



# Investment programme report

Quarter 3 2023/24  
(17 September to 9 December 2023)

# Contents

---

## 3 Introduction

- 4 Purpose and scope
  - 5 Investment programme delivery structure
- 

## 6 Our performance

- 7 Safety performance
  - 8 Strategic milestones
  - 10 Schedule performance
- 

## 11 Major projects

- 12 Elizabeth line – Rolling stock
  - 13 Four Lines Modernisation
  - 15 DLR rolling stock and systems integration
  - 17 Piccadilly line upgrade
  - 19 Silvertown Tunnel
  - 21 Bank station capacity upgrade
- 

## 23 Rail and station enhancements

- 24 High Speed 2
  - 24 Elephant & Castle
  - 25 East London line enhancement programme
  - 25 Surrey Quays
  - 25 Tram replacement rolling stock
  - 25 DLR
  - 25 London Underground
- 

## 27 Safe and healthy streets

- 29 Old Street station and roundabout
  - 29 Cycling infrastructure
  - 29 Vision Zero
  - 30 Bus priority
  - 31 Bus safety
- 

---

## 32 Environment

- 33 London-wide Ultra Low Emission Zone
  - 34 Direct Vision Standard phase two
  - 34 Electric vehicle infrastructure delivery
  - 34 Zero-emission bus fleet
  - 35 Waste heat
  - 36 Solar private wire
  - 36 Buildings decarbonisation
- 

## 37 Technology

- 38 Operations technology
  - 40 Technology and data
- 

## 42 Street, bus and rail-sponsored service renewals

- 43 Streets
  - 44 Buses
  - 44 River services
  - 44 London Overground
  - 45 DLR
  - 46 London Trams
- 

## 47 London Underground renewals

---

## 53 Appendix: Our safety performance data

---



# Introduction

Our investment programme comprises projects to maintain the reliability of the network and support growth in the capital







The quality of our services is fundamental to London's way of life

# Purpose and scope

## Purpose

Transport for London (TfL) is part of the Greater London Authority (GLA) family led by Mayor Sadiq Khan. We are the integrated transport authority responsible for delivering the Mayor's aims for transport.

We run most of London's public transport services, including London Underground, London Buses, the DLR, London Overground, Elizabeth line, London Trams, London River Services, London Dial a Ride, Victoria Coach Station, Santander Cycles and the IFS Cloud Cable Car. The quality and accessibility of these services is fundamental to Londoners' quality of life. By improving and expanding transport, we can make people's lives easier and increase the appeal of sustainable travel.

We are moving ahead with many of London's most significant infrastructure projects, using transport to unlock growth. 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 supply chain creates tens of thousands of jobs and apprenticeships across the country.

## Scope

The report gives a progress update on the programmes and major projects that seek authority each year from the Programmes and Investment Committee. It includes programmes of renewals and enhancements to maintain reliability and support growth. Renewing and replacing our assets is our required baseline to maintain our current performance in terms of safety, reliability, capacity and asset

condition. Additional enhancements can unlock new capacity and enable us to use our existing network more intensively.

This report covers Quarter 3, which runs from 17 September to 9 December 2023. For each key project or programme, the financial and milestone data represent the position at the end of Quarter 2, with commentary on key achievements, progress and challenges. It also updates on notable progress since the last report.

The data displayed differs depending on whether the programme or portfolio has a finite scope to deliver:

- For projects with a finite scope, financial records of spend to date, authority and estimated final cost (EFC) are provided, which represent the entire duration of the programme or portfolio except where stated. For these projects, a completion date is also provided, indicating the year and which quarter the specified event will occur
- For ongoing portfolios that aggregate a number of projects, financial records of spend to date and forecast cost are provided for a discrete period of time

Numbers in brackets represent a deficit in the figure or a decrease since the last report; numbers without brackets represent a surplus in the figure or an increase since the last report. Where financial information is commercially sensitive, it has been redacted. The performance over time graphs illustrate financial performance over the last four quarters. The commentary alongside the graph explains any specific trends or changes to trends over a snapshot in time.



