

Transport for London investment programme report

Quarter 1 2017/18



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 that 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 is changing its focus from projects and programmes with an estimated final cost (EFC) above £50m to updating the Programmes and Investment Committee on major projects and sub-programmes that seek authority each year (unless extraordinary approvals are needed).

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

Financial records of spend to date, authority and EFC are whole-life. This represents the entire duration of each separate project or programme, except for annual portfolios where spend to date, authority and EFC figures represent the current financial year.

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

This report does not contain commercially sensitive information and therefore some EFCs and authorities are marked with an asterisk (see below) until the main contract has been awarded.

*

On schemes where there is commercial confidentiality, the EFC, authority and spend to date may also be withheld.

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

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

On time or early:



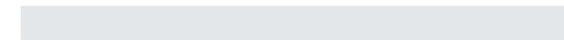
1-89 days late:



90 or more days late:



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



2017/18 budget milestones – the key milestones listed in the TfL Budget document – are detailed in Appendix A (page 54).

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

- Major Projects is responsible for delivery of TfL's largest and most complex projects that currently include Four Lines Modernisation (4LM), World Class Capacity, Deep Tube upgrade, Northern line extension, London Underground (LU) major station upgrades, Silvertown Tunnel and Barking Riverside extension, which are covered in pages 12–25 of this report. The proposed Bakerloo line extension will be reported following authority approval, which is planned for later in the financial year
- London Underground comprises the following sub-programmes: Stations; Signals, control and information; Track and civils; Infrastructure renewals; and Rolling stock renewals, which are covered in pages 26–33
- Surface comprises the following sub-programmes: Healthy Streets; Air quality and environment; Public transport (previously named Contracted services); and Assets, which are covered in pages 34–47
- Other comprises the following sub-programmes: Technology and data; TfL Growth Fund; and the Elizabeth line (including Crossrail), which are covered in pages 48–57

Business at a glance

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

How the Investment Programme is governed



Investment Programme benefits



10,000m

of track renewals will be completed in 2017/18



680km

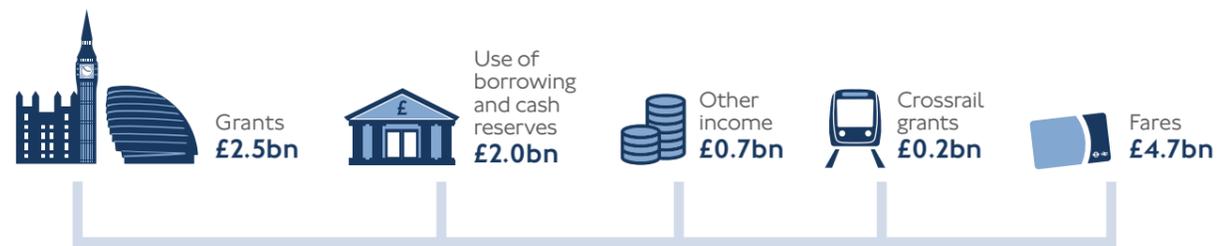
TfL-operated Rail and Underground routes

580km

TfL-operated highways



Finances at a glance*



Sources of funds
£10.1bn

65%
spent on running the network every day.



35%
spent renewing and improving the network through one of the largest capital investment programmes in Europe.

3,000

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



20%▲

in capacity on the Jubilee line by 2021 and the Northern line by 2023, supported by the contract awarded for new trains



Construction of the

4.5km

Barking Riverside extension is set to start in summer 2018



Tunnelling between

Battersea and Kennington

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



*Based on full year 2016/17

Key achievements

LU Four Lines Modernisation

We ran the first production signalling fitted S-Stock train on LU infrastructure under the Thales automatic train control (ATC) system on 13 April at Neasden depot. Twelve S-Stock trains are now fitted with the ATC system, ready to use once we start to commission the infrastructure in May 2018, which would be significantly ahead of schedule for the first signalling migration section.

World class capacity

Since May 2017, and following successful commissioning, the Victoria line has operated a morning and afternoon 90-minute peak service of 36 trains per hour. This is one of the most frequent metro services in Europe and is London's most intensive modern day service.

Northern line extension

Both tunnel boring machines (TBMs) are now tunnelling from the Battersea site towards Kennington. The southbound tunnel is 38 per cent complete and the northbound is 27 per cent complete. Although initial progress was slow as the TBMs met more obstructions than expected, it increased once the TBMs passed Nine Elms at the end of July and we expect it to broadly recover to schedule by the end of tunnelling.

The Northern line service continued uninterrupted while we excavated two large caverns around sections of tunnels at Kennington, where two junctions will link the extension to the existing Northern line. Excavations for the new Battersea and Nine Elms stations continue on schedule.

Major station upgrades

Following the introduction of step-free access from the Victoria station Cardinal Place entrance, the north ticket hall and the Victoria line platforms in April, new pedestrian tunnels linking Cardinal Place and the District and Circle line platforms opened in May. These tunnels provide a more direct route for customers, improving the flow through the station and reducing interchange times.

On the Bank station capacity project, the main access shaft in Arthur Street is complete and tunnelling works started in May. Work has also started on the foundations for the new Cannon Street ticket hall.

LU stations programme

Charing Cross station re-opened ahead of schedule on 26 June following the modernisation of the Northern line ticket hall. The work included a new entrance and retail unit.

All stations on the Northern line are now fully compliant with rail vehicle access regulations following the completion of works at 11 stations during the quarter.

Following feedback from a public consultation in January on a building above and around the proposed entrance at Camden Town station, we began a second consultation on 22 June on the station capacity upgrade.

LU infrastructure renewals

Lancaster Gate re-opened on 26 June, eight weeks early, following the replacement of the two lifts.

Since its closure at Christmas, we have modernised the ticket gates and improved the station's appearance.

Healthy Streets

On the East-West Cycle Superhighway, we completed the section of cycle track at Storey's Gate, a new speed table at Birdcage Walk and resurfacing works at Lancaster Gate.

Our works to transform Archway and make the town centre a more pleasant, accessible and safe area for all road users are complete and the new public space opened on 24 May.

A public consultation on initial proposals for the western section of Oxford Street closed on 18 June. Almost 7,500 responses were received, with around 61 per cent of respondents either fully or partially supporting the proposals.

South of the river, public consultation on proposals for the long-term transformation of both Lambeth Bridge north and south started on 26 June. The improvements will create a safer environment for cycling and walking while keeping traffic moving along key routes.

Public consultation on the transformation of the area around Waterloo roundabout and Waterloo Road started on 26 June and closed on 20 August.

We have finalised the public consultation documents for improvements at Croydon Fiveways, and consultation started on 11 July.

Ultra Low Emission Zone (ULEZ)

Detailed design work is almost complete for delivery of the Emissions Surcharge (the T-Charge) by October, where drivers of the oldest, most polluting vehicles will pay £10 in addition to the existing Congestion Charge.

A consultation ran from 4 April until 25 June on the Mayor's proposal to bring forward the start date of the central London ULEZ, replacing the T-Charge, to spring 2019. The results are currently being reviewed.

Surface Assets portfolio

The replacement of Upper Holloway Road Bridge, as part of our structures and tunnels investment programme, is now fully complete.

Construction of the two new replacement Woolwich Ferry vessels has started. We remain on schedule to deliver them into service in winter 2018/19.

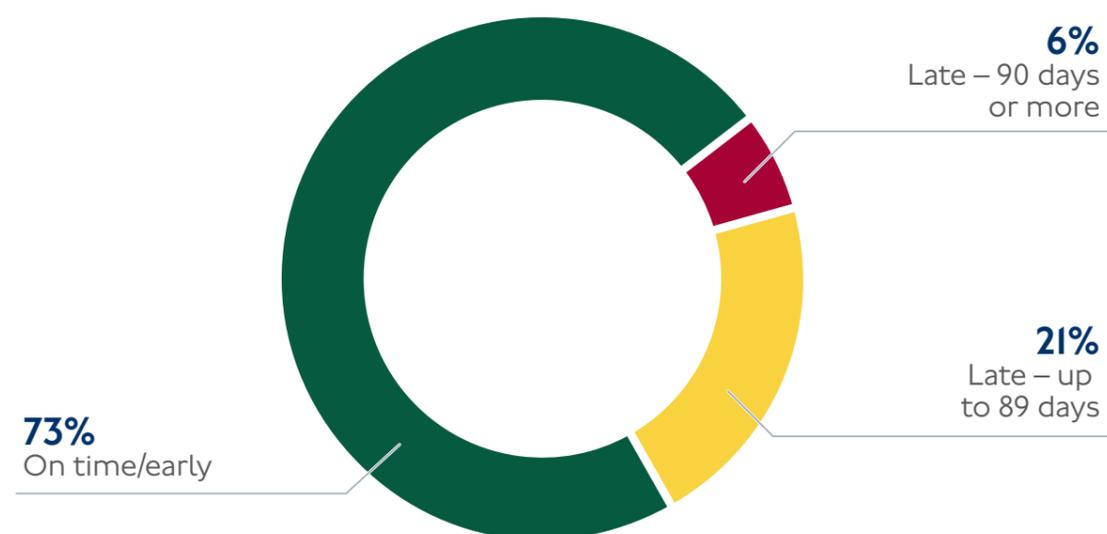
Elizabeth line

Service started between Liverpool Street and Shenfield on 22 June following acceptance of two Class 345 trains from the manufacturer. The trains are being built at Bombardier Transportation's UK site, showcasing British design and manufacture and helping to support 760 UK jobs and 80 apprenticeships in Derby.

