

**Date: 21 February 2018**

**Item: Investment Programme Report – Quarter 3, 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 3, 2017/18 of a range of projects that will deliver world-class transport services to London.

1.2 Quarter 3, 2017/18 covers the months from October to December 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 3, 2017/18.

**List of Background Papers:**

None

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# Transport for London investment programme report

Quarter 3 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, the financial and milestone data represents the position as at quarter end. We include commentary for key achievements and progress in the quarter; the report also contains, as far as possible, updates on any notable progress post quarter end prior to publication.

For a sub-programme and project with a defined start and end, we include the forecast completion year, which is when it is planned to be substantially complete and in customer use. Works such as road 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.

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

EFC increase of 2% or more:



EFC increase of 5% or more:



EFC decrease of 2% or more:



EFC decrease of 5% or more:



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

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

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

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

Each sub-programme or project also has an overall RAG milestone status, which represents the average forecast date variance against plan for 2017/18 budget milestones in line with the following key:

On time or early:



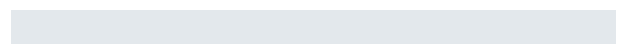
1-89 days late:



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 74).

Our Investment Programme is 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 our largest and most complex projects. It comprises the following areas: Line upgrades; Deep Tube upgrade; Network extensions; and Stations and infrastructure, which are covered in pages 16-34 of this report. Schemes to be delivered by Major Projects in future (see pages 35) will be reported in detail following authority approval
- London Underground comprises the following sub-programmes: Stations; Track and civils; Infrastructure renewals; Rolling stock renewals; and Signals, control and information, which are covered in pages 36-47
- Surface comprises the following sub-programmes: Healthy Streets; Air quality and environment; Public transport; and Asset investment, which are covered in pages 49-65. Following the re-let of the London Road User Charging and Traffic Enforcement Notice Processing contracts to consolidate and simplify the services, we launched the mobile app (a new payment channel under this contract) on 12 December and the project is now closed
- Other comprises the following sub-programmes: Technology and data; TfL growth fund; and the Elizabeth line (including Crossrail), which are covered in pages 67-73



Our Investment Programme covers Major Projects, London Underground, Surface and Other



# Safety

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

We held our first Supplier Awards in November to recognise the contribution that these companies make to running and improving transport in the Capital. There were more than 80 submissions for the eight different awards, across a range of categories such as best safety, health and environment initiatives, collaboration, and increasing opportunities for those underrepresented in the workplace.

FM Conway won the Best Safety Initiative award for its commitment to reducing work-related road risk and understanding the needs of staff that often have to work alone. Working with its IT experts and suppliers, FM Conway has developed an in-cab device to reduce driver distraction by blocking aspects of mobile phone usage, such as sending or receiving text messages.

Costain Skanska won the Best Health Initiative award for mental health. In collaboration with LU, awareness of mental health and its symptoms have been highlighted across the Bakerloo line link project, with dedicated and trained personnel providing confidential support to colleagues working on the project.

Ferrovial Laing O'Rourke JV won the Best Environmental Initiative award for its work on responsible resources. The highlight was transporting one million tonnes of excavated material by barge from the Northern line extension to create arable farmland from a historic landfill in Essex.

We have had some considerable achievements in our workforce safety. The Northern line extension recorded no serious injuries during its 3.2km of tunnelling, and the modernisation of the Circle, District, Hammersmith & City and Metropolitan lines has recorded more than 3.5 million hours without a serious injury. The Tottenham Court Road project has had no serious injuries for a year, equating to more than 600,000 hours of activity.

We are working with our suppliers to improve the safety of their workers. Through analysis of recent incident trends we identified that scaffold towers were, in some cases, not being assembled to the manufacturer's instructions. We have identified sites that are using towers and podiums and raised this with our suppliers to highlight the issue, ensuring that information is recorded and communicated, and that awareness is raised across all levels of our business to reduce the risk of further incidents.

We are rolling out our supplier Zero Harm forum and safety improvement groups across TfL to promote collaboration with clients and suppliers

on key health, safety and environment (HSE) issues. Our 'Making HSE personal' campaign is helping individuals to enhance their commitment through self-motivation. Our efforts so far have resulted in a 45 per cent reduction in lost time injuries compared with last year but, crucially, this approach has made safety an important topic of conversation between colleagues.

We held the first Bus Safety Summit with our bus operators in November, with experts from air, rail and construction industries sharing their safety leadership experience. We also announced the winners of our Safety Innovation Fund, where operators could bid for funding to trial new ideas that could improve safety for their employees or our customers. The successful bids included fatigue management, collision avoidance and safe acceleration technology.

### **Sandilands – tram overturning**

This report comes to the Committee following the publication of the Rail Accident Investigation Branch (RAIB) final report, published in December, into the tragic overturning of a tram at Sandilands junction on 9 November 2016.

We welcome the report and will continue to work alongside the RAIB, the Office of Rail and Road, and First Group, which operates the tram network, to ensure all of the recommendations outlined are met. We published our own investigation report on 15 January. Since the incident, we have introduced a wide range of extra safety measures

to make sure such a tragedy can never happen again. These include new signage and warning systems for drivers, further speed restrictions, enhanced speed monitoring and an upgrade of the CCTV recording system.

An in-cab driver protection device has been trialled and is now fitted to every tram, meaning that any sign of driver distraction or fatigue results in the driver being alerted immediately. Work to evaluate and design a system to automatically reduce tram speeds is under way.

We have enhanced the customer complaints process so that all reports are managed by one dedicated TfL team and any relating to safety are prioritised for immediate investigation. Our Sarah Hope Line continues to provide help with counselling and support to anyone affected by the tragedy.

We also continue to work with the wider tram industry to implement the RAIB's report recommendations and the lessons learnt from this incident, and to introduce any further measures that could improve tram safety across the UK. This work was discussed at a dedicated meeting of the Board's Safety, Sustainability & Human Resources Panel on 22 January.

We hosted a positive summit on 31 January and 1 February, attended by other UK tram operators and transport authorities.

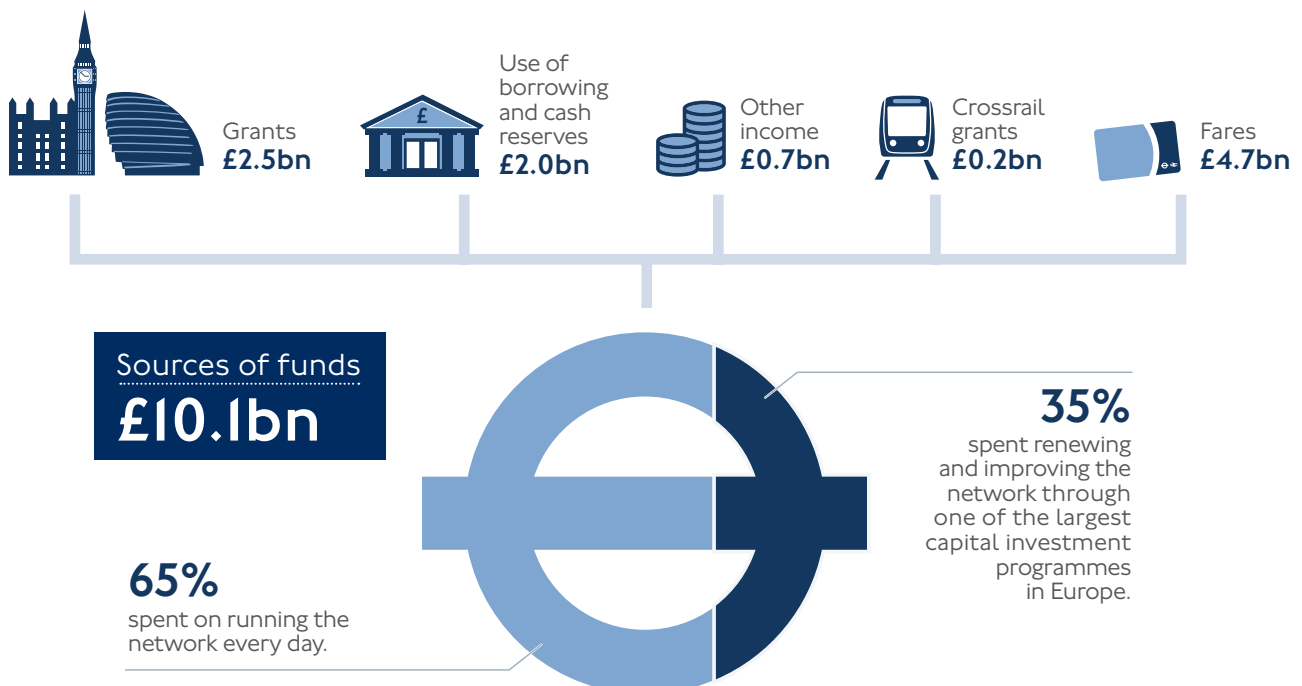
# Business at a glance

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

## How the Investment Programme is managed



## Finances at a glance\*



\*Based on full year 2016/17

## Investment Programme benefits



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

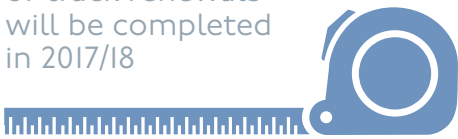
**3,000**



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**

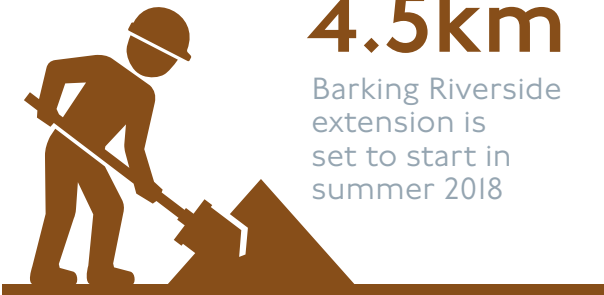
TfL-operated highways



Construction of the

**4.5km**

Barking Riverside extension is set to start in summer 2018



Tunnelling between

**Battersea and Kennington**

completed as part of the Northern line extension, which is planned to open in 2020



# Key achievements

## Line upgrades

We achieved a significant step forward in October with multiple test trains running on the new Four Lines Modernisation (4LM) signalling system, between Hammersmith and Latimer Road. In December, we successfully carried out the biggest test to date across the full extent of the first migration section between Hammersmith and Edgware Road, which will be the first to go live with the new signalling system. The new system will mean quicker, more frequent services on the Circle, District, Hammersmith & City and Metropolitan lines from 2021.

As part of the Infrastructure Renewals programme, we have completed the final stage of the 750 volt power upgrade for the 4LM programme ahead of schedule. Combined with the work undertaken on regenerative braking across the network, these changes support the increased power needs of the new trains and a more frequent train service.

## Network extensions

The Northern line extension is the first major extension to a Tube line since the Jubilee line extension in the late 1990s. We achieved a major milestone in November, completing the two 3.2km tunnel bores from Battersea Power Station to Kennington via Nine Elms. Since their launch in the spring, Amy and her sister tunnel boring machine, Helen, worked around the clock to create the

north and southbound tunnels that will extend the Charing Cross branch of the Northern line to Battersea.

We successfully completed the permanent link between the new extension and the existing Northern line during the planned 10-day Christmas closure of the Kennington loop. This included fully installing a new set of points on the existing Kennington loop to connect to the new extension.

## Stations and infrastructure

We unveiled the completed upgrade of Bond Street station, one of the busiest stations in central London. We increased capacity by 30 per cent following the opening of the new entrance and ticket hall on the north side of Oxford Street in November. The new entrance also provides step-free access for the first time at the station, making Bond Street the 72nd Tube station to become step-free and moving the Underground closer to the Mayor's target for 40 per cent of stations to be step-free by 2022/23.

## LU track and civils

We have completed complex engineering work on the Bakerloo line. This included the upgrade of two key junctions at Paddington and the replacement of more than 100 metres of track at Queen's Park. We also renewed three junctions at Earl's Court during a closure of the District line and southern section of the Circle line from 24–30 December, which will allow trains to pass through more quickly.

### **LU rolling stock renewals**

In conjunction with a package of measures such as intensive trackside vegetation clearance, the two Piccadilly line Rail Adhesion Trains that we introduced to tackle problems with wheel adhesion operated successfully throughout the leaf fall season. As a result, the reliability of the Piccadilly line over the autumn/winter season was significantly better than in prior years.

### **Healthy Streets**

Cyclists can now use the entire length of the East-West Cycle Superhighway (CS3) from Lancaster Gate to Tower Hill, passing through Hyde Park, St James's Park, Parliament Square and past the Tower of London.

The second phase of consultation on proposals for Oxford Street West was launched by the Mayor on 6 November and closed on 3 January.

A public consultation on the options for the new Rotherhithe to Canary Wharf crossing began on 8 November and closed on 8 January.

### **Air quality and environment**

We launched the world's toughest emission standard, the £10 Toxicity Charge (T-Charge), on 23 October to help tackle London's air pollution by getting older, more polluting cars off the roads.

