

Transport for London investment programme report

Quarter 4 2018/19

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

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

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

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

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

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

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Please note that Safety and Sustainability information will no longer be referenced in this report. There is a quarterly Safety, Sustainability and Human Resources report published on our website, which provides an overview of health, safety and environmental performance for London Underground, TfL Rail, Surface Transport and Crossrail services

Introduction

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

This investment programme quarterly performance report presents an update on the major projects and sub-programmes that seek authority each year (unless extraordinary approvals are needed) to the Programmes and Investment Committee.

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

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

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

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

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

EFC increase of two per cent or more:



EFC increase of five per cent or more:



EFC decrease of two per cent or more:



EFC decrease of five per cent or more:



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

We also include cumulative EFC movements for savings and efficiencies that have been embedded since our 2018 Business Plan, while protecting safety, services and reliability. Numbers in brackets represent an EFC increase and numbers without brackets represent an EFC decrease. Commentary is provided for cumulative movements greater than £2m.

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

All financial figures are gross and may not appear to align with costs detailed in the TfL Budget, which are net of any third-party funding.

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

On time or early:



Up to 89 days late:



90 or more days late:



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





The new Walbrook exit at Bank station connects the Waterloo & City line more directly to the street

Budget milestones for 2018/19 – the key milestones listed in the TfL Budget – are detailed in the Appendix (page 86).

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

- Major Projects is responsible for our largest and most complex projects. It comprises line upgrades, Deep Tube Upgrade, network extensions, and major stations, which are covered in pages 18-37 of this report. Future Major Projects schemes (see page 39) will be reported in detail following financial authority approval
- London Underground comprises stations, accessibility, track renewals, power, cooling and energy, rolling stock renewals, and signalling and control, which are covered in pages 40–51
- Surface comprises Healthy Streets, Air quality and environment, public transport, and asset investment. These are covered in pages 52-73
- Other comprises technology and data, the Growth Fund, and the Elizabeth line (including Crossrail), which are covered in pages 74–85

Mayor's Transport Strategy

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

We are providing more trains on our busiest services and are in the final phase of completing the Elizabeth line. We are

also making streets healthy, pleasant and productive places to stop at, travel through and live. Listening to, and acting on, the suggestions of our customers will allow us to make walking, cycling and public transport the first choice for the vast majority of trips, and everyday operational excellence will unlock the new jobs and homes that our city needs.

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

Healthy Streets and healthy people



A good public transport experience



New homes and jobs





We are encouraging more people to cycle by making it a safer option

Business at a glance

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

How we report on our business



Facts and figures*

945 Trains on the TfL network



580km

TfL-operated highways



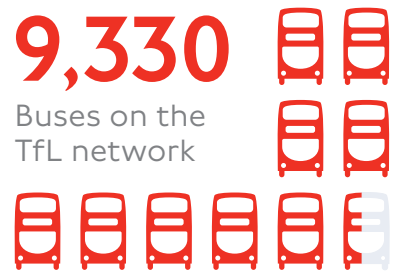
720km

TfL-operated Rail and London Underground routes



9,330

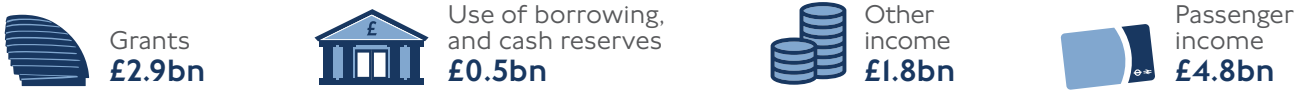
Buses on the TfL network



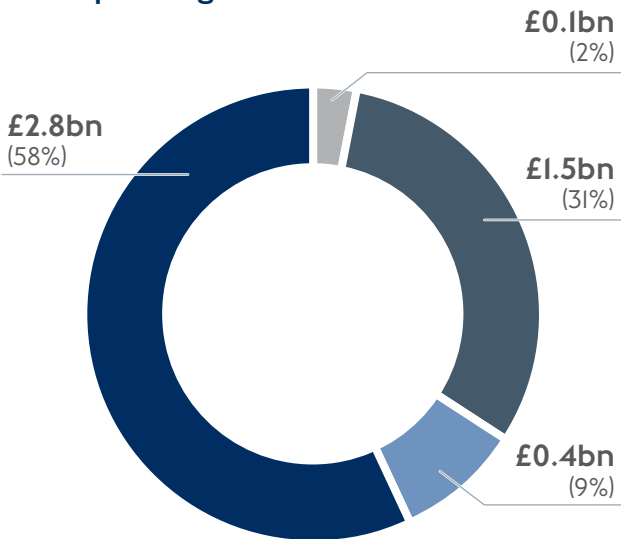
6,365

Traffic signals operated by TfL

Finances at a glance*



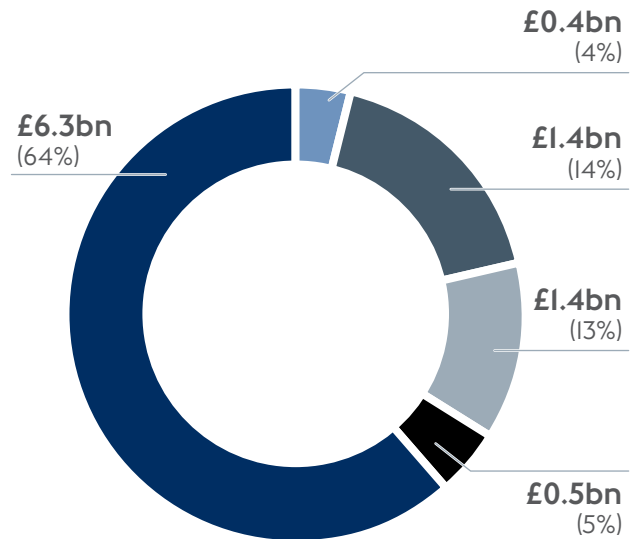
Total passenger income



Total: **£4.8bn**

- London Underground
- Rail
- Buses
- TfL Rail

Total costs



Total: **£10bn**

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

* Based on full year 2018/19

Key achievements

Line upgrades

The first section of the new signalling system on the Four Lines Modernisation programme was successfully introduced earlier this year and is now operating between Hammersmith and Latimer Road, the first part of the network to benefit from the improvements. While there have been a few issues, performance, since introduction, has been better than predicted based on reliability recorded during system testing.

On the DLR rolling stock, tenders to replace the rolling stock were received. Post quarter end, following an extensive period of review and negotiation, a contract for the supply of the next generation DLR trains was awarded to CAF of Spain in June 2019.

The depot concept design has been accepted and a detailed design contract let for the enabling works and sidings design. A tender for the design and build of the sub-station modifications has been issued and we are on track to commence Beckton depot enabling works, as planned, in summer 2019.

Deep Tube Upgrade programme

Following the award of the Piccadilly line rolling stock contract, Siemens Mobility Limited is developing a draft Piccadilly line rolling stock concept design.

We issued the One Person Operation CCTV invitation to tender in March. This allows train operators to ensure safe departure of the new trains from the platform and we aim to award the contract in Quarter 3 of the next financial year.

Network extensions

On the Northern Line Extension, at Nine Elms, all columns for both the eastern and western superstructures are complete and now stand at full height. We have completed the final pour for the roof slab of the eastern superstructure to allow blockwork to begin at ground floor level.

At the Silvertown Tunnel, bidders submitted their final technical, commercial and financial proposals in February 2019. In May, we selected Riverlinx Consortium as the preferred bidder to build the Silvertown Tunnel.

At Barking Riverside, early overhead line equipment works were procured and completed over Christmas 2018, to enable subsequent possessions of Network Rail infrastructure by the main works contractor.

We have removed redundant wagons from the site and carried out initial ground works. We are undertaking readiness reviews to support the Network Rail possessions and blockade planned for later this year, and we continue to work with stakeholders to secure the required network change approval.

Stations and infrastructure

At Victoria station, almost all new passenger-facing facilities have now opened and the overall completion of the station, surrounding buildings and urban realm are planned for summer 2019. Some of the original escalators are being refurbished.



The Northern Line Extension includes a new station at Nine Elms

At Bank, the Walbrook entrance's formal opening in December 2018 was attended by the Mayor of London Sadiq Khan, Michael Bloomberg and the Commissioner, Mike Brown.

At the site of the new entrance, we have excavated an area 30m deep to allow for construction of the new station entrance onto Cannon Street. The structure that will form the new station entrance is 80 per cent complete, with the first of three new escalator barrels complete.

London Underground **Accessibility**

We delivered step-free access at South Woodford on time in March.

Track renewals

Under the track renewals programme this quarter, we replaced more than 1.2km of ballasted track, including 424 metres at Sudbury Town and 328 metres at Ravenscourt Park. In February, we achieved our target for this financial year to install 7.5km of new track across the London Underground network.

Rolling stock

On the Jubilee line, 44 out of 63 trains have been refurbished and are back in service. The refurbishments include a wheelchair area, new flooring, a refreshed interior (including grab-poles and handles), and sealing to the roof and windows. We have now started to install the new priority seating moquette.

On the Central line, we have delivered two carriages to the Bombardier test site to begin prototyping the new traction system. We have awarded the new flooring contract and installed a dust extraction system at Acton Works to facilitate the delivery of the Central Line Improvement Programme.

Signalling and control

We have commissioned approximately two thirds of the new Piccadilly line signalling control system at the control centre in west London. The area between Acton Town and South Harrow was achieved in February and we plan to complete all remaining areas by the end of 2019.

Surface **Walking**

We have now completed work at 29 out of 73 of the most dangerous junctions. We continue to review the completed projects to ensure they have successfully reduced collisions, and there is currently an average 25 per cent reduction overall in collisions across the improved junctions.

Work is progressing well at Old Street roundabout and advanced construction works to remove the traffic islands on all four arms of the roundabout are under way. Over the bank holiday weekend, the project team at Old Street achieved a major project milestone by removing the old vehicle dominated roundabout and replacing it with a two way traffic system. This is a temporary switch which closed the southeast arm of the junction

to traffic to allow for the construction of a new entrance to Old Street Underground Station near to Cowper Street. The project will transform this critical and busy junction and improve safety for pedestrians and cyclists as well as provide new entrances to Old Street Underground station.

Cycling

Construction began in March to deliver pedestrian and cycle improvements between Acton and Wood Lane along the A40, with major carriageway works starting in early April. Construction work is also complete at two critical junctions on Edgware Road and Euston Road that will provide significant improvements for people wanting to walk and cycle.

Work continues on several major new routes, identified in the Strategic Cycling Analysis published in 2017. Stakeholder engagement for the first four routes was undertaken between January and March 2019 for views and suggestions on our initial plans.

Liveable neighbourhoods

Feasibility funding has been awarded for the first phase of the programme and the second phase of funding was launched in February 2019. We received 22 bids from across London, 11 of which were awarded feasibility funding and started development work in April 2019. Projects awarded funding as part of phase 2 are: Bow (Tower Hamlets), Brixton (Lambeth), City Cluster (City of London), Croydon Old Town (Croydon), Custom

House (Newham), Enfield Town Centre (Enfield), Holborn gyratory (Camden), Ilford (Redbridge) Shortlands (Bromley), South Bermondsey (Southwark) and South Chiswick (Hounslow).

Borough Local Implementation Plan projects

The works at White Hart Lane, in Tottenham, were completed in March to meet requirements arising from the new Tottenham Hotspur football stadium development, particularly for pedestrian capacity in White Hart Lane and other local roads. This will contribute to the regeneration of North Tottenham, along with rail station access improvements.

Air quality and environment

In April, we introduced the new Ultra Low Emissions Zone (ULEZ) in central London. ULEZ is the centrepiece of Mayor Sadiq Khan's environmental initiatives, it enforces the world's toughest vehicle emission standard and is the first such initiative to operate 24/7. It has replaced the T-Charge and operates in the same area as the Congestion Charge.

The initial running of the scheme has gone well, with customer call centre volumes high on the day of launch but these subsequently decreased during the first week, and it continues to run smoothly.

