mid-2017 until December 2019. The Elizabeth line (Stage 3) launches in December 2018.

## Crossrail continued

than half of the escalators and a third of the lifts all now in place.

Significant attention continues on the safety regime for energisation and construction as well as the plans for testing and commissioning, regulatory approvals, operational readiness and handover in mid-2018 to ensure a period of trial running and operations before Elizabeth line passenger services begin at the end of 2018.

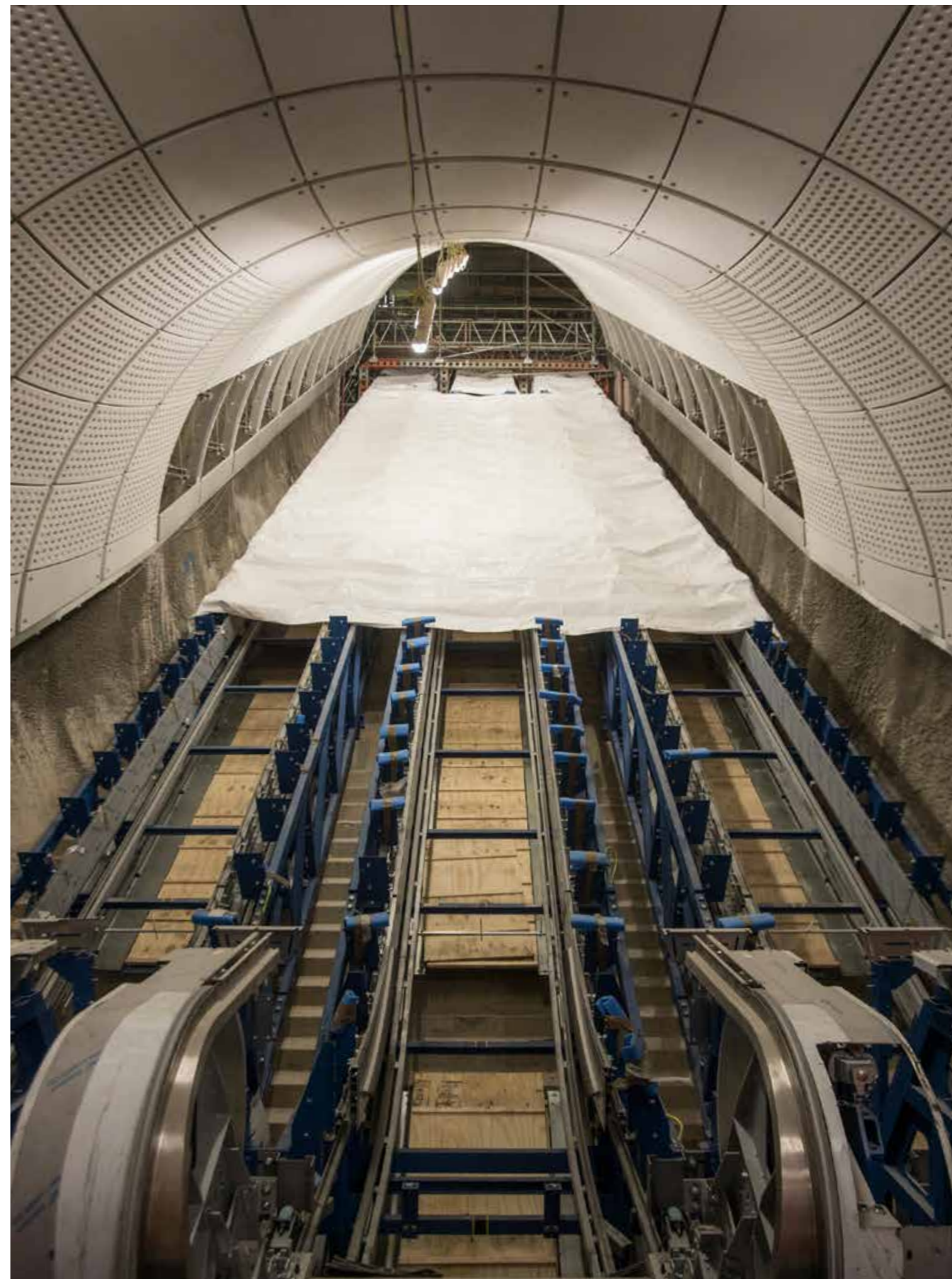
### Surface Works

The upgrade of the existing rail network for Crossrail, being undertaken by Network Rail, continues and is 90 per cent complete overall. Funding is in place to ensure that the scope of the surface works, including station upgrades to the east and west, is delivered in full. Crossrail will continue to push Network Rail for the more detailed

construction schedule for the station building upgrades that ensure completion by December 2019. The main works tender for upgrade of the western stations was issued in October to enable phased completion of the station upgrades from September to December 2019.