On 3 November, the Mayor of London announced the early introduction of the Ultra-Low Emission Zone (ULEZ) in central London from 8 April 2019. This will be the next major stage of measures to help tackle London's air pollution and dramatically reduce emissions from up to 60,000 vehicles daily.

We have completed the installation of NOx abatement equipment on 235 buses in the Brixton/Streatham Low Emission Bus Zone, contributing to significantly lower NOx emissions on that corridor.

### **Public transport portfolio**

On the Docklands Light Railway (DLR), we have completed this year's programme of track renewals consisting of three sites between Heron Quays and South Quay stations on the south route. On our tram network, we have completed track replacement at Gravel Hill and the replacement of the track crossing at Beddington Lane.

Custom House DLR station re-opened to customers on 8 January, having been closed since 3 February 2017 for vital work to modernise and expand the station. The work had reached a stage where the station could re-open, and work continues to finish the station's full facilities by spring 2018.

The introduction of the new Santander Cycles in November has proved successful, with more than 25,000 hires on 300 bikes recorded within just the first few weeks. The new cycles provide improved handling, visibility and comfort.

#### **Surface asset investment portfolio**

We installed the first half of the new bridge deck at Power Road Bridge in October. This was done during possession of the railway while maintaining the traffic flow on the A406. We have also built the road approaches to the new section of Ardsley Green Bridge and switched traffic to them in early December. We completed the demolition and rebuild of the bridge at Highbury Corner during the Christmas and New Year period.

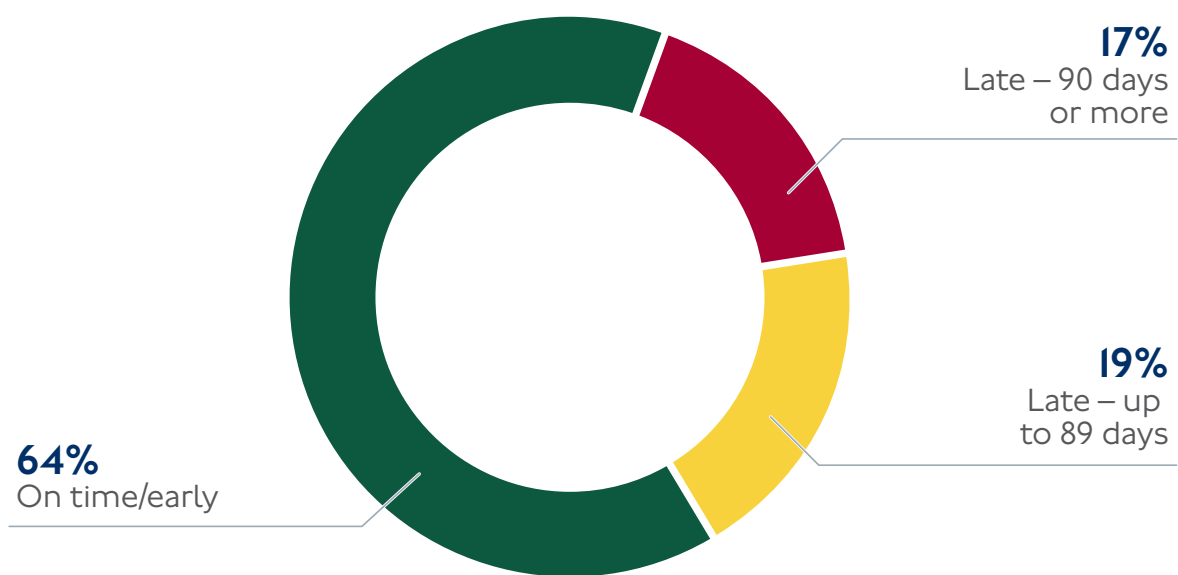
#### **Elizabeth line**

The Crossrail project is now 90 per cent complete. In October, Abbey Wood station opened and a Class 345 train was brought into the central tunnel for the first time and hauled to Abbey Wood to undertake initial testing. Crucial signalling commissioning and other important works were successfully completed by Network Rail over the Christmas period.

There remain, however, some significant cost and schedule pressures, which continue to be actively managed by Crossrail Ltd.

# 2017/18 Budget milestone performance summary

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



The late milestone scores of 17 per cent (90 or more days late) and 19 per cent (up to 89 days late) are driven by the late milestones detailed in Appendix A.



# Major projects

## Line upgrades

### Four Lines Modernisation (4LM)

Forecast completion year

**2023<sup>1</sup>**

Spend to date (£m)

**4,164**

Spend authority (£m)

**5,412**

Estimated final cost (EFC) (£m)

**5,261**

EFC movement post plan (£m)

**(3)**

2017/18 budget milestone RAG:<sup>2,3</sup> 

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

The EFC has increased by £3m since the 2017 Business Plan as a result of various minor increases across the programme. The continued drive for cost reductions in 4LM has identified opportunities to mitigate this and reduce the EFC lower than in the 2017 Business Plan.

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

We continue upgrade works at Upminster depot, where we have extended one of the tracks by 70 metres to accommodate the new, longer trains.

Demolition work has begun at Ealing Common depot, where we have completed the roof removal, acoustic screening and dust protection works.

- <sup>1</sup> This aligns with our 2017 Business Plan.
- <sup>2</sup> The milestone RAG relates to in-year (2017/18) budget milestones, which are listed in Appendix A.
- <sup>3</sup> The 4LM programme milestones (detailed in Appendix A) were set at the earliest possible delivery date and are significantly ahead of those published at the authority stage (thus the amber RAG status). The programme is ahead of schedule and below budget against the original authority targets.



Hammersmith & City line customers are benefiting from new, longer S-Stock trains

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To improve the structural integrity, we are replacing the depot's gable end wall. The need for this extra work has further impacted the 2017/18 milestone for the de-icing facilities, which will now be completed in 2018, and, in part, drives the amber milestone RAG status. An additional cost of £2.5m for the gable end wall is included in the EFC and the Business Plan. We have installed interim de-icing arrangements to mitigate the delay and there is no specific extra cost for this as the works are integral to operating the depot.

Of the 76 planned platform modifications to reduce the gap between the train and the platform, 68 are complete. These modifications have reduced the number of incidents that can happen when customers get on or off trains. We are making further improvements at Baker Street, where most incidents occur, including special public address announcements, track alterations to reduce the size of the gap and blue lighting at the platform edge to warn customers of the gap. Although the new S-Stock trains already significantly exceed their reliability target, a number of reliability enhancements are being implemented before final acceptance of the trains from Bombardier.

Following the success of the new signalling system controlling S-Stock trains running in automatic train operation for the first time in October,

we tested multiple trains between Hammersmith and Edgware Road in December. This included the first section that will go live with the signalling system between Hammersmith and Latimer Road.

Preparations are well advanced for a new, single control centre at Hammersmith to control the whole of the sub-surface network. Control room desks have been installed, together with trial fitting of all Thales and LU equipment. A working version of the customer information system was delivered in December. It will allow the control centre to deliver real-time information to sub-surface line customers.

We have completed the 750 volt traction upgrade which, combined with the work undertaken on regenerative braking across the network, will support the increased power needs of the new trains and more frequent service, and deliver an estimated £10m of annual operational savings.

We have fitted the ATC system to 48 S-Stock trains to date, ready to use once we start to commission the infrastructure, however this is below our stretch target of 71. To address this, we continue to work with Bombardier Transport (BT) and Thales to increase the fitment rate at the Derby factory so that the planned 53 trains will be ready for the go-live of the first migration area.

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Following escalation to a senior level in BT, a joint recovery plan is in place and the planned number of trains was achieved in December for the first time. We continue to closely monitor this while further seeking to increase the fitment rate.

Fitting ATC equipment to engineering trains is critical to the continued operation of these vehicles across the network. It is planned to be completed in 2019. An important milestone was achieved when installation to the first of 50 trains was completed and it was passed to Thales for testing. Installation on the second vehicle is well advanced, with all mechanical works completed.

To be ready for Thales' final fit-out, we have enabled 17 signal equipment rooms, which are critical for housing the signalling equipment, with a further 15 under way. Construction has not yet started on another 14, many of which pose significant challenges and are within constrained spaces, but we plan to complete these by September 2019. The first communication-based train control training course was held in November with seven Circle and Hammersmith & City line instructor operators. We are on schedule to complete the remainder in time for the go-live of the first migration area.

Overall, the programme is ahead of schedule and below budget and authority, and we are mitigating issues to prevent an impact on targets. The in year amber milestone RAG (which relates to the milestones detailed in Appendix A) also represents a reprioritisation of activities on the first migration areas that has delayed some of the later areas. When the plan dates for the milestones were set, we used a stretch target that sought to deliver timetable uplifts much earlier than planned when the programme was authorised, and to help minimise expenditure. We expect to deliver all the timetable improvements between six months to a year earlier than the dates committed to when the programme was authorised.

### Assurance

Project Assurance completed an Integrated Assurance Review (IAR) on the 4LM programme submission to the Programmes and Investment Committee meeting on 13 October. Fifteen IAR recommendations were made and accepted, including 10 by IIPAG. A quarterly update was provided to the Committee on 12 December. One recommendation is closed and progress is being made to close the remaining 14. Project Assurance tracks progress against the recommendations made, including by the Independent Investment Programme Advisory Group IIPAG, as part of its continuous assurance.

## World class capacity

Forecast completion year

**2023**

Spend to date (£m)

**85**

Spend authority (£m)

**245**

Estimated final cost (EFC) (£m)

**233**▼▼

EFC movement post plan (£m)

**(30)**

2017/18 budget milestone RAG:<sup>4</sup> 

**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.**

There is a new, modern digital signalling system on the Jubilee and Northern lines, and trains that have either just been or are currently being refurbished. This is part of the largest investment programme in the Tube's history, which, combined with the huge capacity increases that the Elizabeth line will bring, means we are pausing our plans to buy more trains for these two lines.

Our modernisation programme and in-depth technical work by our new combined engineering division has led to improved performance and reliability. As a result, we can run existing trains more frequently, without the immediate need for new trains. This allows us to prioritise replacing trains that are closer to the end of their design life on other lines, such as Piccadilly line trains, which date back to the 1970s.

The revised EFC of £233m reflects the overall reduction in scope for the World class capacity programme, pausing the investment in 27 additional Jubilee and Northern line trains following careful consideration of our investment priorities.

Since the 2017 Business Plan, the EFC has increased by £30m to allow additional Service Optimisation packages for both the Jubilee and Northern lines. This will enable around 32 trains per hour between West Hampstead and North Greenwich on the Jubilee line and on services to Morden on the Northern line.

<sup>4</sup> The 2017/18 World class capacity budget milestones (detailed in Appendix A) are no longer relevant, however we will deliver committed works to introduce new timetables. Revised milestone dates will be agreed once the full impact of the WCC residual works is confirmed.

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### **Northern line improvements**

We introduced a new Northern line timetable on 29 January, doubling the length of the evening peak service and allowing us to carry an additional 11,000 customers. The enhanced service also reduces congestion along the line, benefiting the 225,000 customers who use it each day. We plan to introduce a further timetable change to improve journey times on the Northern line again in the future.

We are currently developing proposals for signalling upgrades, infrastructure works, and increased fleet availability to achieve 32 tph northbound during the peak hour on services to/from Morden.

### **Jubilee line improvements**

We are currently developing proposals that aim to increase train frequencies to 31-32 tph on the central part of the line without the need for extra trains.

### **Assurance**

Project Assurance completed an Integrated Assurance Review (IAR) on the World class capacity submission to the Programmes and Investment Committee meeting in June 2017. A quarterly update was provided to the Committee on 12 December on the nine IAR recommendations that were made and accepted, including five by IIPAG. All recommendations are now closed.



We will introduce new state-of-the-art trains

# Deep Tube upgrade programme

## Deep Tube upgrade programme – design phase

| Forecast completion year | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|--------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| <b>2018</b>              | <b>78</b>          | <b>154</b>           | <b>114</b>                      | <b>0</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 to replace some of the oldest on our network.**

An addendum was issued to bidders responding to recent business planning decisions and responses were received on 18 December. Despite this, we remain on target to award the train contract in May 2018, subject to approval by the Programmes and Investment Committee.

We have decided to change the intended contract form for the signalling and train control system procurement. By using the NEC3 (New Engineering Contract) Option C target cost contract with activity schedule, we will drive a familiar and more consistent approach with our suppliers. This has delayed the issuing of the invitation to negotiate, which is now planned for March 2018. The impact of this short delay has been managed by reducing the signalling and train control tender development phase.



# Network extensions

## Northern line extension

| Forecast completion year | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|--------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| <b>2020</b>              | * <sup>5</sup>     | * <sup>5</sup>       | * <sup>5</sup>                  | * <sup>5</sup>              |

2017/18 budget milestone RAG:  

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

We created the link between the new extension and the existing Northern line during a planned 10-day Christmas closure of the Kennington loop. We removed the existing Northern line track and track-bed at both new step plate junctions, and installed new track, points and crossings, signalling and communications equipment.