# Investment programme delivery structure

Our investment programme is delivered by the areas of business set out below. This is reflected in this structure of the report

Since Quarter 1 2023/24, a new structure has been established for the report to reflect the new organisational structure under Capital. There may be further small changes over time to refine parts of the structure, however at present it comprises the following areas:

## Major projects

This includes our largest and most complex projects. It comprises line upgrades such as the Piccadilly line upgrade and the Four Lines Modernisation programme, as well as network extensions, major station upgrades and the Elizabeth line.

## Rail and station enhancements

This brings together London Underground and surface-related enhancements. In particular, where there are links to third-party developments and funding, it recognises the similarities in the activities involved and the outcomes that they deliver. It includes HS2, Elephant & Castle, the East London line, Surrey Quays, Tram replacement rolling stock, DLR Royal Docks and DLR Thames Wharf.

## Safe and healthy streets

This programme comprises Old Street station and roundabout, Cycling infrastructure, Vision Zero, Bus priority and Bus safety.

It recognises the importance of holistic investment in the bus network, alongside cycling and walking, to increase travel by sustainable modes.

Similarly, the addition of bus safety schemes such as intelligent speed assistance alongside the Safer Junctions and Lowering speed limits programmes aligns activities to improve safety on London's road network.

## Environment

This includes the London-wide Ultra Low Emission Zone, Direct Vision Standard phase two, Electric vehicle infrastructure, Zero-emission bus fleet, Waste heat, Solar private wire and Buildings decarbonisation, while also reflecting the new green project pipeline that is being developed.

## Technology

This programme comprises two technology programmes. Operations technology covers activities such as Enforcement, compliance, safety and security, Network and public transport management, Cycling and micromobility, Connectivity and Digital asset management.

Technology and data includes projects focusing on Oyster card payment, contactless payment, the Tfl Go app and several projects relating to our internal technology services

These have separate governance despite sharing common resources, stakeholders and delivery of strategic outcomes.

## Streets, bus and rail-sponsored services renewals

This groups together renewals of Streets, Buses, River Services, London Overground, DLR and London Trams.

These programmes share a common approach to work-bank management and by combining associated activities such as bus-focused renewals, we can improve investment prioritisation and efficiency.

## London Underground renewals

This covers two main London Underground renewals activities – Train systems and Infrastructure.

Grouping these activities enables a more holistic oversight and prioritisation in managing renewals across programmes. In addition, this programme incorporates Railway systems enhancements and Elizabeth line renewals.



# Our performance

We measure the safety and milestones progress of our investment programmes schemes





# Safety performance

## Capital

Capital includes all activity under the Chief Capital Officer as well as maintenance activity for which the Chief Operating Officer is responsible. During Quarter 3, the organisational structure of the Capital directorate has continued to change as part of the wider Our TfL programme.

In Quarter 3, our Capital programmes and projects delivered a combined total of 0.8 million site-based hours, a decrease of 0.2 million hours from the previous quarter.

## Quarterly performance

In Quarter 3, there were no incidents which reached the threshold for reporting under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR). As a result, the RIDDOR accident frequency rate for the Capital area has fallen from 0.06 to 0.04 at the end of Quarter 3.

There were no lost-time injuries reported, which are injuries that cause an employee to be absent for one or more shift, resulting in the lost-time frequency rate falling to 0.10 in Quarter 3.

In total, there were eight injuries reported during Quarter 3. The most prevalent incidents included slips, trips, falls and workplace violence directed towards colleagues by members of the public.

This is a reduction of incidents in the quarter by two. This continues the long-term trend of reduction in workforce injuries within Capital, as we work towards our zero-harm ambitions.

In addition to identifying specific actions in response to each incident, common learnings and key themes from the quarter have been shared across our Capital teams to ensure the systemic route causes are fully addressed.