The Crossrail project is more than 85 per cent complete. Key milestones achieved during the quarter included the completion of the formation of all platforms in the 10 new stations and the structural steelwork in the western ticket hall at Farringdon.

2017/18 Budget milestone performance

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



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

Safety

The safety of our employees and customers is our top priority. We work with our delivery teams and suppliers to ensure they have the necessary culture and competence to deliver our investment programme safely.

We also set clear health and safety requirements within our contracts and monitor performance against them to make sure our suppliers continue to achieve high standards of health, safety and environmental (HS&E) management. To support this, we have improved our live incident reporting process. Our suppliers can now submit performance data via the HS&E InfoExchange system, which is a single source of truth where data is immediately available to all users.

Within LU, we recognise suppliers who demonstrate good practice in site management through our Beacon award scheme, which champions HS&E excellence through structured site or team assessments. Six teams and two sites achieved Beacon status in Quarter 1, including the station improvements and lift replacement at Lancaster Gate.

The Office of Rail and Road (ORR) and the Health and Safety Executive (HSE) have identified LU as good construction practitioners, in particular for the application of the Construction (Design and Management) Regulations on complex sites. The HSE is working with us to develop case study material to share with the construction industry and other metros for training purposes.

We held two engagement events with the HSE during the quarter. We hosted a briefing event to inform the HSE's monitoring regime for the Silvertown Tunnel project and we included the HSE in our engagement sessions with the bidders to emphasise the importance of health and safety. At the second event, we briefed the HSE on our arrangements for ensuring good health and safety management throughout the lifecycle of all our projects. Both events have helped build strong relationships with a key stakeholder and feedback was positive.

Piling has started for the new footbridge and the redesigned station at West Hampstead. We have implemented suitable noise mitigation and are monitoring the noise levels until piling completes. We are liaising closely with local residents to update them during the works, which so far have remained below the limit specified by the London Borough of Camden under Section 61 of the Control of Pollution Act 1974.

Croydon tram derailment

The Sarah Hope Line remains open to those affected by the tragic derailment at Sandilands.

Making the tram service safer is one of our top priorities. We are taking action in line with the recommendations we expect to be included in the Rail Accident Investigation Branch's (RAIB) formal report and several extra safety measures are now in place. We are also trialling an in-cab driver protection device system and we are working on an alert system for monitoring and managing tram speed. We continue to work with the RAIB, the ORR and the British Transport Police on their investigations.

Major projects

LU Four Lines Modernisation (4LM)

S-Stock Train Roll Out

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2021	2,943	3,144	3,081

2017/18 budget milestone RAG:*

We have introduced 192 new trains on the Circle, Metropolitan, District and Hammersmith & City sub-surface lines, together with associated depot, station, siding and signal modifications to accommodate them. The remaining work will upgrade three depots to undertake long-term train overhaul.

all four sub-surface lines run solely with new, air-conditioned, walk-through S-Stock trains. As a result, we can now begin works to reduce the gap between the platform and the train at stations where this is possible.

Our customers are benefiting from record levels of S-Stock fleet reliability. This is a result of recent improvements such as train data system modifications.

Following the removal of the last D-Stock from operation on 21 April,

Automatic Train Control (ATC)

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2020	1,061	2,268	2,188

2017/18 budget milestone RAG:*

ATC systems control train movements, allowing more frequent and reliable services. We are providing ATC for our new S-Stock trains to increase capacity and improve journey times.

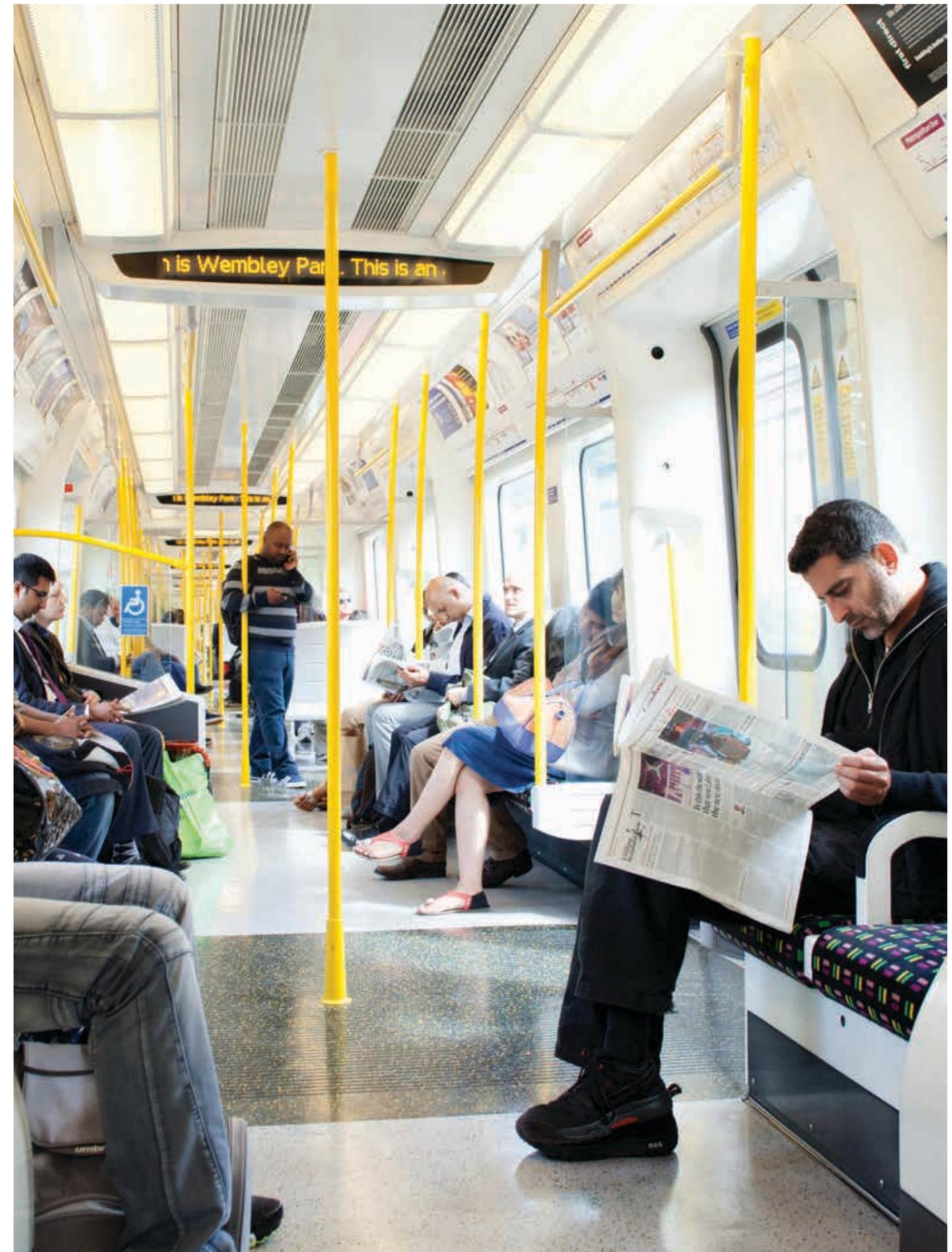
train on LU infrastructure under the ATC system on 13 April at Neasden depot.

Twelve S-Stock trains have been fitted with the Thales ATC system to date, ready to use once we start to commission the infrastructure.

To provide a formal demonstration of the ATC system in use, which is a key milestone, an eight-car S-Stock train is being used to test the ATC system at the Rail and Innovation Development Centre in Melton Mowbray. We ran the first S-Stock

We completed track junction works at South Harrow to prepare for the introduction of the ATC signalling system. The new layout now enables increased running speed and service reliability for this section of track.

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



LU World class capacity

Capacity upgrades modernisations

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2023	74*	245*	528*

2017/18 budget milestone RAG: 

Capacity upgrades increased the Victoria line peak service from 34 to 36 trains per hour (tph) in May, and will increase the Jubilee line peak service to between 34 and 36tph by 2021 and the Northern line from 24 to 30tph by 2023.

We issued the request for tender to Thales for the main package of Jubilee line upgrade (stage 2) signalling works as part of the main timetable capacity uplift on 19 June and we expect to receive Thales' tender in September. We have issued an early works instruction to Thales to allow the software fix at West Hampstead to be installed by the end of August and to safeguard delivery of the 31tph timetable in April 2019.

We have completed initial surveys and a sequencing strategy for the Northern line upgrade (stage 2). We have also begun early engagement with stakeholders on the detailed design package and future site works at Morden.

We are evaluating tenders for the Jubilee and Northern line additional trains (JNAT) project and have also placed contracts for radio and CCTV equipment for the additional trains. We have identified and are managing train-borne equipment obsolescence issues and we are working with Thales to resolve this before a contract award recommendation in September.

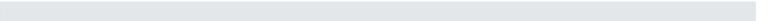
Project Assurance completed an Integrated Assurance Review on the World Class Capacity programme submission to the Programmes and Investment Committee meeting on 28 June. The team also completed an interim Integrated Assurance Review on the Northern line Upgrade 2 project. Eleven recommendations were made and accepted, including six by the Independent Investment Programme Advisory Group (IIPAG). Project Assurance tracks the progress made against the recommendations made (including by IIPAG) as part of its continuous assurance.

* In June, the Programmes and Investment Committee approved an authority increase to £245m to deliver an interim Northern line service improvement. It also funds the start of the Northern line Upgrade 2 (NLU2) and further authority for this will be requested in future. The financials relate to the Business Plan period until 2021/22.