Since the completion of tunnelling in November, we have removed the two tunnel boring machines and associated equipment from site. We have begun to pour the concrete in the tunnels on which the new track will be laid.

In November, the London Borough of Lambeth’s Planning Committee discharged the two conditions on which the outline planning consents for the Kennington Green headhouse and landscaping were previously approved. The headhouse contains the permanent shaft that will provide ventilation and access for emergency train evacuation

and maintenance purposes for the extension. We consulted with local residents to make sure their views on the conditions – the external appearance of the headhouse and the type and age of the trees to be used for the landscaping – were taken into account. The headhouse building construction will start after the removal of the temporary acoustic shed in spring 2018.

We have also submitted planning applications for the Kennington Park headhouse and landscaping, and we expect these to be considered at Lambeth’s Planning Committee meeting in April.

More than half the base slab concrete for the Battersea station box is complete and we have started to construct the western section, which will provide escape stairs, ventilation shafts and services ducts. The excavation of the Nine Elms station box is on schedule and is 60 per cent complete.

<sup>5</sup> This information is withheld for reasons of commercial sensitivity.



The first train through the new step plate junction on the Northern line extension

## Silvertown Tunnel

|                          |                    |                      |                                 |                             |
|--------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| Forecast completion year | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
| <b>2023</b>              | <b>32</b>          | * <sup>6</sup>       | * <sup>6</sup>                  | * <sup>6</sup>              |

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 Secretary of State postponed the decision on the Development Consent Order (DCO) in November by seven months to 10 May 2018, to allow further consideration of the effect of the scheme on air quality. The Department for Transport (DfT) has since asked that the air quality assessment relating to the DCO application be updated based on the latest available emissions evidence and modelling tools. In December, we agreed a methodology with the DfT, Department for Environment, Food & Rural Affairs (DEFRA) and Highways England on how this work should be undertaken. We expect it will take 12 weeks to complete.

The procurement process continues as planned and we remain on schedule to complete a series of technical, financial and commercial negotiation meetings in July. We have decided to delay the contract award by three months to 28 February 2019, to allow time for more ground investigations. These surveys were requested by the bidders and will

reduce the uncertainty of the ground conditions and allow the results to be incorporated into their submissions. We expect the surveys to be completed by June 2018.

The land and works agreements are almost complete. Two were agreed previously, however, we are reviewing them following concerns raised by the bidders about risks associated with the transfer of obligations. We expect to complete this review in February.

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

## Barking Riverside extension

| Forecast completion year | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|--------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| <b>2021</b>              | <b>17</b>          | <b>*<sup>7</sup></b> | <b>*<sup>7</sup></b>            | <b>*<sup>7</sup></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. We will build a spur from the Tilbury Loop line east of Barking to allow our service to extend to Barking Riverside. Train services are planned to start in 2021.**

In August, 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.

Network Rail approved the preliminary designs in November and is now proceeding with the approval of the Asset Protection Agreement that is required to complete the detailed design and allow initial demolition works to start.

Using authority delegated by Network Rail, we are reviewing the detailed design submissions. We expect to complete the approvals in February 2018 and we will then be able to issue the invitation to tender for the main works.

We have already awarded the demolition contract, and demolition of the depot building – which involves removal of the redundant Ripple Lane diesel depot and access ramp – will start in late January.

Work to relocate the ramp and two overhead line structures is planned for possessions at Easter 2018.

The red 2017/18 budget milestone RAG relates to a delay to the issue of the main works tender due to some design complexities; however, we have reviewed the programme and identified opportunities to mitigate this delay, and the overall project completion date is not at risk. We are preparing the invitation to tender documentation ready to issue on completion of the detailed design phase and have engaged in early contractor involvement to enhance the potential contractors' knowledge and lead to a more accurate tender submission.

<sup>7</sup> This information is withheld until the main contract has been awarded.

## Stations and infrastructure

### Victoria station upgrade

| Forecast completion year | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|--------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| <b>2018</b>              | <b>547</b>         | <b>677</b>           | <b>585</b>                      | <b>0</b>                    |

2017/18 budget milestone RAG: 

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

After being closed for five years, the Victory Arch in the Network Rail station re-opened to customers on 25 January, together with a new entrance on Wilton Road and an enlarged south ticket hall.

We continue to install the mechanical, electrical and architectural fittings and the fire and communications systems in the remaining tunnels that will link to the south ticket hall. Work continues on the westbound passage to the District and Circle line, the south ticket hall escalators and the fit-out of the remaining lifts to provide step-free access to the Network Rail station and the District and Circle line platforms. We continue to rebuild the Duke of York public house. The steel frame and floor slabs from basement to roof are complete and the temporary steel frame for the building's Victoria Street facade has now been removed.

We have completed the north ticket hall and provided step-free access to the Victoria line. However, the completion of step-free access by lifts to the

District and Circle line platforms and Network Rail station has been delayed by contractor resource issues, which is reflected in the amber 2017/18 budget milestone RAG. We continue to work with the contractor, which is managing this at a senior level with its lift supplier to ensure adequate resources and appropriate management focus to deliver the remaining step-free access. A senior management meeting was held with the contractor early in 2018 to discuss measures to improve the installation programme, which remains in line with the contract date.

We are opening the new station in stages and the project remains on schedule to complete in mid-2018.

## Tottenham Court Road

Forecast completion year

**2017**

Spend to date (£m)

**471**

Spend authority (£m)

**538**

Estimated final cost (EFC) (£m)

**478**

EFC movement post plan (£m)

**(1)**

2017/18 budget milestone RAG: 

**Our upgrade is reducing congestion and providing step-free access and an interchange to the Elizabeth line, as well as a larger ticket hall, new escalators, and connections to all lines with plaza and street-level entrances.**

Step-free access was provided from the street to all the station's platforms when five lifts opened to customers in February 2017. This completed the opening of the new station and, after seven years' work, the modernised station will be able to serve the 200,000 customers we expect to use it every day when the Elizabeth line opens in 2018.

Following handover to Crossrail, we have now accepted the associated handover documentation. We have been focused on resolving outstanding snagging items and defects during Quarter 3. We have completed 85 per cent of the inspections of the new station works and plan to hand over the assets to maintenance in April. We are holding discussions with the main contractor under the terms of the contract to seek a final commercial settlement to close the project.

The project won the National Rail Major Project of the Year and the British Construction Industry Major Civil Engineering Project of the Year awards.

Project close out is planned for July 2018.

The EFC increase since the 2017 Business Plan is mainly for staff costs due to the prolongation of the handover of the project to maintenance to April 2018

## Bond Street station upgrade

Forecast completion year

**2017**

Spend to date (£m)

**305**

Spend authority (£m)

**308**

Estimated final cost (EFC) (£m)

**312**

EFC movement post plan (£m)

**0**

2017/18 budget milestone RAG: 

The EFC remains under pressure and we continue to seek a resolution on the final account with the main contractor.

**We have increased 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.**

The new Bond Street station entrance, ticket hall and step-free access from street to platform opened to customers on 17 November. Both ends of Oxford Street are now served by step-free stations following the installation of new lifts at Tottenham Court Road station earlier in 2017.

The four new lifts make travel easier for customers with accessibility needs, luggage or heavy shopping by allowing them to access the Underground in a safe and convenient manner. Two new escalators make it easier to exit the station at busy times, two new interchange tunnels help to ease congestion and a new, more spacious ticket hall with five extra ticket gates is a further benefit to customers.

Preparatory work to build a step-free interchange to the Elizabeth line has also been completed ahead of services calling at Bond Street station in December 2018, when it is expected that customer numbers will increase to around 225,000 per day.

The amber 2017/18 budget milestone RAG status reflects a non-critical delay to the 'Station back into full service' milestone, which has now been achieved. Project close out is now targeted for the end of February for handover of the assets into operations and maintenance.



Bond Street station now offers step free access and a more spacious ticket hall



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## Bank Bloomberg Place

| Forecast completion year | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|--------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| <b>2018</b>              | <b>50</b>          | <b>58</b>            | <b>58</b>                       | <b>0</b>                    |

2017/18 budget milestone RAG: 

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

The fit-out of the new Waterloo & City line entrance within the Bloomberg building basement is now focused on finishes to lifts, columns and public stairs. Flooring to both sets of public stairs has been completed and local communication system installations are almost complete. We continue to install services in the non-public areas.

We are currently installing the stainless steel decking and anti-fall measures to the four escalators before testing and commissioning start.

The station entrance is now planned to open in May 2018, which is reflected in the red 2017/18 budget milestone RAG status. Complexity in the design,

manufacture and installation of the fire doors on the connections to the existing station has impacted the 'bringing into use' and project completion dates. To try to reduce the delay, we are challenging procurement times from suppliers, and agreeing earlier survey and design dependencies. We are also closely monitoring progress to ensure earlier identification and resolution of any further issues and we are reviewing all remaining works to identify other potential risk areas.

We are currently dealing with a commercial claim from the main contractor but our joint focus remains on achieving delivery of the project.

## Bank station capacity and systems integration and upgrade

Forecast completion year

**2022**

Spend to date (£m)

**350**

Spend authority (£m)

**623**

Estimated final cost (EFC) (£m)

**642**

EFC movement post plan (£m)

**0**

2017/18 budget milestone RAG: On Track

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

We have completed the piling for the station box and are currently breaking out the substantial, old concrete basement slabs. We have removed more than 6,000 tonnes of excavated material so far, while adhering to strict noise and dust limits.

Work on the new Northern line running and platform tunnels continues ahead of schedule and the platform tunnel enlargement is more than 50 per cent complete. Tunnelling for the first pedestrian passage crossing the station has begun and we broke through the first building piles, which are very close to the Tube's running tunnel, without incident. We have installed a monitoring system in a Thames Water trunk sewer that may be impacted by the tunnelling, ready for when the works pass close to it. We have also protected nearby buildings, including the Grade I listed Mansion House and St Mary Abchurch, which was rebuilt by Wren after the Great Fire of London.

The new electrical switchrooms are complete and high-voltage transformer relocation has started to allow the Central line triple escalator to be built.

For the systems integration and upgrade works, the DLR section of the station operations room is live. The main contractor work completed in December.

The main contractor for the capacity upgrade works has submitted a cost forecast that puts the current EFC under pressure. We are undertaking a comprehensive EFC review that includes an independent scrutiny to determine the full extent of the cost pressure including any potential opportunities and value engineering options.

The EFC for the systems integration and upgrade works remains under pressure because of prolongation of the project that has resulted in increased main contractor costs, internal labour and third party/PFI costs. We continue to discuss this with the main contractor.

## Bakerloo line link

Forecast completion year

**2018**

Spend to date (£m)

**62**

Spend authority (£m)

**67<sup>8</sup>**

Estimated final cost (EFC) (£m)

**67▲**

EFC movement post plan (£m)

**(2)**

2017/18 budget milestone RAG: 

**We are providing a new pedestrian walkway at Paddington to link the Bakerloo line platforms with the new Elizabeth line station, which is planned to open in December 2018.**

We have completed the installation of the new lift and the communication cabling and ventilation systems. The two new escalators are nearing completion and the majority of the electrical and mechanical works will be completed in Quarter 4.

We plan to complete all equipment and systems installations in March, to be ready for systems integration final testing and commissioning. The project remains on schedule for completion in 2018.

Sellar Property Group (SPG) has asked for early access to the Royal Mail Group building through Crossrail Limited (CRL) to LU. LU has obtained quotes and is in further discussion with CRL and SPG on the value of the proposal.

The increase in the EFC of £2m since the 2017 Business Plan mainly results from delays to fit-out works and the permanent power supply. The EFC for Quarter 3 was based on an expectation that permanent power would be available in January. An updated EFC is expected next quarter to reflect the availability of permanent power in May 2018.

<sup>8</sup> This is funded by Crossrail.

## Future projects

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### **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 a key part of the Mayor's Transport Strategy and London Plan. It will transform the wider region's transport network and support 200,000 new homes and jobs. Following the Mayor's joint statement with the Secretary of State on 24 July supporting Crossrail 2, we submitted updated proposals pledging to find ways for London to fund half of the construction costs. As part of the Autumn Budget in November, the Government reiterated its commitment to Crossrail 2 by announcing an independent funding and finance review, due to take place in 2018. The Mayor and the Secretary of State for Transport had a productive meeting in December where they reasserted their commitment to the project. They agreed that affordability remains the most pressing issue and they both welcomed the independent funding and finance review and discussed who could lead this important work. We will consult on the revised proposals as soon as possible once the review is complete.

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. We published the consultation results in July and an initial response in mid-February 2018. A further response

is planned for May 2018 after completion of our route-wide concept design.

The DLR rolling stock programme will replace life-expired rolling stock and deliver 10 extra units, providing capacity to meet the projected growth in the Docklands area. An extended depot at Beckton is required for the new trains, with further sidings, a new maintenance facility, and an extended automatic train operation (ATO) test track. Works to update the Thales ATO signalling system and strengthen the traction power system are also required. We issued the invitation to negotiate for the replacement rolling stock to four pre-qualified bidders on 17 November. The depot concept design is progressing well and we expect to issue the pre-qualification questionnaire for the design and build contract early in 2018. We hosted more than 100 attendees at a supplier engagement day for the depot main works contract. The project will transfer to the Major Projects Directorate at the end of March 2018.