The most significant incidents in TfL Capital in Quarter 3 have been those relating to vandalism and work-related violence and aggression directed towards both people and assets that perpetrators believe to be connected with the expanded Ultra Low Emission Zone (ULEZ).

The workers of our suppliers are facing significant threats, and this is also a major concern for our colleagues who are carrying out work in public areas. Vandalism of assets has posed risks to members of the public, such as exposure to live electrical conductors and the risk of being struck by signal poles being felled.

In December, a significant incident was the detonation of an improvised explosive device on a ULEZ camera in Sidcup. The blast was powerful, but thankfully no one was physically injured. The Metropolitan Police are investigating and have made two arrests.

Supported by TfL, suppliers are sharing information on how they are managing the risks posed. Our SHE Capital team has been working with Compliance, policing, operations and security to develop TfL Capital-specific guidance on work-related violence and aggression.

On the Piccadilly line upgrade programme, a live 50-volt cable was cut after it had been certified as dead by TfL engineers. There were no injuries, but this incident is being followed up with a thorough local investigation.

The DLR rolling stock replacement programme carried out testing of a new train during a track possession. As part of the testing process the train slid and overshot its designated stopping point. Although this happened during a testing activity with no safety risk to others, the reasons need to be fully understood and an investigation is in progress to identify root causes.

On 15 October, on the A4020 Uxbridge Road near the junction of Greenford Road, a TfL contractor was installing posters in a bus shelter when they were struck by a vehicle. The contractor was taken to hospital with life-threatening injuries and sadly passed away on the morning of 24 October. They had been working for a third-party contractor who manages the advertising on our bus shelters. This incident is subject to ongoing investigation by the Metropolitan Police.