Deep Tube upgrade programme

Deep Tube upgrade programme – design phase

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2018	72	154	117

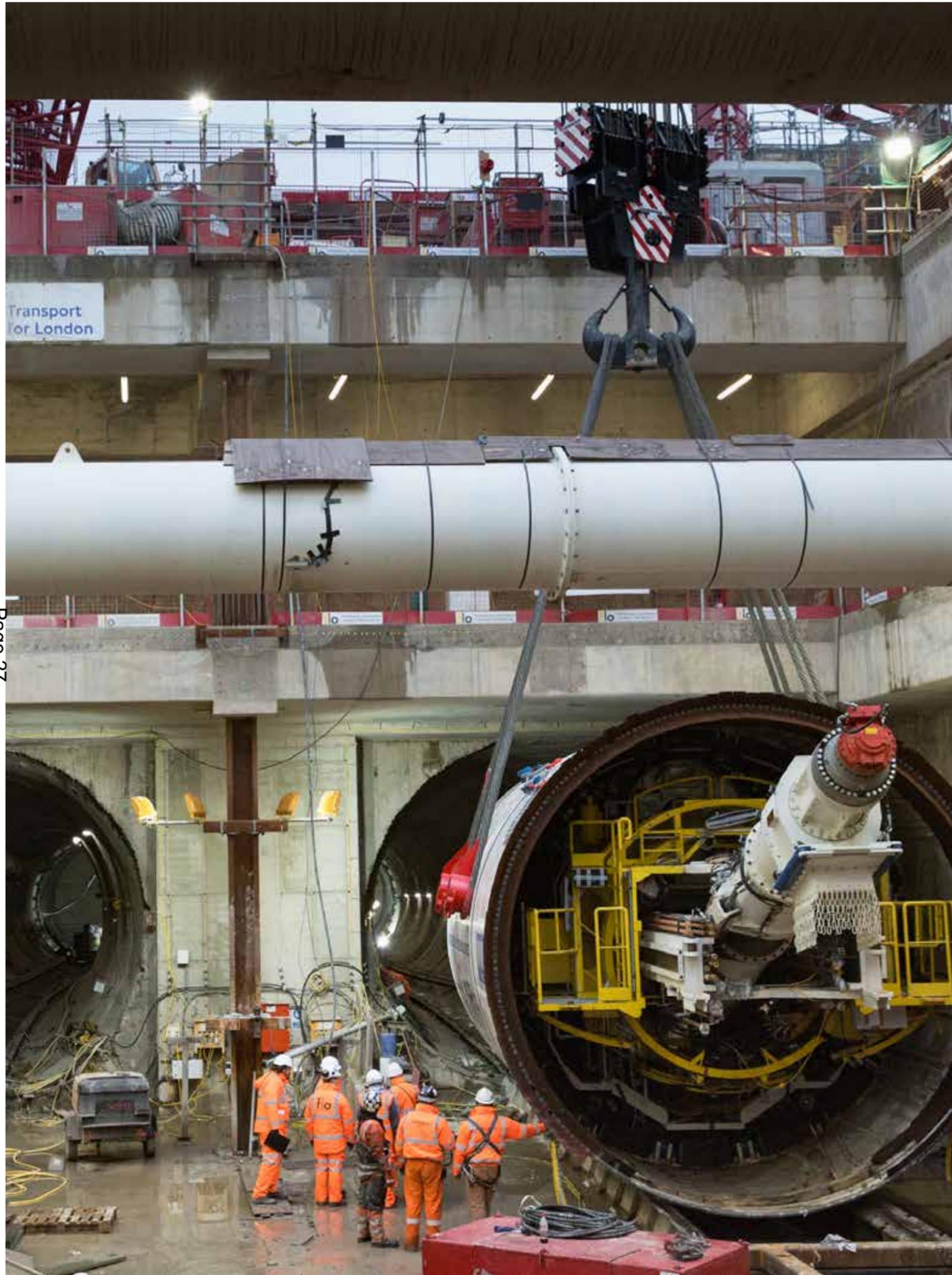
2017/18 budget milestone RAG: 

The Deep Tube upgrade programme will provide more capacity on the Piccadilly, Bakerloo, Central and Waterloo & City lines, plus new signalling systems and 250 new-design, high-capacity, walk-through, air-cooled trains.

We are in the early phases of this significant programme and, in preparation for changes to our depots to accommodate the new fleet of trains, we recently awarded the depots' planning and design contract to Jacobs Engineering.

An addendum to the invitation to negotiate (ITN) for the rolling stock tender that optimises the train production across the life of the programme was issued to the bidders and we held briefings to inform them of this change.

The signalling and train control ITN was deferred to November to ensure we have included all the lessons learnt from our previous signalling upgrade projects.



Northern line extension

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

2017/18 budget milestone RAG:

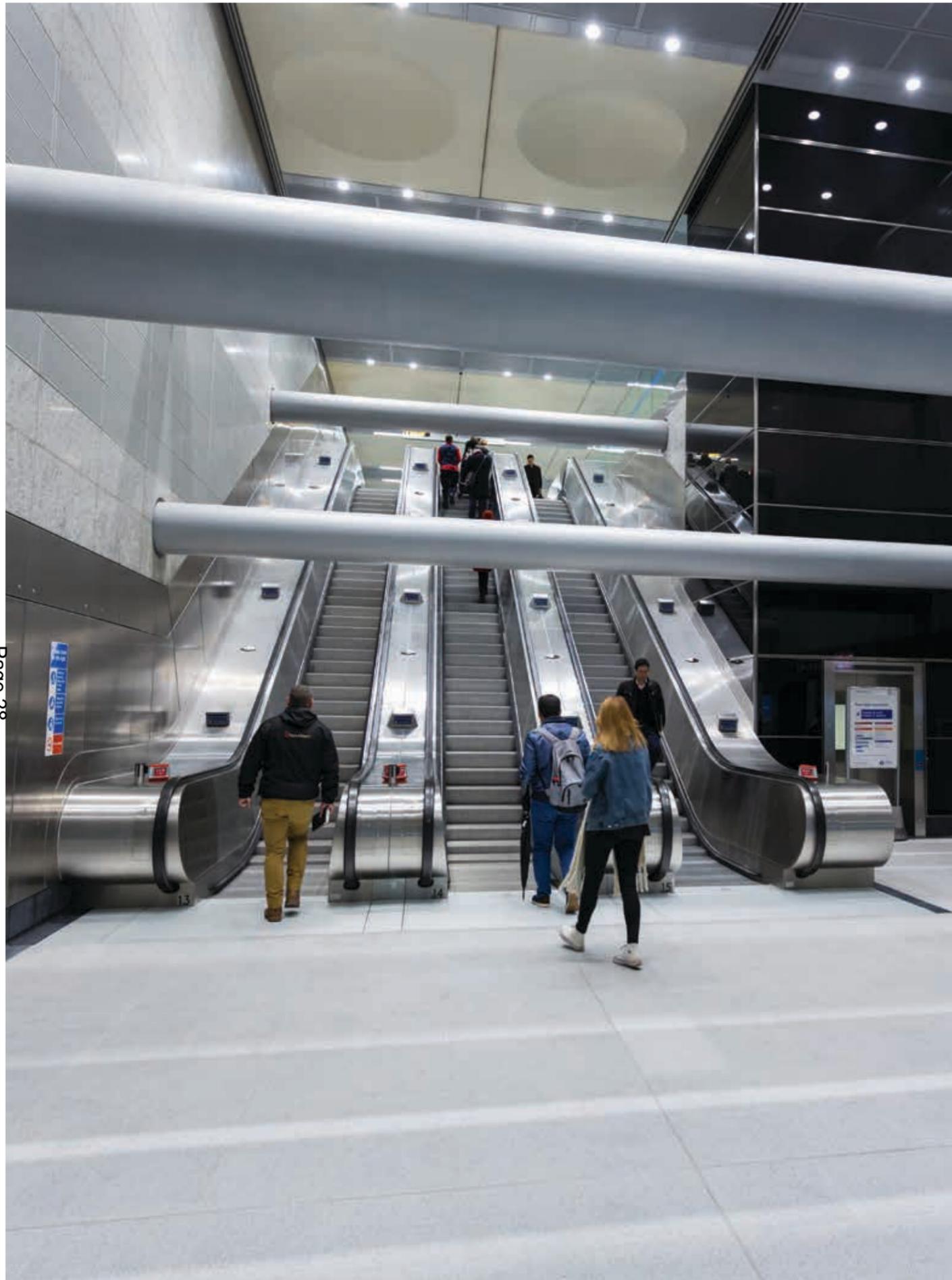
This project will provide a twin-tunnelled extension from Kennington to a new terminus at Battersea Power Station via a new station at Nine Elms. The new transport infrastructure is a catalyst for the regeneration of the Vauxhall Nine Elms Battersea Opportunity Area.

Both tunnel boring machines (TBMs) have launched from the Battersea site and are moving towards Kennington. Initial progress has been slow as this area was heavily developed in the past and the TBMs are passing over or under existing assets (sewers and power cables) or through historical ground obstructions such as piles and wells. Cutting through ground obstructions such as piles wears out the cutting heads so the TBMs need more maintenance interventions than planned. The rate of progress with the southbound tunnel has increased since the TBM passed Nine Elms at the end of July and we expect it to broadly recover to schedule by the end of tunnelling.

Work on the new stations at Battersea and Nine Elms is on schedule and excavation to the first basement level is almost complete. Large concrete beams have been installed at both stations to support the station structure and the over-station buildings that are planned at each site.

The Northern line service continued uninterrupted while we excavated two 9.5 metre diameter caverns around sections of tunnel at Kennington. We used a combination of hand digging and mechanical tools to create two junctions that we have lined with iron rings, and which will link the extension to the existing Northern line.

