

Transport for London investment performance report

Quarter 3 2019/20
(15 September - 7 December 2019)

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Introduction

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

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

For each major project or 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 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. This report only provides an update on progress with committed projects and programmes.

Financial records of spend to date, authority and estimated final costs (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 it is appropriate.

To ensure continued transparency across our organisation, the reporting EFC for projects is based on the current risk profile and opportunity realisation at the time of publication. As a result, project EFC could fluctuate every quarter, however this does not automatically mean there is an increase in spend authority.

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 2019 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 until a later date.

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

Each programme or project also has an overall RAG milestone status, representing the average forecast date variance against plan for 2019/20 strategic milestones:

On time or early:



Up to 89 days late:



90 or more days late:



N/A (without 2019/20 strategic milestones):





HYBRID CLEANER AIR FOR LONDON

Strategic milestones for 2019/20 – the key milestones listed in the TfL Budget – are detailed in the Appendix (page 43).

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

- Major Projects is responsible for our largest and most complex projects. It comprises line upgrades, network extensions and major stations, which are covered on pages 12-19. Future Projects (see page 19) 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 on pages 20-24
- Surface Transport comprises Healthy Streets, Air Quality, Public Transport and Asset Investment. These are covered on pages 25-36
- Other comprises Technology and Data, TfL Growth Fund and the Elizabeth line (including Crossrail), which are covered on pages 37-42

Mayor's Transport Strategy themes

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 making streets healthy, pleasant and productive places to stop at, travel through and live on. Listening to and acting on suggestions from our customers will enable 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 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



People enjoyed Car Free Day celebrations across London's streets

Business at a glance

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

How we report on our business

Underground

London Underground

Elizabeth line

Currently operating as TfL Rail

Buses

London Buses

Streets

TfL Road Network

Rail

DLR, London Overground and London Trams

Other operations

London Dial-a-Ride, London River Services, London Taxi and Private Hire, Santander Cycles, Victoria Coach Station and Emirates Air Line, Crossrail 2, Planning and other Group Items

Major projects

Responsible for our largest and most complex projects

Property

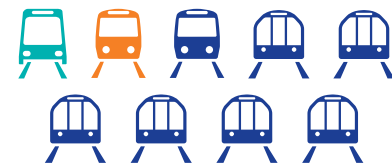
Our commercial and residential estate and building portfolio

Media

Advertising estate and digital marketing infrastructure

Facts and figures

945 Trains on the TfL network



580km

TfL-operated highways



720km

TfL-operated Rail and London Underground routes



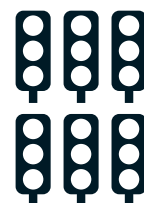
9,330

Buses on the TfL network

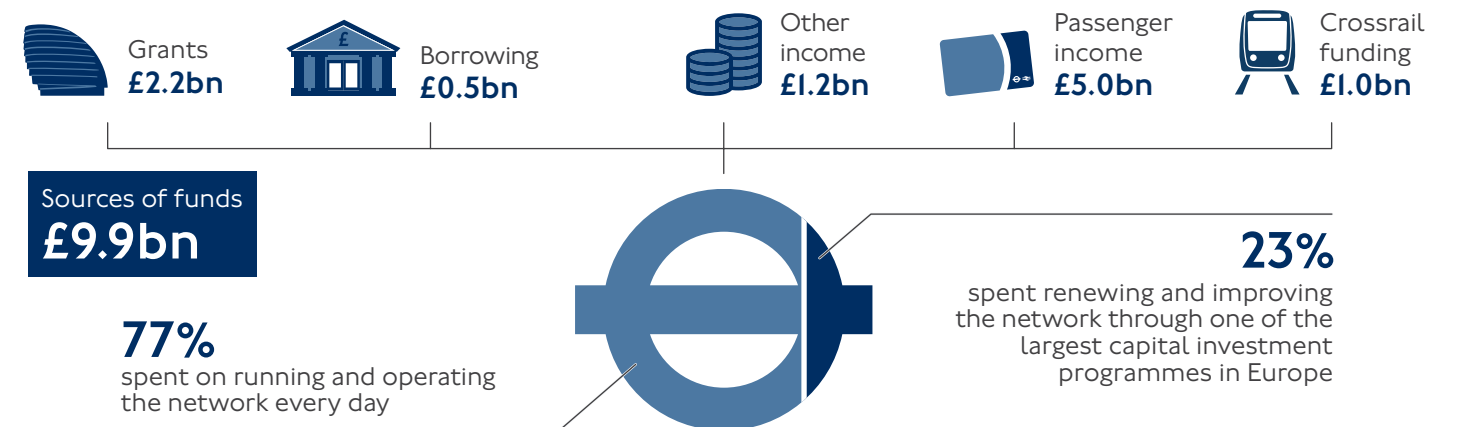


6,365

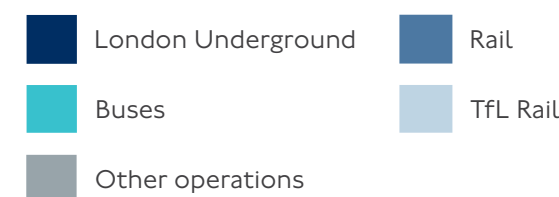
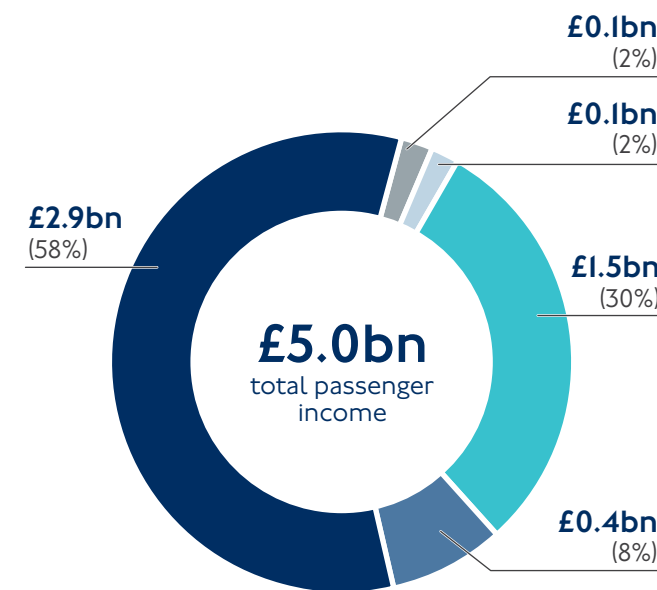
Traffic signals operated by TfL



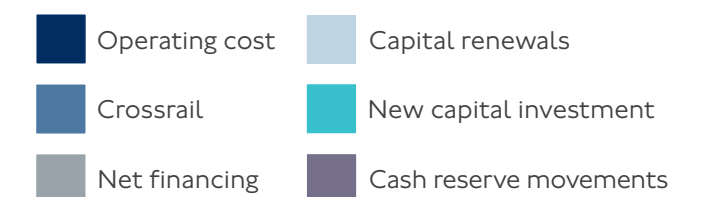
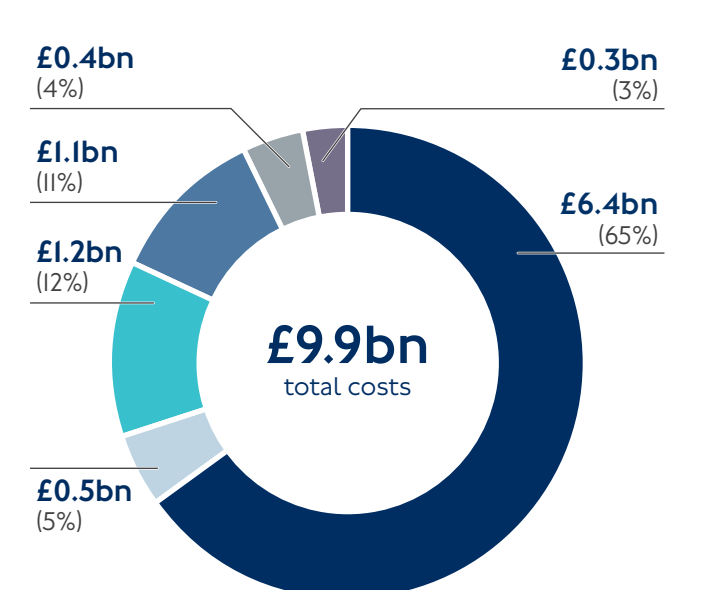
Revised target at a glance



Total passenger income



Total costs





Health and Safety

Our customers

Across the public transport network, there were two customer fatalities and 502 people were seriously injured during Quarter 3, which is a decrease of 20 (3.8 per cent) when it is compared with the same quarter in 2018/19.

Our workforce

There were a total of 419 injuries to our workforce during Quarter 3, and two tragic deaths of Christian Tuvi and Kenneth Matcham. The total number of injuries sustained by our workforce decreased by 25 (5.6 per cent) when compared to Quarter 3 2018/19. Across our construction and projects activities, 34 workers were injured, the majority were employed by our suppliers (91.2 per cent).

On our streets

During Quarter 3, 37 people were killed on London's roads, which is up 32 from the same period in 2018. However, overall the provisional figures for July to September show improvement in terms of the level of serious injuries, where we saw a reduction of eight per cent to 991 when compared to the same quarter last year.

[See our quarterly Safety, Health and Environment report for further information.](#)

Key achievements

Major projects

Line upgrades

Four Lines Modernisation

At Upminster Depot, all site works have been completed including the extended wheel lathe, new training rooms, and upgraded cleaning, maintenance and lifting sheds. These facilities are now back in use.

We have commissioned and handed over the train stabling shed at Ealing Common Depot. This gave back four train stabling roads and has provided greater stabling flexibility. This milestone was achieved three days ahead of schedule.

Railway system enhancements

To enable the new capacity works, we have completed speed improvement and track works to the Northern line and continue to focus on delivering power enhancement.

Network extensions

Northern Line Extension

For the first time, the UK Power Networks (UKPN) transformer rooms have been energised at Kennington Green and Kennington Park. Achieving UKPN power-on is a key step towards getting the Northern Line Extension operational.

In the Kennington area we completed the Vehicle Control Centre 2 signalling system works over the Christmas and Boxing day closure. The works were successfully executed over the two days due to months of detailed preparation works, which were undertaken by the project teams and contractors.

Battersea Power Station and Kennington shafts were awarded Gold and Nine Elms station won Silver at the 2019 Considerate Constructors Scheme National Site Awards.

Major stations

Bank station upgrade

We have completed the excavation of the final two cross passages to connect the new escalator barrel to the Central line. When the project is finished, this will reduce journey times and ease congestion relief from the Central line to the Northern line and DLR.