The aim of the Rotherhithe to Canary Wharf river crossing is to provide a connection for pedestrians and cyclists in east London, improve sustainable travel choices and support economic growth. Refer to page 52 for further information.

# London Underground

## Stations

Forecast completion year

**2021/22<sup>9</sup>**

Spend to date (£m)

**1,917<sup>9</sup>**

Spend authority (£m)

**3,108<sup>9</sup>**

Estimated final cost (EFC) (£m)

**2,604▼▼<sup>9</sup>**

EFC movement post plan (£m)

**191**

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

We have completed the procurement for the new accessibility lifts and have started work at Newbury Park and Buckhurst Hill for both stations to become step-free in 2018. Work has also started at Harrow-on-the-Hill and we have submitted an application for permitted development. We have awarded the design development contract for a further 16 stations and completed feasibility studies for a total of 50 stations.

The EFC has reduced by £191m since Quarter 2 and the 2017 Business Plan. This includes the rephasing of Camden and Holborn station capacity projects for a year.

<sup>9</sup> The figures cover all projects within the Stations programme that are planned until 2021/22 including existing projects where additional authority was not requested in June, and closed projects. The spend authority includes £701m that was approved by the Programmes and Investment Committee in June.

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### **Integrated stations programme**

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

We continue works at Liverpool Street and Moorgate to ensure a consistent station environment across the Elizabeth line when it opens between Paddington and Abbey Wood in December 2018.

At Charing Cross, the new ticket hall lighting is now in use, improving the station ambience and experience for our customers. We are making improvements to the station operations room which we expect to be completed in February 2018.

We continue the replacement of the canopy roof at Ealing Broadway and improvements, such as floor and wall tiling, at Liverpool Street, Moorgate and Sloane Square stations.

### **Camden Town station capacity upgrade**

We continue negotiations with property owners, including the London Borough of Camden, to agree the purchase of the remaining properties required to construct the new station entrance. This includes Hawley Infants School, which is no longer required for educational purposes, and 25 Kentish Town Road. The aim is to acquire these properties in this financial year (2017/18) to secure the future construction worksite and ticket hall location.

### **Station capacity**

We completed the feasibility study for short-term improvements to address capacity issues at Stratford station, including reinstating the Angel Lane entrance. Funding has been approved to complete a study for long-term capacity and access improvements.

The public consultation to present proposals to improve capacity at Holborn station closed on 17 November and the feedback received has been positive. We will aim to complete the station works in line with the deep Tube upgrade on the Piccadilly line.

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

We have almost completed the replacement of the staircases at Piccadilly Circus and Barons Court and we expect to finish them by the end of February 2018. Completion of both projects has been slightly delayed from the end of December 2017, owing to a delay in the delivery of materials.

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

We have completed the concept design for the Elephant & Castle Northern line station capacity and accessibility upgrade. We are now developing the procurement strategy for the next stage, and negotiations for planning and development agreements with the local authorities and developer are under way.

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We submitted a listed building consent application to the Royal Borough of Kensington and Chelsea for the South Kensington station capacity upgrade, following positive feedback from stakeholders and council heritage officers. The application was granted on 9 January.

At Finsbury Park, the southbound staircase civils works are complete and fit-out has started.

Works continue on the redevelopment and upgrade at Tottenham Hale station with 'back-of-house' works to non-public areas under way following the relocation of staff facilities into temporary accommodation.

We continue to refurbish the ticket hall and to install two lifts at Bromley-by-Bow. There have been issues with supplier performance and ground conditions that have led to some delay. To mitigate this, we have already appointed other contractors to undertake some activities (currently at no extra cost).

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 but has one outstanding objection in process. We are in discussion with SPG about it undertaking the concept design for the whole scheme.

### Assurance

Project Assurance completed an Integrated Assurance Review (IAR) on the Stations programme submission to the Programmes and Investment Committee meeting in June 2017. A quarterly update was provided to the Committee on 12 December on the 13 IAR recommendations that were made and accepted, including six by IIPAG. Five recommendations are closed and good progress is being made to close the remaining eight. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.



Improved lighting in the ticket hall at Charing Cross station



# Track and civils

## Track and drainage renewals

Forecast completion year

**Annual**

Spend to date (£m)

**102**

Spend authority (£m)

**139**

Estimated final cost (EFC) (£m)

**145▲**

EFC movement post plan (£m)

**(6)**

2017/18 budget milestone RAG: 

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

In Quarter 3, we replaced almost 1km of deep Tube track, 0.5km of drainage and four sets of points to make journeys smoother and more reliable. We also replaced more than 1.6km of ballasted track against a target of 1.8km; the shortfall is a result of two track renewals on the east end of the Central line that were cancelled in Quarter 2 because of a trespasser on the track and a subsequent fire.

We completed complex engineering work on the Bakerloo line. This included replacing more than 100 metres of track at Queen's Park and upgrading two key junctions at Paddington, working with liquid concrete and signalling equipment in confined spaces deep underground. The work was successful and completed on time.

We renewed points at Rayners Lane in Quarter 2 and renewed a further two sets there this quarter as part of critical work to support the 4LM programme.

The EFC is forecast to be £6m more than authority at year end, owing to a cost reduction of £5.5m that is off-set by £11.5m for Transplant trains. London Underground (LU) pays a fixed annual fee to use Transplant engineering trains on certain projects.

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To support the signal upgrades, we renewed points within the Lillie Bridge depot. We also replaced the ballast between points and track beds within the Ruislip depot and renewed 140 metres of ballasted track. We continued installation of the temporary track at Ealing Common depot and pre-demolition and excavation works at Acton.

We completed a 284 metre ballasted track renewal between Gloucester Road and Earl's Court and renewed three junctions at Earl's Court during a closure of the District line and southern section of the Circle line from 24–30 December.

We completed another area of track renewal on the Heathrow branch using overnight engineering hours, saving five weekend closures on this line. There have been no accidents at our overnight sites for a total of 1,000 consecutive days.

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

# Infrastructure renewals

Forecast completion year  
**2021/22**<sup>10</sup>

Spend to date (£m)  
**379**<sup>10</sup>

Spend authority (£m)  
**749**<sup>10</sup>

Estimated final cost (EFC) (£m)  
**562**▼▼<sup>10</sup>

EFC movement post plan (£m)  
**38**

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 have completed escalator refurbishments at Bank, Holborn, Canning Town, Wembley Park, Green Park and Canary Wharf, and a lift replacement at Liverpool Street on time and within budget.

Works have started at Canada Water to replace lifts, and on the refurbishment of escalators at Westminster, Holborn and North Greenwich.

## 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. Construction of the pump house steelwork is almost complete on Islington's Bunhill scheme, where waste heat from the Northern line will be piped into homes. We are also implementing energy conservation measures, such as solar panels, at TfL buildings.

The EFC has reduced by £38m from £600m at Quarter 2 across the Business Plan period, however the EFC of £928m for the whole programme until 2035 is unchanged. The reduction relates to the postponement of unapproved works into future (post Business Plan) years and the postponement of escalator and lift replacement works at Bank and Liverpool Street following an asset condition review.

<sup>10</sup> The figures represent the lift and escalator renewals (until 2021/22) and power and energy projects (until 2018/19).

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In support of the 4LM works, the last phase of the migration of various direct current (DC) track sections on the Metropolitan, Hammersmith & City, Circle and District lines from 630 volts to 750 volts DC has been successfully completed.

We have awarded the contract for concept design work to Capita for the substation power activities for the Deep Tube upgrade programme and the first phase of work was completed on time in the quarter. These works are critical to ensuring the power supply to the Elizabeth line has sufficient resilience.

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 be completed by mid-2018.

### **Assurance**

Project Assurance completed an Integrated Assurance Review (IAR) on the Infrastructure renewals programme submission to the Programmes and Investment Committee meeting in June 2017. A quarterly update was provided to the Committee on 12 December on the 12 IAR recommendations that were made and accepted, including six by IIPAG. Three recommendations are closed and good progress is being made to close the remaining nine. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

# Rolling stock renewals

Forecast completion year

**2029**

Spend to date (£m)

**149**

Spend authority (£m)

**448<sup>II</sup>**

Estimated final cost (EFC) (£m)

**957▲<sup>II</sup>**

EFC movement post plan (£m)

**0**

2017/18 budget milestone RAG: ████████████████████

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

We are carrying out a series of improvements to ensure continued reliability of the Bakerloo line fleet until its replacement by the Deep Tube upgrade programme. We have completed work involving structural (weld) repairs to carriages on 16 out of 36 trains. By introducing a more intensive schedule, we now expect to complete the full fleet by mid-2019, ahead of the original plan of April 2020.

We have completed a detailed review of the Central Line Improvement Programme (CLIP), challenging assumptions and identifying more cost-effective ways of working, resulting in the removal of a £32m cost pressure and an agreed delivery plan within the Business Plan authority. We are considering further delivery options to maximise efficiency, mitigate risks and deliver installation works by March 2023.

We received final submissions for the saloon carriage CCTV contract for CLIP in December and we are in the final stages of negotiations with two bidders. Our CLIP project team visited Bombardier's Derby and Crewe sites in October

The EFC increase from £746m at Quarter 2 reflects planning for further years out to 2028/29, in particular for heavy haulage works totalling £188m. The authority has increased by £3m following the introduction of two projects: Bakerloo line 72TS reliability works and ballast wagon overhaul.

In the Business Plan for the Rolling stock renewals programme, the mechanisation of overnight ballasted track renewals has been rephased to align with an updated track plan. The resulting one year postponement of this project saves £37.5m over five years, but impacts the Track programme capital expenditure efficiency savings by almost £1m.

<sup>II</sup> The spend authority is lower than the EFC as authority is sought in stages.

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to hold system design reviews for the new traction package contracts placed last July. This contract started five months behind schedule following a legal challenge from an unsuccessful bidder, but is now proceeding well to a revised plan. Although the delay cannot be recovered, we have implemented mitigations to ensure there are no further delays. Also as part of CLIP, the new train data transmission system procurement passed a preliminary design review and is on schedule.

To support the delivery of CLIP, we awarded the design and build contract for our Trains Modification Unit workshop project in late October, and have started on site at Acton.

The fifteenth refurbished Jubilee line train out of 63 is back in service. The refurbishments include an RVAR-compliant wheelchair area, new flooring, refreshed interior (including grab-poles and handles), plus sealing to the roof and windows to address water ingress issues.

The two Piccadilly line Rail Adhesion Trains that we introduced to tackle wheel wear operated successfully throughout the leaf fall season, and a further two similar trains were introduced to the Metropolitan line.

We are carrying out improvement works on our track maintenance and renewal engineering vehicles. We used two of them for track renewal work on

the District line and southern section of the Circle line at Christmas, having completed a series of repairs and modifications to them both.

We have completed traction equipment overhaul work on 13 of 19 battery locomotives, life extension work to 26 of 29 battery locos, and diode modification to six of 29 battery locos. This work is scheduled for completion by 30 May 2018.

The milestone RAG status relates to a delay to weld repairs to 20 (of 36) Bakerloo line trains to extend the fleet's life. The original completion date to overhaul these trains was April 2020. We have now introduced a more intensive work programme and reduced our reliance on agency staff, and have the necessary resource levels to deliver the project to the revised plan. The project is scheduled to be completed by April 2019, allowing customers to benefit from quicker, more reliable journeys.

### Assurance

Project Assurance completed an Integrated Assurance Review (IAR) on the Rolling stock renewals submission to the Programmes and Investment Committee meeting in March 2017. A quarterly update was provided to the Committee on 12 December on the 18 recommendations that were made and accepted, including eight by IIPAG. Seventeen are now closed and good progress is being made to close the remaining one.

# Signals, control and information

## Information communication technology transformation

Forecast completion year

**2018**

Spend to date (£m)

**32**

Spend authority (£m)

**36**

Estimated final cost (EFC) (£m)

**63**▼▼

EFC movement post plan (£m)

**10**

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.**

The EFC reduction of £10m since Quarter 2 mainly relates to the removal from scope of the asset maintenance team planning from 2020/21 and 2021/22, while still delivering the stations and trains element of workforce planning.

We continue works to enhance our ability to remotely view CCTV from more stations. Detailed designs and installations are 98 per cent complete.

We are improving customer information at Circle, Metropolitan, District and Hammersmith & City line stations. Installation works at 24 stations are complete and works at the remaining 30 stations are on schedule.

To improve customer safety by enhancing one-person operation CCTV views for train operators, we are relocating platform equipment and painting platform end barriers. Works completed include further installation of yellow platform edge barriers and relocation of signage. Works to relocate cameras are complete at Shepherd's Bush station, with substantial improvements reported, and are also under way at Bank station. We plan to award the contract for further stations shortly.