Asset investment

All four lanes on the A127 successfully re-opened, as planned, in March.

Public transport

We introduced step-free access at Manor Park, Seven Kings and Maryland Great Eastern Rail Stations in February and March. Works are complete at Willesden Depot to accommodate the new Class 710 Fleet for the London Overground line. An Access for All scheme is under way on the London Overground at West Hampstead station while Access for All funding has been secured for enhancements to Hackney Downs and Seven Sisters stations to deliver full step-free access for customers. Modified electric four-car trains have operated on the Barking to Gospel Oak line from 28 January and the first two new electric Class 710 trains began in passenger service in May.

On the DLR, we have carried out two successful testing phases of the vehicle control centre project. This will remove issues that can occur when trains move from one section to another.

Track renewals have successfully been completed with the majority of works being undertaken outside of weekend closures, allowing the service to remain operational.

The public address system installation has been delivered at Tower Gateway, Limehouse and Heron Quays.

We have completed installation of two new escalators at Limehouse DLR station. This station sees significant traffic as it provides a link with the c2c service to and from Fenchurch Street. The new escalators will improve station access and service interchange, and support future growth.

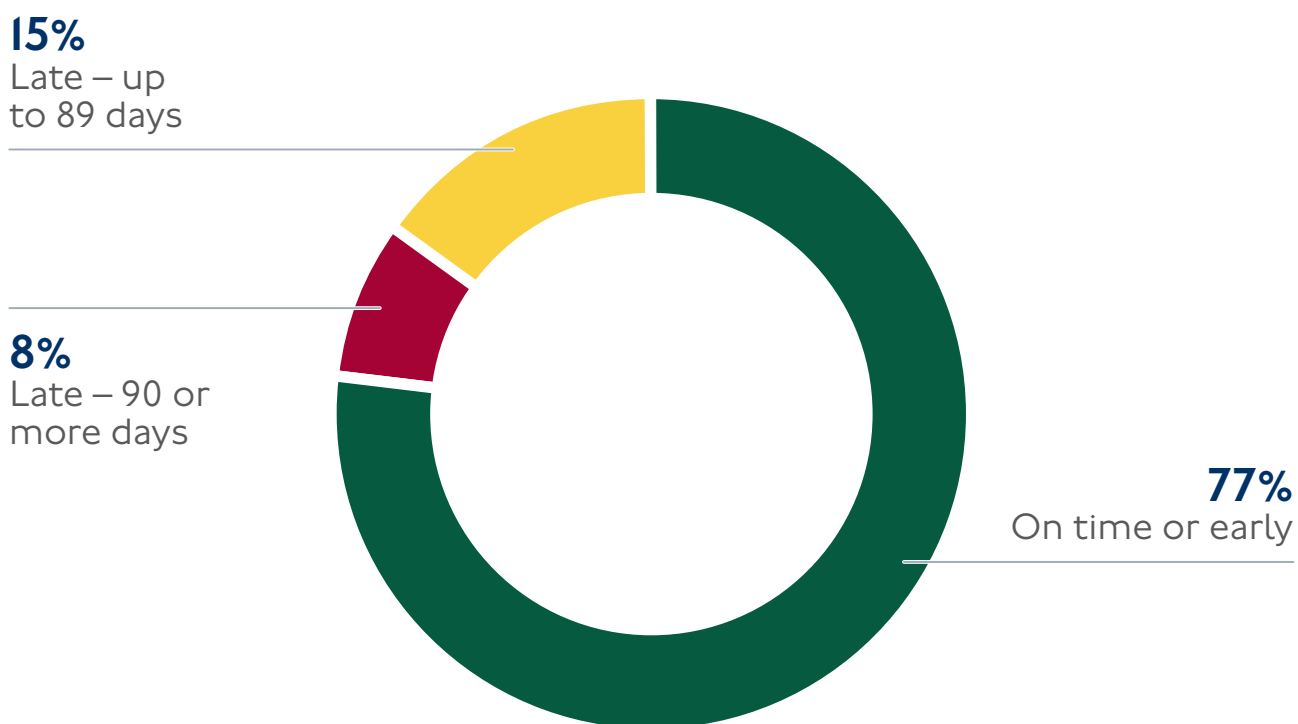
Following the switch to cashless trams in July 2018, existing ticket machines for London trams have been removed from tram stops in Croydon town centre (Reeves Corner to East Croydon). The remainder will be removed by the summer of 2019, and the newly available space at the stops will provide additional platform capacity, seating and information boards, depending on the location.

Other

On the surface radio replacement project, we completed the switch to the new digital system within the last financial year. Over 9,200 buses and ten base stations had the new digital radio hardware installed. All of this was achieved in just one year and one week after contract signature, and without any significant downtime between the old and new services.

2018/19 Budget milestone performance summary

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



The late milestones are shown in the Appendix, on page 86.

Major projects

Line upgrades 

Four Lines Modernisation

Forecast completion year

2023

Spend to date (£m)

4,661

Spend authority (£m)

5,412

EFC (£m)

5,301

EFC movement post plan (£m)

(34)

2018/19 budget milestone RAG 

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

The new automatic train control signalling system will control train movements, enabling more frequent and reliable services. In addition to designing and installing the system, we are working on the related infrastructure and fitting S-stock trains and engineering vehicles with in-cab signalling equipment.

The first section of the new signalling system on this extensive modernisation programme was successfully introduced earlier this year, and is now operating between Hammersmith and Latimer Road. It is the first part of the network to benefit from the improvements. The performance since introduction has been better than predicted, based on reliability recorded during systems testing.

In Quarter 3, we reported potential emerging cost pressures to impact the EFC with an expected range of £10m to £50m. In Quarter 4, a review of the programme schedule and EFC was undertaken, focussing on assurances over key forecast assumptions and risk exposure, supported by an extensive senior management review. The outcome of this review has led to an EFC increase of £34m over the 2019 Business Plan. Work continues on driving improved outcomes in the EFC, aligned with delivering the programme benefits ahead of schedule. The EFC of £5,301m remains £111m under authority. This has been achieved by an aggressive schedule aimed at delivering the benefits ahead of the required authority milestone dates, value engineering solutions, innovation, and providing the optimum scope to bring about the planned benefits. We remain committed to this methodology and are working with the main contractor to identify and realise potential savings with a view to driving the EFC back to the Business Plan or below.

All trains are being fitted with automatic train control equipment. We have now fitted a total of 165 trains (112 S7 trains – which has supported communications-based train control (CBTC) in the first Migration Area – and 53 S8 trains) out of 192 trains in readiness for CBTC on the Circle, District, Hammersmith and City and Metropolitan lines. All S-stock trains are now forecast to be delivered in summer 2019, to support all planned launch dates.

As part of the upgrade to CBTC, modifications were made to some of the track points and crossings. Track layout works have now been completed on a set of points at Farringdon, and the Farringdon double junction project is also complete.

Commissioning of the final signalling area between Rayners Lane and Uxbridge remains on schedule to support the final service increases in 2023.

Assurance

Project Assurance completed an integrated assurance review on the Four Lines Modernisation programme submission to the Programmes and Investment Committee meeting in October 2018. A quarterly update was provided to the Committee on 6 March 2019 on the 15 recommendations that were made and accepted, including 11 by the Independent Investment Programme Advisory Group (IIPAG). Six recommendations are closed and good progress is being made to close the remaining nine. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.



Capacity Optimisation – World Class Capacity

Forecast completion year

2024

Spend to date (£m)

112

Spend authority (£m)

245

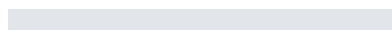
EFC (£m)

209

EFC movement post plan (£m)

(2)

2018/19 budget milestone RAG



This is a programme which includes upgrades to signalling, power, trains and track with the target of maximising capacity on the Jubilee and Northern lines with the existing train fleets. While a lot of the works are standalone, a significant proportion is essential to other programmes, including further upgrades to the Jubilee line and the Northern Line Extension.

The World Class Capacity programme is also delivering the signalling works for the Northern Line Extension and Bank station capacity upgrade.

To enable the new capacity works, we have completed speed improvement and track works to the Northern line and begun power enhancement works with the award of a design and build contract to Balfour Beatty.

Enhancements to the Jubilee line continue, and include improving the speed at which trains exit the depot onto the mainline at Neasden. Train crew accommodation enhancement works at North Greenwich have also been completed.

Assurance

Project Assurance completed an integrated assurance review on the World Class Capacity programme submission to the Programmes and Investment Committee meeting in July 2018. A quarterly update was provided to the Committee on 6 March 2019 on the six recommendations that were made and accepted, including three by the IIPAG. All recommendations are now closed.

The EFC has increased by £2m compared to the 2018 Business Plan, driven by works at Neasdon Depot, which are required to enable the Jubilee line capacity improvement programme. This will increase the capacity to 32 trains per hour on the central section at peak times by the end of 2021.



Renewal of existing London Underground assets will improve safety, reliability and maintain resilience



Capacity Optimisation – DLR Rolling Stock and System Integration

Forecast completion year

2025

Spend to date (£m)

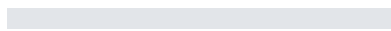
15

Spend authority (£m)

EFC (£m)

EFC movement post plan (£m)

2018/19 budget milestone RAG



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

We continue to achieve key milestones in all areas. There have been no accidents or injuries.

The programme will replace the 60 per cent of existing DLR fleet that is nearing the end of its design life and provide additional trains, which will increase capacity to meet the projected housing and employment growth in the Docklands area. The depot at Beckton will be extended, with further sidings for the new trains, a new maintenance facility and an extended automatic train operation test track. The Thales automatic train operation signalling system also needs updating and the traction power system needs to be strengthened.

On 11 December 2018, the Programmes and Investment Committee granted authority to procure 43 DLR trains to increase capacity and to replace approximately 60 per cent of the existing fleet (33 trains) and for the associated enabling works.

* This information is withheld for reasons of commercial sensitivity

At post quarter end, following an extensive period of review and negotiation, a contract for the supply of the next generation of DLR trains was awarded to CAF of Spain in June 2019.

The depot concept design has been accepted and a detailed design contract let for the enabling works and sidings design. Topographical, drainage and geotechnical surveys are complete. A tender for the design and build of the sub-station modifications has been issued. We remain on track to commence Beckton depot enabling works in summer 2019.

Workshops with KeolisAmey Docklands are under way to plan how the operational service will be maintained during the depot enhancement works, and detailed operational modelling for the early stages was completed. A contract has been awarded to UK Power Networks to secure additional power supplies. Negotiations continue with Thales to agree the scope of services for the signalling upgrade required to support the replacement rolling stock.

Assurance

Project Assurance completed an integrated assurance review on the DLR Rolling Stock Replacement programme submission to the Programmes and Investment Committee meeting in December 2018. A quarterly update was provided to the Committee on 6 March 2019 on the five recommendations that were made and accepted, including three by the IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.



Siemens has started to develop the Piccadilly line rolling stock concept design

Deep Tube Upgrade programme



Deep Tube Upgrade programme

Forecast completion year

2030/31

Spend to date (£m)

112

Spend authority (£m)

3,294

EFC (£m)

3,111

EFC movement post plan (£m)

(2)

2018/19 budget milestone RAG



The Deep Tube Upgrade programme will deliver new signalling systems and a fleet of newly designed, high-capacity, walk-through, air-cooled trains to replace some of the oldest on our network. The initial focus is on the upgrade of the Piccadilly line and the introduction of new trains.

Quarter 4 saw the completion of the Siemens 100 day plan with contract and team mobilisation delivered as planned. Following the award of the Piccadilly line rolling stock contract, Siemens have started to develop the Piccadilly line rolling stock concept design. The next key step to achieve completion of the concept design is the delivery of all train-related interface control documents by the end of Quarter 1 2019/20.

Seventeen position detectors (which give the position of the train on the platform) were commissioned at Oakwood and Hatton Cross, with work ongoing to complete this at Heathrow. Commissioning works are required at a further seven sites (38 position detectors) to replace the existing equipment which is incompatible with the new Piccadilly line trains.