We achieved power-on as part of the Northern Line Extension



London Underground

Stations

At Finsbury Park, a new western entrance was opened on 17 December 2019 and the station is now step-free.

Track renewals

In September 2019, we achieved a key milestone by installing 3.4km of new ballasted track.

Rolling stock

On the Jubilee line, all 63 trains have been refurbished and are back in service. The refurbishments include a new wheelchair area, new flooring, refreshed exterior and interior (including grab-poles and handles), and new roof and window sealing. We have started to install the new priority seating moquette. The fleet is now compliant with Rail Vehicle Accessibility Regulations.

Surface

Healthy Streets

Walking and cycling

Construction for Cycleway 4 is progressing well at the two sections of Jamaica Road and Rotherhithe Roundabout and is on track to be completed by May 2020.

Detailed design for the Kew Bridge section of Cycleway 9 was completed in September 2019. London Borough of Hounslow's Cabinet approved the scheme within the borough in September 2019. We have now constructed 31 safer junctions and all of them have had mitigation measures introduced to reduce road danger. The London Borough of Camden has completed the majority of the works on Tottenham Court Road, which is now operating two-way (buses and cyclists only southbound).

Air quality and fleet compliance

To help meet the Mayor's Air Quality objectives in 2020, we are upgrading the entire bus fleet to meet Euro VI emissions standards. This includes retrofits of up to 4,000 midlife buses, of which 3,600 have already been completed. We have also delivered all 12 Low Emission Bus Zones one year earlier than planned.

Under the ultra-low emission vehicles rapid charging infrastructure scheme, the total number of charge points installed reached 200 in September 2019 and 225 in December 2019. This is a major step towards our target of 300 rapid charge points by December 2020. There are more than 2,500 zero-emission capable taxis licensed in London. Of the rapid charge points that have been installed under this scheme, 73 are dedicated to taxi use.

Public transport

West Hampstead London Overground station is now fully accessible after two new lifts were brought into use. The final work on the platforms has been completed, which has increased the size to relieve congestion during peak times.

On the DLR, Poplar Depot high voltage equipment has been built and tested off site. Stratford high voltage system has been commissioned. The contractor is on site and surveying a number of stations for the installation of additional Oyster validators.

On London Trams, key highlights this quarter include the substantial completion of highway reconstruction works for the Blackhorse Lane Bridge Replacement project, with a single-lane opening on 9 December 2019. The full re-opening will follow in March 2020. We also completed waterproofing works on another of our road bridges, Addiscombe Road Bridge.

Other

Technology and Data

Last quarter, we completed daily processing changes for contactless payment, which now enable customers to receive their refunds at any reader across our network.

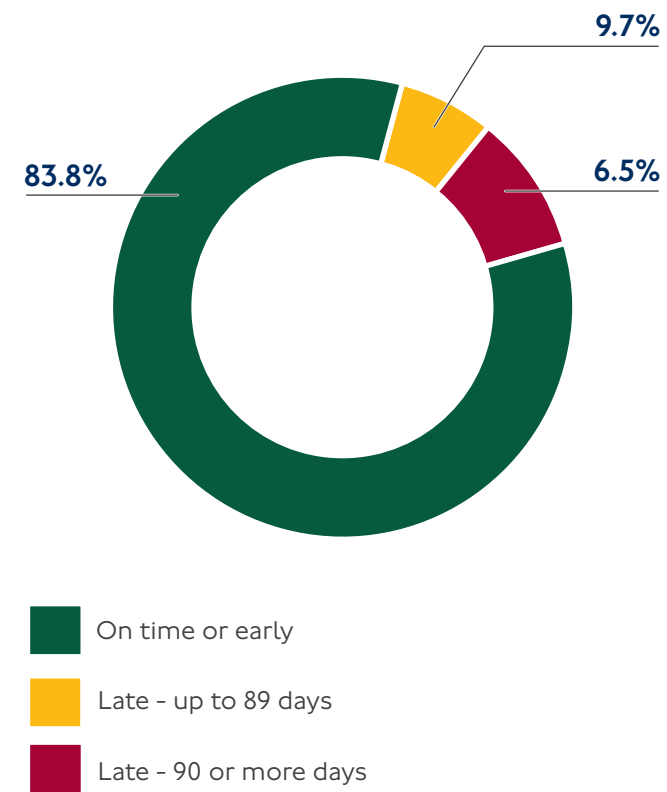
Following a successful trial over the last seven months, our Bus Speed Compliance Tool is now a fully supported application that will transform our capability to understand the extent of speeding infringements across our bus network.

The design phase for the 4G pilot project on the underground network is complete. We have started installation work at all pilot sites and completed work in seven of the 16 tunnel bores.

Our smart working programme is a key enabler for our accommodation strategy, and the resulting move to having seven desks for every 10 people in our main head office buildings.

2019/20 strategic milestone performance strategy

The overall performance for all TfL 2019/20 strategic milestones is summarised here:



The late milestones are shown in the Appendix on page 43.



Our signalling system was extended from Latimer Road to Euston Square

Major projects

Line upgrades 

Four Lines Modernisation

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2023	4,840	5,412

2019/20 strategic milestone RAG

The first section of the new signalling system was successfully introduced in 2019. Last quarter, operation of the new signalling system was extended from Latimer Road to Euston Square on the Circle and Hammersmith & City lines and from there to Finchley Road on the Metropolitan line, and to Paddington on the District and Circle lines.

November saw unexpected levels of disruption, particularly on the Metropolitan line. The supplier has responded positively with a range of measures to improve track to train communications and other contributing items.

Trackside works and software deployments took some time to implement, however we are now starting to see improvements. Further works are planned for progressive implementation over the next three months. All planned works will be completed prior to further roll out of the system into new areas.

The schedule for the software development for the remaining migration areas is under review and we are working with our supplier to arrive at a mutually agreed schedule.

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

EFC (£m)	EFC movement
5,351	2

The movement in EFC since the 2019 Business Plan reflects the latest view of the risk profile and the realisation of opportunities.

The EFC remains £61m under authority. The creation of headroom by driving out cost was a deliberate strategy to ensure later headwinds within the complex programme could be dealt with efficiently. The reductions have been achieved through value engineering solutions, innovation and providing the optimum scope to bring about the planned benefits.

The programme continues to periodically review scope, schedule, outturn costs, risks and opportunities in order to mitigate further increases.

We have already introduced 192 new S-stock trains on the Circle, District, Hammersmith & City and Metropolitan lines.

All the S-stock fleet, which comprises 59 eight-car trains for the Metropolitan line and 133 seven-car trains for the Circle, District and Hammersmith & City lines, has been fitted with automatic train control equipment to support communications-based train control. This work has been completed ahead of, and in readiness for, commissioning the automatic train control system in the remaining signalling areas of the subsurface railway network.

We have completed all site works at Upminster Depot including the extended wheel lathe, new training rooms, upgraded cleaning, maintenance and lifting sheds. All these facilities are back in use.

At Ealing Common Depot, we commissioned and handed over the train stabling shed. These sheds are used to store the trains when they are not being used. Giving back four stabling roads gives increased stabling flexibility. This milestone was achieved three days ahead of schedule. Shed 2 has also been commissioned and works to the remaining shed are on target to be completed by the end of the year. In addition, extensive track replacement has been completed at the depot following recommendations from an investigation into train derailments.



Railway System Enhancements

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2024	121	245

2019/20 strategic milestone RAG



This programme includes upgrades to signalling, power, trains and track to maximise capacity on the Jubilee and Northern lines with the existing train fleets. While many of the works are standalone, a significant proportion are essential to other programmes, these include further upgrades to the Jubilee line and the opening of the Northern Line Extension, as well as the reconfiguration of the Northern line at Bank.

To enable the new capacity works, we have completed speed improvement and track works to the Northern line and continue to focus on delivering power enhancement works. Site activities have commenced for the installation of a new wheel lathe at Morden Depot.

Enhancements to the Jubilee line continue and include improving the speed at which trains exit the depot onto the mainline at Neasden. A tender was issued in September 2019 for the signalling works.

EFC (£m)	EFC movement
196	(1)

The increase in EFC since the 2019 business plan is driven by higher than anticipated Jubilee line optimisation estimates. These are under review and the goal remains to drive the cost down.



Piccadilly Line Upgrade – rolling stock and enabling

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2030/31	150	3,294

2019/20 strategic milestone RAG



This programme is designed to deliver a fleet of newly designed, high-capacity, walk-through, air-cooled trains to replace some of the oldest on our network.

We have carried out exercises to learn lessons from previous programmes, and these have been embedded into the plan to achieve the preliminary design milestone in Quarter I 2020/21. To accelerate this phase, we have taken part in a number of detailed design reviews at the Siemens premises in Germany and Austria. This has ensured we progress to the preliminary design on schedule.

We are focusing on taking the one-person operation CCTV through commercial assurance in Quarter 4 so that we can award the contract for this sub element of the overall programme.

EFC (£m)	EFC movement
2,959	6

The EFC and spend authority only relates to works and enabling associated with the Piccadilly line trains introduction programme. Work continues to support the case to gain funding for additional scope regarding the Deep Tube Upgrade Programme.

During Quarter 3, the concept design milestone for the 94 Tube trains was achieved on time. The reduction in the quarter is as a result of ongoing risk management actions to lower the risk profile of the works, as well as a review of professional services spend.



We will replace 60 per cent of the DLR fleet with new trains



DLR Rolling Stock and Systems Integration

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2025	31	603

2019/20 strategic milestone RAG

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

The programme will replace 60 per cent of the existing DLR fleet which is nearing the end of its design life and will provide additional trains, increasing 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 requires updating and the traction power system needs to be strengthened.

The contract for the supply of the next generation of DLR trains by Construcciones y Auxiliar de Ferrocarriles (CAF) is underway and good progress is being made towards the completion of the preliminary design work.

At Beckton depot, enabling works have started on site. Tenders have been received for the Southern Sidings build package and for the new Maintenance Facility Building detailed design package.

Thales have been contracted to upgrade the signalling system to enable the use of the new trains. This is an upgrade of the existing Thales Seltrac system.

EFC (£m)	EFC movement
602	1

Savings have been made on depots infrastructure, generated through materials procurement, and through challenges to the requirements for switches and crossings - moving to semi-weld as opposed to cast crossings. The saving was partially offset by costs associated with currency hedging options.

Network extensions

Northern Line Extension

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2021	860	1,260

2019/20 strategic milestone RAG On Track

The Northern Line Extension (NLE) is 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.

Good progress continues to be made across all NLE work sites. All primary civils and structural work has been completed. The main focus is now on fitting-out and installing the power supply at Nine Elms station, Battersea Power Station and the two new head houses at Kennington. We are also extending the Northern line signalling system into the extension.