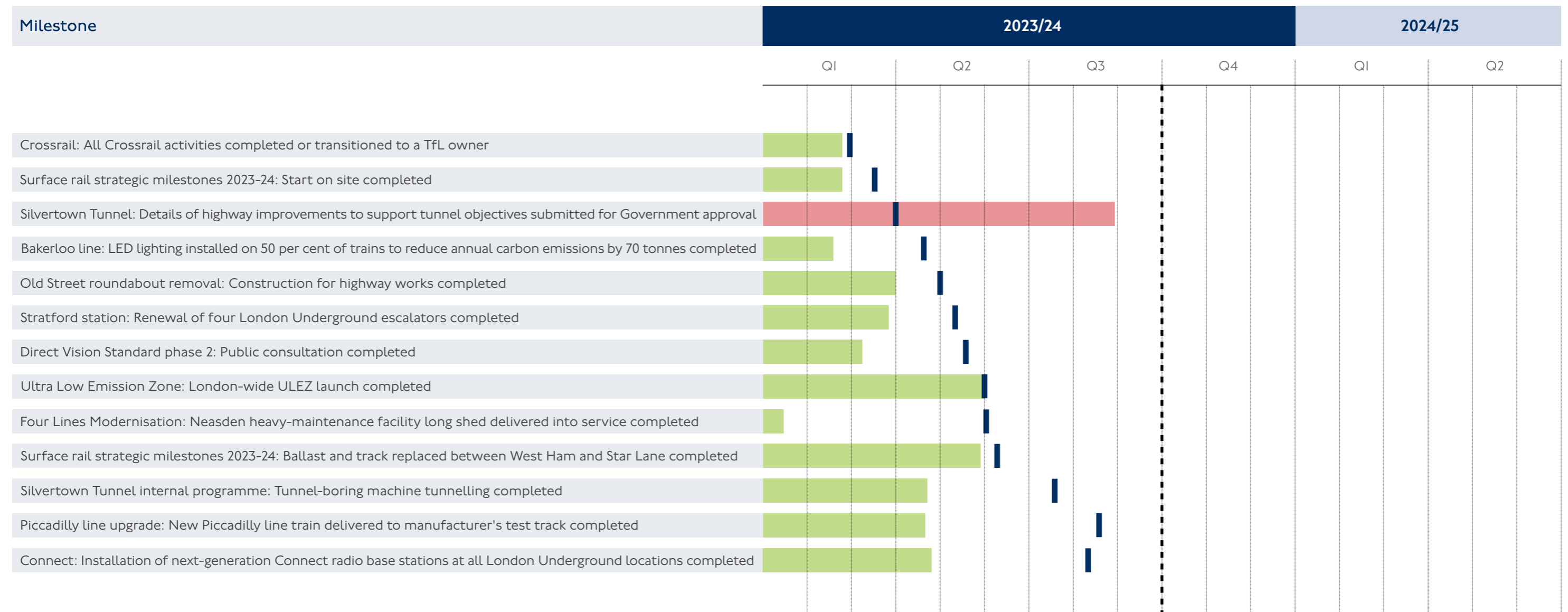


# Strategic milestones

This year to date we have delivered 19 milestones, three more than the 16 planned for completion by the end of Quarter 3

We delivered seven strategic milestones in Quarter 3. Of these, three were planned to complete in Quarter 3 and were delivered on time, while three that were planned for Quarter 4 were delivered early in Quarter 3.

Below are our strategic milestones for 2023/24. The solid blue bar shows when the milestone was due to be met, while the green, amber and red blocks show when it was achieved, or is forecast to be achieved.



■ Delivered on time or earlier than planned
 ■ Delivered less than 90 days later than planned
 ■ Delivered more than 90 days later than planned
 ■ Planned delivery date
  Reporting period cut off by 9 December 2023



Strategic milestones 2023/24 (continued)



■ Delivered on time or earlier than planned
 ■ Delivered less than 90 days later than planned
 ■ Delivered more than 90 days later than planned
 ■ Planned delivery date
  Reporting period cut off by 9 December 2023



# Schedule performance

We achieved a number of scheduled milestones this quarter, with two forecast to be late

## **Milestones achieved**

**Kingston bus station redevelopment – Cromwell Road**

Construction started on site ahead of schedule in October.

## **Piccadilly line upgrade**

We completed the first stationary commissioning test on the new Piccadilly line train in October, ahead of schedule.

## **London Underground staff welfare sites**

In November, we delivered the first eight staff welfare sites.

## **Silvertown Tunnel internal programme – monitoring and mitigation strategy**

Submission of details to the Secretary of State for Transport of highway improvements to support the traffic, environmental and socio-economic objectives of the tunnel were deferred to ensure effective engagement with the boroughs on the planned highway improvements, but have now been completed.

## **Milestones achieved early**

### **DLR rolling stock replacement**

Signalling is now complete to allow trial running for the new trains.

## **Technology – Mobile phone coverage**

There is now coverage at 100 locations across London Underground (stations and tunnel roads).

## **London Underground renewals – Track programme – Deliver 3.5km of new track, improving reliability and reducing noise**

This was delivered earlier than planned, in Quarter 3.

## **Milestones forecast to be late**

**DLR – Beckton Depot and network infrastructure**

**Bring into use Beckton Depot southern sidings to enable the introduction of new DLR trains**

This milestone will be impacted by the principal contractor for the northern sidings project, Buckingham Group, entering into administration, as the southern sidings can only be commissioned following the northern sidings commissioning. This milestone cannot now be recovered; however, this delay relating to sidings does not impact the overall trains into service in two years' time.

**London Underground renewals Jubilee line (fleet overhaul and component renewal) – Completion of the renewal of key components on 50 per cent of Jubilee line trains**

This strategic milestone target date is now expected to be missed by 19 days. The refurbisher of the train wheels has experienced a number of issues since the start of the programme, including inaccurate material estimates, shortage of employees and issues with quality. We are working closely with the supplier to mitigate the delay.