We have issued the One Person Operation CCTV (OPO CCTV) Invitation to Tender as planned in March 2019. The OPO CCTV will allow train operators to ensure safe departure of the train from the platform in all driving modes. We aim to award the OPO CCTV contract in Quarter 3 of 2019/20.

The EFC and spend authority relates only to works and enabling associated with the introduction of the Piccadilly line rolling stock. Work continues to support the case to gain funding for additional scope for the Deep Tube Upgrade programme, which forms part of a wider programme EFC.

A contract was signed with Siemens to design and build 94 Tube trains to replace the existing 1970s fleet. The increase since the Business Plan is a result of further refinement in the baseline. The main movements relate to omission of required train testing works, offset by reductions in risk exposure and refinement of the train costs and programme resources. The programme will have completed a rebaselining exercise by the end of June with a view to identifying further opportunities to bring the EFC back to the Business Plan.

Network extensions



Northern Line Extension

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
**	745	*	*	*

2018/19 budget milestone RAG

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

At Nine Elms station, completion of concrete pours for the track formation alongside the platforms has allowed for running track to be installed through the station. All columns for both the eastern and western superstructures are complete and now stand at full height. The final pour for the roof slab of the eastern superstructure is complete, allowing blockwork to commence at ground floor level.

At Battersea station, blockwork construction work continues on the internal walls to form the rooms in the new station. Following the removal of the last tower crane, installation of the precast coffered panels, which form the ticket hall's signature architectural ceiling, is now complete. The removal of the tower crane has also allowed the completion of the construction of Prospect Way on behalf of Battersea

Power Station Development Company (BPSDC). The Prospect Way structure spans the station box and supports the roadway to the west of the main entrance. The various utility supplies for the station are set to be installed within the roadway. A jetty which facilitated the removal of excavation waste from the site by river barge rather than using Heavy Goods Vehicles has been decommissioned and handed back to BPSDC. The benefits of using the jetty include reduced toxic pollutants, substantial carbon savings and reduced congestion on roads caused by lorries.

At Kennington Park, the ground floor concrete slab and columns for the head house are complete. At Kennington Green, the head house structure and parapets are complete. Construction of the head house's ground floor internal and external walls continues.

* This information is withheld for reasons of commercial sensitivity

** The end of December 2020 target opening date is currently under review. This is driven by the need to adapt the construction programme as the designs for Battersea Power Station's over-station development and Tube station have evolved

Installation of all running track in the tunnel sections across the Northern Line Extension is complete, enabling deliveries by engineering train to be made deeper into the extension, and the installation of conductor rail is under way. The final piece of track – the diamond crossing in the Battersea crossover box – will be installed by June 2019.

The first of the Northern Line Extension's 16 tunnel ventilation fans was successfully tested and will provide temperature and smoke control in the Battersea station western core.

Assurance

Project Assurance completed an integrated assurance review on the Northern Line Extension programme submission to the Programmes and Investment Committee meeting in December 2018. A quarterly update was provided to the Committee on 6 March 2019 on the ten recommendations that were made and accepted, including six by the IIPAG. Two recommendations are closed and good progress is being made to close the remaining eight. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.



Silvertown Tunnel

Forecast completion year

2025

Spend to date (£m)

52

Spend authority (£m)

*

EFC (£m)

*

EFC movement post plan (£m)

*

2018/19 budget milestone RAG



The Silvertown Tunnel will tackle traffic congestion at the Blackwall Tunnel and the consequential effects this has on travel, the environment, the economy and growth across the wider east and southeast London area.

Bidders submitted their final technical, commercial and financial proposals in February 2019. In May, we selected Riverlinx Consortium as the preferred bidder to build the Silvertown Tunnel.

Pre-construction activities to facilitate a smooth start to construction, once the contract is awarded, have continued. This includes the design for enabling works packages following completion of concept designs for the replacement North Greenwich car parks last year. We continued monitoring existing structures in the area before the main tunnelling works commence, and started noise monitoring ahead of the start of construction. We are working with utilities companies to agree how to progress early investigation and service diversions.

The tunnel will connect Silvertown and the Greenwich Peninsula, which are areas being developed by third parties with numerous tenants and landowners.

We have been establishing third-party agreements with them and are negotiating land access. We have been developing our consent obligations and finalised the agreement with the Royal Borough of Greenwich to ensure benefits of the tunnel are maximised and the area around the tunnel is enhanced.

Assurance

An integrated assurance review commenced in February 2019, which will support selecting the preferred bidder in May and contract award in the summer. A quarterly update was provided to the Committee on 6 March 2019 on the 10 recommendations that were made and accepted, including six by the IIPAG. Eight recommendations are closed and good progress is being made to close the remaining two. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

* This information is withheld for reasons of commercial sensitivity



Barking Riverside Extension

Forecast completion year

2022

Spend to date (£m)

34

Spend authority (£m)

EFC (£m)

EFC movement post plan (£m)

2018/19 budget milestone RAG



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

The main works contract was awarded in December 2018 to a joint venture of Morgan Sindal and VolkerFitzpatrick. Early overhead line equipment works were procured separately and completed over Christmas 2018, to enable subsequent possessions of Network Rail infrastructure by the main works contractor

Following contract award, the focus has been on mobilisation of the joint venture team, completing environmental surveys, securing planning approvals for the viaduct and new station, and establishing structural monitoring on the High Speed 1 tunnels – which the new link will cross. We have removed redundant wagons from the site and undertaken initial ground works including test piling. Readiness reviews are being undertaken to support the critical Network Rail possessions and blockade planned for later this year. To enable the summer 2019 blockade, we continue to work with stakeholders to secure the required network change approval.

Assurance

Project Assurance completed an integrated assurance review on the Barking Riverside Extension programme submission to the Programmes and Investment Committee meeting in December 2018. A quarterly update was provided to the Committee on 6 March 2019 on the seven recommendations that were made and accepted, none by the IIPAG. Two recommendations are closed and good progress is being made to close the remaining five. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

* This information is withheld for reasons of commercial sensitivity

Major stations

Victoria station upgrade and finishes

Forecast completion year

2019

Spend to date (£m)

577

Spend authority (£m)

604*

EFC (£m)

582

EFC movement post plan (£m)

(1)

2018/19 budget milestone RAG 

We have built a new north ticket hall, 300 metres of subways and 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.

The EFC has increased by £1m since the last quarter to £582m, £21m below authority. The EFC reflects the latest forecasted completion date.

Station capacity has increased with the upgrades which opened in stages, with almost all new passenger-facing facilities now fully available. One escalator is being refurbished, and a small amount of work to complete ceiling panels, tiling and platform and walkway surfaces remains. Project completion is on target for the summer.

* The spend authority for the Victoria station upgrade has decreased from £612m in Quarter 3 to £604m in Quarter 4 following reallocation to the Holborn station capacity project



Bank Walbrook

Forecast completion year

2019

Spend to date (£m)

58

Spend authority (£m)

58

EFC (£m)

59

EFC movement post plan (£m)

(1)

2018/19 budget milestone RAG



We have built a new entrance for the Waterloo & City line on Walbrook, with connections to the existing concourse, which was commissioned in November 2018.

The facility was constructed by Bloomberg on behalf of TfL, with a formal opening in December 2018 attended by the Mayor of London Sadiq Khan, Michael Bloomberg and Transport for London Commissioner, Mike Brown.

The EFC now reflects the final account settlement with the main contractor and is aligned to the 2018 Business Plan.



Work continues to upgrade Bank station on the London Underground



Bank station upgrade

Forecast completion year

2022

Spend to date (£m)

420

Spend authority (£m)

656

EFC (£m)

656

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



We are boosting capacity at Bank station by 40 per cent. This includes creating a new Northern line tunnel, platform and circulation spaces, a new entrance on Cannon Street, the introduction of step-free access to the Northern line, additional interchange between the DLR platforms, and two new moving walkways between the Central and Northern lines to reduce customer journey times.

The ongoing tunnelling works are progressing well, with the majority of the new infrastructure already tunnelled. In March, the first breakthrough between the new entrance on Cannon Street and the newly constructed Northern line tunnel was made. The breakthrough will make further construction work easier, helping to ensure the upgrade is delivered by 2022. Tunnelling works for the new lift shaft continue, delivering step-free access to the Northern line and improved step-free access to the DLR in 2022.

At the site of the new entrance, we have excavated an area 30 metres deep to allow for the construction of the new station entrance onto Cannon Street. The structure, which will form the new station entrance, is 80 per cent complete with the first of three new escalator barrels completed.

The EFC has remained static since last quarter and is aligned to the 2018 Business Plan.



Bakerloo line link

Forecast completion year

2019

Spend to date (£m)

74

Spend authority (£m)

76

EFC (£m)

75

EFC movement post plan (£m)

(6)

2018/19 budget milestone RAG



A new step-free pedestrian walkway at Paddington is being constructed to link the Bakerloo line platforms with the new Elizabeth line station.

The new pedestrian walkway will provide step-free access from the Bakerloo line to the new Paddington Elizabeth line station. Two new escalators and a new lift have been installed.

On 30 November 2018, the project completed the testing and commissioning works, which enabled the Bakerloo line link tunnel to be ready for trial running and integration with the Elizabeth line.

The planned final integration testing identified a couple of issues that need to be addressed. These are being progressed and are due to be completed by the end of the summer.

The EFC has increased by £6m since the last quarter to £75m. This was the result of reaching a settlement agreement with the contractor as part of the final accounts.



New escalators connect the Bakerloo line to the Elizabeth line at Paddington station



Holborn station capacity

Forecast completion year

2031

Spend to date (£m)

5

Spend authority (£m)

13

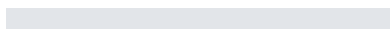
EFC (£m)

13

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



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

As stated in our updated Business Plan of December 2018, the proposed capacity upgrade to Holborn station has been re-phased subject to funding and consents.

We are still very much committed to the Holborn project given how crucial it is to the West End and the upgrade of the Piccadilly line. Our work so far includes developing the scheme proposals and carrying out our first public consultation.

The EFC represents early stage works, including concept design and Transport and Works Act Order preparation, and is aligned with the current spend authority. Work continues beyond this stage, forming part of a wider EFC. The Authority and EFC has increased by £8m since last quarter to reflect the next tranche of works to develop the Transport and Works Act Order and associated works in line with the 2018 Business Plan. The project and procurement has since paused, pending the 2019 Business Plan review.



Camden Town station capacity upgrade

Forecast completion year

TBC

Spend to date (£m)

10

Spend authority (£m)

24

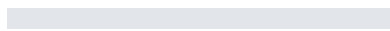
EFC (£m)

24

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



The station upgrade will provide a new, fully-accessible entrance north of the station which will connect to the existing platforms by tunnels.

As our 2018 Business Plan explains, we are reliant on steady and sustained investment from the Government to support major capital investment. We currently have no certainty of capital funding beyond 2020 and, over the next year, we will be making the case to Government for confirmed capital support to enable critical infrastructure projects, such as the capacity upgrade to Camden Town station.

In the meantime, we continue to look to identify third-party funding and work with potential development partners, which could help fund the new station entrance and capacity improvements.

Assurance

Project Assurance completed an integrated assurance review on the Major Stations programme submission to the Programmes and Investment Committee meeting on 6 March 2019. Nine recommendations were made and accepted, including five by the IIPAG. Four recommendations are closed and good progress is being made to close the remaining five. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

The EFC represents early stage works, including concept design and Transport and Works Act Order preparation along with property purchases, and is aligned with the current spend authority. The EFC has remained static since last quarter and is aligned to the 2018 Business Plan.



We are creating a transport system where everyone can travel safely by the healthiest and most resource efficient means

Future projects



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

Learning lessons from Crossrail, the Crossrail 2 team are working to further strengthen our assurance processes and are setting up a number of Expert Review Groups (ERGs). The ERGs will scrutinise, challenge and verify the outputs of the project team's work, focussing on the areas of scheme development, case-making analysis and cost and risk. In addition to the ERGs, an Independent Assurance Panel will soon be confirmed. This will be the overarching review group providing independent assurance to the Crossrail 2 sponsors and Senior Responsible Owners concerning the planned and in-progress development of the project, the quality and rigour of outputs, and proposals for delivery of the scheme.