In the Kennington area we completed the Vehicle Control Centre 2 signalling system works over the Christmas and Boxing day closure. The works were successfully executed over the two days due to months of detailed preparation works undertaken by the project teams and contractors.

At Nine Elms station, entrance glazing has been completed and construction of the canopy frame above the station entrance has commenced. The exterior louvre framework installation has started and reconstituted stone cladding to the eastern entrance is complete. Power transformers have been delivered and positioned in the transformer room. Three escalators have been lowered into position between the ticket hall and platform levels.

EFC (£m)	EFC movement
1,134	13

During Quarter 3, the EFC reduced, reflecting reassessment of the dynamic systems testing forecast in the latter part of 2020. This was achieved from a better understanding of the requirements for staff and test trains, cost estimate reductions from railway systems packages.

The EFC is underpinned by a revised forecast developed following the supplementary agreement executed in June 2019 with the project's primary main works contractor, Flo.

At Battersea station, the west end of the site has been handed over to Battersea Power Station Development Company, which will enable the construction of the over-station development (Norman Foster Building) to commence. Tunnel ventilation fans have been delivered and lowered into the fan room beneath the western ramp. Installation of the third escalator bank has begun. UKPN is installing the cables to connect mains electricity to Nine Elms and Battersea stations.

For the first time, the power transformer rooms at Battersea Power Station, Nine Elms Station, Kennington Park Headhouse and Kennington Green Headhouse have been energised. Achieving power on across the whole of the NLE is a significant step forward as it supports the testing and commissioning activities required for getting the NLE operational.

Work continues on making both Kennington head houses watertight and fitting the architectural cladding. The ventilation works at Kennington Green are progressing well. At Kennington Park, installation of ductwork and cable management system brackets continues in the basement and blockwork wall construction in basements two and three.

Battersea station and Kennington shafts were awarded Gold and Nine Elms station won Silver at the 2019 Considerate Constructors Scheme National Site Awards.



Silvertown Tunnel

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2025	59	*	*	*

2019/20 strategic 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 east and southeast London.

The tunnel will connect Silvertown and the Greenwich Peninsula, which are areas being developed by third parties with numerous tenants and landowners. The new twin-bore tunnel, within the extended Ultra Low Emission Zone (ULEZ), will effectively eliminate congestion and help improve air quality, with no increase in carbon emissions. It will also provide several new cross-river bus routes in east London, operating at least 20 buses per hour in each direction, all of which are expected to be zero emission.

Following an extensive tender process, the design, build, finance and maintenance contract was awarded to Riverlinx consortium on 21 November 2019.

We are in discussion with third parties to put in place the relevant agreements for land access. We are also working with the utility companies to plan the required service diversions. We continue to monitor existing structures and noise levels ahead of the construction phase.

User charge is a fundamental part of the scheme. There will be packages of local improvements with host boroughs and improved network resilience.

* This information is withheld for reasons of commercial sensitivity.



Barking Riverside Extension

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2022	106	287

2019/20 strategic milestone RAG

We are delivering a new rail link to serve the 10,800 new homes 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.

Since the contract was awarded in December 2018, several key milestones have been achieved. These include securing planning permission for the new Barking Riverside station and viaduct structure, and a two-week long blockade of Network Rail lines to deliver essential groundworks for the viaducts.

We are making good progress on the new Barking Riverside station, where the pier walls have been constructed and deck spans have been installed. We have also started pouring the deck slabs. More than 70 per cent of the piling has been completed across the site and we are now working on the pile cap foundations and pier walls for the viaducts. A series of successful weekend possessions of Network Rail infrastructure have been completed in preparation for significant signalling works which were also successfully completed in possessions during the Christmas holiday period.

EFC (£m)	EFC movement
289	(3)

During Quarter 3, there have been a number of challenges following the discovery of utility services that needed to be diverted. The number of diversions and time it will take to divert them, or to redesign the infrastructure, are putting considerable pressure on the programme.

The movement in EFC reflects these issues. The project continues to review all options to mitigate the associated costs and formalise the contractual position with the main works contractor and recover the delay.

Discovery of uncharted utilities within the viaduct ramp area and at remaining viaduct pier locations across the site represents a major risk to programme. There has been progress in reducing both the number and impact of these issues. These mitigations included redesigning the pier foundations to reduce the impact of utility service diversion timescales.



The Barking Riverside Extension will help serve new homes

Major stations

Victoria station upgrade and finishes

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2019	580	604

2019/20 strategic milestone RAG 

At Victoria, we have built a new north ticket hall and 300 metres of subways. We have also increased the size of the south ticket hall by 50 per cent. Step-free access to all platforms is now meeting the needs of the 83 million customers, rising to 105 million when interchange flows are included, who use the station each year.

The station and the surrounding buildings are largely complete with only minor works outstanding. A design study is underway to identify how best to utilise the former retail units at 175-179 Victoria Street. The delivery and funding mechanism for any solution, which must be acceptable to Westminster City Council, has yet to be determined.

EFC (£m)	EFC movement
585	0

The EFC remains static and £19m below authority. Works on site have now been completed and we are working towards the finalisation of the project.



Bank station upgrade

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2022	477	656

2019/20 strategic 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.

Bank station continues to make significant progress. We are working on the dividing walls to create operational rooms across 11 floors at the new station entrance on Cannon Street. Preparation for the fit out stage will start in Quarter 2020/21.

We have excavated the final two cross passages to connect the new escalator barrel to the Central line. This will reduce journey times from the Central line to the Northern line and DLR. Secondary lining works to the new southbound Northern line platform tunnel have been completed and the structural work to house the two new moving walkways is nearly complete. Secondary lining works to the escalator barrel from the new ticket hall to the Northern line has also started.

EFC (£m)	EFC movement
665	(2)

The EFC has increased by £2m since the 2019 Business Plan was set, owing to a changed risk profile to deliver the upgrade. Risk mitigation reviews continue to be held each period, along with opportunities to reduce the current EFC. We continue to collaborate with the main works contractor to identify and realise potential savings with a view to reduce the EFC back to authority.



High Speed 2

Forecast completion year

TBC*

Spend to date (£m)

8

Spend authority (£m)

11

2019/20 strategic milestone RAG

High Speed 2 (HS2) is a new high-speed railway connecting London to the West Midlands and the North of England. Our work consists of new TfL assets, infrastructure and operational facilities at Euston and Old Oak Common.

On 11 February and after consideration of the Independent Oakervee Review, it was announced that HS2 will go ahead to deliver North-South connectivity, greater capacity and shorter journey times, with construction for the first phase between London and the West Midlands set to begin in April. We are supportive of HS2's benefits to London and the UK, but stressed to the Oakervee Review panel that any solutions considered must include both Euston and Old Oak Common stations.

We are working with HS2 Limited to support the early works programme to minimise disruption at Euston. This includes alternative solutions for utilities diversions on Euston Road and Hampstead Road to minimise the impact on the road network.

In November 2019, we reviewed designs for the TfL elements of the new HS2 Euston station. We continue to work collaboratively with HS2 to ensure the designs achieve the best outcomes for London.

* The forecast completion date is to be determined following the decision on 11 February 2020 to go ahead with the HS2 project.

EFC (£m)

45

EFC movement

1

This project is fully refundable by HS2 Limited and the scope of works is dependent on third party requirements. Since the 2019 Business Plan was set, the client has instructed changes to the scope of works, which are reflected in the current EFC.

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.

Bakerloo Line Extension

We have continued to develop our plans to extend and upgrade the Bakerloo line to support development and regeneration in southeast London. It will transform capacity and connectivity across London and the South East. The extension could relieve congestion on overcrowded lines, open up wider opportunities to more people and improve air quality. It would support thousands of jobs and homes in the New Cross, Lewisham and Catford and Old Kent Road Opportunity Areas.

We are working closely with Network Rail, the Greater London Authority (GLA) and the London Boroughs of Southwark and Lewisham, to make sure we can deliver the best possible scheme. The latest round of public consultation closed on 22 December. The consultation sought views on new features, including the proposed route of the tunnels, proposed worksite locations, a new proposal for a combined new Bakerloo and Northern line station entrance at Elephant & Castle, and the possible names for the stations on Old Kent Road. We are analysing the results and will publish the report shortly. Following the public consultation, we will continue to develop the scheme, including working with central Government, the GLA and local authorities to develop a funding agreement for the scheme and safeguard the preferred route alignment.

Crossrail 2

The Crossrail 2 Strategic Outline Business Case (SOBC) was submitted to the Government in June 2019, and was considered by the the Department for Transport (DfT) Board Investment and Commercial Committee in late October. The DfT has confirmed that the SOBC satisfies HM Treasury's Green Book guidance in terms of making a case for change and exploring a preferred way forward. Additionally, it was confirmed that the SOBC is technically robust at this stage of development. The DfT commented on the high quality of the document and stated no further work is required on the SOBC at this time, and it could therefore be used to support a decision on the project at the next Spending Review.

In the meantime, we are working on the 2019 cost estimate for the scheme. The team is working closely with the DfT to ensure that variable factors are applied consistently and is using benchmarking data from Crossrail and other major infrastructure projects to inform the estimating process. The estimating process is subject to an assurance process and has been assessed as appropriate. This week will result in an updated cost estimate for the scheme in the spring.

We have also been learning lessons from industry experts on the pros and cons of various consent processes, including legal advice, outline costs and benefits for each consent mechanism.

London Underground

Stations 

Forecast completion year

2022/23

Spend to date (£m)

157

Spend authority (£m)

535

EFC (£m)

1,132 ▼▼

EFC movement

0

2019/20 strategic milestone RAG

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

Station developments

We are working with Berkeley Homes to create a new western entrance at West Ham station, which will provide a direct route into the Jubilee line areas of the station from the development site. The developer's consultants have drafted the concept design specification documents and we are currently working together to finalise agreements.

We have created 11 retail units in the railway arches beneath Wood Lane station, where we continue to install core services. This work is nearly complete and the first units are now being fitted out for the new tenants to start trading soon.

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 have been working closely with the developer, Network Rail and Great Western Railway, to ensure everything is in place for our proposed commencement of construction work in spring 2020.

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, and on improvements to step-free access and capacity in the adjacent western subway.



We are creating more retail units in our railway arches

Track renewals

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
Annual	89	122	132*	0

2019/20 strategic 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.

We replaced 1.8km of ballasted track in Quarter 3 2019/20 and more than 1.1km of drainage.

On our deep Tube track network, we replaced 1.4km of an older track with modern flat bottom rails and renewed a further 0.9km of concreted deep Tube track.

The track renewals programme achieved a key milestone in September 2019 by installing 3.4km of new ballasted track.

During Quarter 3, we directly installed two points and crossings on the Piccadilly line at South Harrow.