There has been a strong focus on installation of driver CCTV, platform extensions and gauging work on the western surface section as well as preparation for the critical works being carried out over Christmas.

The striking new station at Abbey Wood was handed over for management by MTR (operator of TfL Rail and the Elizabeth line) in October.





# Appendices

## Appendix A: 2017/18 Budget milestone performance

The TfL 2017/18 Budget milestones for the projects or programmes covered in this report are listed below. The red, amber and green (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.

Milestone description	Plan date	Actual/ forecast date	Status
<b>Line upgrades</b>			
<b>Four Lines Modernisation (4LM) S-Stock Train Roll-Out</b> <span style="color: orange;">■</span>			
Ealing Common depot de-icing facility operational	23-Jan-18	28-Sep-18	<span style="color: red;">■</span>
Identification of structural faults in the Ealing Common EC3 shed has led to additional work to stabilise the building, which in turn has impacted completion of the de-icing facility.			
Upminster depot de-icing facility operational	12-Feb-18	18-Dec-17	<span style="color: green;">■</span>
Transformer rectifier unit modification works complete to enable operation of 750 volt regeneration	23-Feb-18	31-Jan-18	<span style="color: green;">■</span>
<b>4LM Automatic Train Control (ATC)</b> <span style="color: orange;">■</span> *			
Communications based train control (CBTC) Service Control Centre operations training starts	13-Jun-17	18-Apr-17	Complete
Customer information system enabling works (phase 3) between Cannon Street, Paddington, Barons Court and Fulham Broadway completed	13-Jun-17	13-Jun-17	Complete
Design for fitment to battery loco type A engineering vehicle completed	30-Jun-17	26-Feb-17	Complete
Tower Hill track alignment works to support service uplift completed	07-Aug-17	02-Jul-17	Complete
All wayside signalling installation for the Edgware Road/ Finchley Road to Euston Square migration area complete	26-Jul-17	19-Dec-17	<span style="color: red;">■</span>

To avoid delays to completion of infrastructure impacting the signalling equipment installation, parallel working for this migration area is planned with the signalling contractor once construction work is complete. There is no impact on overall programme timescales.

\* The programme milestones will be rebaselined to reflect the current approach to early timetable delivery.

Milestone description	Plan date	Actual/ forecast date	Status
Ruislip depot commission area ready for passenger vehicle testing	21-Aug-17	06-Oct-17	<span style="color: orange;">■</span>
Post-installation check and testing on installed equipment between Hammersmith to Paddington to ensure correct working completed	12-Sep-17	16-Nov-17	<span style="color: orange;">■</span>
Track work completed to enable performance at the maximum safe speed as specified in the Thales contract	26-Sep-17	10-Nov-17	<span style="color: orange;">■</span>
CBTC fleet maintenance training starts	05-Oct-17	02-Jan-18	<span style="color: orange;">■</span>
Thales site software readiness review for release	19-Oct-17	30-May-18	<span style="color: red;">■</span>
We have paused software development to allow greater system design maturity prior to developing it further. This delay does not impact the planned commissioning date for the Finchley Road to Preston Road migration area.			
CBTC Circle and Hammersmith & City lines train operators – training starts	24-Oct-17	31-Aug-17	Complete
Hammersmith Service Control Centre information and communication system site acceptance testing completed	25-Oct-17	11-Jan-18	<span style="color: orange;">■</span>
CBTC signalling operators training starts	05-Nov-17	13-Mar-18	<span style="color: red;">■</span>
Delays to the completion of the training facility at Acton initially impacted the training start date, which has been further delayed by three weeks this quarter to coordinate the training with the wayside infrastructure pilot and training.			
Wayside infrastructure (signal equipment rooms, power and cable management system) for Circle line completed	29-Nov-17	15-Feb-18	<span style="color: orange;">■</span>
CBTC 30 Metropolitan line trains (half the line's fleet) fitment completed	05-Dec-17	10-Nov-17	<span style="color: green;">■</span>
CBTC testing of system along areas that do not interface with mainline rail	28-Dec-17	25-Jul-17	Complete
Final design and structure of track layout for Farringdon Sidings approved	16-Jan-18	14-Dec-17	<span style="color: green;">■</span>
CBTC signalling system performance monitoring for Hammersmith to Paddington – completed	05-Feb-18	29-Mar-18	<span style="color: orange;">■</span>
Wayside infrastructure (signal equipment rooms, power and cable management system) for District line east completed	27-Mar-18	13-Jun-18	<span style="color: orange;">■</span>
CBTC signalling system ready for commissioning between Hammersmith and Latimer Road	31-Mar-18	28-Mar-18	<span style="color: green;">■</span>