The team continues to work closely with the Department for Transport and Network Rail colleagues to refine the scheme as we prepare to submit our Strategic Outline Business Case to Government in the summer. Discussions on the plans to consult and update the 2015 Safeguarding Directions continue.

An extension and upgrade to the Bakerloo line will improve connectivity, increase capacity of the transport network and reduce journey times to key destinations across London. This would support development and regeneration, particularly in South East London, including supporting at least 20,000 new homes in the Old Kent Road Opportunity Area, while also ensuring that our existing network is upgraded and modernised. We continue to develop the scheme and refine the proposals prior to further public consultation.

London Underground

Stations 

Forecast completion year

2023/24

Spend to date (£m)

1,995

Spend authority (£m)

3,207

EFC (£m)

2,533▲

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



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

Integrated stations programme

We have completed works on eight stations, (Barbican, Charing Cross, Ealing Broadway, Holland Park, Paddington, Sloane Square, Vauxhall and Whitechapel), including three that will interchange with the Elizabeth line.

Station enhancements

At Finsbury Park, work on the new western station entrance continues and we plan to open it in late 2019.

We have completed the concept design for the South Kensington station capacity upgrade project and we plan to appoint a design and build contractor by summer 2019 to deliver the works.

We will provide step-free access at Knightsbridge and build two new entrances on Brompton Road and Hooper's Court in partnership with a developer, who will enable and part-fund the works. The civils works on the lift shaft to the platform were completed in June.

The EFC, which covers all projects including those completed within the stations programme, has increased from £2,440m at Quarter 2 as it now includes the financial year 2023/24.

We continue the redevelopment and upgrade of Tottenham Hale station. The new station structure is in construction. The next stage of the programme is dependent on working on Network Rail infrastructure to complete the new station interchange building.

Concept design for Colindale station is now complete and the next phase will be to procure detailed design. The project will bring significant improvements, including a spacious new entrance, a new lift providing step-free access to the platforms and new homes around the station.

Developer funded works

We are working with Berkeley Homes to create a new entrance at West Ham station with step-free access between the entrance and Berkeley's development site. The developer's consultants have drafted the concept design specification documents and we are working with the developer to finalise legal agreements.

We continue to work with Canary Wharf Group to deliver a new station entrance and three new escalators at Waterloo. Communications and public announcement systems installations are almost complete and the new entrance was opened in spring 2019.

We are creating 11 retail units in the railway arches beneath Wood Lane station, where we continue front and service installation works.

Collaborative enhancements and third-party projects

In July, the London Borough of Southwark recommended that planning permission be granted for a new town centre at Elephant and Castle, subject to legal agreement and approval by the Greater London Authority (GLA) and the Secretary of State. We continue to await final approval on the Section 106 agreement with the developer and the London Borough of Southwark. As part of the development, a new station box with connecting tunnels to the existing platforms will be built to increase capacity at the station and provide step-free access to the Northern line.

At Paddington, we are working with Great Western Developments to construct a new entrance to the Bakerloo line, with a much-enlarged ticket hall and step-free access to the platforms, as part of its redevelopment of adjacent buildings. We continue to collaborate with Great Western Developments and its consultants to confirm the scope, agree commercial terms and finalise a Works Agreement before starting the concept design phase.

At Stratford, we continue to work with stakeholders to consider access and capacity improvements. This includes working with the London Legacy Development Corporation on reviving proposals for a new entrance and ticket hall to serve the Carpenters Road area, along with improvements to step-free access and capacity in the adjacent subway.

Assurance

Project Assurance completed an integrated assurance review on the Stations programme submission to the Programmes and Investment Committee meeting in July 2018. A quarterly update was provided to the Committee on 6 March 2019 on the eight recommendations that were made and accepted, including three by the IIPAG. Three recommendations are closed and good progress is being made to close the remaining five. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.



We continue to consider access and capacity improvements to Stratford station

Accessibility



Forecast completion year

2023/24

Spend to date (£m)

35

Spend authority (£m)

244

EFC (£m)

165▼▼

EFC movement post plan (£m)

25

2018/19 budget milestone RAG



We are working on a wide programme of accessibility improvements, customer service and information enhancements across the Underground network. We will make over a third of stations accessible by 2020 by providing step-free access at a further 15 stations.

The EFC has decreased from £197m at Quarter 2 as there is reduced funding available in the 2018 Business Plan.

Fifteen stations will become step-free by spring 2020 as part of the Mayor's funding for step-free access. Having upgraded two stations in 2018, we delivered step-free access at South Woodford in March. We converted the existing steps to the westbound platform to create ramped access. As part of the fire strategy, we have provided platform places of relative safety and an additional fire escape. We also upgraded the lighting system, installed improved signage and repaired the station building.

Design and build contracts are in place for a further 12 stations (Amersham, Burnt Oak, Cockfosters, Debden, Hanger Lane, Harrow-on-the-Hill, Ickenham, Mill Hill East, Northolt, Osterley, Sudbury Hill and Wimbledon Park). These all include the construction of new lifts and overbridges, and other assets will be upgraded while we carry out these works. We have started works at a number of these stations and works will continue for the rest of this year, with these stations all planned to be step-free by spring 2020.

We have completed early stage designs for more step-free stations to be delivered in the mid-2020s.

Track renewals

Forecast completion year

Annual

Spend to date (£m)

115

Spend authority (£m)

107

EFC (£m)

115▲

EFC movement post plan (£m)

(9)

2018/19 budget milestone RAG 

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

On 16 February, we achieved our target for this financial year to install 7.5km of new track across the London Underground network.

We replaced more than 1.2km of ballasted track, which included 424 metres of renewal at Sudbury Town and 328 metres at Ravenscourt Park. We also replaced more than 220 metres of drainage in this quarter.

On our deep Tube track network, we replaced more than 2km of an older track with modern flat bottom rails and renewed a further 1.5km of concreted deep Tube track.

Balfour Beatty was awarded the new track delivery partner contract, which started in April 2019.

Assurance

Project Assurance completed an assurance review in February 2018. An update was provided to the Committee on 6 March 2019 on the seven recommendations that were made and accepted, none by the IIPAG. Six recommendations are closed and good progress is being made to close the remaining recommendation. Project Assurance tracks progress against the recommendations made as part of its continuous assurance.

The EFC has increased to £115m from Quarter 3 due to the business decision to implement its delivery recovery plan following the loss of 2.5km of ballasted track renewals and drainage due to TransPlant asset availability and industrial action during the first half of 2018/19.

The successful delivery of this recovery plan ensured that the Track Programme delivered its annual milestone of 7.5km of full track renewal.

Power, cooling and energy

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
2023/24*	44	90	133	0

2018/19 budget milestone RAG 

Our renewals programme aims to improve safety, reliability and legal compliance of our power assets, introduce cooling in key locations to improve the customer experience and increase the energy efficiency of our assets.

Power

We continue to support the delivery of a number of third party and major projects by providing power works, such as relocating the substation at Euston for High Speed 2, installing cable routes for the Northern Line Extension and works for the Deep Tube Upgrade, and the Bank Station Capacity Upgrade.

We are delivering a new portfolio of power renewal works to improve asset condition through a prioritised work bank of projects. Installation work on the first projects has started, with designs for the next priorities having reached approval stage. The previous work bank of power renewals, which has been operative since 2015, is nearing completion.

We have started to commission specialist compensation equipment at Greenwich Power Station that protects the Four Lines Modernisation network's resilience by improving the quality of the power supply, which is forecast to be completed in the second quarter of 2019/20.

We have agreed the procurement strategy to extend the life and address immediate obsolescence risk by consolidating three power control systems to a single system. The system, once completed, will remotely monitor and safely operate traction, station, signalling and depot power supplies.

Cooling

We have completed works at Bond Street station to provide improved airflow to the new Elizabeth line tunnel, and we plan to close the site by summer 2019.

* The figures represent power and energy projects until 2023/24

Energy

To install solar panels at the Acton workshop, the roof would require remediation at a significant cost, so we have put this site on hold and are assessing the feasibility of installation at alternative sites, to meet the Mayor's solar commitment.

Assurance

Project Assurance completed an integrated assurance review on the Power, Cooling and Energy programme submission to the Programmes and Investment Committee meeting in July 2018. A quarterly update was provided to the Committee on 6 March 2019 on the 13 recommendations that were made and accepted, including eight by the IIPAG. Nine recommendations are closed and good progress is being made to close the remaining four. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

Rolling stock renewals



Forecast completion year

2029

Spend to date (£m)

228

Spend authority (£m)

618*

EFC (£m)

1,092▲

EFC movement post plan (£m)

(80)

2018/19 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 improvements to ensure continued reliability of the Bakerloo line fleet until its replacement by the Deep Tube Upgrade programme. We have completed structural weld repairs to carriages on all 36 trains and a vinyl retrofit, due to a change in design, of the first eight is planned to complete in autumn 2019.

On the Jubilee line, 44 out of 63 trains have been refurbished and are back in service. The refurbishments include a wheelchair area, new flooring, refreshed interior (including grab-poles and handles), and new sealing to the roof and windows. We have now started to install the new priority seating moquette.

The EFC increase from £1,012m at Quarter 3 mainly relates to the incorporation of Central line programme lift, an update to Central line improvement programme risk and an expected increased spend on the new train maintenance workshop at Acton.

* The authority is lower than the EFC as authority is sought in stages

On the Central line improvement programme, we have delivered two carriages to the Bombardier test site to start prototyping the new AC traction system. We have awarded the new flooring contract and installed a dust extraction system at Acton works to facilitate the delivery of the Central line improvement programme.

The manufacture of seven pre-production wagons in China will begin soon, following design sign off. These wagons will be tested and shipped to the UK in November 2019, for full inspection and approval, before production begins of the remaining 64 new wagons that will support track renewal and maintenance activities.

We have received tender responses for the design and build of the prototype mechanised renewal vehicle, which will eventually change the way we renew track in the deep Tube.

The Ardelt cranes and tilting wagons are undergoing final tests before being shipped to the UK from Germany by December 2019.

Following an evaluation exercise, we have selected the option for replacing our track recording vehicle, which records and monitors the alignment and condition of the track.

The construction of the new train maintenance workshop at Acton has progressed on site. We have started the final round of design evaluations and work is under way to finalise the underground services and foundations.

A project is under way to improve cab security providing train operators control over unauthorised entry into their cab from the saloon.

Assurance

Project Assurance completed an integrated assurance review on the Rolling Stock Renewals programme submission to the Programmes and Investment Committee meeting on 6 March 2019. 14 recommendations were made and accepted, including ten by the IIPAG. Three recommendations are closed and good progress is being made to close the remaining 11. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.



Piccadilly line signalling control system migration is set to complete by the end of 2019

Signalling and control



Forecast completion year

2023/24

Spend to date (£m)

72

Spend authority (£m)

143

EFC (£m)

188

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



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

Siemens continues the design for the life extension of the Central line signalling and control systems. This project will maintain the reliability, availability, maintainability and safety of the assets and resolve obsolescence concerns. Once the design of a number of items has been finalised, we will work with Siemens to deliver pilot sites and complete trials.

We have commissioned approximately two thirds of the new Piccadilly line signalling control system at the control centre in west London. The migration of control between Acton Town and South Harrow was achieved in February 2019. The programme is progressing well and all remaining migrations are planned to complete by the end of 2019.

Assurance

Project Assurance completed an integrated assurance review on the Signalling and control programme submission to the Programmes and Investment Committee meeting on 6 March 2019. Nine recommendations were made and accepted, including four by the IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

Surface

Healthy Streets



Forecast completion year

2021/22

Spend to date (£m)

443

Spend authority (£m)

957

EFC (£m)

1,759

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



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

Highbury Corner

Construction is progressing well for the major reconfiguration of the road network and removal of the gyratory at Highbury Corner. The footway paving and kerbing works are substantially complete and the traffic switchover to two-way operation took place over the Easter weekend. Urban realm works will continue throughout the summer. All highway works are on track to be completed by late summer 2019.