Accessibility

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2023/24	58	176	176	0

2019/20 strategic milestone RAG



We are working on a wide programme of accessibility improvements, customer service and information enhancements across the Underground network. We will make more than one-third of stations accessible in 2020.

We are making 15 stations accessible as part of the first phase of the Mayor's step-free programme. We delivered step-free access at three stations in 2018/19.

The remaining 12 step-free projects, at Amersham, Burnt Oak, Cockfosters, Debden, Hanger Lane, Harrow-on-the-Hill, Ickenham, Mill Hill East, Northolt, Osterley, Sudbury Hill and Wimbledon Park, are all on-site. These projects include the construction of new lifts and bridges, while other assets will be upgraded as we carry out these works.

We have completed piling work to prepare the foundations at Amersham, Osterley and Ickenham. At Amersham, the lift towers and overbridges are in, ready for the lift installation to start in February. At Debden and Harrow-on-the-Hill, piling and ground works is in preparation for a lift tower, and overbridge installation continues.

Works are ongoing to prepare for piling at the three remaining sites, including Burnt Oak, Hanger Lane and Northolt.

Mill Hill East lift has entered its final testing and commissioning phase to ensure reliability when it enters service. Lift installation has commenced at Cockfosters.

* Track EFC is based on an annualised programme. Spend to date and EFC are based on the forecast for P9 2019/20

Power, cooling and energy

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2023/24*	49	90	88	0

2019/20 strategic milestone RAG On Track

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 a number of third-party and major projects by providing power works, such as relocating the substation at Euston station for HS2, installing cable routes for the Northern Line Extension, and works for the Piccadilly line and Bank station upgrades.

We are delivering a rolling portfolio of power renewal works to improve the condition of assets through a prioritised work bank of projects. Installation work on the first of these safety related projects has been completed, with several others now in delivery. Designs for the next priorities have been completed and they are moving into procurement. Key objectives and forthcoming milestones include projects to replace depot traction isolation and high voltage network switchgear, plus station emergency lighting power supply equipment.

We have completed the testing of new specialist equipment at Greenwich Power Station, which protects the Four Lines Modernisation network's resilience by improving the quality of the power supply, and was commissioned into service at the end of 2019.

We are in the advanced stages of procurement for a project to extend the life of the main power control system to address obsolescence risks and consolidate three power control systems to a single one. Once completed, this system will remotely monitor and safely operate traction, station, signalling and depot power supplies on all lines.

Cooling

In August 2019, we completed works at Bond Street station to provide improved airflow to the new Elizabeth line tunnel. We continue to upgrade the cooling of our power assets to support the new Four Lines Modernisation signalling system

Energy

We are reducing our environmental impact by installing new solar panels on selected London Underground, DLR and tram depots to deliver more than 1.1 megawatts of power.

In early February 2020 the first solar panels were installed on the roof of the Tunnelling Underground Construction Academy. This milestone marks the start of the installation of solar panels across our estate to deliver 1.1MWp of solar generated, zero-carbon electricity, supporting the Mayor's London Environment Strategy and Solar Action Plan.

The panels have not been commissioned and are currently not generating any electricity. The installation was the first step to meet the long-term ambition of producing 1.1MWp across three sites.

* The figures represent power and energy projects until 2023/24 and authority is sought in stages for future unapproved works.

Rolling stock renewals

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2023/24	209	525*	970	0

2019/20 strategic milestone RAG

We are modifying our passenger rolling stock to improve safety, accessibility, reliability and customer satisfaction, as well as to 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. We have completed structural weld repairs to carriages on all 36 trains. We have also refitted the vinyl on all trains to make them consistent with newer trains.

On the Jubilee line, all 63 trains have been refurbished and are back in service. The refurbishments include a wheelchair area, new flooring, refreshed exterior and interior, including grab-poles and handles, and new sealing to the roof and windows. We have also started to install the new priority seating moquette. The fleet is now compliant with the Rail Vehicle Accessibility Regulations.

On the Central line improvement programme, we are creating prototypes for four carriages at the AC Traction supplier's site. We have started dynamic testing of the train management system on a second prototype train at London Underground premises.

We continue to work with our supply chain to enable the installation facilities for the improvement programme on the full fleet. Work to integrate overhaul activities and modification activities has started.

Construction work continues on a new facility to support the Train Modification Unit at Acton. The external cladding of the building is nearly complete and the pit roads are being built. Construction work on the first phase of the new track layout is complete and being checked prior to handover.

The first seven pre-production engineering vehicles in China are being prepared for static testing. Once complete, they make a two-month journey by sea to the UK, where they undergo infrastructure and dynamic testing. After the pre-production wagons are fully tested and approved, the remaining 66 wagons will be manufactured in China by CRRC (the world's largest rolling stock manufacturer).

The two Kirow cranes and eight tilting wagons arrived at Ruislip Depot in November following a 1,400km journey by rail through Germany, France, and the Channel Tunnel into the UK. The machines are being prepared for infrastructure testing, due to start in early 2020.

The mechanised renewals vehicle will improve the way track is renewed in the deep Tube sections of the Bakerloo, Central, Jubilee, Northern, Piccadilly and Victoria lines. The three allocated wagons are being overhauled, which is due to finish in early 2020. The wagons will then be hauled back to Ruislip Depot ready for fitment of the track renewal equipment and are due to be in service by June 2020.

Ruislip Depot is being upgraded to enable the vehicles to be stabled and loaded. In November, the train loading bay within Ruislip Depot took delivery of the Kirow crane lifting beams along with the cross and connector beams that enable the tilting wagons to operate.

Following an option selection evaluation exercise, we have started creating the tender documentation for replacing our track recording vehicle, which records and monitors the alignment and condition of the track, supporting track maintenance and renewal activities. An ingenious solution has also been agreed to ensure the vehicle can operate on sub-surface lines following the new signalling roll-out. This mitigation and the 750V modification will be complete in summer 2020.

The project to give train operators better control over unauthorised entry into the cab from the saloon is progressing well. The contract has been awarded and installation support is being finalised, with the first installation due on the Waterloo & City line in early 2020.

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



Our signalling and control assets support the running of our services

Signalling and control

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2023/24	83	145*	180	0

2019/20 strategic milestone RAG On Track

We are extending the life of our track-based signalling and control assets. This ensures they can continue to support a safe, reliable and maintainable service until then.

Siemens is continuing 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 signalling 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.

Works to replace the signalling system in Northumberland Park Depot on the Victoria line has started. This is required to interface with the new depot control system. A contract has been awarded for the design phase and is progressing according to plan.

We have finalised commissioning of all the new Piccadilly line signalling control systems at the control centre in west London. The migration of control has progressed well is now complete. This project planned is planned to be completed in the first quarter of 2020.

* Authority updated for latest PIC paper

Surface

Healthy Streets

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2021/22	558	1,207

2019/20 strategic 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 gyratory

The main highway and urban realm work is now complete. The road network has been reconfigured and the gyratory at Highbury Corner removed. In November 2019, new trees were planted and hostile vehicle measures were installed. Further hostile vehicle measures will be installed outside Highbury & Islington station this year once approval has been obtained from Network Rail. The Mayor officially opened the scheme on 2 October 2019.

Wandsworth gyratory

The purchase of properties from landowners on Putney Bridge Road is progressing, with the remaining three properties expected to be acquired by April 2020. The concept design will be completed by the end of February 2020, ready for inclusion in the tender package. The scheme will now be tendered through the civils project framework contract, and tender documents are currently being prepared. The detailed design remains on track to run in parallel with the compulsory purchase order (CPO) process. We plan to start construction at the end of 2021.

EFC (£m)	EFC movement
1,207 ▼▼	(258)

The EFC covers 2021/22 to provide a direct comparison to the programme as originally approved in 2017/18. In June 2019, we announced our intention for the Rotherhithe to Canary Wharf crossing project to return to feasibility stage, and we are reviewing options to deliver a ferry crossing. This is reflected in the change to EFC. We are still planning for the same historic level of Healthy Streets projects.

Fiveways

The project aims to alleviate congestion and improve journey times at Fiveways Corner in Croydon. Work is continuing to update the business case and ensure the project remains aligned to the latest developments within the Croydon Growth Zone. We are preparing a planning application and a tender for a design and build contract to be let, both during 2020. CPO approval will be sought at the TfL Board in the spring, and the CPO process will run in parallel with the detailed design in 2021.

Vauxhall Cross

This project has been paused since the interfacing developer's planning application was called in by the Secretary of State for Housing, Communities and Local Government in May 2019. Following the inspector's report, which is expected in early 2020, the Secretary of State's decision is anticipated in summer 2020. We will not be going out to tender for the design and build contract until we have a positive outcome from the planning decision.

King's Cross

Safety, cycling and pedestrian improvements are being delivered in phases in the King's Cross and Euston Road area. The first phase is to improve safety at the Duke's Road and Churchway junction on Euston Road, which started construction in December 2019. Proposals include a 'green man' pedestrian crossing across both Churchway and Duke's Road and provision of safer north-south movements for cyclists.

Waterloo City Hub

The scheme provides significant safety and comfort upgrades for pedestrians, cyclists and public transport users. The scheme will provide a new pedestrian walking route to the river, improved road crossings, segregated cycling facilities and improved bus waiting and boarding areas. The detailed design continues to progress well. We aim to start construction in summer 2020, subject to securing the necessary consents. 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.

Old Street Roundabout

Construction is progressing at Old Street roundabout, where a new design will improve safety for cyclists and pedestrians by providing new and improved crossings, fully segregated cycle lanes, and a new public space with an accessible main entrance to the Underground station and shopping arcade.

Following the temporary traffic switch in May 2019, which closed the southeast arm of the roundabout, construction work continues on the new entrance to Old Street Underground station near Cowper Street, which will be complete in spring 2020. Utility diversions have all been completed, including a difficult and complex diversion of a 24 inch-high pressure water main by Thames Water. This was completed in November 2019, but unfortunately took longer to complete than previously scheduled and has impacted overall delivery of the project.

Other associated highways and drainage works in the southeast arm of the roundabout have progressed.

Site clearance and station roof strengthening works have started within the roundabout peninsula, and a temporary goods lift for the shopping arcade area has been installed. This enables the existing goods lift to be removed in readiness for demolition works for the new main entrance to Old Street Underground station, which began in January 2020.

In spring 2020, a second temporary traffic switch will take place to reopen the southeast arm of the roundabout and close the northeast arm. This will enable the station roof strengthening works to be completed and the opening in the peninsula to be created for the superstructure elements for the new main station entrance. In summer 2020, a final traffic management switch will take place to reopen the northeast arm of the roundabout and permanently close the northwest arm. This will enable the construction of the public space, new passenger lift and new main station entrance in the peninsula area.