## Piccadilly line interim upgrade

Forecast completion year

**2018**

Spend to date (£m)

**35**

Spend authority (£m)

**47**

Estimated final cost (EFC) (£m)

**46** ▲

EFC movement post plan (£m)

**(1)**

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.**

The new Piccadilly line signalling control system, which improves the reliability of the line's service offering and allows employees to better monitor and manage the service, continues to operate successfully between Cockfosters and Earl's Court. We will start installation works on the Uxbridge and Rayners Lane branches next. Phased commissioning is planned to start in mid-2018 and will be completed in early 2019.

The layout of the new Piccadilly line control centre in West London has also been confirmed and is ready for third party fit-out and equipment delivery. We have built the equipment room for the Connect radio system and equipment delivery and fit-out has started.

Designs for customer information signage at Ealing Broadway, Barons Court and Hammersmith are under way.

Signal design and installation at Hammersmith and Turnham Green has been completed and Hatton Cross to Heathrow signal design and installation work has started.

The EFC increase from £45m at Quarter 2 is a result of an unplanned increase in scope to improve the security of the building and increased internal resource costs for the associated longer installation time.





Cyclists using the new CS3 route from St James's Park to Lancaster Gate

# Surface

## Healthy Streets

Forecast completion year  
**2021/22**<sup>I2</sup>

Spend to date (£m)  
**135**<sup>I2</sup>

Spend authority (£m)  
**439**<sup>I2</sup>

Estimated final cost (EFC) (£m)  
**1,814**▲<sup>I2</sup>

EFC movement post plan (£m)  
**0**

2017/18 budget milestone RAG: 

**The Healthy Streets approach prioritises health and wellbeing, with the overall objective of delivering a transport system where everyone can travel safely by the healthiest and most resource efficient means, specifically walking, cycling and public transport.**

The EFC has increased from £1,780m at Quarter 2. The revised EFC reflects the approval of the 2017 Business Plan, with extra funding allocated towards this portfolio including extra spend to deliver 'Vision Zero' danger reduction outcomes.

### Cycle Superhighways

We completed the core route of the East-West Cycle Superhighway (CS3), including the infrastructure and resurfacing works, in November. The final section of cycle track within St James's Park opened in mid-December, allowing cyclists to use the entire length of the route from Lancaster Gate to Tower Hill, passing through Hyde Park, St James's Park, Parliament Square and past the Tower of London.

On 6 November, we started construction of Phase 2 of the North-South Cycle Superhighway (CS6) at Warner Street, Ray Street and Regent Square.

The public consultations for Cycle Superhighway 9 (Kensington Olympia to Brentford) and Cycle Superhighway 4 (Tower Bridge to Greenwich) closed on 31 October and 19 November respectively. We held a number of public and stakeholder meetings and events to support our consultations, resulting in a high level of response. We are now reviewing the responses and plan to publish consultation reports for both routes in due course.

<sup>I2</sup> The forecast completion year and financials relate to the Business Plan period until 2021/22 and do not include any historic spend.

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### Mini-Hollands

Twenty-three of the 103 Mini-Hollands schemes (98 infrastructure and five supporting measures) are complete. Two schemes started on site this quarter, including Quietway 18 (Salmon's Brook Path in Enfield and Wheatfield Way Greenway in Kingston). In total, 20 schemes are under way, including the Kingston Station scheme, the Lea Bridge Road scheme in Waltham Forest and the A105 Green Lanes scheme, which is nearing completion.

### Central London Cycling Grid

Construction of the 85km of core network continues in the City of Westminster and the boroughs of Hackney, Islington, Lambeth and Southwark, with 59 per cent (50km) complete or under way. By the end of December, 37km of wayfinding has been introduced in the City of London, the Royal Borough of Kensington and Chelsea, and the boroughs of Hackney, Islington, Lambeth and Southwark, and also in Hyde Park and St James's Park.

As part of the future Grid programme, 62km of additional Grid routes are being prioritised for delivery.

### Cycling Quietways

Construction is complete or under way on 97km out of a potential 250km of routes. Of this, 57km are the first seven Phase 1 routes. The remaining 40km are Phase 2, where a Quietway to Barking (linking to Cycle Superhighway 3) has now

started and construction continues on 10 other 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, Woolwich to Lee Green.

### Oxford Street

Following feedback from the first consultation for Oxford Street West and extensive stakeholder engagement, we have developed a detailed set of proposals. The second phase of consultation was launched by the Mayor on 6 November and closed on 3 January. The proposals include the removal of traffic along Oxford Street between Orchard Street and Oxford Circus and an enhanced environment and facilities for pedestrians. No decisions have been taken and we look forward to reviewing all the feedback. Subject to the outcome of the consultation, works could begin to transform Oxford Street in spring and be complete to support the introduction of the Elizabeth line in the area in December 2018.

We continue feasibility work on the eastern side of Oxford Street between Oxford Circus and Tottenham Court Road and hope to consult on proposals later in 2018. Importantly, this will also include a detailed cycling strategy and set of proposals for the wider Oxford Street district to provide high quality cycle routes.



An artist's impression of the improved pedestrian space on Oxford Street

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

This project aims to relieve existing transport links, encourage more active travel and support growth in the Canada Water and the Isle of Dogs Opportunity Areas by providing a cross-river connection for pedestrians and cyclists. A public consultation on the options for the new crossing began on 8 November and closed on 8 January. Based on the outcomes of this consultation, we will establish the most appropriate type of crossing and develop a more detailed design for further consultation in 2018, prior to a consents application in 2019.

### **Transformational programme**

At Westminster Bridge South, the new cycling and pedestrian infrastructure is now substantially complete.

We have completed surveys at Lambeth Bridge North and South and we continue discussions with utility companies to minimise the need for major and costly service diversions. We are continuing to review our proposals in light of comments received as part of public consultation and will publish the response to the consultation report by the end of Quarter 4.

We are developing a preferred option for Fiveways Croydon and will announce a way forward in due course. We are seeking to maximise the walking and cycling benefits and minimise land-take requirements in response to comments raised at the second public consultation, which closed in September.

We submitted the planning application on proposals for improvements to Vauxhall Cross bus station to the London Borough of Lambeth on 3 October. Lambeth's Planning Committee approved the application on 19 December for onwards submission to the Mayor for further consideration. We continue the design for the gyratory highway works and expect to complete this in spring 2018.

We continue to negotiate with landowners to secure the land required to deliver the Wandsworth gyratory proposals. We have decided to reschedule the submission to Board for the principle of making a Compulsory Purchase Order to late 2018. This will allow time to finalise the land negotiations and carry out further investigations to have greater cost certainty. This postponement, which also results in a delay in purchasing land, drives the overall amber budget milestone RAG status and is in line with the most recent budget. There is no impact on the Healthy Streets objective or on other projects within the portfolio.

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We appointed Morgan Sindall as the main works contractor for Old Street in September. It has now mobilised its design team to complete the concept design and refine the cost of the works by May 2018. The main works are planned to start in late 2018.

We have completed a public consultation on the transformation of the area around Waterloo roundabout and Waterloo Road in partnership with the London Borough of Lambeth on our proposals to create a larger, greener and more accessible public space for local communities. We published the response to the consultation in December, detailing our intent to continue with the scheme and make changes to parts of the proposal in light of the consultation responses. We will share an updated design on our website in summer 2018.

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

We delivered 37 bus priority schemes across 15 London boroughs this quarter, of which 11 were on the Transport for London Road Network (TLRN). To date, 119 schemes have been completed this year, achieving 70 per cent of the target and representing a bus journey time saving of approximately 13 hours daily across all bus routes 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 A503 Camden High Street, A406 Gunnersbury Avenue, A24 Tooting Town Centre and along the A23 at Streatham Hill.

We have delivered five local network improvement schemes, including cycling and walking improvements along the A406 North Circular between Bridge Lane and Golders Green Road and pedestrian crossing improvements at the junction of A10 High Road/Holywell Lane. We also implemented a 20mph speed limit at A10 Shoreditch Triangle.

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We have reviewed the public consultation responses to our proposals to improve connectivity at Charlie Brown's roundabout in South Woodford. Overall, 84 per cent of responses support the project. Following the completion of concept design in November, we began detailed design in December and this will finish in spring. Construction is planned later in 2018.

### Technology programme

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 road demand using an enhanced Urban Traffic Control system with predictive modelling capabilities, and a system delivering a unified operational view of live road conditions.

We continue the procurement of the Real Time Optimiser system to manage London's road space more efficiently and effectively as demand increases. We plan to award the contract at the end of January 2018.

We continue to run data pilots to define and plan the full procurement activity for a system for managing incidents on the road network.

### 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.

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

### Assurance

Project Assurance completed an Integrated Assurance Review (IAR) on the Healthy Streets submission to the Programmes and Investment Committee meeting in March 2017. A quarterly update was provided to the Committee on 12 December on the nine IAR recommendations that were made and accepted, including three by IIPAG. Six are closed and good progress is being made to close the remaining three. Project Assurance tracks 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 (EFC) (£m) | EFC movement post plan (£m) |
| <b>2021/22</b> <sup>I3</sup> | <b>29</b> <sup>I3</sup> | <b>202</b> <sup>I3</sup> | <b>421</b>                      | <b>0</b>                    |

2017/18 budget milestone RAG: 

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

## Emissions Surcharge

The Toxicity Charge (T-Charge) went live as planned on 23 October. Drivers of the oldest, most polluting vehicles must now pay £10 in addition to the existing £11.50 Congestion Charge every weekday that they drive in the Congestion Charge zone from 07:00-18:00.

## Vehicle compliance zone

From April 2019, the central London Ultra-Low Emission Zone (ULEZ) will replace the T-Charge and operate in the same area, alongside the Congestion Charge. Unlike the T-Charge and Congestion Charge, which are only in place on weekdays, it will operate 24 hours a day, seven days a week, 365 days a year.

In addition to the Congestion Charge, there will be two ULEZ charge levels: £12.50 a day for cars, vans and motorbikes and £100 a day for lorries, buses and coaches.

We are near to finalising the high level and functional designs that we will use with our suppliers to build the ULEZ system and, once complete, we will start the detailed design. We plan to start the development stage in early 2018 once the detailed design is complete.

## TfL fleet compliance

To date (Quarter 1 to Quarter 3), we have awarded 14 double-deck routes with Euro VI hybrid ULEZ compliant buses, delivering more than 280 buses into service during 2018. We have also awarded three single-deck routes with zero emission electric buses, which will deliver more than 50 buses into service between 2018 and 2019 when the new route contracts start.

<sup>I3</sup> Programme authority of £202m was approved by the Programmes and Investment Committee in October to reduce emissions from vehicles in London. It covers financial years 2017/18 to 2021/22.



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Currently, there are 1,600 single-deck and double-deck ULEZ compliant buses in service.

The red 2017/18 budget milestone RAG relates to the Mayor's November announcement of an earlier introduction of the central London ULEZ from September 2020 to April 2019, which now requires all Euro V New Routemaster buses to comply with a Euro VI emissions standard. When the '75 per cent of the buses operating in the ULEZ will be compliant' milestone was set, all 306 Euro V New Routemasters were specifically considered to be ULEZ-compliant.

We continue to install NOx abatement equipment on buses. The Brixton/Streatham Low Emission Bus Zone has been completed with 235 compliant vehicles now contributing significantly lower NOx emissions on that corridor. The A12 Eastern Avenue corridor is 91 per cent complete and the Haringey Green Lanes corridor is 39 per cent complete.

We are starting to retrofit NOx abatement equipment on buses on the A21 Lewisham Catford and Stratford corridors. More than 580 buses have been converted to date and these are also directly delivering benefits for the Mayor's programme to improve air quality.