Milestone description	Plan date	Actual/ forecast date	Status
<b>World class capacity</b> ■			
Victoria line upgrade 2 ready for extending to 36 trains per hour service	21-May-17	12-May-17	Complete
Jubilee line upgrade 2 ready for extending to 30 trains per hour service	24-Aug-17	n/a†	n/a†
Jubilee and Northern line additional trains contract award	19-Oct-17	n/a†	n/a†
Northern line upgrade 2 detailed design for the Morden track, civils, earth and structures completed	06-Dec-17	n/a†	n/a†
Northern line upgrade 2 Morden civil earth structure site works begin	05-Feb-18	n/a†	n/a†
<b>Network extensions</b>			
<b>Northern line extension</b> ■			
Tunnelling between Battersea and Nine Elms station completed	01-Aug-17	04-Aug-17	Complete
Kennington Loop enabling works complete	15-Sep-17	18-Aug-17	Complete
Kennington Green shaft – second tunnel boring machine arrives	20-Oct-17	05-Nov-17	Complete
Kennington Loop – 10 day closure for works	23-Dec-17	23-Dec-17	■
Nine Elms station – break through into the existing Northern line tunnels	16-Mar-18	30-Jan-18	■
Nine Elms station – all B2 top-down slabs poured as part of the top down construction method	31-Mar-18	12-Feb-18	■
<b>Silvertown Tunnel</b> ■			
Invitation to negotiate issued	20-Jun-17	20-Jun-17	Complete
Property cost estimate, as at June 2017, of land required for construction at Silvertown Tunnel	14-Jul-17	16-Jun-17	Complete
<b>Barking Riverside extension</b> ■			
Main works tender issued	03-Oct-17	08-Jan-18	■
The design phase has been extended owing to unexpected complexities with traction power and topographical surveys. The tender for the main works contract will be issued on completion of the design.			

†These milestones are no longer relevant as a result of the pause of the programme.

Milestone description	Plan date	Actual/ forecast date	Status
<b>Stations and infrastructure</b>			
<b>Victoria station upgrade</b> ■			
Basement areas handed back to Network Rail	26-Jun-17	23-May-17	Complete
North ticket hall completed including step-free access to all platforms via lifts	31-Dec-17	16-Mar-18	■
<b>Bond Street station upgrade</b> ■			
Station back into full service	27-Aug-17	21-Nov-17	■ ‡
Station upgrade complete, including a new station entrance and step-free access to all platforms	31-Dec-17	29-Dec-17	■ ‡
<b>Bank Bloomberg Place</b> ■			
Waterloo & City line entrance opens to customers	18-Jan-18	05-Mar-18	■
<b>Bank station capacity</b> ■			
Tunnelling begins	31-May-17	10-May-17	Complete
Excavation works begin	16-Oct-17	26-Oct-17	■
<b>Bakerloo line link</b> ■			
All systems (such as link switch rooms, lifts, chiller room, and link tunnel) installed and tested for start of integration and testing	29-Mar-18	25-Jan-18	Complete
<b>LU track and civils</b> ■			
Completed renewal of 15 points and crossings units	31-Mar-18	31-Mar-18	■
Completed renewal of 2,500 metres of track drainage	31-Mar-18	31-Mar-18	■
Ballasted track renewal and re-ballast – 7,000 metres completed	31-Mar-18	31-Mar-18	■
Deep Tube renewals – 2,500 metres completed	31-Mar-18	31-Mar-18	■
<b>LU infrastructure renewals</b> ■			
<b>Lifts and escalators</b>			
Euston escalator 5 refurbishment – escalator fully operational	24-Jul-17	29-Jun-17	Complete
Lancaster Gate lifts 1 and 2 replacement – new lifts fully operational	28-Aug-17	26-Jun-17	Complete
Final escalator at Holborn station (Piccadilly line) – operational	20-Oct-17	30-Aug-17	Complete