Construction is now expected to be complete by autumn 2021. This is due to delays to utility diversions as well as preparing new designs for the main entrance to Old Street station and an extra lift.

Lambeth Bridge north and south

This scheme will improve safety and comfort for pedestrians and cyclists, by removing the current roundabouts on both sides of the river and replacing them with signal controlled junctions. The proposal includes segregated approaches for cyclists with dedicated cycle phases at the junction and new signal controlled pedestrian crossing facilities. The shared space has been reviewed with small changes being introduced to separate pedestrians and cyclists where possible. Survey and design continues to detail the work required to replace the waterproofing, drainage and expansion joints on the bridge deck. We have concluded our discussions with key stakeholders about their responses to the 2017 public consultation. The design amendments and proposed way forward will be published in spring 2020 as part of the consultation report.

Cycleways

We continue to make good progress on the development of the wider Cycleway network, with a focus on completing and opening whole or significant sections of these routes. We have constructed more than 140km of cycle routes since 2016, with more than five kilometres of additional routes under construction through inner and outer London. All newly completed routes will be signed as Cycleways.

Design works are progressing well to rebrand existing high-quality cycling routes to Cycleways, with 50 per cent of the designs finished at the end of December 2019. CS6 has been rebranded with C6 signs, and the route now extends from Elephant



We have constructed more than 140km of cycle routes since 2016

and Castle to Kentish Town. The rebranding of C28 along Portsmouth Road in Kingston also started in December 2019, which is forecast to be completed by the end of March 2020.

Improvements between Wood Lane and Acton (Cycleway 34)

The works are progressing well to deliver 3.5km of upgraded shared-use facility for pedestrians and cyclists and a new off carriageway bi-directional cycle track along the A40 between Wood Lane and Acton.

Works to install the new cycle track and footway are complete between Savoy Circus and Gibbon Road. These are progressing well between Leamington Park and Kathleen Avenue, including installation of new signalised cycle crossings at junctions. Upgrades to the existing shared-use facility between Wood Lane and Savoy Circus are now complete and work has started to improve pedestrian and cycle crossings at Savoy Circus.

Proposed improvements between Wood Lane and Notting Hill Gate

The consultation report for the proposed improvements between Wood Lane and Notting Hill Gate was published on 5 November 2019. We continue to work with the London Borough of Hammersmith & Fulham to finalise plans for its section of the route, while developing improvements for the section in the Royal Borough of Kensington and Chelsea to address concerns raised during the consultation. We are engaging with the borough and key local stakeholder groups to discuss the changes.

Cycleway 4

Construction for Cycleway 4 is progressing well at the two sections of Jamaica Road and Rotherhithe Roundabout and is on track to be completed by May 2020. New traffic signals at Tooley Street at its junction with Tower Bridge Road were successfully commissioned in November 2019 and following this, we opened up sections of the new cycle track in December 2019. Construction of a further section along Creek Road within the Royal Borough of Greenwich started in November 2019, which was ahead of schedule.

Cycleway 9

Detailed design for the Kew Bridge section was completed in September 2019. London Borough of Hounslow's Cabinet approved the scheme within the borough in September 2019. The London Borough of Hammersmith & Fulham Cabinet approved to construct the scheme within its borough in December 2019 and work began on Kew Bridge in December 2019.

Cycleway between Hackney and the Isle of Dogs

We ran a public consultation for this route between 8 May and 21 June 2019, with results published in October 2019. Detailed design for the first section of Burdett Road has been completed ahead of the start of construction planned for April 2020. Advanced works for the scheme started in December 2019, including the relocation of a cycle hire station and CCTV cabinets, removal of street clutter and drainage repair works. We are continuing to meet regularly with Tower Hamlets Council to coordinate the start of works on Burdett

Road and the design of the Grove Road proposals with its proposed Liveable Neighbourhood scheme in the same area.

The northern section of the route is being delivered by the London Borough of Hackney, which is now reviewing the concept design.

The Isle of Dogs section has now been de-scoped from the main project as proposals do not meet the Cycling Quality Criteria. Improvements in the Isle of Dogs will be progressed as part of the Cycleway network development with the help of Tower Hamlets Council.

Future Cycleway routes

Design work continues on several major new cycle routes identified in the 2017 Strategic Cycling Analysis. In addition to the public consultation for the first route between Hackney and the Isle of Dogs, other public consultations that have recently closed include the proposed Cycleway between Ilford and Barking Riverside, and the Cycleway between Lea Bridge and Dalston, the second phase of which finished consultation in mid-December 2019. At the beginning of January 2020, we launched a public consultation for a Cycleway between Woolwich and Charlton, which is the first phase of the whole route that will extend to Woolwich.

Cycleway between Camden and Tottenham Hale

We are continuing design and modelling assessments for this proposed route. This review has enabled us to further refine the proposals and to engage with key

stakeholders including the relevant local councils. These activities aim to ensure the scheme that goes to public consultation in 2020 is the best that can be achieved for the local communities and road users along this route and surrounding areas.

Mini-Hollands and Cycleway network development

The Mini-Hollands programme involves both infrastructure and behaviour change schemes across three outer London boroughs – Waltham Forest, Enfield and Kingston. Good progress is being made by all three boroughs, each having completed Cycleway routes including the recently launched Lea Bridge Road, a five-kilometre protected cycle route linking Millfields Park to Whipps Cross, offering improvements to both pedestrians and cyclists. Schemes currently under construction include protected Cycleways between Kingston Vale and Kingston, and Kingston and Surbiton in the Royal Borough of Kingston, and between Ponders End and Freezey Water on the A1010 in Enfield.

Further schemes are progressing through design and consultation, including a number of Cycleway links and Enfield's Quieter Neighbourhoods.

Waltham Forest will complete its Mini-Hollands funded programme at the end of this financial year.

Rotherhithe to Canary Wharf crossing

We are investigating the feasibility of providing a new pedestrian and cycling ferry crossing between Rotherhithe and Canary Wharf to improve cross-river



We are installing 20mph signage across London

connectivity and drive access and growth in the area. Our feasibility and options analysis is nearly complete, which looks at our preferred pier locations, ferry type, and delivery and operating model. These activities will better inform our forward programme ahead of starting work on concept design, procurement preparation, and planning and consents preparation in early 2020, with the view to starting a procurement exercise in summer 2020.

Safer Junctions

In April 2017, the Safer Junctions programme highlighted some of the most dangerous junctions on our road network. These are defined as those with the highest vulnerable road user collision rates between 2013 and 2015. Following substantial completion of Highbury Corner in September 2019, we have now constructed 31 of these Safer Junctions and have introduced mitigations measures to all of them to reduce road danger.

Construction of Camberwell town centre Safer Junction began in October 2019, and work continues on the Rotherhithe Tunnel junction as part of Cycleway 4. The programme is on target to complete 41 junctions by May 2020, in line with the Mayor's Vision Zero commitment. Public consultation reports have been published on the following accelerated Safer Junctions projects:

- Kingsland Road/Balls Pond Road
- Kennington Park Road/Braganza Street
- East India Dock Road/Birchfield Street

- Edgware Road/Harrow Road
- Clapham Road/Union Road
- Holloway Road/Drayton Park/Palmer Place
- Camden Street/Camden Road

The Traffic Regulation Orders for the changes are being advertised to the public, to ensure that proposed speed limit changes and prohibited movements are legally enforceable. The detailed design packages have been finalised and construction began in January 2020.

Lowering speed limits

The consultation report for introducing 20mph speed limits in central London has now been published, and detailed design is nearly complete. The Traffic Regulation Orders have also been published for consultation, which are needed to ensure the new speed limit is legally enforceable.

Implementation of the first phase of the central London 20mph speed limit, installing 20mph signs and carriageway markings, started in November 2019 and is substantially complete. Detailed design work is complete on the second phase of the project, to install seven raised traffic calming features on the TfL Road Network.

The 20mph speed limit in central London will be launched by the end of March 2020. Behaviour change marketing communications will take place ahead of the launch to ensure drivers are aware of the new speed limit.

Direct Vision Standard

The Direct Vision Standard (DVS) was created to improve the safety of all road users, particularly the most vulnerable, such as pedestrians, cyclists and motorcyclists, by assessing vehicle blind spots. The DVS assesses and rates how much a driver can see directly from their heavy goods vehicle (HGV) cab in relation to other road users and assigns a star rating from zero (poor) to five (excellent). Any vehicle rated zero star will be required to fit additional safety equipment to increase the vehicle's safety to meet the minimum one-star requirement. Upon application, a HGV Safety Permit, recording the vehicle's star rating or safe system, is then issued.

Under the DVS scheme, all HGVs weighing more than 12 tonnes will be required to hold a Safety Permit in order to operate in the Greater London area from October 2020. The minimum DVS threshold will rise to three stars from October 2024 to ensure we continually improve the safety of HGVs coming into London.

The registration element, enabling operators to apply for an HGV Safety Permit online, was successfully launched on 28 October 2019. This gives operators a year to prepare and apply for a permit ahead of the October 2020 enforcement date. Work has commenced on core system development and testing to prepare for the launch of the enforcement element of the scheme in October 2020.

Crossrail complementary measures

We are working with the boroughs, Crossrail Ltd and Network Rail to develop and deliver a programme of improvements to 17 stations in outer London, to improve capacity and help regenerate local communities. So far, Crossrail complementary measures works are complete at Abbey Wood, Chadwell Heath, Goodmayes, Manor Park and Romford stations. Site works at Forest Gate, Gidea Park, Hanwell, Harold Wood, Ilford, Maryland, Seven Kings, Acton Main Line, West Ealing and West Drayton stations are at various stages of construction. Southall and West Ealing stations are at design or consultation stage.

The original Crossrail programme has slipped and a new programme is being developed for station works. Complementary works at some stations are dependent on station works as well as borough delivery.

Liveable Neighbourhoods

Liveable Neighbourhoods are a key part of how we work with boroughs to deliver the Mayor's Transport Strategy, by creating locally led, attractive, healthy and safe neighbourhoods that encourage walking, cycling and public transport use and reduce car journeys.

Progress continues on the current 18 Liveable Neighbourhood projects. Public consultation started on the Deptford Parks

Liveable Neighbourhood in the London Borough of Lewisham in November 2019. Also, in November 2019 and as part of the third bidding round, we received 19 new bids from the following boroughs:

- Beacontree, Barking and Dagenham
- Erith Links, Bexley
- Park Royal, Brent
- Ealing town centre, Ealing
- Angel Edmonton, Enfield
- North Fulham, Hammersmith & Fulham
- Tottenham, Haringey
- Wealdstone, Harrow
- Ruislip, Hillingdon
- Feltham, Hounslow
- Farringdon and Old Street, Islington
- Connecting Malden Manor, Kingston
- Leyton, Newham
- Barnes, Richmond
- North Kingston/Ham and Petersham, Richmond
- Sutton, Sutton

- Brick Lane, Tower Hamlets
- Higham Hill and Lloyd Park, Waltham Forest
- Thamesfield West, Wandsworth

These bids will be assessed over the next few months and we intend to announce the winning bids in March 2020.