We are currently waterproofing new tunnel sections that link the Kennington shafts with the Kennington loop in preparation for the formation of permanent concrete internal linings.



LU major station upgrades

Victoria station upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2018	527	677	586

2017/18 budget milestone RAG: On Track

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

Three new lifts are now providing step-free access between street level at the Cardinal Place entrance, the north ticket hall and the Victoria line platforms.

Since May, new pedestrian tunnels that link Cardinal Place and the District and Circle line platforms are providing a more direct route for customers.

Work is under way in the remaining tunnels, which will link to the south ticket hall, including mechanical, electrical and architectural fit-out and the installation of fire and communications systems. Work also continues on the westbound link passage, the south ticket hall escalators and fit-out of the remaining lifts.

We also continue to rebuild the Duke of York public house, which was demolished to allow jet grouting works for the pedestrian link tunnels, although the original facade has been retained.

Tottenham Court Road station upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2017	470	538	477

2017/18 budget milestone RAG:

Our upgrade is reducing congestion, 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 from the street to all the station's platforms was provided in February when five lifts opened to customers, and a further lift opened on 7 April. After seven years, this completes

the new station works and station modernisation. Snagging and remedial works will continue until December.

The project has won the Worshipful Company of Tylers and Bricklayers' Triennial Awards for the Paolozzi tiling works. It was also shortlisted for the National Rail Major Project of the Year and the British Construction Industry Major Civil Engineering Project of the Year awards.

Bond Street station upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2017	303	308	309

2017/18 budget milestone RAG:

We are providing greater 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.

Works to build four new lifts and two escalators are nearly complete, following which there will be a period of testing

and commissioning. We also continue to fit out the tunnels and their connection to the existing station.

The station work is now planned to finish by the end of 2017 as progress has been slowed by issues with lift works and panel fit-out in the tunnels.



Bank Bloomberg Place

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2017	48	58	58

2017/18 budget milestone RAG: 

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

Our focus this quarter was to erect high-level access to public areas (including above both banks of escalators) to complete the first fix of the cable management system and ceiling works. We also installed the steelwork for both sets of public stairs.

In the non-public areas of the station, final fit-out works are under way and are scheduled for completion in October.

Compliance checks are in progress on the four escalators and two lifts that will provide step-free access to the Waterloo & City line platforms and serve the new Walbrook Square entrance. We have removed temporary hoists here, and the entrance is planned to open in December. We are also installing supporting services such as lighting and fire and communication systems, after which testing and commissioning will start.

Bank station capacity

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2022	306	623	642*

2017/18 budget milestone RAG: 

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

The main access shaft in Arthur Street is complete and tunnelling works started in May. All office buildings have been demolished, and we are preparing the site for foundation works for the new Cannon Street ticket hall to start next quarter.

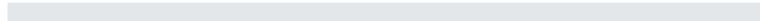
The new station operations room is now open, and the systems upgrade is planned to be complete by the end of this year.

New employee locker rooms are now in use on the District line lower concourse as the high-voltage transformer/switchrooms need to be relocated to the vacated locker rooms to enable the building of the Central line triple escalators. This relocation, which is crucial for completion of the project, will take longer than originally forecast and this has altered our forecast completion date from December 2021 to April 2022.

* The estimated final cost (EFC) has increased from £628m as a result of a detailed risk assessment. We are working with the contractor to attempt to identify cost saving initiatives to bring the EFC within authority.

Vauxhall station upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2017	28	35	30

2017/18 budget milestone RAG: 

We have reduced congestion by increasing station capacity and have delivered step-free access from ticket hall to platform level.

Vauxhall station is now complete and continues to provide a fully accessible interchange between rail, bus and tube services. All site works completed on 18 August.

Silvertown Tunnel

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2023	29	*	*

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 Development Consent Order examination process concluded as planned on 11 April. The Planning Inspectorate submitted the recommendations to the Secretary of State on 11 July and a decision is expected on 11 October. The majority of the land and works agreements have now been concluded with the relevant land interest owners, and the legal agreements are nearing completion with the three host boroughs of Greenwich, Tower Hamlets and Newham.

We held a briefing workshop in May with the three bidders who were shortlisted at the pre-qualification questionnaire stage. On 20 June, we issued the invitation to negotiate documentation for the 'design, build, finance, operate and maintain' public-private partnership contract - this comprised the draft project agreement and the schedules. The tender period will run to the end of August 2018.

We updated the property cost estimate on 16 June. This confirms the forecast costs associated with the temporary and permanent land required for the construction and operation of the scheme.

Barking Riverside extension

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2021	13	*	*

2017/18 budget milestone RAG: 

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

We continue the procurement process to deliver the Barking Riverside 4.5km extension with our shortlisted bidders.

Preliminary designs have been submitted to Network Rail for approval.

We have worked with Arcadis and Network Rail to address power capacity issues, and a preferred option has been selected.

In August, the Secretary of State for Transport granted powers to deliver the Barking Riverside extension. We plan to start the main construction works in summer 2018.

Future projects

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

The Bakerloo line extension from Elephant & Castle to Lewisham will increase the capacity and resilience of the transport network, reduce journey times and support at least 20,000 new homes in the Old Kent Road Opportunity Area. Public consultation on the extension closed in April and we published the results in July. We are reviewing the 4,899 responses and the feedback will inform the development of our plans for the extension. We will publish our response in December.

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

London Underground

LU stations

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2035*	661*	3,103*	2,367*

2017/18 budget milestone RAG:

We are improving customer accessibility by significantly increasing the number of stations that provide step-free access. The targeted renewal of existing assets will also improve safety, reliability and ambience, and maintain resilience. Station enhancements will reduce congestion and improve customer journey times.

Accessibility including step-free access

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

Integrated stations programme

We are making improvements at stations, including five that interchange with the Elizabeth line, to keep them safe, maintainable and operable. We have completed works at nine so far, and work at further stations is planned.

We completed the modernisation of the Northern line ticket hall at Charing Cross ahead of schedule and the station re-opened on 26 June. The work included a new entrance and retail unit, and wall and floor re-tiling. Improvement work continues in non-public areas of the station.

Liverpool Street and Moorgate stations remain open to customers while we continue improvements, such as re-tiling of the floors and columns.

We continue improvement works at eight Jubilee line stations. Canning Town is nearly complete and work will start next on West Ham.

We have completed works to comply with rail vehicle access regulations at 11 stations on the Northern line and we continue to install storage solutions for manual boarding ramps.

Camden Town station capacity upgrade

Following feedback from a public consultation in January on a building above and around the proposed station entrance, a second consultation on the capacity upgrade ran from 22 June until 18 August.

The Education and Skills Funding Agency has confirmed that the Hawley Infants School is no longer required for educational purposes and we have begun negotiations with the London Borough of Camden to buy the school. The land that it occupies would be used for the construction of the project and would form a large proportion of the new station.

Station capacity

An early feasibility study is under way to address capacity issues at Stratford, both immediately and in the long term.

Civils (bridges, structures and deep Tube tunnels)

We have completed repainting and general repairs to the bridge between Harrow and West Harrow. We have begun replacement of the staircase at Barons Court and the spiral staircase at Piccadilly Circus.

Collaborative Enhancements and Third Party Projects

Concept design is nearing completion for the new ticket hall at Elephant & Castle. Delancey has submitted a planning application for the redevelopment of the shopping centre integrating the new station entrance. We are negotiating a development agreement for the new station requirements.

At Finsbury Park, we have completed the northbound lift shaft civils work and we

continue southbound lift shaft works. We are preparing to issue a tender for fit-out works due to start at the end of 2017.

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

At Tottenham Hale, works are under way to upgrade the ticket hall, station entrances and Network Rail interchange.

We have completed the first package of enabling works to support Crossrail in energising traction power for the new railway in October. We have set up a marketing and advertising stand at Tottenham Court Road, which will also be appearing at Canary Wharf, Paddington and Westminster stations until October.

At Paddington, a proposed commercial development by Sellar has been granted planning approval. The consented scheme will include a new entrance and access capacity, including step-free access, to the Bakerloo line platforms. Works are planned to start following further design development and agreement with TfL and on completion of Crossrail works at the development site.

Project Assurance

An Integrated Assurance Review on the programme's submission to the Programmes and Investment Committee meeting on 28 June was completed. Seven recommendations were made and accepted, including six by IIPAG. Project Assurance tracks progress against the recommendations made (including those by IIPAG) as part of its continuous assurance.

* The figures cover all projects within the Stations programme that are planned until 2035 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.

LU track and civils

Track and drainage renewals

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
Annual	33	139	138

2017/18 budget milestone RAG: 

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

We achieved our targets in Quarter 1, replacing more than 1.9km of ballasted track, 1.2km of deep Tube track, 1.3km of drainage and nine sets of points.

We replaced two new track crossovers south of Harrow on the Hill. When required, trains can now move between the fast and local lines at 50mph, compared to 20 or 30mph previously, which delivers immediate journey time benefits on the Metropolitan line.

To improve reliability, we completed ballasted track renewal between Earl's Court and Gloucester Road and we installed new sets of points at Wimbledon in the first phase of works to renew assets in the area.

At Tower Hill, we completed track remodelling at the east end of the station for the 4LM programme. The new layout will provide better service recovery options on the District line, allowing us to remove trains from service more quickly, which will reduce the overall impact on the customer.