Wandsworth Gyratory

The purchase of properties from landowners on Putney Bridge Road continues to progress. The last three properties, of the current first tranche of planned purchases, are expected to complete by June 2019. We are working with the London Borough of Wandsworth to ensure the project brings value for money, this includes reviewing whether all land take on Armoury Way is essential. Any changes or a revised layout will be communicated to the public in summer 2019. We plan to start work on site in 2021, at the end of the compulsory purchase process.

The EFC reflects the 2018 Business Plan up to 2021/22 to provide a direct comparison to the original authority requested. Spend authority is to the end of 2019/20.



Two-way traffic was introduced at Highbury Corner over the Easter weekend

Fiveways

Design assurance is currently under way and a detailed design and build contract is being prepared for issue in August 2019. We will submit a planning application for the scheme in October 2019, and a decision by the London Borough of Croydon is expected by end December 2019. Following planning approval, Board approval will be sought so that the compulsory purchase orders and design and build contract can be progressed.

Vauxhall Cross

The Vauxhall Cross island site planning application was referred to the Mayor in March 2019. The GLA Stage 2 letter and report states that the GLA does not object and that Lambeth can determine the planning application themselves, subject to any action that the Secretary of State for Transport may take. The Secretary of State is yet to review the planning application. Design assurance for the gyratory removal and improved bus station is under way ahead of a detailed design and build contract being issued in summer 2019. Construction work is planned to start in autumn 2020.

Waterloo City Hub

The scheme provides a significant upgrade for the safety and comfort of pedestrians, cyclists and public transport users, with a new pedestrian walking route to the river, improved crossings, segregated cycling facilities and improved bus waiting and boarding areas. The proposed transformational scheme continues to progress well

and the initial concept design has been updated following stakeholder review. Technical approval of the concept design is under way and we are working with our supply chain to commence the detailed design of the scheme. The London Borough of Lambeth recently approved a £2m funding contribution towards delivering these improvements. We continue to work closely with the London Borough of Lambeth and developers in the area, to ensure delivery is coordinated with existing and future plans for Waterloo. We aim to start construction in spring 2020, subject to securing the necessary consents.

Old Street Roundabout

Work is progressing well to transform this critical and busy junction and improve safety for pedestrians. Site investigations and utility diversion works have continued on site at the junction with Cowper Street. Advanced construction works to remove the traffic islands on all four arms of the roundabout are under way. Over the late May bank holiday weekend, we achieved a major milestone by removing the old vehicle-dominated roundabout and replacing it with a two-way traffic system. This is a temporary switch, closing the southeast arm of the junction to traffic to enable construction of a new entrance to Old Street Underground station near to Cowper Street. Later this year, a further switch will be required to reopen the southeast arm and permanently close the northwest arm. Eventually, the project will bring huge

improvements to cycling and walking in the area including fully segregated cycle lanes, a new public space with a new main entrance to the underground station and a new lift to the shopping arcade. Construction is on track to be completed by the end of 2020.

Direct Vision Standard

We are committed to improving safety for vulnerable road users. We have developed the world's first Direct Vision Standard (DVS) to measure the volume of space that a heavy goods vehicle (HGV) driver can see directly from each vehicle's cab. DVS will give regulators, manufacturers, operators and contractors an objective standard to rate and improve the safety of HGVs.

As the DVS and HGV Permit Scheme proposal for London amounts to a technical regulation, we were required to notify the European Commission to ensure that it did not conflict with 'free movement' within the European Union. We were notified on 6 December 2018 that the European Commission had no objections to our proposals.

Following public consultation, statutory consultation started in April 2019 for the introduction of this standard which could be applied to prevent vehicles with the lowest ratings from entering London from 2020. The registration system to enable HGV drivers to apply for DVS permits will go live by the end of 2019.

DVS contributes directly to the Mayor's Vision Zero objective to eliminate death and serious injury from London's roads.

Surface Intelligent Transport System

We are leading the way in terms of delivering innovative new road traffic management systems to make journeys on foot, bike, bus, as well as essential emergency services and freight trips, as efficient as possible. We are working with Siemens to develop the Real Time Optimiser system to manage the flow of people on London's road network by controlling the phasing of traffic signals using pre-planned timetables, manual interventions and optimisation techniques, with the first release scheduled for late 2020. A separate procurement process is under way to appoint a supplier to design, develop and implement a new incident management system, which will enable us to increase the speed at which we detect and respond to incidents on the road network.

Cycleways

Construction started on 18 March to deliver pedestrian and cycle improvements between Acton and Wood Lane along the A40, with major carriageway works starting in early April. Construction work is also complete at two critical junctions on Edgware Road and Euston Road that will provide significant improvements for people wanting to walk and cycle.



Work continues to deliver improvements across the Cycleways network

Work continues on several major new routes, identified in the Strategic Cycling Analysis published in 2017. Stakeholder engagement for the first four routes was undertaken between January and March 2019 to get views and suggestions on our initial plans. Public consultations for the routes have opened for the cycleways between Hackney and the Isle of Dogs and Ilford and Barking Riverside. We also plan to consult the public later in the year on additional routes including Dalston to Lea Bridge, Greenwich to Woolwich and Camden to Tottenham Hale.

Rotherhithe to Canary Wharf crossing

On 21 June, the Programmes and Investment Committee made the decision, after consultation with members, that the Rotherhithe to Canary Wharf crossing should revert to feasibility so that strategic alternatives, such as a ferry service, can be reassessed. This is due to a combination of increased capital costs for the bridge option, the current financial constraints within the organisation, together with an absence of alternative funding sources.

There remains a strong case for a new river crossing for pedestrians and cyclists between Rotherhithe and Canary Wharf to relieve congestion on existing transport links, encourage more active travel and support good growth in the Canada Water and Isle of Dogs Opportunity Areas. Therefore, investigations are under way for a ferry to be used as potential crossing solution that is more affordable and quicker to deliver. This is alongside the wider investment we are making in walking and cycling across the area, including delivery of Cycleway 4 and new cycle routes from Rotherhithe to Peckham and Hackney to the Isle of Dogs.

Safer Junctions

In April 2017, the Safer Junctions list highlighted the 73 most dangerous junctions on our road network, defined as those with the highest vulnerable road user collision rates between 2013 and 2015. We have now completed work at 29 of these junctions. We continue to review the completed projects to ensure they have successfully reduced collisions, and overall there is currently a 25 per cent average reduction in the incidence of collisions across the improved junctions. We are taking the remaining 44 schemes through design, with 12 scheduled for construction by spring 2020.

Crossrail complementary measures

We are working with the boroughs, Crossrail Limited, Network Rail and Rail for London to develop and deliver a programme of improvements to 17 stations in outer London to create capacity for additional footfall and regenerate the area. So far, Crossrail complementary measures works are complete at five stations (Abbey Wood, Chadwell Heath, Goodmayes, Manor Park and Romford). Site works at eight stations (Forest Gate, Gidea Park, Hanwell, Harold Wood, Ilford, Maryland, Seven Kings and West Drayton) are at various stages of construction. Four stations, (Acton Main Line, Ealing Broadway, Southall and West Ealing) are at design or consultation stage.

The original Crossrail programme has slipped and a new programme is being developed by Crossrail for station works. Complementary works at some stations are dependent on station works and some of the west London stations will be completed later than December 2019, as a result.

Liveable Neighbourhoods

Liveable Neighbourhoods is a key part of the Mayor's Transport Strategy, which aims to create locally-led, attractive, healthy and safe neighbourhoods that encourage walking, cycling and public transport use and reduce car journeys. In 2018/19, feasibility funding was awarded for the first phase of the programme. Proposals for the first seven neighbourhoods include: the creation of a new public space in Crouch End and the introduction of new segregated cycle routes; removing the Greenwich town centre gyratory and reallocating more space to pedestrians and cyclists; and improving Romford town centre by making the busy ring road easier to cross on foot and by bike.

The second phase of funding was launched in February 2019. We received 22 bids from across London, 11 of which were awarded feasibility funding and started development work in April 2019. Projects awarded funding as part of phase two are: Bow (Tower Hamlets), Brixton (Lambeth), City Cluster (City of London), Croydon Old Town (Croydon), Custom House (Newham), Enfield Town Centre (Enfield), Holborn gyratory (Camden), Ilford (Redbridge), Shortlands (Bromley), South Bermondsey (Southwark) and South Chiswick (Hounslow).

Borough Local Implementation Plan projects

Construction of schemes at Baker Street, Beddington, Feltham, Hayes town centre, Stratford gyratory and Tottenham Court Road (West End project) are currently complete or in construction, in accordance with the agreed programmes and budget allocations.

The works at White Hart Lane, in Tottenham, were completed in March 2019. These were accelerated to meet requirements arising from the new Tottenham Hotspur football stadium development particularly for pedestrian capacity in White Hart Lane and other local roads. This will contribute to the regeneration of North Tottenham, along with rail station access improvements.

Construction is planned to start at Hornsey Lane Bridge and the Blackhorse Road junction with Forest Road in spring this year. A safety-orientated scheme for Camberwell town centre on the TfL Road Network is currently in design, and adjoins the Corridors, Neighbourhoods and Supporting Measures borough scheme, under Local Implementation Plan (LIP), which is currently on site.

Most of the Boroughs have now submitted final LIPs following consultation for approval, with a small number of exceptions. These are being assessed in batches for Deputy Mayor approval. We expect all LIPs to be approved by July 2019.

Assurance

Project Assurance completed an integrated assurance review on the Healthy Streets programme submission to the Programmes and Investment Committee meeting in July 2018. A quarterly update was provided to the Committee on 6 March 2019 on the nine recommendations that were made and accepted, including four by the IIPAG. All recommendations are now closed.

Air quality and environment



Forecast completion year

2022/23

Spend to date (£m)

132

Spend authority (£m)

280

EFC (£m)

433

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



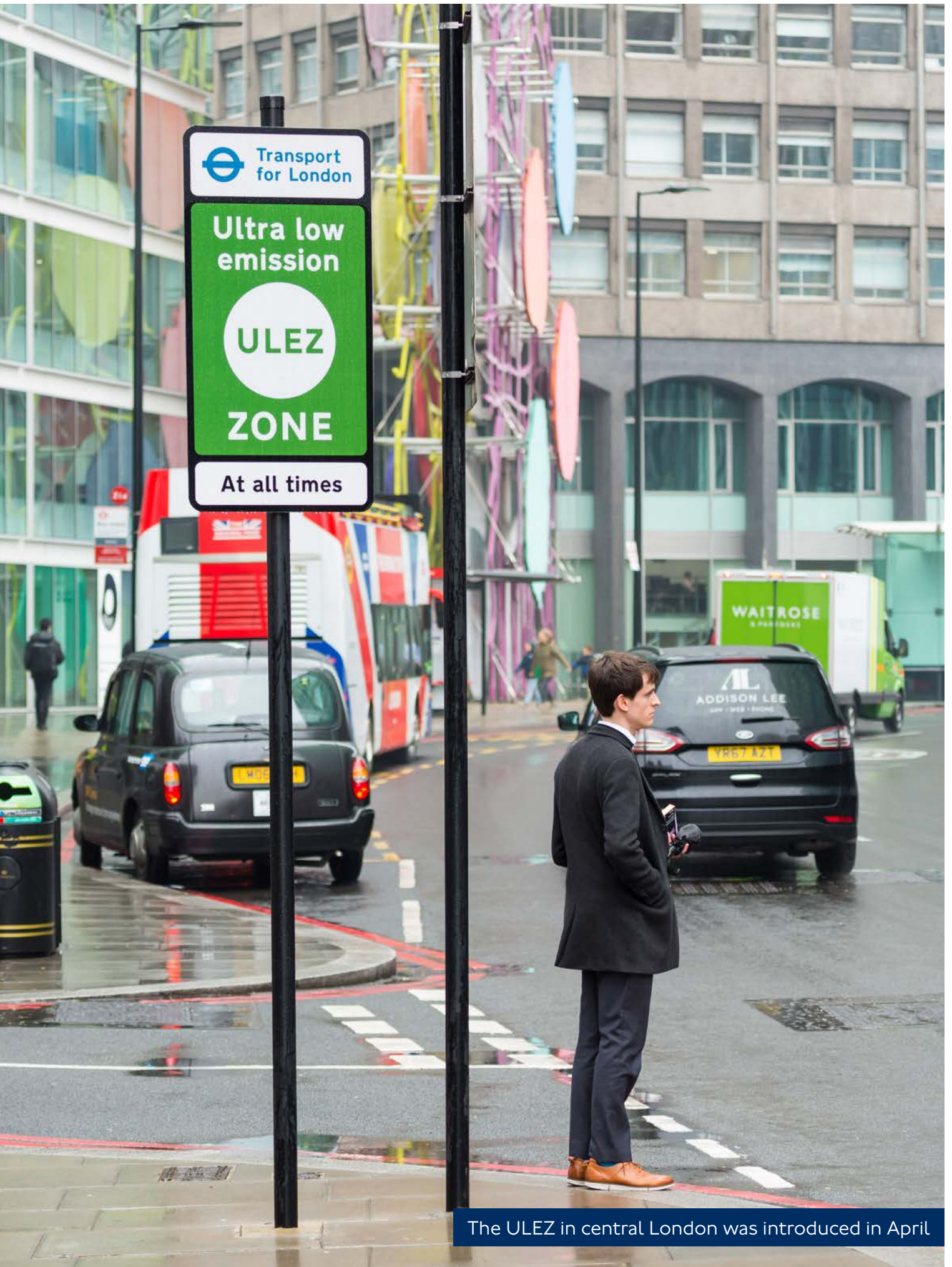
The Air quality and environment programme reduces impact of transport on air quality and climate change by targeting vehicles in our contracted and regulated fleets, and all vehicles driving in London.