Borough Local Implementation Plan projects

Blackhorse Road/Forest Road

The London Borough of Waltham Forest commenced construction in June 2019, and it is on schedule to complete improvements to this junction as well as the area outside the Underground station by June 2020.

West End Project

The London Borough of Camden has completed most of the works on Tottenham Court Road, which is now operating two-way (buses and cyclists only southbound). Works are currently on-site at Gower Street/Bloomsbury Street and are scheduled to finish by summer 2020.

Feltham town centre

The London Borough of Hounslow and Network Rail works are well underway. The phases funded through the Local Implementation Plan major schemes budget are now forecast to be completed by March 2020, but delays have been encountered which are impacting Network Rail funded elements beyond this date.

Camberwell town centre

This overall scheme is being delivered in two elements. First, the London Borough of Southwark has completed improvements to Denmark Hill in summer 2019, including footway and carriageway renewal, a modification at the Orpheus Street junction, a new controlled pedestrian crossing at Love Walk, and a relocated pedestrian crossing by the Butterfly Walk shopping centre. These are all on Borough Strategic Road Network roads.

Second, we started works on the A202 corridor through the town centre in November 2019, including the Camberwell Green junction to improve vulnerable road user safety and provision, and develop the urban realm. This also forms part of our Safer Junctions programme. These works are funded via Local Implementation Projects major schemes and scheduled for completion in spring 2020.



Work continues to improve the area around Blackhorse Road

Air quality

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2022/23	219	280

2019/20 strategic milestone RAG On Track

The Air Quality programme reduces the 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

The Ultra Low Emission Zone (ULEZ) expansion project will extend the central London ULEZ, which was successfully introduced in April 2019, up to the North and South Circular Roads. The project is now in design phase with work ongoing to define the system, infrastructure and operational changes required and progress the supply chain commercial agreements.

The strategy and proof of concept phase for migrating existing systems from physical infrastructure to a cloud service to manage ULEZ expansion volumes was completed in January 2020. Detailed design for the cloud service and migration is due to be completed in May 2020.

Survey work to support camera and the signage infrastructure work streams has started. Signage designs have been completed and submitted to the DfT for approval. The first phase of modelling the traffic effects has been completed and engagement with affected boroughs is underway. Work continues to develop marketing and communications plans.

EFC (£m)	EFC movement
503	0

The EFC reflects the financial authority up to 2022/23. The EFC is in line with prior submission and reflects the spend authority to the end of 2022/23.

Low Emission Zone 2020

The existing Low Emission Zone (LEZ) standards will be tightened from October 2020. The emissions standards for lorries, vans and other specialist heavy vehicles more than 3.5 tonnes, as well as buses, minibuses and coaches more than five tonnes, will change from Euro IV to Euro VI. Owners of vehicles that do not meet the tougher emissions standards will need to pay a daily charge to drive within the LEZ. To ensure a successful launch, the business and enforcement systems, as well as the website, need updating. These process changes will be supported by a comprehensive communications campaign.

A joint marketing campaign for both LEZ 2020 and the HGV Safety Permit scheme was launched in October 2019, supported by a vehicle registration checker webpage, targeted at HGV drivers. We are updating the website, and developing and testing the business and enforcement operations system required for October 2020.

Fleet compliance

To help meet the Mayor's air quality objectives in 2020, we are upgrading the entire bus fleet to meet Euro VI emissions. This includes retrofits of up to 4,000 midlife buses, of which 3,600 have already been completed.

In addition, all 12 Low Emission Bus Zones have been delivered one year earlier than planned. The zones are:

- Putney High Street
- Brixton to Streatham
- A2 Camberwell to New Cross
- A3 Wandsworth to St. John's Hill
- High Road, Haringey to Green Lanes
- A12 Eastern Avenue to Homerton Road
- A5 Edgware Road, Kilburn to Maida Vale
- A21 Lewisham to Catford
- Edmonton to Seven Sisters corridor
- Stratford
- Chiswick High Road to Kensington
- Uxbridge Road to Shepherds Bush

Ultra-low emission vehicles – rapid charging infrastructure

To support the growing number of zero-emission capable (ZEC) taxis and the wider take-up of electric vehicles, we are spending £18m and working with the London boroughs and other organisations to build a network of rapid charge points across London. Under this scheme, the number of charge points reached 200 in September 2019 and 225 in December 2019. This is a major step towards our target of 300 rapid charge points by December 2020.



We are installing charge points to support electric vehicle use

There are more than 2,500 ZEC taxis licensed in London. Of the rapid charge points installed under this scheme, 73 are dedicated to taxi use. We are working with the taxi trade to identify the most favourable locations and focusing on the central London area for taxi-dedicated sites.

London's first rapid hub launched in Stratford on 28 December 2019, with grant funding for TfL. We are also developing designs for two more hub sites, one in Greenwich and another in the City of London, and working with other potential partners developing hub site proposals. These hubs will consist of at least six rapid charge points that can be used simultaneously to support both taxi and private electric vehicle users.

Mayor's Air Quality Fund

The Mayor's Air Quality Fund will invest £22m over 10 years to support projects by London boroughs to improve air quality. Projects supported in the third round of funding were announced by the Mayor on 7 June 2019. In this round he is supporting four Low Emission Neighbourhoods and two other innovative air quality projects.

Go Ultra Low City Scheme

Between 2015/16 and 2019/20, London's Go Ultra Low City Scheme bid was awarded £13m in capital funding to drive the uptake of ultra-low emission vehicles. We are working alongside London Councils and the GLA to install around 1,700 residential charging points. The allocation for the final round of funding is due to be announced, and we will support the boroughs in delivering these projects in 2020.

Asset investment

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2021/22	277	303

2019/20 strategic milestone RAG On Track

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

Ardleigh Green Bridge replacement

The bridge is now complete and fully open. The remaining railway-side work to remove remnants of the old bridge have been discussed with Network Rail. This is planned for completion by December 2020 when a suitable railway possession is available.

Bus driver facilities

Good progress has been made since the Mayor announced increased funding for bus driver facilities in February 2018. By 7 December 2019, we had delivered 19 permanent facilities and 26 temporary facilities against a minimum target of servicing 42 priority bus routes.

We are working towards the final target of having permanent facilities on all 42 priority bus routes by the end of March 2020 by connecting the remaining temporary units to the utilities including foul sewer, water and power supply, and constructing permanent concrete foundations. Where possible, we are adapting existing infrastructure to ensure it integrates well with the local environment.

EFC (£m)	EFC movement
596 ▼▼	(38)

The EFC covers 2021/22 to provide a direct comparison to the programme as originally approved in 2017/18. The majority of this relates to Rotherhithe Tunnel, where more advanced investigation on the timing of major works has moved spend from 2021/22 to 2022/23.

To save costs, we plan to use an internal rather than external technology supplier to renew our Strategic Asset Management Information Systems.

Hammersmith Bridge

Recognising the impact the closure of this strategic route is having on residents and bus operations, we have quickly completed an options analysis with high-level costs and benefits on behalf of the London Borough of Hammersmith & Fulham which owns the bridge.

It has now confirmed its intention to restore the bridge with a 7.5 tonne limit for general traffic, together with future proofing for limited electric buses. We have committed £25m to the project and are progressing with the concept design phase, together with advanced works. In August 2019, the concept design work for the bridge was awarded to Pell Frischmann and it is expected to be completed by the end of March 2020.

We are using all our tools to measure, understand and mitigate the effect of the closure on traffic. This includes using our network data to make decisions on traffic light timings and implement contingency plans to manage unplanned events. For example, we have completed a significant redesign of timings around Hogarth Roundabout, a comprehensive change to timings around Hammersmith, and rebalanced priorities at Chalkers Corner and Lower Richmond Road. Journey times are showing some improvement as a result of these traffic light changes.

Rotherhithe Tunnel

Rotherhithe Tunnel, opened in 1908, is a single-bore road tunnel carrying the A101 beneath the River Thames in east London. Planned Rotherhithe Tunnel refurbishment works include renewing tunnel lighting and cable supports, replacing the fire main system, providing resilient power supply, upgrading and reconfiguring the ventilation system, as well as other mechanical, electrical and civil assets that are life-expired or safety-critical.

Concept design for the refurbishment of Rotherhithe Tunnel is due to be completed in summer 2020. A separate workstream to install additional protective measures at the tunnel entrances and prevent excess height vehicles entering the tunnel has started and is planned to be operational by summer 2020.

We made enforcement of vital safety restrictions in the Rotherhithe Tunnel stricter from December 2019 to stop vehicles that are more than two metres wide or two metres high, or goods vehicles weighing more than two tonnes, from endangering other road users by entering the tunnel. From 2 December 2019, non-compliant vehicles entering the tunnel could now receive a Penalty Charge Notice for each journey through the tunnel, rather than one per day.

Public Transport

Forecast completion year	Spend to date (£m)	Spend authority (£m)
2021/22	261	347

2019/20 strategic milestone RAG 

The public transport programme oversees London Buses, London Overground, the DLR, London Trams, Emirates Air Line, Santander Cycles and London River Services.

London Overground

At West Hampstead, two new lifts have been brought into use, making the station fully accessible. The final work on the platforms has been completed, which has increased the size and relieved congestion during peak times. We have been operating a 10 trains per hour (tph) peak service on the North London line since December of last year.

We are progressing with a design for updated signalling to enable 18 trains per hour to run in east London. The works are planned to be implemented in summer 2020 ahead of the timetable change, which takes place in December.

We were successful in a bid to attain Housing Infrastructure Fund money to carry out infrastructure changes in east London to accommodate several housing developments in the Surrey Quays area. The schemes delivered as part of this bid are a redevelopment of Surrey Quays station, a new station at Surrey Canal Road and infrastructure changes to enable 20 trains per hour to run. An agreement is being negotiated with Homes England and will be signed by April 2020 to enable the project team to develop the designs.

EFC (£m)	EFC movement
482	(10)

The increased EFC reflects increased spend on critical renewals across trams, London Overground and the DLR. To be noted, all projects are now reported at gross value. The increased EFC spend authority is to the end of 2021/22.

DLR

A number of new projects have started in the last quarter, including Limehouse arch repair, track renewals, noise mitigation, track access, depot conductor rail renewal and Woolwich Arsenal waterproofing.