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

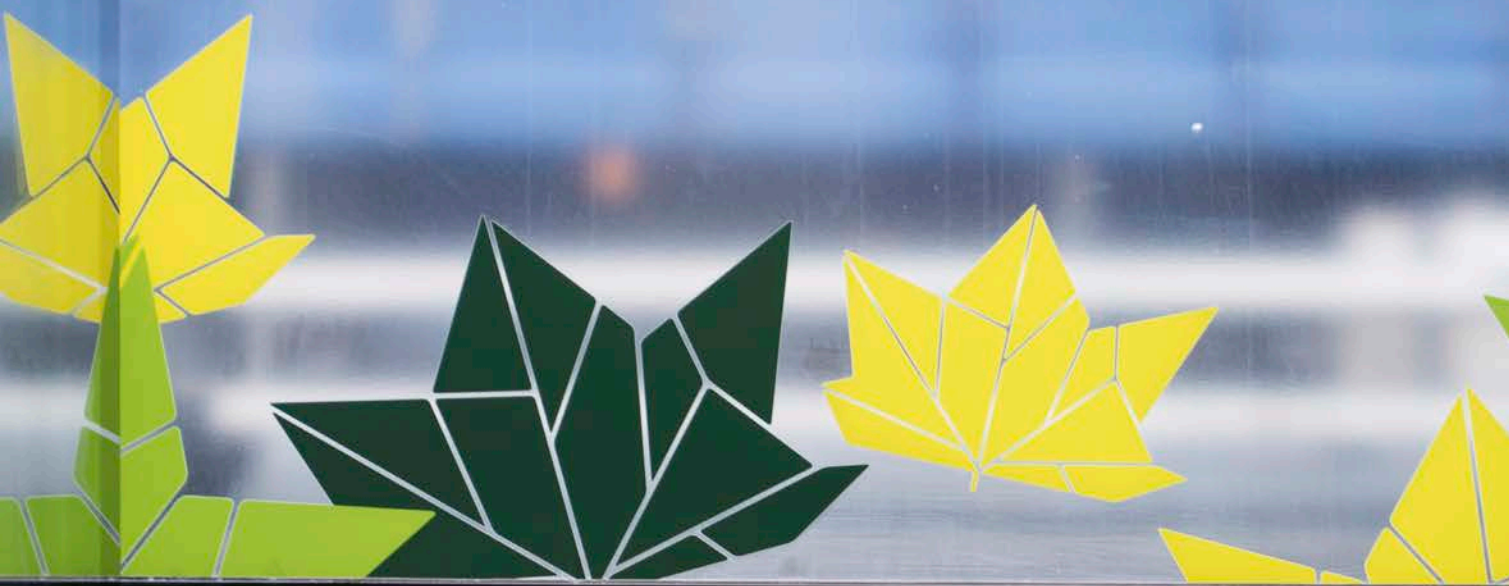
We are prioritising delivery of Rapid Charge sites on our land and road network and by the end of December we had achieved 66 sites against the target of 75. We still expect to achieve 100 sites by the end of March 2018 as we are incorporating lessons learnt to date in future targeting and delivery strategies.

### **Assurance**

Project Assurance completed an Integrated Assurance Review (IAR) on the Air Quality and Environment programme submission to the Programmes and Investment Committee meeting on 13 October. Eleven IAR recommendations were made and accepted, including three by IIPAG. A quarterly update was provided to the Committee on 12 December and progress is being made to close the 11 recommendations. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.



LOW EMISSION  
BUS ZONE  
**CLEANER AIR**  
FOR LONDON



Our Low Emission Bus Zones are helping to improve air quality

# Public transport

Forecast completion year

**2018/19**

Spend to date (£m)

**62**

Spend authority (£m)

**268**<sup>14</sup>

Estimated final cost (EFC) (£m)

**456**

EFC movement post plan (£m)

**0**

2017/18 budget milestone RAG: 

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

## London Overground

We are increasing capacity at some of our busiest London Overground stations. We continue improvements at West Hampstead, where the installation of the lift shafts is 90 per cent complete and the over-track footbridge was completed on 14 December. Detailed stakeholder engagement with local residents continues and we have seen minimal complaints as a result. Overall, the works are in delay and we are in discussion with the contractor on how the station building works can be more synergised to reduce the delay.

The procurement process started ahead of schedule for the electrification of the sidings at Willesden. Having issued the invitation to tender on 10 November, tenders have been returned and are under evaluation.

Value engineering reductions have been incorporated in the 2017 Business Plan, however they are not fully embedded as we are currently finalising how to achieve this. The EFC covers the five-year Business Plan period from 2017/18 to 2021/22.

<sup>14</sup> Budgeted programme and project authority of £268m was approved during Quarter 3 by the Programmes and Investment Committee on 12 December to manage renewals and enhancements on Surface Transport's frontline customer services in 2017/18 and 2018/19.

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We are installing a train protection warning system on the sections of the Euston to Watford line that are shared by London Underground and London Overground (National Rail) services. This work allows us to interchange the fleet between lines and improve reliability. Design approval is under way to allow similar works on the Richmond line to take place in 2018.

The main works contract for White Hart Lane station was awarded in June and the design is currently under way. The work site has been prepared and secured, with works planned to start in spring 2018.

A number of key renewals have successfully completed this quarter:

- We have finished this year's programme of track renewals consisting of three sites between Heron Quays and South Quay stations on the south route
- Border realignment changes to the Vehicle Control Centres (VCC) signalling software – the data provided by the VCC is used to safely control vehicle routing, progress, separation and speeds
- Upgrades to the Beckton depot wheel lathe
- Improvements to extend the life of our ticket vending machines

On our programme of rolling stock renewals, repairs to the kingpin/bogie mechanism on the B2007 vehicle fleet continue, with 53 per cent repaired and returned into service, and the remainder planned to complete in July 2018. We have fitted a remote condition monitoring system to the B92 vehicle fleet so that the live status of the entire DLR fleet can be seen by the control room. The replacement of the seat covers on the B92 and B2007 type vehicles has been completed, however there are minor warranty issues that we are currently resolving.

A number of other projects are under way, such as works to upgrade low-voltage electrical systems and to renew customer announcement systems at stations.

We are delivering a variety of enhancements across the DLR network. Custom House station re-opened to customers on 8 January. It was closed to create an easier interchange with the Elizabeth line and further improve journey times in advance of the Elizabeth line opening in December 2018. Work continues to finish the station's full facilities, including a mezzanine deck above the DLR platforms, new canopies and two more staircases, by spring 2018.

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Two new escalators were installed at Limehouse station on schedule. We have completed the redesign of the new route maps, and wayfinding totems have been installed. London City Airport Currency Exchange is now operational and work continues on the new Visitor Centre, which we expect to open in spring 2018.

### London Trams

The renewals programme consists of 17 projects across seven asset groups. We have delivered a number of key milestones in Quarter 3.

We successfully completed track replacement at Gravel Hill in September and the replacement of the track crossing at Beddington Lane during a weekend possession in November.

Replacement of the on-tram CCTV cameras on our original fleet of CR4000 tram vehicles was completed in October.

In November, we completed works to relocate and install a new stanchion on Cairo New Road to support the overhead line infrastructure.

We have completed work on 22 of 23 trams to renew their upstand, the outer panel at top of the tram that protects power collection and other equipment located on the tram roof.

We have delivered several initiatives this quarter as part of our commitment to make the tram network safer following

the tragedy at Sandilands in 2016. We have reduced the speed limit from 80kph to 70kph across the tram network, improved speed signage and installed an in-cab protection system – where any sign of driver distraction or fatigue will result in the driver being alerted immediately. Work on the remaining initiatives continues to plan.

The application for a new Westfield shopping centre has been approved by the London Borough (LB) of Croydon and the Mayor of London, however, it now provides no direct funding for the Dingwall Road loop. With recent changes to its funding streams, the project is now due to be fully funded by public sector sources. In light of this, we are currently reviewing the preferred option to ensure affordability.

Full funding has now been identified for a package of improvements at Elmers End station to add a second tram platform and double-tracking. This will improve journey times, reliability and resilience across the tram network and the interchange with Network Rail services. Subject to final funding approval in late January 2018, procurement of a contractor to design and build the works will then begin.

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A contractor to replace Blackhorse Lane Bridge was appointed in February. This project is being delivered jointly with LB Croydon and we have identified significant savings from the partnership working.

### **Sponsored services**

The Cycle Hire renewals programme includes workstreams such as payment software, on-street equipment, bike replacement, docking station relocation and map updates. The support contract for the keypad and payment software expires in November 2018 and we have identified potential solutions through initial scoping work.

The introduction in November of the new Santander Cycles has proved successful, with higher than average hires-per-bike recorded on the new model. The cycles have a new gel saddle, a lower frame, tyres with puncture prevention, a new gear hub and improved front and rear Blaze lighting.

We remain on schedule to deliver seven extension sites (200 docking points) in Brixton in February.

We have completed works at both Emirates Air Line terminals to replace assets such as CCTV and staff facilities. Preparations are in place for a planned closure in Quarter 4 to deliver cable renewal works.

### **Buses**

The delivery of the new Routemaster fleet is close to completion. A total of 995 New Routemasters out of 1,000 are now in service, with 689 using the ultra low emission Euro VI engine and the remainder are Euro V.

We are developing a Bus Safety Standard to review the effectiveness of I3 technologies and design features that could prevent or mitigate death or serious injury as a result of a collision involving a bus. In November, we completed an initial road map with a provisional timetable up to 2025 for testing and mandating these innovations. This road map will help operators and manufacturers understand how future fleets/products will look, with an increased emphasis on safety.

# Asset investment

Forecast completion year

**2021/22**<sup>15</sup>

Spend to date (£m)

**112**

Spend authority (£m)

**352**

Estimated final cost (EFC) (£m)

**634**▼▼<sup>15</sup>

EFC movement post plan (£m)

**0**

2017/18 budget milestone RAG: 

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

## Asset renewals programme

In Quarter 3, we completed more than 150,000 square metres of road resurfacing at locations including the A3 Kingston Bypass (TLRN boundary up to South Lane), A2406 Hanger Lane gyratory and A41 Finchley Road (Swiss Cottage to Fortune Green).

We also replaced more than 8,000 square metres of pavement including A312 Harlington Road West (Helen Avenue to Staines Road) and A3 Kennington Park Road (Canterbury Place to Othello Close).

We have completed the refurbishment of floodgates at Blackwall Tunnel northbound and southbound entrances and have also completed expansion joint replacement to the flyover at Hanger Lane. We have started work on bus staff facilities at Molesworth Street in the London Borough of Lewisham and Camden Road in the London Borough of Islington. Refurbishment work is under way at Greenwich Pier and we plan to complete this in spring 2018.

The EFC decrease of £271m since Quarter 2 reflects a significant reduction in the programme of proactive capital renewals on the road network in the short to medium term, although the safety of the network will be maintained. The 2018/19 financial year represents the first year without any Government operating grant. In the medium to long term, new and sustainable funding sources for London's roads will need to be identified.

<sup>15</sup> The forecast completion year and EFC relate to the Business Plan period until 2021/22.



A new bridge beam is lifted into place at Power Road Bridge



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Other works included the replacement of a further 130 bus shelters, 20 signalled junctions and more than 100 conventional street lights with energy-efficient LEDs. We have also delivered 30 signalled crossings at locations including Acton High Street, A503 Seven Sisters Road by Coleridge Road and Camberwell New Road opposite Kennington Park.

We have experienced delays to the completion of pump station renewal works across London and now expect these to complete by the end of Quarter 4 following a change of supplier.

### Structures and tunnels investment programme

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

- **Completed utility diversion works at Highbury Corner, followed by demolition and rebuilding of the bridge during the Christmas and New Year period. We plan to finish works in spring 2018**
- **Built the road approaches to the new section of Ardleigh Green Bridge and switched traffic to them in early December. Works will now focus on the demolition of the final section of bridge during road and rail possessions in spring 2018**

- **Installed the first half of the new bridge deck at Power Road Bridge during possession of the railway (but maintaining traffic flow on the A406) in October. We continue to build the road approaches to the new section of the bridge and plan to switch traffic to them in spring 2018**

We are also carrying out investigations to define the works required on other bridges and tunnels and determine priorities, based on risk, as well as preliminary options and costs. We have completed surveys and investigations on the Westway and at Brent Cross and we are finalising the feasibility reports. We also continue inspections and investigations for the Blackwall and Rotherhithe Tunnels to inform the feasibility report.

Our latest Business Plan has set out a significant reduction in short- to medium-term proactive capital renewals on the road network. We will monitor the impact of this on asset performance to maintain the safety of the network.

### River schemes

Construction of two replacement vessels for the Woolwich Ferry is progressing well. We have completed detailed surveys, and diving activities are under way to clear potential obstructions in the river bed to allow construction of the new berths and

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mooring infrastructure to begin in summer 2018. We remain on schedule for the new vessels to begin service in winter 2018/19.

We have begun renovations of Greenwich Pier to extend its life by approximately 10 years. The first pontoon was removed for refurbishment in November 2017.

### **Coaches**

We continue to develop proposals and feasibility works for new coach facilities and work proceeds to replace the roof glazing at Victoria Coach Station as part of our works to maintain the existing station.

### **Assurance**

Project Assurance completed an Integrated Assurance Review (IAR) on the Asset investment programme submission to the Programmes and Investment Committee meeting in June 2017. A quarterly update was provided to the Committee on 12 December on the 10 IAR recommendations that were made and accepted, including five by IIPAG. Six recommendations are 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.



We successfully launched the unlimited Hopper fare in January

# Other

## Technology and data

### Future Ticketing Programme (FTP) Phase 3, 4 and 5

Forecast completion year

**2019**

Spend to date (£m)

**28**

Spend authority (£m)

**44**

Estimated final cost (EFC) (£m)

**41**▼

EFC movement post plan (£m)

**2**

2017/18 budget milestone RAG: 

**We are making ticketing more convenient for our customers while reducing fare revenue collection costs. Further benefits for Oyster and contactless customers include a new mobile ticketing app and improved online processes.**

The EFC has been reduced by £2m since Quarter 2 by a combination of reduced project management costs and revising our scope in response to customer feedback since the app launched.