Ultra Low Emission Zone update

On 8 April 2019 we introduced the new Ultra Low Emissions Zone (ULEZ) in central London. It enforces the world's toughest vehicle emission standard and the first to operate 24/7. The ULEZ has replaced the T-Charge and operates in the same area of central London as the Congestion Charge. The initial running of the scheme has gone well, with customer call centre volumes high on the day of launch but lowered during the first week, and the scheme continues to run smoothly.

In October 2021 the ULEZ will be expanded to the boundary formed by the North and South circular roads. This will expand the zone to 18 times its initial size. A feasibility study to understand the options for delivering the systems and services has concluded. An update on the delivery strategy will be presented to the Programmes and Investment Committee in May 2019.

The EFC reflects the 2018 Business Plan up to 2022/23. The spend authority is less than the EFC as we only requested part approval at the last meeting of the Programmes and Investment Committee.



The ULEZ in central London was introduced in April

Fleet compliance

To help meet the Mayor's air quality objectives in 2021, we are working to ensure that 4,000 of our vehicles are Euro VI compliant by 2020. We completed the fit out of 2,500 buses in January 2019, and all buses in Low Emission Bus Zones will be retrofitted by the end of October 2019.

We have completed seven Low Emission Bus Zones, with the retrofitted vehicles now contributing significantly lower NO_x emissions on these corridors.

The completed bus zones are:

- Putney High Street
- Brixton – Streatham
- A2 Camberwell – New Cross
- A3 Wandsworth – St John's Hill
- High Road (Haringey)
- A12 Eastern Avenue (Homerton Road)
- A5 Edgware Road

Ultra low emission vehicles – rapid charge infrastructure

To support the growing use of zero emission capable taxis and electric vehicles, we are building a network of rapid charge points across London. By the end of March 2019, we installed 177 points, 71 of which are dedicated for taxis. We continue to prepare sites for installation, with the number of live sites estimated to reach 200 by summer 2019. We are also progressing designs for two 'hub' sites, which have multiple rapid charge points, and aim to have the first site live by December 2019.

In addition, residential on-street charging is being installed in 24 boroughs via the Go Ultra Low City Scheme.

Recognising the need for a strategic approach to electric vehicle infrastructure, the Mayor launched the Electric Vehicle Infrastructure Taskforce in May 2018, to look at how much public infrastructure might be needed in London by 2025, and to mitigate any barriers to implementation. An accompanying delivery plan for electric vehicle infrastructure in London, to 2025, will be published in the summer.

Assurance

Project Assurance completed an integrated assurance review on the Air Quality and Environment programme submission to the Programmes and Investment Committee meeting in December 2018. A quarterly update was provided to the Committee on 6 March 2019 on the eight recommendations that were made and accepted, including three by the IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

Asset investment



Forecast completion year

2021/22

Spend to date (£m)

237

Spend authority (£m)

303

EFC (£m)

585

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



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

Ardleigh Green Bridge replacement

All four lanes on the A127 successfully re-opened, as planned, in March 2019. Some minor off-peak lane closures will be required while the finishing works are completed until mid-April 2019, followed by the removal of the site compound in May 2019. Discussions with Network Rail have been ongoing to agree the final phase of the railway-side works which have been re-scheduled from December 2018 to 2019.

Power Road Green Bridge replacement

All construction works have been completed and the removal of the site compound was finalised in April 2019.

Woolwich Ferry

We have replaced the three old Woolwich ferries with two new, modern, low-emission vessels that are more reliable and environmentally friendly. The new ferries started operating in early 2019 and offer additional capacity and dedicated cycle facilities, and use a quieter, low-emission engine, helping to deliver the Mayor's ambition to grow river transport and improve air quality.

The EFC reflects the 2018 Business Plan up to 2021/22. Spend authority is to the end of 2019/20. This is the first year without any Government operating grant. As a result, the programme of proactive capital renewals on the road networks has been stopped in the short to medium term, although the safety of the network will be maintained. In the medium to long term, new sustainable funding sources for London's roads will need to be identified.

The new ferries provide 14 per cent more space than the old vessels, can carry 150 passengers, have a total of 210 metres of space for vehicles across four lanes, and have improved accessibility with separate areas for pedestrians and cyclists.

The boats are powered by hybrid-propulsion engines, improving fuel efficiency and reducing noise. They are fitted with equipment to reduce emissions of diesel particulates by 90 per cent and NO_x by 70 per cent, so the vessels are compatible with the emission standards for the ULEZ. This innovative technology is the first of its kind to be used in the UK and led to a longer than anticipated commissioning and testing period for the ferries, and some periods of service suspension following re-entry into service. However, since the service was introduced, crossings per hour have now moved from three to four on a consistent basis and technical reliability has also improved (although there has been some weather-related disruption).

Bus driver facilities

Providing bus driver facilities aligns with the Mayor's Transport Strategy by ensuring that the bus network is operationally efficient and reliable. This project ensures we can run a safe and efficient bus network and that our bus drivers have the basic facilities required at work.

Good progress has been made since the Mayor announced increased funding for bus driver facilities in February 2018. A total of 25 priority routes will have a facility installed by the end of March 2019.

We are currently working to deliver facilities on a total of 42 routes by this year. The majority of these new facilities will be standalone permanent toilet units, adjacent to the bus stands where they are required. Where possible, however, we are adapting existing infrastructure to ensure integration with the local environment. So far, we have been able to do this to eight sites.

Assurance

Project Assurance completed an integrated assurance review on the Asset Investment programme submission to the Programmes and Investment Committee meeting in October 2018. A quarterly update was provided to the Committee on 6 March 2019 on the 12 recommendations that were made and accepted, including five by the IIPAG. Five recommendations are closed and good progress is being made to close the remaining seven. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.



Investment across London Overground will help improve access and capacity

Public transport

Forecast completion year

2021/22

Spend to date (£m)

199

Spend authority (£m)

347

EFC (£m)

394

EFC movement post plan (£m)

0

2018/19 budget milestone RAG

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

London Overground

We are continuing construction of the new ticket hall at White Hart Lane station to increase capacity and improve accessibility. We have completed extensive ground works and are progressing with the superstructure. The station and existing ticket hall remain operational throughout the works with the new ticket hall planned to be opened in late summer 2019.

Works have been completed at Willesden Depot to accommodate the new Class 710 Fleet.

We are designing a train protection warning system for the Richmond to Gunnersbury branch to enable us to interchange the fleet between lines and improve reliability across the network. Construction works are due to start late summer.

An Access for All scheme is under way at West Hampstead station. Access for All funding has been secured for enhancements to Hackney Downs and Seven Sisters stations to bring full step-free access to customers. We are developing an enhanced station at Surrey Quays with the local developer, British Land, to ensure the station is capable of catering for the additional 12,000 homes planned.

The EFC reflects the 2018 Business Plan up to 2021/22. The spend authority is less than the EFC as we only requested part approval at the last meeting of the Programmes and Investment Committee.

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

Since 18 March 2019 and the return of the last three Class 172 trains, our operator, Arriva Rail London has been running a service of two trains per hour (reduced from four) on the Gospel Oak to Barking line on weekdays and weekends. We modified three trains from our Class 378 fleet, converting them from five-car to four-car length, allowing us to maintain overall capacity.

A supplementary bus service has also been in place on the Gospel Oak to Barking line to mitigate the reduced train frequency.

We have been in constant contact with Bombardier to ensure they are doing everything they can to address software issues to enable us to bring all of the new Class 710 electric trains into service as soon as possible. Driver training is progressing and the approval certificate from the Office of Rail and Road was received in May, allowing the first two trains to begin passenger service. They are being monitored closely before more units are added.

We are progressing with a design for updated signalling to enable the East London line to run 18 trains per hour.

DLR

We have undertaken two successful testing phases of the vehicle control centre project. This will simplify the signalling borders around the central section of the railway and remove conflicts that can occur when trains move from one section to another.

We have completed low-voltage renewal works at Pontoon Dock, Poplar High Walkway and West India Quay concourse, and testing and commissioning will follow thereafter.

We have completed the drainage, bridge bearing, tunnel remedial and noise barrier projects as well as resurfacing and drainage at Crossharbour, Prince Regent Concourse and Royal Victoria Bridge. Station canopy drainage designs have been finalised.

Track renewals have successfully been completed with the majority of works being undertaken outside of weekend closures, allowing the service to remain operational. Custom House station upgrade fit out works are progressing while the station remains operational.

Public address system installation has been delivered at Tower Gateway, Limehouse and Heron Quays. The main radio resilience works have been completed with testing and commissioning planned for this financial year.



Track renewals on the DLR are now successfully complete



A number of initiatives have been completed to make the tram network safer

Works are progressing well with the refurbishment of CT30 DLR shunter locomotive. We continue repairs on the B2007 vehicle fleet.

London Trams

As part of our commitment to make the tram network safer following the tragedy at Sandilands in 2016, we are continuing to address the recommendations from the Rail Accident Investigation Branch. We have completed a number of initiatives and are currently in the delivery phase of the iTram performance monitoring system and the Physical Prevention of Over-Speeding automatic braking system. We are evaluating the design for tram emergency lighting, and the award of a contract to provide enhanced lighting in the Sandilands tunnel is pending.

The renewals programme consists of 17 projects across seven asset groups including fleet, power, and permanent way infrastructure. Overhauls of the hydraulic power units and brake callipers on the Bombardier CR4000 fleet have been completed ahead of schedule and to budget. The bogie overhauls continue to gather pace with half of the CR4000 bogies overhauled to date.

Replacement of the parafil support wires, which hold up the overhead power lines, started by the in-house maintenance team in September, and this year's renewal programme has been delivered. Additional design work for the rebalancing of power within the tram depot has been finalised and a new delivery contractor will soon be appointed to deliver the works.

Following the switch to cashless trams in July 2018, the existing ticket machines, which date back to the opening of the system, have been removed from tram stops in Croydon town centre (Reeves Corner to East Croydon). The remainder will be removed by summer 2019, and the newly available space at our tram stops will provide additional platform capacity, seating and information boards, depending on location.