High voltage equipment for Poplar Depot has been built and tested off site and a high voltage system commissioned for Stratford. The contractor is on site and surveying a number of stations to install additional Oyster validators.

Poplar station continues to be upgraded with new LED lights, cabling and containment works, which are progressing well. The upgrade of DLR engineering vehicle CT30 has been delivered to Beckton Depot for track testing, which is planned to begin in March 2020 and continue until June 2020. Handover is planned for August 2020.

Work to upgrade the entire signalling system to improve resilience is making progress, with a planned software upgrade scheduled for this quarter.

Design approval for the visitors' centre at London City Airport is expected in early 2020, which will enable the start of construction in March 2020.

The capacity upgrade work at Custom House station is ongoing while the station remains operational.

London Trams

As part of our commitment to making the tram network safer following the tragedy at Sandilands in 2016, we continue to address the recommendations from the Rail Accident Investigation Branch. We have completed several initiatives and are currently in the final delivery phases of the physical prevention of over-speeding automatic braking system with an enhanced lighting for the Sandilands tunnel. Work has commenced to fit a new emergency lighting system to all trams.

Our renewals programme of works continues across seven asset groups including fleet, power, civils, systems and permanent way infrastructure.

Key highlights this quarter include the substantial completion of highway reconstruction works for the Blackhorse Lane Bridges Replacement project, with a single-lane opening on 9 December. The full re-opening will follow in March 2020. Waterproofing works on another of our road bridges, Addiscombe Road Bridge, was also completed.

Overhaul of the Bombardier CR4000 bogies has continued to progress well, with only two units remaining. The contract to replace the switchgear system at Oaks Road substation was awarded and the procurement of a contractor for the depot power rebalancing works is currently in its final stages.



The Systems Integration Project, related to network-wide telecommunications upgrades and obsolescence management, continues to progress well. Commissioning works are on schedule to be completed by the end of 2020.

A revised programme and cost estimate has been agreed with Network Rail for completing outstanding works at Wimbledon platform 10. The replacement of bins and poster-frames across all tram stops was completed as part of the customer experience project, and liaison has progressed with South Western Railway on the removal of the last redundant ticket vending machine from Wimbledon station.

Key milestones achieved after quarter close were the re-opening of Blackhorse Lane to single-lane traffic on 9 December and the completion of commissioning works for the Systems Integration Project on 8 December 2019.

Surface technology

Forecast completion year

2023/24

Spend to date (£m)

Spend authority (£m)

85

2019/20 strategic milestone RAG 

This programme is responsible for overseeing strategically important technology projects within our five-year Business Plan. It provides a structure for all future technology projects being delivered by Surface Transport.

Surface intelligent transport systems

We are leading the way in delivering innovative new road traffic management systems to make journeys on foot, bike and 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. This will 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. We are in discussion with Siemens about timescales to complete this work.

We are also working with Sopra Steria to design, develop and implement a new incident management system, enabling us to increase the speed at which we detect and respond to incidents on the road network. Work is progressing well, with the first few months of development delivering as planned.

Operational safety and compliance

We are developing a consolidated compliance and enforcement programme. As a result, we will support a more versatile compliance, policing and on-street services operation.

EFC (£m)

159 ▼▼

EFC movement

(18)

The EFC reflects the financial authority, and the 2019 Programmes and Investment Committee authority, up to 2023/24. Surface technology is a new portfolio and their first paper was submitted to the Programmes and Investment Committee in March 2019. The spend authority is therefore below EFC as the portfolio is only part authorised.

This will help improve efficiencies and support safe, secure and reliable journeys. We are in the process of defining the project scope, with a view to confirming a delivery strategy next year. This programme includes proposals to introduce body worn cameras for more staff in front line roles, in line with operational need, and to introduce unattended deployable cameras to improve compliance with road traffic regulations.

This programme includes procuring systems and services to support our licensing of taxi and private hire vehicles, drivers and operators. We will ensure business continuity is maintained, protecting customers and ensuring vehicles are safe, accessible and meet strict environmental standards. The new system aims to provide an efficient service to taxi and private hire vehicle owners, drivers and operators. Following early market engagement, a Prior Information Notice was issued in September 2019.

Public transport technology

To support a good public transport experience, we are maintaining and developing technology to operate our public transport networks and improve customer experience. This includes upgrading the technology systems that underpin the bus network, providing better information systems and improving the booking system for Dial-a-Ride.

We are making good progress towards finalising tender documentation for the booking system for Dial-a-Ride, and are developing a procurement strategy to upgrade bus technology systems.

Other

Technology and Data

Forecast completion year

2020/21

Spend to date (£m)

101

Spend authority (£m)

228

EFC (£m)

195 ▼▼

EFC movement

33

Authority and EFC shown are for financial years 2018/19 to 2020/21. The main reason for the decrease in EFC is due to an overprogramming adjustment that was included in the 2019 Business Plan values to deal with slippage into future years. The total value for this adjustment in 2019/2020 and 2020/2021 is £39.7m.

2019/20 strategic milestone RAG 

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

Payments

In partnership with the DfT, we have extended pay as you go on contactless payment cards to six additional stations on Go-Ahead Thameslink Railway's network as far as Luton Airport Parkway and Welwyn Garden City. We have extended pay as you go to Reading in January 2020. In all these instances, pay as you go will offer customers a convenient alternative to single and return tickets, with automatic daily and weekly capping being introduced in spring 2020.

We take the protection of customer data very seriously. In 2019, some customer accounts were accessed maliciously by third parties using correct usernames and passwords obtained from other websites that had been compromised. We have since taken steps to improve the security of our Oyster Online and contactless account web pages. As part of the improved security, we have strengthened the password requirement for these accounts and have required every account holder to change their password. We will take further steps to protect customer data during 2020.



We are working towards having 4G capability on the Tube

Evergreen programme

The Evergreen programme is aimed at renewing more than 80 per cent of our desktop PCs, and moving all users to Windows 10/Office 365 by the end of March 2020. By dealing with technology obsolescence we will significantly reduce the operational, security and financial risks of unsupported IT hardware and software.

The Smart Working programme is a key enabler for our accommodation strategy, and the resulting move to have seven desks for every 10 people in the main office buildings. The programme includes several technology enabler projects from digital workplace, such as providing around 1,700 new laptops for users who are changing their way of working to become more mobile and using IT tools to connect from any location. Excellent progress has been made on both these programmes.

Around 8,000 new 'thin client' PCs have been successfully deployed, with excellent user feedback. These are small, low-cost PCs found in most office neighbourhoods and community areas. They are shared devices available for all our account users to log-on and receive their desktop profile.

Content and collaboration

Microsoft SharePoint is one of our main departmental file sharing applications. However, three versions exist that need to be consolidated into a single version, SharePoint Online. To date, all SharePoint 2007 sites have been migrated, and 227 SharePoint 2010 sites have also been migrated with only eight remaining.

Livelink is our document management tool, largely used for engineering documentation. The current version is not supported and needs to be upgraded to run under Windows 10. The project has completed a proof of concept to validate new infrastructure designs, and the build and installation of a new test environment. Current work is focused on the pre-production installation and upgrade.

The Intranet Consolidation/Renewal project is to replace the three current portals with a single new portal, based on Microsoft 365 software, with a new front end which makes it easier to search and customise. The project has completed the procurement phase.

Hosting – data centre rationalisation and cloud migration

Hosting continues to develop a hybrid operating model in which we have extended our data centre core capabilities into the public cloud through Amazon Web Services (AWS) and Azure. The expanded capabilities to deliver stronger governance, operational controls and cost transparency to yield additional efficiencies has been delivered in Azure and good progress is currently being made in AWS.

The first tranche of a new infrastructure technology was implemented in our data centre. This is part of the technology refresh project.

Data and analytics

Last quarter, we completed daily processing changes for contactless payment by ensuring that all of the refunds generated

are processed through the faster universal load. This means that customers can receive their refunds at any reader across the TfL network.

The Bus Speed Compliance Tool is now a supported live application, which will transform our capability to understand the extent of speeding infringements across our bus network. Our buses generate around 700 million log records across about 60,000 files every day and, until now, we had no way of bringing this data together in a way that highlights which routes, roads or vehicles are most prone to exceeding the speed limit. Driven primarily by the Mayor's Vision Zero strategy, the benefits include:

- Speeding up and reducing the cost of accident and complaint investigations
- Being able to identify particular roads where speeding is most prevalent to drive strategic infrastructure improvements
- Prioritising and assessing the success of Intelligent Speed Assistance installations across the bus network
- Helping to identify the need for further driver training
- Helping to drive a speed awareness culture across bus garages
- Identifying routes which may need to be rescheduled to allow drivers more time

Following the successful implementation of the solution to capture and analyse Wi-Fi connection data, the Journey Planner tool

has been updated with average walk-times between interchanges and platforms. This provides an accurate reflection of journey times across 55 stations. There will be further benefits in 2020, including analysing route choices and showing how busy a station is.

Networks

The delivery of the London Underground Connect radio system upgrade continues, with the new core site equipment now successfully integrated and running in parallel with the live system.

We continue to deliver infrastructure to support the Home Office's new national Emergency Service Network communications system. We have now installed 335km of tunnel fibre (80 per cent), pulled 376km of the tunnel leaky feeder (89 per cent) and fixed 181km of this leaky feeder (43 per cent) into its final position. Snagging works are underway at the next 14 stations (39 in total) and installation work has started in a further 15 stations. In parallel, we have now pulled leaky feeder into the eastern half of the Jubilee line, building on that already installed in the western section.

The design phase for the 4G pilot project has been completed and we have started installation work at all pilot sites and completed work in seven of the 16 tunnel bores. Initial infrastructure testing has started in the first tunnel bores and the learnings from those installations are being applied to all subsequent installations. Initial radio coverage testing began in December 2019.



We are upgrading the radio system on the Underground

Our project to secure a partner to commercialise our telecoms assets continues according to plan. We have completed our evaluation of the three bids and we are currently in dialogue with all bidders with the aim of issuing an invitation to submit final tender to all bidders by February 2020.

Technical refresh and technical service operation

Following the contract award to Computa Center to supply IT service desk functions, physical engineering support and hardware repair and build services, our preparations are underway. The project is on track and the primary tooling platform used to manage and resolve IT issues was upgraded in December 2019 as planned.

Enterprise resource planning

In November 2019, we delivered the new MyTfL employee recognition platform. This online system enables colleagues to recognise good work against our behaviours. Take up and feedback has been very positive.

In December 2019, we agreed a contract with Warwick International to deliver a new occupational health solution. The system efficiently manages the end-to-end process and experience for both our medical professionals and our people needing support. The new system is planned to go-live in September 2020.

We continue to support our finance teams, with the re-implementation of the SAP Business Planning and Consolidation system, which will make financial planning more efficient by using one central system. This system is live and being populated with data ready for full use by financial year end 2019/20.