‡These were completed post quarter end

Milestone description	Plan date	Actual/ forecast date	Status
<b>Power upgrades</b>			
Central line resilience works Bow and South Woodford – contract award recommendation	08-May-17	07-Apr-17	Complete
Power asset renewals Park Royal Group high voltage – start on first site	17-May-17	03-Apr-17	Complete
Dual power – Queensbury transformer room fit-out completed	31-Aug-17	15-Aug-17	Complete
<b>LU rolling stock renewals</b>			
Bakerloo line rolling stock life extension weld repairs – 20 of 36 trains complete (target for full completion – November 2018)	13-Dec-17	26-Mar-18	■
A significant number of critical weld project employees left TfL as a result of IR35 - a revised tax legislation affecting public sector contractors. We are currently working on mitigations to reduce the impact on the project.			
<b>Healthy Streets</b>			
Oxford Street west transformation – first public consultation	21-Jun-17	24-Apr-17	Complete
Archway gyratory construction (excluding Despard Road loading bay) complete	09-Jun-17	24-May-17	Complete
50km (about 60 per cent) of borough Central London Cycling Grid network either in progress or completed	30-Sep-17	30-Sep-17	Complete
Cycle Superhighways route II – Swiss Cottage detailed design work completed	15-Dec-17	20-Oct-17	■
Wandsworth gyratory removal – Board approval of the principle of making a Compulsory Purchase Order	15-Dec-17	28-Nov-17	■
Surface Intelligence Technology implementation – notification of Urban Traffic Control contract award to selected supplier	22-Feb-18	30-Nov-17	■
4km of segregated Enfield Mini-Hollands cycle route completed	31-Mar-18 <sup>§</sup>	30-Oct-17	■ <sup>§</sup>
100km of Cycling Quietways construction either complete or in progress	31-Jan-18	31-Jan-18	■
Bus priority improvements of 64 minutes to bus journey time on borough roads through schemes aiming to reduce delays owing to the Road Modernisation Plan	31-Mar-18	28-Feb-18	■
Crossrail complementary measures – implementation completed on four schemes	30-Mar-18	30-Mar-18	■

<sup>§</sup>The plan date of 31-Mar-18 is an error and should be 30-Oct-17

Milestone description	Plan date	Actual/ forecast date	Status
<b>Air quality and environment</b>			
75 per cent of the buses operating in the ULEZ will be compliant	30-Mar-18	02-Mar-18	■
Emissions Surcharge (T-Charge) launch	23-Oct-17	23-Oct-17	Complete
<b>Public transport</b>			
<b>London Overground stations capacity programme</b>			
West Hampstead station over-track footbridge completed	27-Oct-17	25-Dec-17	■
<b>Cycle Hire re-let</b>			
New operating model with new back office systems and different distribution, call centre and cleaning contracts – transitioned into service	30-Aug-17	30-Aug-17	Complete
<b>Other</b>			
London Overground track protection warning system detailed design approved by Network Rail	15-May-17	14-Apr-17	Complete
London Overground West Anglia stations programme main works completed	28-Jun-17	23-Jul-17	Complete
London Overground Willesden driving motor unit electrification option selection design approved by Network Rail	28-Jun-17	22-Aug-17	Complete
London Overground train crew accommodation – main works at Chingford completed	25-Feb-18	25-Feb-18	■
Trams assets gearbox overhauls started	02-Oct-17	05-Jun-17	Complete
Trams assets mid-life refurbishment completed	04-Mar-18	04-Feb-18	■
DLR rolling stock replacement concept design for Beckton depot completed	25-Feb-18	28-Jan-18	■
<b>Assets</b>			
Upper Holloway railway bridge replacement construction completed	24-Jun-17	24-Jun-17	Complete
<b>Other</b>			
<b>Technology and data</b>			
Contactless extended to the Oyster app	30-Mar-18	30-Mar-18	■
<b>IM</b>			
New multi-modal command and control system operational	31-Aug-17	26-Apr-17	Complete

Milestone description	Plan date	Actual/ forecast date	Status
<b>Commercial development ■</b>			
Five small development sites brought to market for property development through a pilot programme	30-Mar-18	29-Sep-17	■
Completion of the sale and lease back deal for the 55 Broadway building, which will deliver a significant capital receipt while retaining it as relatively low-cost office space	30-Mar-18	01-Mar-18	■
Six major sites brought to the property development market through a variety of routes including our Property Partnerships Framework and wider market engagement	30-Mar-18	30-Mar-18	■
Installation programme agreed for Digital Portrait advertising screens	04-Sep-17	27-Sep-17	Complete
<b>Elizabeth line integration</b>			
<b>Rolling stock ■</b>			
The first new trains (Class 345) on the Great Eastern section from Liverpool Street to Shenfield introduced into TfL Rail passenger service	31-May-17	22-Jun-17	Complete
Full fleet of new class 345 trains in passenger service on the Great Eastern section from Liverpool Street to Shenfield <sup>  </sup>	17-Oct-17	17-Oct-17	■ <sup>  </sup>

<sup>||</sup>This milestone refers to 11 new class 345 trains in passenger service on the Great Eastern section from Liverpool Street to Shenfield. Post quarter end, this is delayed until the end of 2017.

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