We have now replaced more than 1km of ballasted track with slab track on the Metropolitan line between Baker Street and Finchley Road. This slab track improves track drainage in the tight tunnels as well as increasing track life and reducing maintenance. We are doing this vital work in extended overnight closures of the Metropolitan line between Aldgate and Wembley Park – the line has been out of service from May 2016 from approximately 10pm, Mondays to Wednesdays.

LU infrastructure renewals

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2024/25*	224*	746*	981*

2017/18 budget milestone RAG: 

Our renewals programme for lifts, escalators, power and ventilation assets aims to improve safety, reliability, customer accessibility, the environment and journey times, 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 successfully completed all works within Lancaster Gate station, improving the station appearance and installing new, more reliable lifts. The station re-opened on 26 June, eight weeks ahead of schedule.

At North Greenwich, we completed an escalator refurbishment on 7 April, 14 days ahead of schedule, and escalator 3 at Chancery Lane was completed in May.

Power and Energy

As part of the Mayor's pledge to make London a zero carbon city by 2050, we are making the most of waste heat from the Tube. Site work continues on Islington's Bunhill scheme, where waste heat from the Northern line will be piped into homes. Construction of the pump house steelwork is almost complete.

To reduce temperatures in tunnels on the Jubilee line between Baker Street

and Green Park, we continue major tunnel ventilation system upgrades on site at Park Square Gardens and Hay's Mews. These works will take approximately one year and support the Jubilee line upgrade (stage 2).

We have also commissioned the first section of the District line to 750-volt traction, which is a key deliverable for the 4LM programme.

Assurance

Project Assurance completed an Integrated Assurance Review on the LU Infrastructure Renewals programme submission to the Programmes and Investment Committee meeting on 28 June. Twelve recommendations were made and accepted, including six by IIPAG. Project Assurance tracks progress against the recommendations made (including those by IIPAG) as part of its continuous assurance.

* The figures represent the lift and escalator renewals (until 2024/25) and power and energy projects (until 2018/19) that were approved by the Programmes and Investment Committee in June. The spend authority of £746m includes the £131m approved in June (not yet uploaded to SAP) and further authority will be sought in future.

LU rolling stock renewals

Forecast completion	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2024	126	445*	708

2017/18 budget milestone RAG: On Track

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

We have awarded the contract for the manufacture and supply of a replacement Central line fleet propulsion system following the resolution of a challenge from an unsuccessful bidder.

We have received bids for the contract to design, manufacture and supply a passenger information system for the Central and Bakerloo lines and saloon carriage CCTV for the Central line fleet and we expect to award the contract in the autumn.

To ensure continued reliability of the Bakerloo line train fleet until its replacement as part of the Deep Tube upgrade, a series of improvements, including works in adherence to Rail

Vehicle Accessibility Regulation (RVAR) requirements, are being carried out. The first phase of this work, involving car body structural repairs, is under way on trains 13 and 14 out of a total of 36.

To improve reliability of the Central line fleet, we have completed an overhaul of traction cards, which control train motors.

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

We continue to convert a passenger train into two rail adhesion trains for the Piccadilly line to mitigate potential service disruption during the 2017 leaf-fall season.

Life extension works are complete on 24 of the 29 battery locomotives. We are also carrying out improvement works on our engineering vehicles – eight have had traction equipment overhauls and all 29 have been upgraded to 750 volts.

A contract to design and build 71 wagons, which will carry materials for LU track renewals and maintenance works, was signed in late March. The new wagons will be introduced into service early in 2019.

On our Trains Modification Unit workshop project, we completed the evaluation of bids for the design and build contract, which we expect to award in Quarter 2.

Assurance

Project Assurance completed an Integrated Assurance Review on the Rolling Stock Renewals Sub Programme submitted to the Programme and Investment Committee meeting in March 2017. Eighteen recommendations were made and accepted, including eight by IIPAG. A quarterly update was provided to the Programme and Investment Committee meeting on 28 June 2017 where eight recommendations were closed, and good progress is being made to close the remaining 10. Project Assurance tracks progress against the recommendations made (including those by IIPAG) as part of its continuous assurance.

* The spend authority, which is lower than EFC as further authority will be sought in future, has reduced from £449m approved in March as the net result of the removal of a completed project and the introduction of the financials for the Trains Modification Unit workshop project.

LU signals, control and information

Information communication technology transformation

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2018	31	36	73

2017/18 budget milestone RAG: 

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

We continue works to enhance our ability to remotely view CCTV from more stations. Detailed design reviews are 80 per cent complete, installations are 60 per cent complete and the first stations have been brought into operational use.

We are improving customer information at Circle, Metropolitan, District and Hammersmith & City line stations. All installations are complete in the first tranche of nine stations. Five stations are complete in the second tranche, with works at the remaining 40 stations on schedule.

To enhance one-person operation CCTV views for train operators and customer safety on busy platforms, we are relocating platform equipment such as electronic displays, signs and seating. We are also painting end barriers on platforms. Following the completion of surveys on a number of platforms, works are under way to improve train operators' camera views of customers who are boarding or alighting.

Piccadilly line interim upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2018	28	47	45

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 signalling and allows employees to better monitor and manage the line, continues to operate successfully between Cockfosters and Earl's Court. Installation and commissioning of the infrastructure to extend the system to Turnham Green is complete, and we will start installation works on the Uxbridge branch next. Phased commissioning is planned to start in 2018 and will be completed in early 2019.

The new Piccadilly line control centre in west London continues on schedule. The fabricated steel frame sections for the roof plant and switchgear floor have been delivered to site.



Surface

Healthy Streets

Healthy Streets programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2021/22*	31*	439*	1,780*

2017/18 budget milestone RAG: On Track

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

Cycle Superhighways

On the East-West Cycle Superhighway, we completed the section of cycle track at Storey's Gate, a new speed table at Birdcage Walk and resurfacing works at Lancaster Gate. We continue construction between Great George Street and Hyde Park Corner and we expect all construction to be complete by October.

We continue detailed design for the North-South Cycle Superhighway Phase 2 and CSII (Swiss Cottage section) and we plan to start construction on both routes in November.

CS4 Phase I (Tower Bridge to Greenwich) consultation is planned to start in September once we have secured approval of designs and support from the London Borough of Southwark.

Mini-Hollands

Of the 102 schemes (97 infrastructure and five supporting measures), five were completed in the quarter. The total to date is 20.

The A10/Bury Street TLRN scheme completed in the London Borough of Enfield and the construction of the A105 Green Lanes scheme continues.

In the Royal Borough of Kingston, the St Mark's Hill one-way segregated cycle-way has been completed.

In Waltham Forest, two cycle hubs have been launched in Leyton and Chingford and additional cycle parking in Highams Park has been installed.

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

Healthy Streets programme continued

Central London Cycling Grid

Construction of the core network continues, with 55 per cent (48km) complete or under construction. The Royal Borough of Kensington and Chelsea has installed wayfinding signs and carriageway markings on its entire network.

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

Cycling Quietways

Construction is complete or under way on 84km out of a potential c. 250km of routes. Of this, 48km are the first seven Phase 1 routes. The remaining 36km is Phase 2, where construction is under way on 10 routes comprising Q14 Thames Path, Q16 Grand Union Canal, Newham Greenway, Ealing Broadway to Greenford, Notting Hill to East Acton, Wandsworth to Teddington, Greenwich to Bexleyheath, Wimbledon to Raynes Park, Bermondsey to Catford, and Woolwich to Lee Green.

Oxford Street

A public consultation on initial proposals for the western section of Oxford Street (Orchard Street to Oxford Circus) closed on 18 June. Almost 7,500 responses were received, with around 61 per cent of respondents either fully or partially supporting the proposals. We received

approximately 6,500 further emails relating to the consultation, which we will analyse with the other responses. We also held six consultation roadshows across the local district in June.

Feedback from the consultation will be considered as part of the more detailed proposals that are being developed for a second consultation, which is planned for late 2017.

Rotherhithe to Canary Wharf river crossing

The Rotherhithe to Canary Wharf river crossing will provide a new strategic connection across the river in east London. We held community engagement workshops in June with local people on both sides of the river to obtain feedback that will inform the design and functional requirements of the new crossing. We discussed matters such as how the crossing should look; safety and security; access arrangements; and integration with existing and proposed buildings and spaces.

We have appointed Arcadis to provide early design and engineering support on the project and work is now under way on the development of a reference design. We have also started surveys, demand modelling, business case development, funding, planning consents and land requirements.



Healthy Streets programme continued

Transformational programme

We have worked closely with the London Borough of Islington to transform Archway. Our works to introduce a two-way traffic system to replace the former gyratory, dedicated cycle lanes, and new pedestrian crossings are complete. The new public space opened on 24 May.

We started construction for Westminster Bridge South on 18 April and completed signal commissioning on the staggered crossing at York Road three weeks ahead of schedule on 23 May. We expect to complete construction by the end of 2018.

Public consultation on proposals for the long-term transformation of both Lambeth Bridge North and South started on 26 June. The improvements will create a safer environment for cycling and walking while keeping traffic moving along these key routes.

Along with the London Borough of Lambeth, we are also publicly consulting on transformation of the area around Waterloo roundabout and Waterloo Road. Our proposals would create a larger, greener and more accessible public space for local communities, pedestrians, bus passengers and cyclists. Consultation started on 26 June and closed on 20 August.

We have finalised the public consultation documents for improvements at Croydon Fiveways and consultation started on 11 July.

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

We have finalised a preferred land acquisition option for Wandsworth gyratory removal and have started land acquisition negotiations with landowners. We plan to seek in principle approval from the Board later in 2017 to make a Compulsory Purchase Order.

A design and build tender for Old Street was issued to our three framework contractors, with a view to appointing a contractor in September and works starting in September 2018.