Work continues to prepare the SAP platform for migration onto AWS, which will increase SAP performance, remove several technical support risks and put in place the necessary steps required for a full upgrade of SAP over the Business Plan. This is a significant enabler for our upgrade strategy over the next five years.

Following the successful Oracle Decommissioning project go-live in October 2019, post go-live issues have been minimal, with positive user feedback, and the project was completed at the end of December 2019.

Contact Centre operation

The contactless payment card outsourcing project has successfully completed the transition of contactless call handling to our supplier. Correspondence handling also commenced on the planned date of 9 December 2019. We are on track to complete the full transition of this service in early 2020.

Growth Fund

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2024/25	1.5	144	144	0

2019/20 strategic milestone RAG 

This 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 and West Ham. White Hart Lane station reopened in late August 2019 and all these improvements support new housing developments. Our investment in the transport infrastructure has been supported by financial contributions from developers as well as other sources, including the GLA.

Sutton Link

We completed a detailed option selection process, including a public consultation on a shortlist of choices. Further work is now being progressed to develop the business case and funding package.

Committed schemes

We made recommendations to the Programmes and Investment Committee to provide contributions to support five 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 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
- A new DLR station, Thames Wharf, to support the Thameside West development, which is set to deliver around 7,000 new homes

- An enhancement to Renwick Road, which will provide the additional capacity needed to unlock Barking Riverside development's delivery of around 7,000 new homes

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.



We are preparing our stations for the new Elizabeth line services

Elizabeth line

On-network stations improvement programme

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2020	86	94	95	0



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

Work on Great Eastern step-free schemes has been completed with lifts at Maryland, Manor Park and Seven Kings, in use since late February 2019. The handover of the assets from the contractor to Rail for London Infrastructure Limited (TfL's wholly owned infrastructure manager) is still outstanding due to issues with securing paperwork. While this paperwork is outstanding, the maintenance risk remains with the contractor, so it is hoped that this and outstanding payments will be sufficient incentive for the matter to be resolved in the coming weeks.

MTR Elizabeth Line is continuing its station refurbishment programme with work ongoing at Hanwell and about to start on site at Langley. The Langley scheme will refurbish the booking hall at the same time making space for ticket gates. The approach to the station from the south side will also be significantly improved at the same time, providing a better environment for customers as well creating a new southern station entrance with ticket barriers.

On the Great Western section, lift schemes at Hanwell, Iver, Langley and Taplow are entering the final phase. Taplow opened in December 2019 and Hanwell, Iver and Langley are expected in early 2020. This is ahead of the previously publicised spring 2020 date. The opening of the lifts will complement works at other stations by Crossrail and Network Rail, meaning the entire Paddington to Reading route will be step-free by the end of 2020. Network Rail works are now complete for the Harold Wood lifts, which were opened in January 2020.



Rolling stock

Forecast completion year	Spend to date (£m)	Spend authority (£m)	EFC (£m)	EFC movement
2020	960	1,149	980	0

2019/20 strategic milestone RAG

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

Testing of the train and automatic train operation signalling has continued in the central section tunnels, including transitions to the Network Rail mainline routes to the east and west, as well as running multiple trains under the control of the system.

Signalling and train control software was installed on the trains and in the central section tunnels for testing through to February 2020, prompting the safety case and generation of the safety case for operating more trains at a higher frequency.

The project obtained approvals for operating Elizabeth line trains under the control of European Train Control System (ETCS) signalling on the Heathrow branch for driver training, and the submissions are now being made to the Office of Road and Rail pursuant to authorisation to operate the ETCS-fitted trains in Quarter 4.

Nine-carriage Elizabeth line trains have continued to operate limited services between Paddington and Hayes & Harlington while the software is upgraded. A fleet of seven-carriage Elizabeth line trains launched the all-day Reading to Paddington service on 15 December 2019. These will be replaced by nine-carriage trains when the software has been tested.



Crossrail

Forecast completion year	Spend to date (£m)	Spend authority (£bn)	EFC (£m)	EFC movement
2022	*	17.6	*	*

2019/20 strategic milestone RAG

Crossrail Ltd's latest assessment is that the central section of the Elizabeth line will open in the summer of 2021. While this is disappointing, as joint sponsors with the DfT, we will work with Crossrail Ltd to ensure this project is delivered safely and as quickly as possible.

In January, Crossrail Ltd confirmed that it plans to open the central section that runs between Paddington and Abbey Wood in summer 2021.

Following the opening of the central section, full services across the Elizabeth line route from Reading and Heathrow in the west to Abbey Wood and Shenfield in the east will commence by mid-2022.

Stopping services started operating from Paddington to Reading on 15 December 2019.

The two critical paths for the project remain the complex assurance and handover process for the railway, and software development for the signalling and train systems. Both involve safety certification for the Elizabeth line. These must be done to the highest standards to ensure the reliability of the railway from day one. Nearly 200,000 documents need to be completed as part of the assurance and handover process and safety certification.

Whitechapel station is now ready to start trials. As this is the first station to reach this critical point, learnings and lessons are being shared and implemented across the programme to further improve the process.

Significant work has taken place within the tunnels to support readiness for trials. This includes connecting the central section to the national railway radio system and assurance by the London Fire and Emergency Planning Authority of the public address system.

* This information is withheld for reasons of commercial sensitivity

Appendix

2019/20 strategic milestone performance

Our 2019/20 strategic 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
- Up to 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 ■			
First customer services start on the new higher capacity moving block signalling system	30 Apr 19	17 Mar 19	Complete ■
Use of the new, higher capacity signalling system for customer service extends to the north side of the Circle line and to all other lines	1 Jan 20	22 Feb 20	■
<p>Poor reliability performance in earlier migration areas has required prioritisation of software improvements. While we work on these issues with our contractors, it is clear that we will not make the February 2020 milestone forecast date and are working on a mutually agreed schedule for the remainder of the migration areas.</p>			
Piccadilly Line Upgrade programme ■			
Complete the concept design of new Piccadilly line rolling stock and present first look walkthrough of air-cooled trains	15 Jan 20	1 Nov 19	Complete ■
Network extensions			
Northern Line Extension ■			
Track installation complete	28 Jun 19	3 May 19	Complete ■
Essential power supplies available at all sites for testing and commissioning work to begin	16 Mar 20	25 Feb 20	■
Silvertown tunnel ■			
Contract to design, build, operate and maintain the tunnel begins	29 Oct 19	21 Nov 19	Complete ■
<p>The milestone was late due to the legal challenge to the contract award.</p>			

Milestone description	Plan date	Actual/forecast date	Status
Barking Riverside Extension ■			
Main works commence for Barking Riverside Extension	19 Apr 19	19 Apr 19	Complete ■
Completion of 16-day Network Rail blockade (works to support new viaduct)	4 Aug 19	3 Aug 19	Complete ■
Major stations ■			
Bank station – commence construction of new triple escalator tunnel to serve DLR customers at Bank station and relieve congestion	31 Mar 20	26 Jan 20	■
London Underground			
Station renewals and enhancements ■			
22 lift and escalator replacement and refurbishments complete on London Underground	31 Mar 20	17 Feb 20	■
Tottenham Hale – new station entrance and concourse opens to the public	31 Mar 20	14 Dec 20	■
<p>Due to the location of the Tottenham Hale project, there have been significant challenges in delivering the project. These include gaining the required access to the railway and the interface requirements with the London Underground/Network Rail stations, and that of the interchange project with the West Anglia Main Line upgrade works. We are working collaboratively with our supply chain and Network Rail to mitigate any delay to the programme and are working to resolve ongoing access issues which may restrict the programme.</p>			
Accessibility ■			
Eight more London Underground stations become step-free	31 Mar 20	27 Jul 20	■
<p>Currently forecasting two out of the eight stations (Mill Hill East and Ickenham) to be completed by the milestone date. Challenges including delayed planning permissions, unforeseen ground conditions and contractor delays have affected the programme for the remaining 6 stations (Amersham, Osterley, Debden, Ickenham, Wimbledon Park and Northolt). We are working with our contractors to deliver step-free access at these stations as soon as possible. These eight stations form part of the Mayor's commitment to open 15 additional step-free stations by 2020.</p>			
Track renewals ■			
Install 7.5km of new track across the London Underground network	30 Mar 20	5 Mar 20	■

Milestone description	Plan date	Actual/ forecast date	Status
Rolling stock renewals ■			
Victoria line fleet programme lift – first train enters production	31 Jul 19	1 Jul 19	Complete ■
Jubilee line fleet refurbishment is complete and all trains are compliant with the Rail Vehicle Accessibility Regulations	31 Jan 20	9 Dec 19	■
Central line – begin refurbishment and life extension work on first production train	31 Mar 20	16 Oct 19	Complete ■
Signalling and control ■			
Piccadilly line interim signal control upgrade complete	26 Jan 20	17 Oct 19	Complete ■
Power, cooling and energy ■			
First solar panels installed, representing the start of large-scale solar generation on our buildings	18 Feb 20	15 May 20	■
The project is making progress, on track according to the revised delivery schedule, and we continue to work collaboratively with our contractor to further mitigate the delays.			
Surface			
Healthy Streets ■			
Old Street Roundabout removal – main works start	31 May 19	28 May 19	Complete ■
Highbury Corner Gyratory removal – traffic switches to two-way system	13 Jul 19	22 Apr 19	Complete ■
Cycleway 4 – detailed design for Jamaica Road signed off	30 Aug 19	4 Jul 19	Complete ■
Direct Vision Standard – launch of system to enable heavy goods vehicle drivers to request Direct Vision Standard permits	28 Oct 19	28 Oct 19	Complete ■

Milestone description	Plan date	Actual/ forecast date	Status
Cycleway 9 – completion of detailed design for Kew Bridge section	6 Dec 19	5 Dec 19	Complete ■
Air quality and environment ■			
Launch of central London ULEZ scheme	8 Apr 19	8 Apr 19	Complete ■
All buses in Low Emission Bus Zones are retrofitted with new bespoke exhaust systems to reduce nitrogen oxides and particulate matter	31 Dec 19	16 Aug 19	Complete ■
Assets ■			
Concept design for the renewal of major assets starts	1 Dec 19	9 Aug 19	Complete ■
Bus driver facilities – install permanent facilities on 42 routes	31 Mar 20	31 Mar 20	■
Public transport ■			
Repairs to Blackhorse Lane Bridge – demolition of Blackhorse Lane Bridge begins	17 Aug 19	15 Apr 19	Complete ■
White Hart Lane Station Capacity Upgrade – existing station entrance demolition complete	27 Mar 20	24 Dec 19	■
Other ■			
Technology and Data			

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.