Following implementation of the revised card scheme rules for Visa EU as part of Phase 3, we continue to develop the remaining card schemes. We launched the TfL Oyster App to rail and river bus customers in September and to bus and tram customers on 26 October as part of FTP Phase 4. Since the Marketing launch of the app (30 October-26 December), there have been more than 305,500 downloads and almost £7 million of travel products purchased. We are developing functionality to allow customers with contactless payment cards use the app, and we expect to introduce this in the summer.

Initial testing of weekly capping for Oyster customers has begun. We will use the test data to move to the next stage, which is to develop and assure the accuracy of revenue allocation between us and the Train Operating Companies. We successfully launched the extended Hopper fare, which allows passengers to make unlimited bus and tram journeys within an hour, on January 31.

The forecast completion year has moved from 2018 to 2019 as we are prioritising some work to support the launch of the Elizabeth line ahead of bringing concessions into the Phase 4 proposition.

# TfL Growth Fund

| Forecast completion year | Spend to date (£m)       | Spend authority (£m)     | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|--------------------------|--------------------------|--------------------------|---------------------------------|-----------------------------|
| <b>2021/22</b>           | <b>n/a</b> <sup>16</sup> | <b>200</b> <sup>16</sup> | <b>200</b>                      | <b>0</b>                    |

2017/18 budget milestone RAG: 

**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.**

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. We completed 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. Our response to issues raised will be published in spring.

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

A public consultation on the Rotherhithe to Canary Wharf crossing closed in

January. We are reviewing the responses to reach a preferred option (see page 52).

We provided an update to the Programmes and Investment Committee in December on our continuing work to assess potential schemes that, together with the GLA, we have identified against agreed criteria. We hope to announce details of the successful shortlisted schemes soon. Funding is being sought for some schemes through the Government’s Housing Infrastructure Fund.

Project Assurance completed an IAR on the Growth Fund submission to the June Programmes and Investment Committee meeting. A quarterly update was provided to the Committee on 12 December on the 11 IAR recommendations that were made and accepted, including four by IIPAG. Five recommendations are closed and progress is being made to close the remaining six.

<sup>16</sup> Programme authority of £200m was approved by the Programmes and Investment Committee on 28 June. Spend to date will be reported from Quarter 1, 2018/19 as there was no spend allocated this financial year against the authority granted.

# Elizabeth line

## On-network stations improvement programme

| Forecast completion year | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|--------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| <b>2019</b>              | <b>34</b>          | <b>94</b>            | <b>94</b>                       | <b>0</b>                    |

2017/18 budget milestone RAG: 

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

Progress continues on the Great Eastern step-free schemes (Maryland, Manor Park and Seven Kings). The new footbridge has been installed at Manor Park and the fit-out of the bridge and installation of lift shaft cladding and lifts will now begin. The newly refurbished ticket office was opened at Maryland in December. We will start to install steelwork at Seven Kings during a series of planned closures at the end of January 2018.

We awarded a contract to J. Murphy & Sons Limited in November to install lifts at Hanwell, Langley and Taplow and new lifts and a station building at Iver. Surveys are planned to begin soon, with works starting on site in summer 2018 and completing in autumn 2019.

MTR is continuing its station refurbishment programme. In November, it awarded a contract for the next package of works that will deliver improvements to the platforms at Ilford, Chadwell Heath and Goodmayes. Works will start on site at the end of January 2018 in the same series of planned closures.

## Rolling stock

Forecast completion year

**2019**

Spend to date (£m)

**585**

Spend authority (£m)

**1,137**

Estimated final cost (EFC) (£m)

**1,137 ▲**

EFC movement post plan (£m)

**0**

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.**

We have accepted 12 of the new Class 345 trains for the first stage of service introduction on the Liverpool Street – Shenfield route. The amber 2017/18 milestone RAG relates to the introduction of the new fleet into TfL Rail later than originally planned on this route. The delay was due to initial train reliability problems, and capacity constraints at the Melton Mowbray test track and the Ilford depot (due to closure of sidings at Gidea Park for upgrade works). To minimise the delay, we have made several improvements to the reporting, investigation and rectification of train faults that affect reliability. We have delayed the withdrawal of the old train fleet to provide a full service, which is covered by both old and new trains.

Dynamic testing of the new on-train European Train Control System (needed for Paddington-Heathrow services from May 2018) started in November. The first Class 345 test run in the Heathrow tunnel was rescheduled to January. Dynamic testing of the Class 345 automatic train operation system began at the test track in December to prepare for testing of the first section of the new Crossrail tunnel infrastructure in early 2018. A train was delivered to the Crossrail tunnel in November for unpowered tests hauled by a locomotive prior to the infrastructure being energised.

The spend authority and EFC have both increased by £46m since Quarter 2 owing to the funding of four extra trains to operate additional Elizabeth line services, which was approved by the Board in March 2017. This will allow increased frequencies from December 2019 across the network and trains will now also call at Heathrow Terminal 5.

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A delay in completing the overhead line works and agreeing traction power control protocols with Network Rail has rescheduled energisation and the bringing into use of the first section of Old Oak Common depot to January 2018, although the first Class 345 train has already been delivered to the site.



## Crossrail

| Forecast completion year  | Spend to date (£m) | Spend authority (£m) | Estimated final cost (EFC) (£m) | EFC movement post plan (£m) |
|---------------------------|--------------------|----------------------|---------------------------------|-----------------------------|
| <b>2019</b> <sup>17</sup> | *                  | <b>14.8</b>          | *                               | *                           |

2017/18 budget milestone RAG: 

**The Crossrail project will deliver a new railway from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east. Crossrail Limited is managing construction, and when TfL-run services open through central London in December 2018 it will be known as the Elizabeth line.**

Overall the Crossrail project, which is now 90 per cent complete, remains on time. However, there are some increasing cost and schedule pressures on the project that Crossrail Ltd will continue to manage. In addition, software development by Bombardier for the new rolling stock, its testing and availability for Paddington to Heathrow services in May, is behind plan. We are monitoring closely at senior level. The overall programme for December 2018 remains on track and we will continue to update on progress.

The major construction activities that continue are electrification and signalling, and the installation of communications and ventilation systems, as well as station fit-out including lifts and escalators and platform edge doors. Intensive work continues to complete the fit-out of the new stations in the central section.

Farringdon and Tottenham Court Road are already nearing physical completion, while others, including Bond Street, Liverpool Street and Paddington, have more work left to complete.

The start of bringing the Elizabeth line into railway use took place on 28 October, when a Class 345 train was brought into the central tunnel for the first time and hauled to Abbey Wood to undertake initial testing. However, energisation of the south east section of the infrastructure was delayed until 31 January. The delay was caused by failure of high voltage transformer equipment at Pudding Mill Lane during initial testing.

Significant attention continues on the safety regime for energisation and construction as well as the detailed plans for testing and commissioning, regulatory approvals, operational

<sup>17</sup> Crossrail is opening in five stages from mid-2017 until December 2019. The Elizabeth line (Stage 3) launches in December 2018.

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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 the Elizabeth line, being undertaken by Network Rail, continues and is 90 per cent complete overall. Network Rail has committed to deliver the remaining station building upgrades from September to December 2019. The main works tender for upgrade of the western stations was issued in October, advance works started in December to use Christmas possessions, and detailed designs were approved by local councils in January and February 2018.

There is a strong focus on the installation of driver CCTV and platform extensions on the western surface section in preparation for the start of Stage 2 services in May 2018 as well as planning for a vital extension of Hayes & Harlington bay platform. The crucial signalling commissioning and other important works were successfully undertaken by Network Rail over Christmas.

# 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. These milestones also indicate the history of forecast date movements by showing the RAG status and variance (the number of days difference) between the plan date and the forecast date at each quarter end. Programme impact and mitigations are also detailed.

| Milestone description   | Plan date | Actual/<br>forecast date | Status   |
|---|-----------|--------------------------|----------|
| <b>Line upgrades</b>  |           |                          |          |
| <b>Four Lines Modernisation (4LM)</b> <span style="color: yellow;">■</span> <sup>18</sup>           |           |                          |          |
| Transformer rectifier unit modification works complete to enable operation of 750 volt regeneration | 23-Feb-18 | 17-Oct-17                | Complete |
| Upminster depot de-icing facility operational   | 12-Feb-18 | 31-Jan-18                | ■        |
| Ealing Common depot de-icing facility operational   | 23-Jan-18 | 30-Nov-18                | ■        |
| Design for fitment to battery loco type A engineering vehicle completed                             | 30-Jun-17 | 26-Feb-17                | Complete |
| Communications based train control (CBTC) Service Control Centre operations training starts         | 13-Jun-17 | 18-Apr-17                | Complete |

Q1: 175 days late ■      Q2: 248 days late ■      Q3: 311 days late ■

Following the start of work to repair structural faults in the Ealing Common EC3 shed, we have identified major structural issues with the gable end wall. The wall is being demolished and replaced and this extra work has impacted completion of the de-icing facility.

This has been mitigated by a temporary de-icing facility and there is no specific further cost for these works as they are integral to operating the depot.

<sup>18</sup> Thales has rebaselined its programme, which was based on stretch targets, to align with the committed dates in our 2017 Business Plan. We will rebaseline the programme's milestones to reflect the current approach to early timetable delivery.

| Milestone description  | Plan date | Actual/<br>forecast date | Status   |
|--|-----------|--------------------------|----------|
| Customer information system enabling works (phase 3) between Cannon Street, Paddington, Barons Court and Fulham Broadway completed   | 13-Jun-17 | 13-Jun-17                | Complete |
| Tower Hill track alignment works to support service uplift completed   | 07-Aug-17 | 02-Jul-17                | Complete |
| CBTC testing of system along areas that do not interface with mainline rail  | 28-Dec-17 | 25-Jul-17                | Complete |
| CBTC signalling operators training starts  | 05-Nov-17 | 09-Oct-17                | Complete |
| CBTC Circle and Hammersmith & City lines train operators – training starts   | 24-Oct-17 | 27-Nov-17                | Complete |
| Track work completed to enable performance at the maximum safe speed as specified in the Thales contract   | 26-Sep-17 | 10-Nov-17                | Complete |
| Post-installation check and testing on installed equipment between Hammersmith to Paddington to ensure correct working completed   | 12-Sep-17 | 10-Jan-18                | ■        |
| <p>Q1: 70 days late ■      Q2: 65 days late ■      Q3: 120 days late ■</p> <p>The majority of the testing has been completed, the points are commissioned and tested and the testing at the migration area boundary is under way. This delay was a consequence of reprioritising system testing to more critical areas first.</p> <p>There is no impact on the rest of the programme as there was sufficient float in the construction schedule on this non-critical activity.</p> |           |                          |          |
| Final design and structure of track layout for Farringdon Sidings approved   | 16-Jan-18 | 12-Jan-18                | ■        |
| All wayside signalling installation for the Edgware Road/ Finchley Road to Euston Square migration area complete   | 26-Jul-17 | 15-Jan-18                | ■        |
| <p>Q1: 30 days late ■      Q2: 146 days late ■      Q3: 145 days late ■</p> <p>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 therefore there is no impact on overall programme timescales.</p>  |           |                          |          |
| Ruislip depot commission area ready for passenger vehicle testing  | 21-Aug-17 | 08-Jan-18                | ■        |

| Milestone description  | Plan date | Actual/<br>forecast date | Status                                |
|--|-----------|--------------------------|---------------------------------------|
| <p>Q1: 65 days late <span style="color: yellow;">■</span>      Q2: 46 days late <span style="color: yellow;">■</span>      Q3: 140 days late <span style="color: red;">■</span></p> <p>The delay to the milestone is due to unavailability of the cable route management system and the signal equipment room and the impact on booking extra depot possessions, resulting in a delay to the start of the engineering vehicle testing and commissioning.</p> <p>The delay is recoverable by pre-fitting engineering vehicles with an on-board controller and commissioning them in batches and there is therefore no impact on migration area commissioning.</p>   |           |                          |                                       |
| CBTC fleet maintenance training starts   | 05-Oct-17 | 15-Jan-18                | <span style="color: red;">■</span>    |
| <p>Q1: 170 days early <span style="color: green;">■</span>      Q2: 89 days late <span style="color: yellow;">■</span>      Q3: 102 days late <span style="color: red;">■</span></p> <p>Several aspects of the system that will need to be maintained have been delayed primarily due to the broader slippage in the Thales programme from the stretch target dates. This has impacted the start of training because all aspects of the system need to be finalised to design the training.</p> <p>We have now rebaselined the fleet training plan so that the training pilot will run in January and the full roll-out of training will start on 12 February 2018. While there has been an impact on testing, there is no impact on the programme benefits milestones and related introduction into service as the slippage has been against the stretch targets.</p> |           |                          |                                       |
| Hammersmith Service Control Centre information and communication system site acceptance testing completed  | 25-Oct-17 | 09-Mar-18                | <span style="color: red;">■</span>    |
| <p>Q1: 79 days late <span style="color: yellow;">■</span>      Q2: 78 days late <span style="color: yellow;">■</span>      Q3: 135 days late <span style="color: red;">■</span></p> <p>System application design and installation have taken longer than scheduled as more integration work and testing was required than had been estimated. Additionally, further testing has been needed for it to be assured. Completion of site acceptance testing for the Hammersmith Service Control Centre is now forecast to be completed close to the Service Line Control migration date of 17 March 2018.</p> <p>This is being closely monitored and subject to a contractual Early Warning Notice, as float is being eroded and concurrency of activities is increased.</p>   |           |                          |                                       |
| CBTC signalling system ready for commissioning between Hammersmith and Latimer Road  | 31-Mar-18 | 28-Mar-18                | <span style="color: green;">■</span>  |
| CBTC signalling system performance monitoring for Hammersmith to Paddington – completed  | 05-Feb-18 | 29-Mar-18                | <span style="color: yellow;">■</span> |
| CBTC 30 Metropolitan line trains (half the line's fleet) fitment completed   | 05-Dec-17 | 28-Apr-18                | <span style="color: red;">■</span>    |
| <p>Q1: 25 days early <span style="color: green;">■</span>      Q2: 25 days early <span style="color: green;">■</span>      Q3: 144 days late <span style="color: red;">■</span></p> <p>Bombardier Trains has experienced a number of technical issues during early train fitment resulting in the planned production rate of two trains per week not being achieved.</p> <p>Mitigations are in place however to ensure there are sufficient Metropolitan line trains available for the Migration Area 2 revenue service go-live in September 2018.</p>   |           |                          |                                       |