Construction works have completed and regulatory approval has been granted to reinstate automated operation of the points at East Croydon tram stop. The training of operational staff is currently being agreed between Tram Operations Limited and London Trams. Once complete, this will improve local operations at East Croydon and increase the resilience of the tram network, particularly in the town centre.

Discussions are ongoing with Network Rail on a revised programme for completing the outstanding works at Wimbledon.

Strengthening to the foundations of two Victorian bridges at Blackhorse Lane has been completed, and services diversions are ongoing while parts of the existing bridge decks are replaced, resulting in a series of tram closures. Most of the construction work is scheduled to take place in 2019, with the work forecast for completion in 2020.

Tram track renewals between Addiscombe Road and Blackhorse Lane are ongoing and involve closures over six weekends, three of which have been successfully completed to date. The works are due to be completed in 2019.

Replacement of the Ampere Way retaining wall has commenced and site works are progressing. The works are expected to be completed by the summer of 2019.

The systems obsolescence management project has completed the detailed design work and is due to commence enabling works from April in advance of the disruptive migrations from September 2019.

Limehouse station

We have completed installation of two new escalators at Limehouse station. This station sees significant traffic as it also provides a link with the c2c service to and from Fenchurch Street. Our new escalators will improve station access and service interchange, and provide additional vertical capacity to support future growth.

Bus Safety Standard

Testing is under way on the potential components of the Bus Safety Standard, including emergency automatic braking and measures to make bus interiors more forgiving if passengers slip or fall. The outcome is a safety specification, incorporated into contracts from January 2019, to ensure new buses entering the fleet are compliant. Initial road trials for autonomous emergency braking were held in March and we are engaging with external stakeholders on the development of the remaining safety measures. We are planning a peer review of the safety measures, with vehicle industry experts chosen from an international pool.

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

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

Hydrogen Buses

To help reach the Mayoral target for all buses to be zero emission by 2037 and meet the Mayor's air quality objectives, we are procuring 20 hydrogen fuel cell buses and building a hydrogen refuelling station. The first hydrogen fuel cell buses are planned to arrive in 2020, with the station due to be operational by March 2020.

Assurance

Project Assurance completed an integrated assurance review on the Public Transport programme submission to the Programmes and Investment Committee meeting in December 2018. A quarterly update was provided to the Committee on 6 March 2019 on the seven recommendations that were made and accepted, including two by the IIPAG. Five recommendations are closed and good progress is being made to close the remaining two. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

Other

Technology and data

Forecast completion year

2020/21

Spend to date (£m)

52

Spend authority (£m)

228

EFC (£m)

201

EFC movement post plan (£m)

27

2018/19 budget milestone RAG 

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

Payments

In November 2018, we reached an agreement, in principle, on the changes needed to support the delivery of weekly capping for Oyster customers. We are continuing to work with the Train Operating Companies and are aiming to conclude the agreement later this year to enable us to launch weekly capping on rail services. As the agreement will involve changes to the provision of Oyster and contactless data to the Train Operating Companies, we are currently working to ensure that this is done in a manner which is fully compliant with the General Data Protection Regulation.

Evergreen programme

Over 5,500 new thin client devices have been successfully deployed to the TfL estate, while the remaining 2,000 (of the 7,500 purchased) continue to be deployed and we expect completion by summer 2019.

We have successfully deployed over 500 laptops with Microsoft Windows 10 and Office software to early adopters within Technology and data and Smart Working pilot areas.

In March 2019, the Programmes and Investment Committee approved the funding request. Authority and EFC shown are for financial years 2018/19 to 2020/21. EFC is net of the Data Centre Consolidation Investment Fund Credit which is included in the spend authority amount.



Weekly capping for Oyster customers on rail services is due to launch later this year

A business engagement network has been established to guide and assist the formal roll out of Windows 10/Office 365, which will commence at the end of May 2019 with further deployments scheduled for summer through to winter 2019.

User acceptance testing of business applications migrating to Windows 10 continues. Critical applications were prioritised, with others scheduled to support the formal roll-out phases.

Content and collaboration

The SharePoint Legacy Consolidation project is now in the implementation phase, and the migration of all SharePoint 2007 sites to SharePoint Online has been completed. The next stage is under way with the target of migrating all SharePoint 2010 sites.

The Livelink Upgrade project has also started implementation, and the new server environment proof of concept has been completed.

Operating and monitoring systems

The Surface Radio Replacement project completed its switch over to the new digital system within the last financial year. Over 9,200 buses and ten base stations were installed with the new digital radio hardware. This was achieved in just one year and one week after contract signature and without any significant downtime between the old and new services.

The Future Bus Systems project is delivering the functional specification for the design of the solution to replace our obsolete bus scheduling tools: BusNet, Caesar and SSTT.

Hosting – data centre rationalisation and cloud migration

We have nearly completed the handing back of two thirds of our primary data centre, where we host our applications and data, with a target completion date of summer 2019. This will generate £4.6m per annum in operational cost savings.

We continue to develop a hybrid hosting operating model, in which we have extended our data centre core capabilities into the public cloud, through AWS and Azure. We are expanding these capabilities to deliver stronger governance, operational controls and cost transparency to yield additional efficiencies.

Cyber security

We have used a number of inputs to inform and develop our cyber security strategy, including an audit conducted by external experts, a penetration testing exercise, partner engagements and the business pipeline of technology initiatives approved as part of our Business Plan.

Ongoing assessments of systems in scope of the Networks and Information Systems regulation are being concluded and compiled in preparation for sharing with the Department for Transport as our competent authority.

Data and analytics

Continuing work on the Digital Marketing Cloud, we have supported the business to remove contractual relationships with the third-party provider, making savings of circa £90k per annum for data hosting. In addition, by bringing the Cycle Hire scheme automation in to the platform we have saved a further £70k per annum.

We are using Faster Universal Load to deliver Oyster refunds, which allows us to issue service disruption refunds to Oyster customers in a much more effective manner. These refunds are now sent to validators at all stations, as well as buses and trams, in a timely manner, making it easier for customers to receive refunds and helping us meet our commitment to accessibility.

We are continuing to provide analytic services that underpin London Underground's visualisation programme. We are working with the performance analysis and improvement programme and have created various reports and system changes in the past quarter.

Two key deliveries were:

- NACHs 4G has been refreshed to bring more up to date data, driving a more accurate calculation for lost customer hours, which will help to improve strategic decision making
- We have brought category one safety information from SAFE into TfL which will provide greater feedback on service performance. It incorporates richer qualitative and quantitative datasets and this information is available via targeted reports. It also allows the business to identify root causes to performance issues

Networks

The Access and Wide Area Network (WAN) transformation programme has successfully completed pilot transformations at 11 sites and is now commencing the rapid roll out of the new WAN with an initial focus on rail sites (London Trams, London Overground, TfL Rail and Network Rail stations) with Oyster card terminals.

The delivery of the London Underground Connect radio system upgrade has started. The required equipment has been installed at three of the five core sites (King's Cross St Pancras, Shepherd's Bush and West Kensington) and works at the remaining two core sites are progressing. Preparations for the operational exit of the Connect PFI and transition to the successor arrangements with Thales are on schedule to complete by November 2019.

We continue to deliver infrastructure to support the Home Office's nationwide Emergency Service Network critical communications system. Across our 422km of tunnels, we have installed 280km of fibre optic cable and placed 321km of leaky feeder in a temporary position, 75km of which has been fixed into final position. Cabling works at the first 25 stations are largely complete and design work has started on the next 14 stations. We are finalising a new grant agreement with the Home Office for funding £24m of works through to the end of 2019/20, to enable us to largely complete all tunnel works and a further 25 per cent of the required stations cabling work. We have held further meetings with the Home Office about aligning the Emergency Services Network project with our telecoms commercialisation project with the aim of achieving delivery and cost synergies, and we expect to formalise this decision in the next month. We have included key Emergency Services Network requirements in the current telecoms commercialisation procurement process.

Following the recent funding approval by the Programmes and Investment Committee for a pilot of public cellular services network (PCN) and further PCN enabling works we are working with Capita and their key supplier, Nokia, to develop a proposal for the pilot. All four mobile network operators have confirmed their interest in participating in the pilot and we have so far met with Vodafone, O2 and EE to confirm their requirements if doing so. We aim to have the pilot operational by early 2020. In parallel, we aim to install a second leaky feeder cable on two Underground lines and complete station cabling works on a further 15 stations, including those on the Elizabeth line, to minimise the time between the telecoms commercialisation project awarding a concession and PCN services being available on these lines.

Technical refresh and technical-service operation

We have published a contract notice to invite bidders to supply a service desk, deskside support, and hardware repair and build services. These services are currently supplied through multiple providers, and this procurement process will bring these services under a single contract and supplier.

Our mission critical systems have been identified, prioritised for restoration and assessed in terms of resiliency. Solutions to address required improvements in resiliency across these systems are being finalised with implementation commencing in Quarter 2 2019/20.

An analysis of IT service management tools in the marketplace has been conducted and BMC Remedy has been chosen as our next toolset. A project to deliver this new and improved toolset is in progress with delivery expected in Quarter 4 2019/20.

We have completed a scoping and planning exercise to transition some third-party managed services to ourselves. The associated transition activities started in December 2018 and are due to complete in Quarter 3 2019/20. This transition together, with migration of infrastructure hardware by Quarter 2 2020/21, will result in approximately £1.2m reduction in annual operating costs.

Enterprise resource planning

In December 2018, we successfully concluded the migration of 1,500 staff from the Oracle HR and finance system, used by the former Tubelines organisation, to our expansive SAP system. This has removed duplication, and resulted in a common set of HR and payroll processes for our people. By Quarter 4 2019/20 we will conclude the Oracle decommissioning project by integrating the procurement and asset inventory functions into our SAP system.

In February 2019, we consolidated hundreds of manual internal periodic reports into one systemised financial management performance pack. In Quarter 3 2019/20 we will implement a new planning and consolidation system which will reduce manual activity and increase financial efficiency.

We have also made a major step in our enterprise resource planning (ERP) technology transformation by selecting the public Cloud to host our SAP ERP system and wave I of the migration begins in Quarter 2 2019/20. This is a significant element to enable our ERP upgrade strategy over the next five years.

Contact centre operation

The Oyster photocard concessions contract was awarded to Novacroft at the end of 2017, with transition taking place since then. Service commencement for the new contract took place on 1 January 2019. Ahead of this, functionality was delivered to allow Oyster photocard customers making online purchases to activate their product at any station within 30 mins, providing parity with adult Oyster customers.

Assurance

Project Assurance completed an integrated assurance review on the Technology and Data programme submission to the Programmes and Investment Committee meeting on 6 March 2019. Seven recommendations were made and accepted, including five by the IIPAG. Good progress is being made to close the recommendations. Project Assurance tracks progress against the recommendations made, including by the IIPAG, as part of its continuous assurance.

The Growth Fund

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement post plan (£m)
2024/25	0.4	144	144	0

2018/19 budget milestone RAG 

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

Existing Growth Fund schemes

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

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

Sutton Link

A detailed option selection process has been undertaken, including a public consultation on a short list of options. A provisional recommended option has been identified and further work is now being progressed to develop the business case and funding package. Subject to confirming a full funding package, we plan to submit a Transport and Works Act Order application by late 2020.

Committed schemes

We made recommendations to the Programme and Investment Committee to provide contributions to support three schemes that met our agreed criteria.

These are:

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

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

Assurance

Project Assurance completed an integrated assurance review on the Growth Fund submission to the Programmes and Investment Committee meeting in July 2018. A quarterly update was provided to the Committee on 6 March 2019 on the 11 recommendations that were made and accepted, including four by the IIPAG. All recommendations are now closed.

Elizabeth line



On-network stations improvement programme

Forecast completion year

2019

Spend to date (£m)

70

Spend authority (£m)

94

EFC (£m)

94

EFC movement post plan (£m)

0

2018/19 budget milestone RAG



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

The step-free access works on the Great Eastern stations (Manor Park and Seven Kings) were substantially completed with all lifts and footbridges brought into use in February and Maryland in March 2019, making the stations accessible to customers for the first time.