Bus priority reliability and growth programme

We delivered 33 bus priority schemes across 12 London boroughs this quarter, with five schemes delivered on the TLRN, including Loampit Vale bus lane. This is ahead of our target of 23 schemes. These schemes have saved more than 40 minutes of bus journey time, which includes more than 24 minutes saved from the Bank scheme, which was partially funded by this programme.

Multi-modal network improvements

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

Design continues for improvements at key TLRN junctions and corridors, including the A205 at Tulse Hill and Bruce Grove, and along the A23 at Streatham Hill. Proposals will bring safety, cycling, walking and urban realm benefits.

Public consultation started on 30 June for proposals to improve connectivity at Charlie Brown's roundabout in South Woodford. The proposals will introduce new pedestrian and cycle crossings.

Technology programme

The Surface Intelligent Transport System (SITS) programme will provide the technology, tools and processes to manage London's road space more efficiently and effectively as demand for road space increases. SITS will deliver significant benefits through delay reduction and improved journey time reliability for all road users, through faster, automated responses to live road conditions using an enhanced Urban Traffic Control (UTC) system. The UTC operates the traffic signals, typically in groups, using centrally controlled timing plans.

We continue the procurement of replacement UTC and Split Cycle Offset Optimisation Technique (SCOOT) systems. We have completed the initial bidder engagement, tender submissions and bidder dialogue stages, and contract award is planned for winter 2017/2018.

We also continue preparation for the procurement of a replacement system for managing incidents on the road network. Data pilot projects have started to support the definition and planning for full procurement activity on data-related topics.

Other programmes and projects

Construction of Crossrail complementary measures continues ahead of schedule, with 10 out of 17 schemes under way and one at Chadwell Heath completed.



Air quality and environment

Ultra Low Emission Zone (ULEZ)

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2020	8	*	*

2016/17 budget milestone RAG:

We plan to introduce an Ultra Low Emission Zone (ULEZ) and a portfolio of associated Air Quality Measures in the capital to significantly improve air quality and, in turn, the health of Londoners.

We delivered more than 125 ULEZ-compliant double-deck buses into service during the quarter, taking the total to date to 1,500.

Detailed design work is almost complete for delivery by October of the Emissions Surcharge, where drivers of the oldest, most polluting vehicles will pay £10 in addition to the existing Congestion Charge.

We have finalised the requirements that we will use with our suppliers to build the system for the central London ULEZ and we have begun initial design scoping work.

The consultation on the Mayor's proposal to bring forward the start date of the central London ULEZ to spring 2019 ran from 4 April until 25 June. The results are currently being reviewed.

We have awarded a framework contract for the supply of nitrogen oxide (NOx) abatement equipment on buses. The roll-

out is being coordinated centrally across the route operators and framework suppliers. All major bus operators have submitted initial plans for fitting abatement equipment to their fleets. Bus operators have started the retrofit programme on the Brixton/Streatham corridor, which is the second corridor in London to benefit from the Mayor's programme to improve air quality.

Delivering the target of 75 Rapid Charge Points (RCPs) by December 2017 remains a key risk for the RCP project owing to a complex delivery process and multiple supplier and approver interfaces. We are therefore focusing on sites on TfL land and the TLRN, where greater delivery certainty can be achieved. We are also working with the boroughs to agree a single contact for RCP delivery.

Project Assurance completed an Integrated Assurance Review on the Euro VI Bus NOx abatement project (option) submission to the Programmes and Investment Committee meeting on 28 June. Ten recommendations were made and accepted, including three by IIPAG. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

Public transport portfolio

Cleaner and greener buses

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

2017/18 budget milestone RAG:

A total of 978 New Routemasters (out of 1,000) are now in service and 659 are using the cleanest Euro VI engine.

Opening windows have been fitted to all New Routemasters in service plus the remaining 22 on the production line.

London Overground stations capacity programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2018	22	29	32

2017/18 budget milestone RAG:

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

We continue the design for West Hampstead station to improve the entrance, accommodate future growth in customer numbers and provide step-free access to both platforms via lifts on

a new, wide footbridge. The design also incorporates a widened pavement and integration with the Ballymore housing development and public square.

We have completed the ground works on platform I at West Hampstead station to raise and level the site to allow crane operation during the main construction. We began piling in July following a trial of piling equipment.

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

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

2017/18 budget milestone RAG:

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

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

Cycle Hire re-let

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2018	26	52	41

2017/18 budget milestone RAG:

We are delivering an improved Cycle Hire operating model. Contracts will transfer to the new supply chain in 2017, which will develop service enhancements, such as Single Sign On, for go live in 2018.

Some activities have successfully transitioned from the incumbent service provider Serco, including the back office systems (to be operated by Cubic), the contact centre (to Journey Call) and the

website (to TfL). Serco is now finalising exit activities for the remaining activities that are to transfer to other providers, namely the finance systems and on-street fixed asset (docking stations) management including their cleaning.

Work also continues on operating processes to ensure that, in a future world with multiple service providers and our own service delivery, all can effectively communicate with each other.

Assets

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2021/22*	28	352*	905*

2017/18 budget milestone RAG:

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

Asset renewals programme

Renewals are the day-to-day planned works that maintain and lengthen the useful life of an asset, either by replacing it with a new one (typically like-for-like or a modern equivalent) or through interventions such as reconstruction or refurbishment.

This quarter we resurfaced more than 27,000 square metres of carriageway at locations including the A3 Kingston Bypass TLRN boundary up to South Lane (phase three), A3036 Albert Embankment, A406 Hanger Lane gyratory and A23 Purley Way (Imperial Way to Edghill).

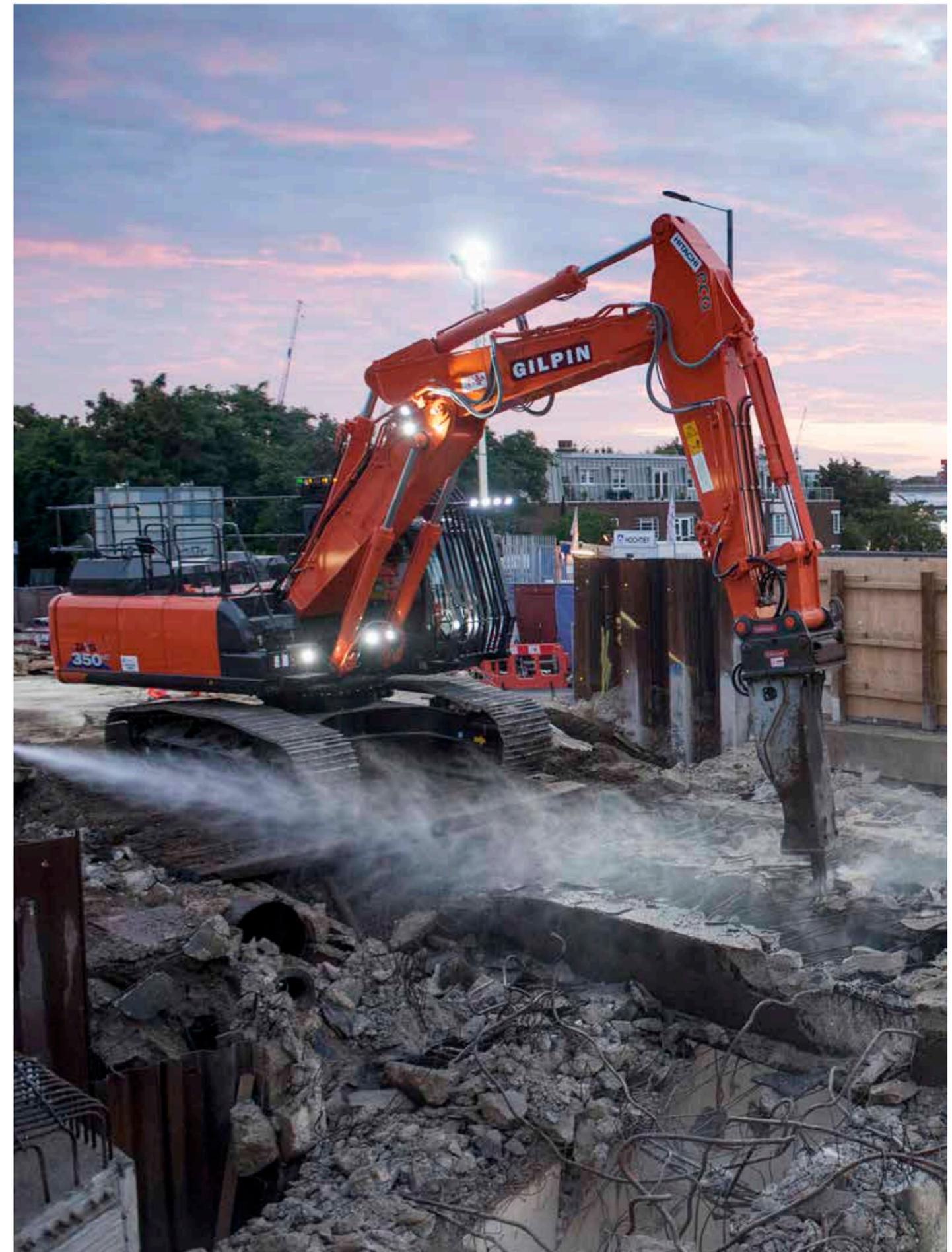
We also replaced almost 2,500 square metres of footway at Al Holloway Road (Windermere Road to St John's Grove).