| Milestone description  | Plan date | Actual/<br>forecast date | Status            |
|--|-----------|--------------------------|-------------------|
| Wayside infrastructure (signal equipment rooms, power and cable management system) for Circle line completed   | 29-Nov-17 | 01-Jun-18                | ■                 |
| <p><b>Q1: 16 days late ■      Q2: 78 days late ■      Q3: 184 days late ■</b></p> <p>The detailed design of the cable management system has identified that more hangers, cable routes and cable lengths are required than had been identified in the concept design.</p> <p>This has impacted the milestone and has increased material and installation costs however we have identified a number of options to reduce the impact.</p>  |           |                          |                   |
| Thales site software readiness review for release  | 19-Oct-17 | 07-Aug-18                | ■                 |
| <p><b>Q1: 193 days late ■      Q2: 223 days late ■      Q3: 292 days late ■</b></p> <p>We have paused software development to allow greater system design maturity prior to developing which has resulted in a slip to the Factory Acceptance Test start date for the revised software release strategy.</p> <p>This has been mitigated through the use of float within the schedule for this project and the delay does not impact the planned commissioning date for the Finchley Road to Preston Road migration area.</p> |           |                          |                   |
| <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 | 05-Dec-17                | Complete          |
| Jubilee and Northern line additional trains contract award   | 19-Oct-17 | n/a <sup>19</sup>        | n/a <sup>19</sup> |
| Northern line upgrade 2 detailed design for the Morden track, civils, earth and structures completed   | 06-Dec-17 | n/a <sup>19</sup>        | n/a <sup>19</sup> |
| Northern line upgrade 2 Morden civil earth structure site works begin  | 05-Feb-18 | n/a <sup>19</sup>        | n/a <sup>19</sup> |
| <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 | 08-Nov-17                | Complete          |
| Kennington Loop – 10 day closure for works   | 23-Dec-17 | 23-Dec-17                | Complete          |

<sup>19</sup> These milestones are no longer relevant as a result of the revised approach of the programme.

| Milestone description   | Plan date | Actual/<br>forecast date | Status   |
|---|-----------|--------------------------|----------|
| <b>Northern line extension</b> ■  |           |                          |          |
| Nine Elms station – all B2 top-down slabs poured as part of the top down construction method    | 31-Mar-18 | 15-Feb-18                | ■        |
| Nine Elms station – break through into the existing Northern line tunnels                       | 16-Mar-18 | 19-Feb-18                | ■        |
| <b>Silvertown Tunnel</b> ■  |           |                          |          |
| Property cost estimate, as at June 2017, of land required for construction at Silvertown Tunnel | 14-Jul-17 | 16-Jun-17                | Complete |
| Invitation to negotiate issued  | 20-Jun-17 | 20-Jun-17                | Complete |
| <b>Barking Riverside extension</b> ■  |           |                          |          |
| Main works tender issued  | 03-Oct-17 | 28-Feb-18                | ■        |
| Q1: 94 days late ■      Q2: 97 days late ■      Q3: 148 days late ■                             |           |                          |          |

The Approval in Principle (AiP) design and detailed design phases have been further extended due to complexities of the design. The final AiP design, for signalling, completed in November. We are preparing the Invitation to Tender (ITT) documentation ready to issue on completion of the detailed design phase and we have engaged in early contractor involvement to enhance the potential contractors' knowledge and lead to a more accurate tender submission.

### Stations and infrastructure

#### Victoria station upgrade

|   |           |           |          |
|---|-----------|-----------|----------|
| 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 | 04-Jun-18 | ■        |

Q1: 22 days late ■      Q2: 75 days late ■      Q3: 155 days late ■

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.

We continue to work with the contractor and lift supplier to provide an increased level of resource and appropriate management focus to deliver the remaining step-free access by June 2018.

#### Bond Street station upgrade

|  |           |           |          |
|--|-----------|-----------|----------|
| Station back into full service   | 27-Aug-17 | 17-Nov-17 | Complete |
| Station upgrade complete, including a new station entrance and step-free access to all platforms | 31-Dec-17 | 17-Nov-17 | Complete |

| Milestone description  | Plan date | Actual/<br>forecast date | Status   |
|--|-----------|--------------------------|----------|
| <b>Bank Bloomberg Place</b> ■  |           |                          |          |
| Waterloo & City line entrance opens to customers   | 18-Jan-18 | 10-May-18                | ■        |
| <b>Q1: 28 days early</b> ■ <b>Q2: 46 days late</b> ■ <b>Q3: 112 days late</b> ■<br>Complexity in the design, manufacture and installation of the fire doors on the connections to the existing station has impacted the opening of the new station entrance.<br>To try to reduce the delay, we are challenging procurement times from suppliers, agreeing earlier survey and design dependencies. We are also closely monitoring progress to ensure earlier identification and resolution of any further issues and we are reviewing all remaining works to identify other potential risk areas. |           |                          |          |
| <b>Bank station capacity</b> ■   |           |                          |          |
| Tunnelling begins  | 31-May-17 | 10-May-17                | Complete |
| Excavation works begin   | 16-Oct-17 | 16-Oct-17                | Complete |
| <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 | 22-Mar-18                | ■        |
| <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>  |           |                          |          |
| Lancaster Gate lifts 1 and 2 replacement – new lifts fully operational   | 28-Aug-17 | 26-Jun-17                | Complete |
| Euston escalator 5 refurbishment – escalator fully operational   | 24-Jul-17 | 29-Jun-17                | Complete |
| Final escalator at Holborn station (Piccadilly line) – operational   | 20-Oct-17 | 30-Aug-17                | Complete |
| <b>Power upgrades</b>  |           |                          |          |
| Power asset renewals Park Royal Group high voltage – start on first site   | 17-May-17 | 03-Apr-17                | Complete |
| Central line resilience works Bow and South Woodford – contract award recommendation   | 08-May-17 | 07-Apr-17                | Complete |
| Dual power – Queensbury transformer room fit-out completed   | 31-Aug-17 | 15-Aug-17                | Complete |



| Milestone description   | Plan date | Actual/<br>forecast date | Status   |
|---|-----------|--------------------------|----------|
| <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 | 06-Apr-18                | ■        |
| <b>Q1: 117 days late</b> ■ <b>Q2: 103 days late</b> ■ <b>Q3: 114 days late</b> ■  |           |                          |          |
| <p>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. The work is now scheduled to be completed by April 2019 allowing passengers to benefit from quicker, more reliable journeys.</p> |           |                          |          |
| <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 |
| 4km of segregated Enfield Mini-Hollands cycle route completed   | 31-Mar-18 | 05-Oct-17                | Complete |
| Cycle Superhighways route 11 – Swiss Cottage detailed design work completed   | 15-Dec-17 | 01-Dec-17                | Complete |
| Surface Intelligence Technology implementation – notification of Urban Traffic Control contract award to selected supplier  | 22-Feb-18 | 31-Jan-18                | ■        |
| Bus priority improvements of 64 minutes to bus journey time on borough roads through schemes aiming to reduce delays  | 31-Mar-18 | 28-Feb-18                | ■        |
| Crossrail complementary measures – implementation completed on four schemes   | 30-Mar-18 | 30-Mar-18                | ■        |
| 100km of Cycling Quietways construction either complete or in progress  | 31-Jan-18 | 31-Jan-18                | ■        |

| Milestone description   | Plan date | Actual/<br>forecast date | Status |
|---|-----------|--------------------------|--------|
| Wandsworth gyratory removal – Board approval of the principle of making a Compulsory Purchase Order | 15-Dec-17 | 30-Nov-18                | ■      |

Q1: 17 days early ■      Q2: 17 days early ■      Q3: 350 days late ■

We have deferred the submission to Board for the principle of making a Compulsory Purchase Order until November 2018 to allow time to finalise the land negotiations and do further investigations that will result in greater cost certainty. This postponement, which also results in a delay in purchasing land, is in line with the most recent budget setting.

There is no impact on the Healthy Streets objective or on other projects within the portfolio.

#### Air quality and environment ■

|  |           |           |          |
|--|-----------|-----------|----------|
| Emissions Surcharge (T-Charge) launch                            | 23-Oct-17 | 23-Oct-17 | Complete |
| 75 per cent of the buses operating in the ULEZ will be compliant | 30-Mar-18 | 30-Sep-18 | ■        |

Q1: 28 days early ■      Q2: 28 days early ■      Q3: 212 days late ■

All 306 Euro V New Routemasters were specifically considered to be ULEZ-compliant when this milestone was set. Within the Mayor's November announcement of an earlier introduction of the central London ULEZ (starting in April 2019) a requirement was made that all Euro V New Routemaster buses will need to comply with Euro VI emissions as part of ULEZ standards.

All Euro V New Routemasters will be retrofitted to meet Euro VI emissions. The cost of the retrofits will be funded through the existing NOx Abatement Programme. Retrofitting is the most cost effective method to reduce emissions from these buses. We remain on track to meet all air quality targets including implementing 12 Low Emission Bus Zones, the central London Ultra-Low Emission Zone and a Euro VI (or better) emissions bus fleet by 2020.

#### Public transport ■

|  |           |           |          |
|--|-----------|-----------|----------|
| London Overground track protection warning system detailed design approved by Network Rail   | 15-May-17 | 14-Apr-17 | Complete |
| Trams assets gearbox overhauls started   | 02-Oct-17 | 05-Jun-17 | Complete |
| London Overground West Anglia stations programme main works completed  | 28-Jun-17 | 23-Jul-17 | Complete |
| Cycle Hire new operating model with new back office systems and different distribution, call centre and cleaning contracts – transitioned into service | 30-Aug-17 | 01-Aug-17 | Complete |
| London Overground Willesden driving motor unit electrification option selection design approved by Network Rail  | 28-Jun-17 | 22-Aug-17 | Complete |
| West Hampstead station over-track footbridge completed   | 27-Oct-17 | 14-Dec-17 | Complete |
| Trams assets mid-life refurbishment completed  | 04-Mar-18 | 04-Feb-18 | ■        |

| Milestone description  | Plan date | Actual/<br>forecast date | Status   |
|--|-----------|--------------------------|----------|
| <b>Public transport</b> ■  |           |                          |          |
| London Overground train crew accommodation – main works at Chingford completed<br>These works are to transfer to Arriva Rail London for delivery to maximise market efficiencies and discussions under way about how transfer of funds will occur. | 25-Feb-18 | 25-Feb-18                | ■        |
| DLR rolling stock replacement concept design for Beckton depot completed   | 25-Feb-18 | 25-Feb-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 |
| <b>Commercial development</b> ■  |           |                          |          |
| Installation programme agreed for Digital Portrait advertising screens   | 04-Sep-17 | 27-Sep-17                | Complete |
| Five small development sites brought to market for property development through a pilot programme  | 30-Mar-18 | 23-Feb-18                | ■        |
| 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                | ■        |

| Milestone description   | Plan date | Actual/<br>forecast date | Status   |
|---|-----------|--------------------------|----------|
| <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   | 17-Oct-17 | 07-Feb-18                | ■        |
| <b>Q1: on time</b> ■ <b>Q2: on time</b> ■ <b>Q3: 113 days late</b> ■  |           |                          |          |
| <p>The delay was due to initial train reliability problems and capacity constraints at the Melton Mowbray test track and Ilford depot, owing to sidings closure at Gidea Park for upgrade works.</p> <p>To minimise the delay, we have made several improvements to the reporting, investigation and rectification of train faults that affect reliability. We have delayed withdrawing the old train fleet to provide a full service, which is covered by both old and new trains.</p> |           |                          |          |

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