On the Great Western section lift schemes at Hanwell, Iver, Langley and Taplow, construction is progressing well with groundworks largely completed and steelwork installation commenced at Langley and Taplow (lift shafts and bridge trestles). The remaining steelwork will be installed in the summer and all lifts and footbridges are scheduled to be in use by December 2019.

MTR Crossrail is continuing its station refurbishment programme. Work started in January 2019 on platform refurbishment activities, such as painting and decorating, at Brentwood, Harold Wood, Gidea Park and Romford. Refurbishment of the western surface stations not being rebuilt by Crossrail has also progressed with schemes for West Drayton and Hanwell having tenders evaluated. After the quarter close, work started as planned on West Drayton in May. At the same time, we received the listed building consent for Hanwell and works are now expected to commence in the summer.



Step-free access works on the Great Eastern stations have been substantially completed

Rolling stock

Forecast completion year

2019

Spend to date (£m)

959

Spend authority (£m)

1,149

EFC (£m)

983

EFC movement post plan (£m)

52

2018/19 budget milestone RAG



We are introducing the new Elizabeth line train fleet in phases and have built a depot to provide train maintenance facilities.

Since December 2018, test running has been carried out with nine-car trains fitted with integrated on-train signalling equipment. This has taken place on the Leicestershire test track and Great Western main line in readiness for replacing the seven-car trains currently in operation on the Paddington to Hayes & Harlington service from late June. This forms part of a reliability growth programme to prepare the nine-car fleet for extended services to Reading from December 2019, and central section trial running and trial operations in 2020.

Testing of the Class 345 units fitted with the European Train Control System, needed for operation to Heathrow Airport, has continued in the last quarter with more type-test being completed with higher maturity software.

Class 345 trains continue to be used for dynamic testing of the central tunnel section of the Elizabeth line, including over the signalling system transitions to Network Rail at Westbourne Park in the west and Stratford in the east, and including the first multi-train testing with two trains operating in the same test zone.

The EFC has reduced this quarter, mainly because of the deferral of rolling stock production to post the sale and lease back of the rolling stock fleet. Post the sale, rolling stock production will be funded directly by the lessor.

Crossrail

Crossrail

Forecast completion year	Spend to date (£m)	Spend authority (£bn)	EFC (£m)	EFC movement post plan (£m)
TBA	*	17.6	*	*

2018/19 budget milestone RAG

The Crossrail project will create 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 our services open through central London, it will be known as the Elizabeth line.

Crossrail Limited is focused on developing a detailed plan for an opening date, establishing a regime of project and cost control supported by a new visual management process. The result will be better reporting, a clearer understanding of issues, and quicker resolution with greater accountability at all levels.

Dynamic testing started in January 2019 continues, which involves trains running at service speed through both tunnels. A number of tests were carried out on the on-board train software and signalling systems.

Further work has been undertaken to gain clarity on completion dates on stations, shafts and portals which are critical to readiness for trial operations and passenger services.

We continue to make progress with the testing for stage two, phase two where four trains per hour will be running between Heathrow and Paddington.

In April, Crossrail Limited announced it had identified a six-month delivery window with a midpoint at the end of 2020.

The central section of the Elizabeth line will open between Paddington and Abbey Wood, and will link the West End, the City of London, Canary Wharf and southeast London with initially 12 trains per hour during peak times.

It is expected that all stations on the route will open except for Bond Street which is delayed because of design and delivery challenges. Crossrail Limited is working closely with Costain Skanska Joint Venture to ensure the station is ready to open at the earliest opportunity.

Once the central section opens, full services across the Elizabeth line from Reading and Heathrow in the west to Abbey Wood and Shenfield in the east, will commence as soon as possible.

* This information is withheld for reasons of commercial sensitivity

Appendix

2018/19 Budget milestone performance

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

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

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

Milestone description	Plan date	Actual/ forecast date	Status
Major Projects			
Four Lines Modernisation ■			
Train services on Hammersmith & City line use new signalling system between Hammersmith and Latimer Road	21-Oct-18	17-Mar-18	Complete ■
Train services on Hammersmith & City line use new signalling system between Ladbroke Grove and Paddington	18-Nov-18	19-May-18	Complete ■
Q2: 28 days late ■ Q3: 146 days late ■ Q4: 147 days late ■ Q2: 28 days late ■ Q3: 230 days late ■ Q4: 182 days late ■			
Due to signalling software readiness issues, the commissioning between Hammersmith and Latimer Road was re-forecast for spring 2019 and, as a result, the commissioning between Ladbroke Grove and Paddington has been delayed until summer 2019. Through revenue gapping, the rest of the migration areas received new forecast dates. The commissioning of Hammersmith to Latimer Road was achieved on 17 March 2019. The uplift remains on target to begin in 2021 and complete in 2023.			
Deep Tube Upgrade programme ■			
Preferred bidder for new Piccadilly line rolling stock contract determined	12-Jul-18	15-Jun-18	Complete ■
Tenders returned for signalling and train control contract	15-Mar-19	01-Apr-19	■
The signalling and train control contract procurement has been put on hold to accommodate Business Planning options. The Programme now awaits dispensation for the milestone so that it can be moved.			

Milestone description	Plan date	Actual/ forecast date	Status
Network extensions			
Northern Line Extension ■			
Nine Elms station civil works complete	26-Sep-18	25-Sep-18	Complete ■
Kennington station cross passage civil works complete	17-Sep-18	16-Sep-18	Complete ■
Silvertown Tunnel ■			
Preferred bidder selection dependent on national government support	28-Jan-19	22-May-19	■
<p>Q2: 93 days late ■</p> <p>Q3: 114 days late ■</p> <p>Q4: 112 days late ■</p> <p>The main reason for the delay was due to the Development Consent Order being postponed by the Secretary of State for six months. The consequential impact of this delay prevented private land agreements from being concluded, resulting in the need for additional time to gain access to undertake the ground investigations. However, the delay has allowed the GI report to be more informative, which provides the bidders with greater certainty when assessing risk levels as part of the bid submission. The bidders issued their final technical submission at the end of January 2019, and the tender evaluation is now complete. This delay directly impacted the selection of preferred bidder status, which moved the current forecast date from November 2018 to May 2019.</p>			
Barking Riverside Extension ■			
Early works contract – completion of all early works	27-Jul-18	27-Jul-18	Complete ■
Main works contract – supplier evaluation and award recommendation complete	18-Jul-18	24-Dec-19	■
<p>Q2: 197 days late ■</p> <p>Q3: 159 days late ■</p> <p>Q4: 154 days late ■</p> <p>Tender returns for the Barking Riverside extension main works contract were received in July 2018, and were higher than the project authority. To achieve greater value a series of Value Engineering (VE) exercises were undertaken with both internal and external stakeholders. The VE outputs were incorporated into a Best and Final Offer which, after further evaluation, allowed the contract to be awarded in December 2018. Although the contract award was delayed by 21 weeks, we successfully mitigated this delay by changing the procurement strategy to procure the critical overhead line electrification (OLE) switch works as a separate package. These works were successfully completed during a Network Rail Christmas possession. Despite the contract award delay the overall project completion date has not been impacted and remains December 2021. Also, by delaying the contract award, the project has achieved greater value, improved contractual documentation and mitigated the critical OLE switch works.</p>			

Milestone description	Plan date	Actual/ forecast date	Status
Major stations ■			
Bank station: preparatory power works complete to allow the start of tunnelling for new escalators	03-Oct-18	15-Aug-18	Complete ■
All Victoria station passenger facilities available for use	03-Dec-18	19-Oct-18	Complete ■
Bakerloo line link passage ready for Crossrail trial running	30-Nov-18	30-Nov-18	Complete ■
London Underground			
Stations renewals and enhancements ■			
Improvement works complete at London Underground stations that interface with the Elizabeth line	09-Dec-18	09-Dec-18	Complete ■
Finsbury Park is a step-free station	20-Mar-19	31-Jan-18	Complete ■
Accessibility ■			
Buckhurst Hill is a step-free station	09-May-18	04-May-18	Complete ■
Newbury Park is a step-free station	26-Oct-18	01-Nov-18	Complete ■
South Woodford is a step-free station	15-Mar-19	15-Mar-19	Complete ■
Track renewals ■			
Install 7.5km of new track across the Underground network	31-Mar-19	16-Feb-19	Complete ■
Rolling stock renewals ■			
75 per cent of Bakerloo line fleet refurbishment works complete	31-Dec-18	03-Oct-18	Complete ■
50 per cent of Jubilee line fleet mid-life refurbishment works complete	31-Dec-18	06-Oct-18	Complete ■
23 lift and escalator replacement and refurbishments complete	31-Mar-19	21-Dec-18	Complete ■
Surface			
Healthy Streets ■			
Highbury Corner gyratory – start construction	31-Aug-18	28-Jun-18	Complete ■
Highbury Corner bridge – construction complete	31-Aug-18	17-Aug-18	Complete ■

Milestone description	Plan date	Actual/ forecast date	Status
Cycle Superhighway North South – Phase 2 from Stonecutter Junction to Judd Street complete. This completes the CS6 route, running from Elephant and Castle to Judd Street	23-Dec-18	30-Oct-18	Complete ■
Old Street roundabout – start advance works on site	22-Feb-19	19-Nov-18	Complete ■
Mini-Hollands – 4.5km of segregated or semi-segregated cycle route across Kingston, Waltham Forest and Enfield complete	31-Mar-19	31-Mar-19	Complete ■
Cycle Quietways Borough – construction of 25km of the total 250km completed in 2018/19	31-Mar-19	31-Mar-19	Complete ■
Dial-a-ride fleet renewal – Delivery of first vehicle	31-Dec-18	01-Dec-18	Complete ■
Local schemes – 75% of agreed regional improvement schemes complete	13-Jun-18	31-Mar-19	Complete ■
Liveable Neighbourhoods – feasibility stage complete for three of the seven boroughs that received feasibility funding in 2017/18	31-Mar-19	12-Mar-19	Complete ■
Air quality and environment ■			
Bus retrofit – Four Low Emission Bus Zone routes complete: <ul style="list-style-type: none"> • A2 Camberwell – New Cross • A3 Wandsworth – St John’s Hill • A5 Edgware Road • Edmonton – Seven Sisters 	31-Mar-19	03-Mar-19	Complete ■
Growth Fund ■			
Sutton Tram extension – consultation launch	30-Nov-18	30-Nov-18	Complete ■
Technology and data ■			
Heathrow extension – extension of Oyster and contactless acceptance to Heathrow	27-Jul-18	27-Jul-18	Complete ■
Future Ticketing Programme 4 – delivery of weekly capping for Oyster customers	21-Dec-18	13-Dec-18	Complete ■
Ticket vending machine – new ticket vending machines to support Elizabeth line central service installed and ready for operation	31-Dec-18	31-Dec-18	Complete ■

Milestone description	Plan date	Actual/ forecast date	Status
Commercial development ■			
Announce Elizabeth line partners	31-Oct-18	28-Sep-18	■
Deliver a signed contract for the commercialisation of the telecommunications assets, including the delivery of public cellular services on the Underground	14-Dec-18	15-Apr-18	■
<p>Q2: 123 days late ■</p> <p>Q3: 123 days late ■</p> <p>Q4: 123 days late ■</p> <p>The Home Office has reviewed national Emergency Services Network communications programme, and announced a revised delivery approach for the programme. Following a joint review of delivery options between the Emergency Services Network and the Telecommunications Commercialisation Project (TCP), it has been agreed in principle with the Home Office to align the projects.</p> <p>This has the potential to deliver cost savings and delivery synergies, and we are aiming to release the ITT for the combined Emergency Services Network and TCP scope in summer 2019.</p>			
Submit planning application – Kidbrooke	04-Feb-19	27-Nov-18	Complete ■
Submit planning application – Blackhorse Road	29-Mar-19	17-Aug-18	Complete ■
Elizabeth line integration			
Rolling stock ■			
Elizabeth line passenger services start on central section between Paddington and Abbey Wood	Dec-18	TBC	■

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