Other works included replacing more than 60 lighting columns at locations including A3205 York Road (Plough Road to York Road roundabout) and A203 South Lambeth Road, more than 430 conventional lights with energy-efficient LEDs and 97 bus shelters.

We have also replaced 387 of 397 spot speed cameras and 234 of 235 red light wet film cameras with digital units to date. These projects remain on hold pending a decision on operational funding in future years.

Structures and tunnels investment programme

This is a programme of major works to address high-priority risks. Works began in 2010 and included Hammersmith Flyover. Progress in



* Programme and project authority was approved by the Programmes and Investment Committee in June to the value of £179m in 2017/18 and £173m in 2018/19. The forecast completion year and EFC relate to the Business Plan period until 2021/22.

the quarter on the four road-over-rail bridge replacements included:

- The full completion of Upper Holloway Road Bridge replacement works. The main works to demolish and replace the bridge were completed over Christmas 2016, allowing the A1 to be re-opened in January. Minor highway, service bridge and station works were undertaken through the spring and are now fully complete
- The demolition and rebuilding of a section of the existing bridge over the North London Line at Highbury Corner during a railway possession at Easter. Utility diversion works are under way and are planned to complete ahead of the final demolition and rebuild during Christmas 2017
- The demolition of the first half of the existing Ardleigh Green Bridge and preparation for the new bridge deck to be positioned over the railway in July. This demolition was completed to plan during the first May bank holiday, in a coordinated closure of both the railway and the A127

- The construction of new bridge supports at Power Road and preparation for demolition of the existing bridge. This included moving the alignment of the A406 to free up working space for the construction works. The main demolition works will be undertaken during an August bank holiday weekend railway possession

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

- Surveys, investigations and testing have started on Marylebone Flyover and the Westway
- Feasibility studies for Lambeth and Vauxhall bridges are complete and we are preparing to issue the tender documents next quarter for design and construction
- Following a competitive tender, our appointed contractor began structural investigations on site in June to inform a feasibility study for the Brent Cross project, which includes the refurbishment of six bridges at the A41/A406 Brent Cross interchange

- Also following a competitive tender, our appointed contractor began inspections on site in June to inform a feasibility study for the Blackwall and Rotherhithe Tunnels that will inform priorities, scope and costs

River schemes

Construction of the two new replacement Woolwich Ferry vessels has started. Following a competitive tender, our contractor and its subcontractors began early contractor involvement (ECI), and the final berth designs are almost complete. After conclusion of the ECI process, we will award the contract for the civil works. We remain on schedule to deliver the new vessels into service in winter 2018/19.

Coaches

We are undertaking works to maintain the existing Victoria Coach Station. Work is under way to replace the roof glazing following approval of the glass system by Westminster City Council.

We are also developing proposals and feasibility works for new coach facilities at Victoria Coach Station.

Assurance

Project Assurance completed an Integrated Assurance Review on the Assets programme submission to the Programmes and Investment Committee meeting on 28 June. Ten recommendations were made and accepted, including five by ILAG. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

Other

Technology and data

Customer experience – Future Ticketing Programme Phase 3, 4 and 5

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2018*	23	44	43

2017/18 budget milestone RAG:

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

We have implemented the revised card scheme rules for Visa EU as part of Phase 3, with card payments being successfully processed. Development work on the remaining card schemes is now under way.

On Phase 4, faster online purchases were made available to customers on 18 July. The Oyster ticketing app is being launched to customers in two stages. The first was made available to rail, tram and river customers on 7 September. The second stage will extend it to bus customers later in the autumn.

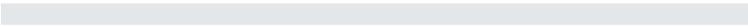


* The forecast completion year was previously incorrectly reported as 2017.

TfL growth fund

TfL growth fund programme

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

2017/18 budget milestone RAG: 

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

This programme allocates funding to support the delivery of transport schemes that help to accelerate housing delivery and unlock development and regeneration opportunities in some of London's key growth areas.

Existing Growth Fund schemes

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

The remainder of the schemes are at various stages of the project lifecycle. A decision is expected by October on the Transport and Works Act Order (TWAO) application for Barking Riverside extension (refer to page 25). A second public consultation on Fiveways started in July as part of the Healthy Streets programme (refer to page 35).

We have selected Taylor Woodrow to design and rebuild White Hart Lane station by spring 2019.

Sutton Tramlink extension

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

Rotherhithe to Canary Wharf Crossing

Also as part of the Healthy Streets Approach, we have sought feedback from the local community to inform the design and functional requirements (refer to page 36).

Shortlisted schemes

We continue to assess 32 potential schemes that, together with the GLA, we have identified against agreed criteria. We are producing a prioritised shortlist of schemes to receive a Growth Fund contribution, and we expect to complete this process next quarter.

Assurance

Project Assurance completed an Integrated Assurance Review on the Growth Fund programme submission to the Programmes and Investment Committee meeting on 28 June 2017. Eleven recommendations were made and accepted, including four by IIPAG. Project Assurance tracks progress against the recommendations made (including by IIPAG) as part of its continuous assurance.

* Programme authority of £200m was approved by the Programmes and Investment Committee during Quarter 1 for developing and contributing towards the Sutton Tramlink extension and Rotherhithe to Canary Wharf Crossing projects and for developing and delivering shortlisted schemes. The figures relate to the Business Plan period until 2021/22 and do not include existing Growth Fund schemes. Spend to date will be reported from Quarter 2 2017/18.



Elizabeth line

On-network stations improvement programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2019	29	94	94

2017/18 budget milestone RAG:

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

Construction of new footbridges and lifts continues at Maryland, Manor Park and Seven Kings. The new footbridge and lift structures are being made by a specialist fabricator in Doncaster and will be transported to site and installed in planned closures of the railway starting from August.

A tender for the detailed design and build of the lifts at the western section of the line was issued in June and contract award remains planned for November 2017. Completion is planned for mid-2019 ahead of the introduction of full Elizabeth line services in December 2019.

Work to finalise the scope of the refurbishment for the stations west of Paddington is under way. These packages will be tendered towards the end of 2017, with work starting on site in early 2018.

Crossrail rolling stock

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2019	424	1,091	1,091

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.

Service started between Liverpool Street and Shenfield on 22 June following acceptance of two Class 345 trains from Bombardier Transportation. The trains showcase British design and manufacture and help to support 760 UK jobs and 80 apprenticeships in Derby.

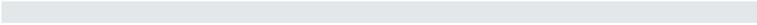
These trains also continue to support driver training. The third and fourth trains are being prepared for acceptance, with 11 trains planned to be in service by October.

Testing by Network Rail of the new European Train Control System (ETCS) on the Heathrow branch continues, in readiness for Class 345 testing from October ahead of Heathrow to Paddington services starting in May 2018.

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

Crossrail

Forecast completion year	Spend to date (£m)	Spend authority (£m)	Estimated final cost (£m)
2019	*	14,800	*

2017/18 budget milestone RAG: 

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

The project, which is now more than 85 per cent complete, remains on time and within the funding envelope (the committed funding) of £14.8bn. There are, however, a number of cost and schedule pressures that are being actively managed by Crossrail Limited.

The first of the five opening stages began in June following a period of rigorous testing and approvals, with the new Class 345 trains constructed by Bombardier Transportation in Derby running in customer service between Liverpool Street and Shenfield.

Several other significant milestones were also achieved this quarter, including:

- Completion of the formation of all platforms in the 10 new stations
- The concreting train completing its final journey on Crossrail – having installed more than 33km of track slab
- Excavation of the last piece of earth on the central section at Liverpool Street – more than seven million tonnes of spoil have been excavated across the project since construction began, three million of which went to construct the RSPB nature reserve at Wallasea Island
- Completion of structural steelwork in the western ticket hall at Farringdon
- Completion of the floating track slab under the Barbican Centre between Farringdon and Liverpool Street

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

Crossrail continued

Railway fit-out of the tunnels continues with the track, cables, overhead power, communication systems and ventilation equipment being put in place to ensure dynamic testing of the new rolling stock in the south eastern spur can start before the end of 2017. The installation of all track in the tunnels was completed in July.

Surface finishes continue to be applied to public spaces in the interior and exterior of the new stations. Escalators and lift installation continues and platform screen door installation has started.

Significant attention is being given to the plans for energisation, testing and commissioning, regulatory approvals, operational readiness and handover to the infrastructure maintainers in mid-2018 to ensure a period of trial running and operations before Elizabeth line passenger services begin at the end of 2018.

Crossrail Limited is also focusing on the significant interface risk between the train control management system on board the new trains and the systems and signalling being used for dynamic testing later this year from Heathrow to Paddington, and then through the central section under London next year.

Network Rail Crossrail works have continued on both east and west surface sections and are now 85 per cent complete overall. Work has focused on Driver Only Operation CCTV installation, track and gauging as well as signalling and electrification. The programme for major station building upgrades has proved to be challenging for Network Rail. Assurance has now been given that the stations will be upgraded by December 2019 when Elizabeth line services start from Reading, Maidenhead and Heathrow into central London via Paddington.



Appendices

Appendix A: 2017/18 Budget milestone performance

The TfL 2017/18 Budget milestones for the projects or programmes covered in this report are listed below. The red, amber and green (RAG) status indicates delivery forecast against the current plan date in line with the following key:

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

Commentary is provided on milestones that are forecast to be delivered significantly (more than 90 days) late.

Milestone description	Plan date	Actual/ forecast date	Status
LU Four Lines Modernisation			
S-Stock train roll-out ■			
Ealing Common depot de-icing facility operational	23-Jan-18	17-Jul-18	■
Additional assessments of the existing gable end wall and roof trusses and prolonged design in Ealing Common EC3 shed have impacted the related de-icing facility. We have developed options to mitigate this and they are currently under review.			
Upminster depot de-icing facility operational	12-Feb-18	27-Nov-17	■
Transformer rectifier unit modification works complete to enable operation of 750 volt regeneration	23-Feb-18	31-Jan-18	■
Automatic Train Control (ATC) ■			
Communications based train control (CBTC) Service Control Centre operations training starts	13-Jun-17	18-Apr-17	Complete
Customer information system enabling works (phase 3) between Cannon Street, Paddington, Barons Court and Fulham Broadway completed	13-Jun-17	13-Jun-17	Complete
Design for fitment to battery loco type A engineering vehicle completed	30-Jun-17	26-Feb-17	Complete
Tower Hill track alignment works to support service uplift completed	07-Aug-17	03-Jul-17	Complete
All wayside signalling installation for Edgware Road/ Finchley Road to Euston Square (SMA2) complete	26-Jul-17	25-Aug-17	■
Ruislip depot commission area ready for passenger vehicle testing	21-Aug-17	25-Oct-17	■
Post-installation check and testing on installed equipment between Hammersmith to Paddington to ensure correct working completed	12-Sep-17	21-Nov-17	■

Milestone description	Plan date	Actual/ forecast date	Status
Track work completed to enable performance at the maximum safe speed as specified in the Thales contract	26-Sep-17	03-Nov-17	■
CBTC fleet maintenance training starts	05-Oct-17	21-Dec-17	■
Thales site software readiness review for release	19-Oct-17	30-Apr-18	■
We have paused software development to allow greater system design maturity prior to developing it further. We will review schedule logic and float to determine if the delay can be mitigated.			
CBTC Circle and Hammersmith & City lines train operators – training starts	24-Oct-17	31-Aug-17	■
Hammersmith Service Control Centre information and communication system site acceptance testing completed	25-Oct-17	12-Jan-18	■
CBTC signalling operators training starts	05-Nov-17	19-Feb-18	■
Delays to the completion of the Neasden depot commissioning area and the training facility at Acton are currently impacting the start of training however we are seeking to develop mitigation options. We are investigating the opportunity to improve track access and thereby de-risk the overall delivery schedule.			
Wayside infrastructure (signal equipment rooms, power and cable management system) for Circle line completed	29-Nov-17	15-Dec-17	■
CBTC 30 Metropolitan line trains (half the line's fleet) fitment completed	05-Dec-17	10-Nov-17	■
CBTC testing of system along areas that do not interface with mainline rail	28-Dec-17	25-Jul-17	■
Final design and structure of track layout for Farringdon Sidings approved	16-Jan-18	14-Dec-17	■
CBTC signalling system performance monitoring for Hammersmith to Paddington – completed	05-Feb-18	04-May-18	■
Wayside infrastructure (signal equipment rooms, power and cable management system) for District line east completed	27-Mar-18	03-May-18	■
CBTC signalling system ready for commissioning between Hammersmith and Latimer Road	31-Mar-18	02-May-18	■
Capacity upgrades modernisations ■			
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	17-Aug-17	■
Jubilee and Northern line additional trains contract award	19-Oct-17	02-Oct-17	■
Northern line upgrade 2 detailed design for the Morden track, civils, earth and structures completed	06-Dec-17	09-Oct-17	■
Northern line upgrade 2 Morden civil earth structure site works begin	05-Feb-18	10-Jan-18	■

Milestone description	Plan date	Actual/ forecast date	Status
Northern Line Extension ■			
Tunnelling between Battersea and Nine Elms station completed	01-Aug-17	10-Aug-17	■
Kennington Loop enabling works complete	15-Sep-17	14-Sep-17	■
Kennington Green shaft – second tunnel boring machine arrives	20-Oct-17	15-Nov-17	■
Kennington Loop – 10 day closure for works	23-Dec-17	23-Dec-17	■
Nine Elms station – break through into the existing Northern line tunnels	16-Mar-18	16-Jan-18	■
Nine Elms station – all B2 top-down slabs poured as part of the top down construction method	31-Mar-18	16-Jan-18	■
LU major stations			
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	22-Jan-18	■
Bond Street station upgrade ■			
Station back into full service	27-Aug-17	17-Nov-17	■
Station upgrade complete, including a new station entrance and step-free access to all platforms	31-Dec-17	31-Dec-17	■
Bank Bloomberg Place ■			
Waterloo & City line entrance opens to customers	18-Jan-18	21-Dec-17	■
Bank station capacity ■			
Tunnelling begins	31-May-17	10-May-17	Complete
Excavation works begin	16-Oct-17	27-Sep-17	■
Paddington to Bakerloo line link ■			
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	01-Mar-18	■
Silvertown Tunnel ■			
Invitation to negotiate issued	20-Jun-17	20-Jun-17	Complete
Property cost estimate, as at June 2017, of land required for construction at Silvertown Tunnel	14-Jul-17	16-Jun-17	Complete

Milestone description	Plan date	Actual/ forecast date	Status
Barking Riverside extension ■			
Main works tender issued	03-Oct-17	05-Jan-18	■
The design phase has been extended owing to unexpected complexities with traction power and topographical surveys. The tender for the main works contract will be issued on completion of the design.			
LU track and civils ■			
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	■
LU infrastructure renewals ■			
Lift and escalators			
Euston escalator 5 refurbishment – escalator fully operational	24-Jul-17	29-Jun-17	Complete
Lancaster Gate lifts 1 and 2 replacement – new lifts fully operational	28-Aug-17	26-Jun-17	Complete
Final escalator at Holborn station (Piccadilly line) – operational	20-Oct-17	22-Sep-17	■
Power upgrades			
Central line resilience works Bow and South Woodford – contract award recommendation	08-May-17	07-Apr-17	Complete
Power asset renewals Park Royal Group high voltage – start on first site	17-May-17	03-Apr-17	Complete
Dual power – Queensbury transformer room fit-out completed	31-Aug-17	15-Aug-17	■
LU rolling stock renewals ■			
Bakerloo line rolling stock life extension weld repairs – 20 of 36 trains complete (target for full completion – November 2018)	13-Dec-17	09-Apr-18	■
A significant number of critical weld project employees left TfL as a result of IR35 - a revised tax legislation affecting public sector contractors. We are currently working on mitigations to reduce the impact on the project.			

Milestone description	Plan date	Actual/ forecast date	Status
Healthy Streets ■			
Cycle Superhighways route II – Swiss Cottage detailed design work completed	15-Dec-17	22-Sep-17	■
50km (about 60 per cent) of borough Central London Cycling Grid network either in progress or completed	30-Sep-17	30-Sep-17	■
100km of Cycling Quietways construction either complete or in progress	31-Jan-18	31-Mar-18	■
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
Wandsworth gyratory removal – Board approval of the principle of making a Compulsory Purchase Order	15-Dec-17	28-Nov-17	■
Surface Intelligence Technology implementation – notification of Urban Traffic Control contract award to selected supplier	22-Feb-18	30-Nov-17	■
4km of segregated Enfield Mini-Hollands cycle route completed	31-Mar-18	30-Oct-17	■
Bus priority improvements of 64 minutes to bus journey time on borough roads through schemes aiming to reduce delays owing to the Road Modernisation Plan	31-Mar-18	28-Feb-18	■
Crossrail complementary measures – implementation completed on four schemes	30-Mar-18	28-Nov-17	■
Air quality and environment ■			
75 per cent of the buses operating in the ULEZ will be compliant	30-Mar-18	02-Mar-18	■
Emissions Surcharge (T-Charge) launch	23-Oct-17	23-Oct-17	■
Public transport ■			
London Overground stations capacity programme ■			
West Hampstead station over-track footbridge completed	27-Oct-17	01-Sep-17	■
Cycle Hire re-let ■			
New operating model with new back office systems and different distribution, call centre and cleaning contracts – transitioned into service	30-Aug-17	30-Aug-17	■
Other ■			
London Overground track protection warning system detailed design approved by Network Rail	15-May-17	14-Apr-17	Complete
London Overground West Anglia stations programme main works completed	28-Jun-17	31-Jul-17	■

Milestone description	Plan date	Actual/ forecast date	Status
London Overground Willesden driving motor unit electrification option selection design approved by Network Rail	28-Jun-17	25-Aug-17	■
London Overground train crew accommodation – main works at Chingford completed	25-Feb-18	31-Dec-17	■
Trams assets gearbox overhauls started	02-Oct-17	04-Sep-17	■
Trams assets mid-life refurbishment completed	04-Mar-18	04-Feb-18	■
DLR rolling stock replacement concept design for Beckton depot completed	25-Feb-18	28-Jan-18	■
Assets ■			
Upper Holloway railway bridge replacement construction completed	24-Jun-17	24-Jun-17	Complete
Other			
Customer experience ■			
Contactless extended to the Oyster app	30-Mar-18	30-Mar-18	■
IM ■			
New multi-modal command and control system operational	31-Aug-17	26-Apr-17	Complete
Commercial development ■			
Five small development sites brought to market for property development through a pilot programme	30-Mar-18	31-Aug-17	■
Completion of the sale and lease back deal for the 55 Broadway building, which will deliver a significant capital receipt while retaining it as relatively low-cost office space	30-Mar-18	01-Mar-18	■
Six major sites brought to the property development market through a variety of routes including our Property Partnerships Framework and wider market engagement	30-Mar-18	30-Mar-18	■
Installation programme agreed for Digital Portrait advertising screens	04-Sep-17	14-Aug-17	■
Elizabeth line integration			
Crossrail rolling stock ■			
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	17-Oct-17	■

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