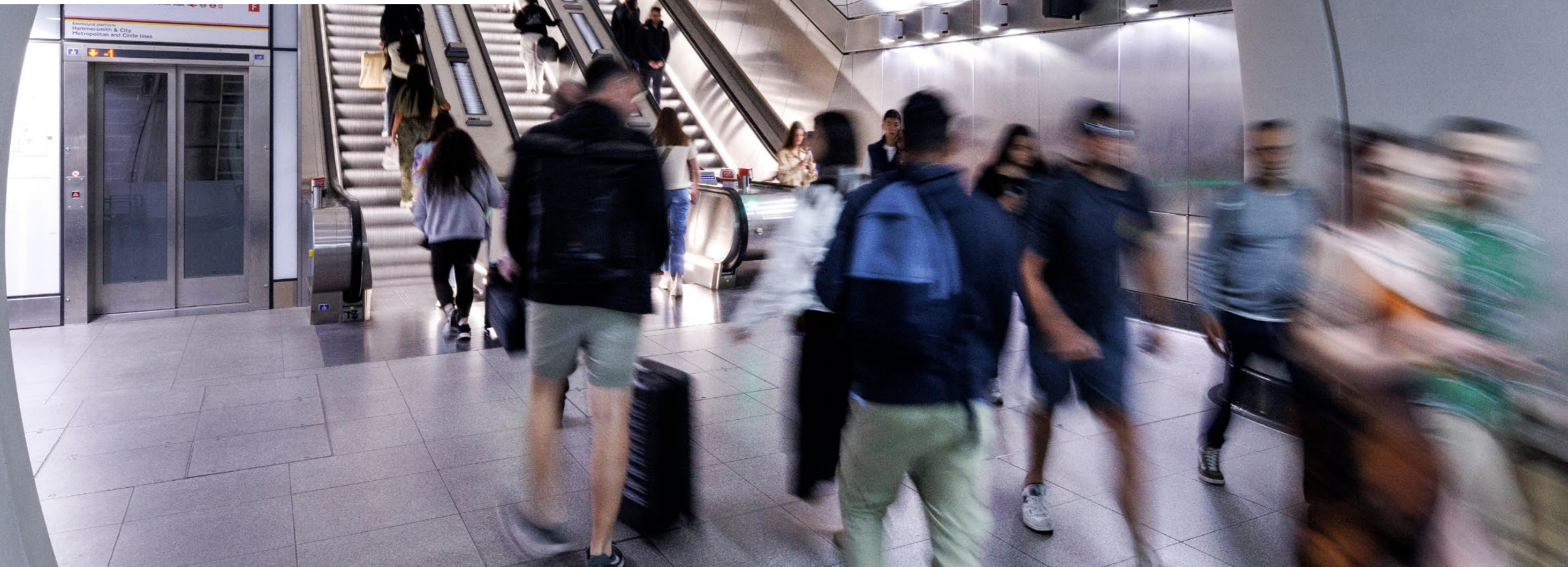


We are investing in staff welfare facilities on the Tube network



## Major projects

This portfolio includes our largest and most complex projects. It comprises line upgrades such as the Piccadilly line upgrade, the Four Lines Modernisation programme and the Elizabeth line





# Elizabeth line

## Rolling stock

Forecast completion	Gross cost to date (£m)	Gross cost to go (£m)	Gross EFC (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
Q4 2024/25	1,002	5	1,007	1,149	142
Change since last Investment programme report					
No change	No change	No change	No change	No change	No change

### Financial commentary

The cost to date relates to ongoing rolling stock work that will be completed in 2024/25.

### Performance over time commentary

The forecast end date represents the delivery of the rolling stock and depot, including all additional changes. Since authority was awarded in 2013/14, the estimated final cost dropped from £1,090m to £1,007m because the trains have since been part of a sale and leaseback arrangement. They are now being leased and the costs charged as operational costs.

### Programme update

#### Class 345 Trains

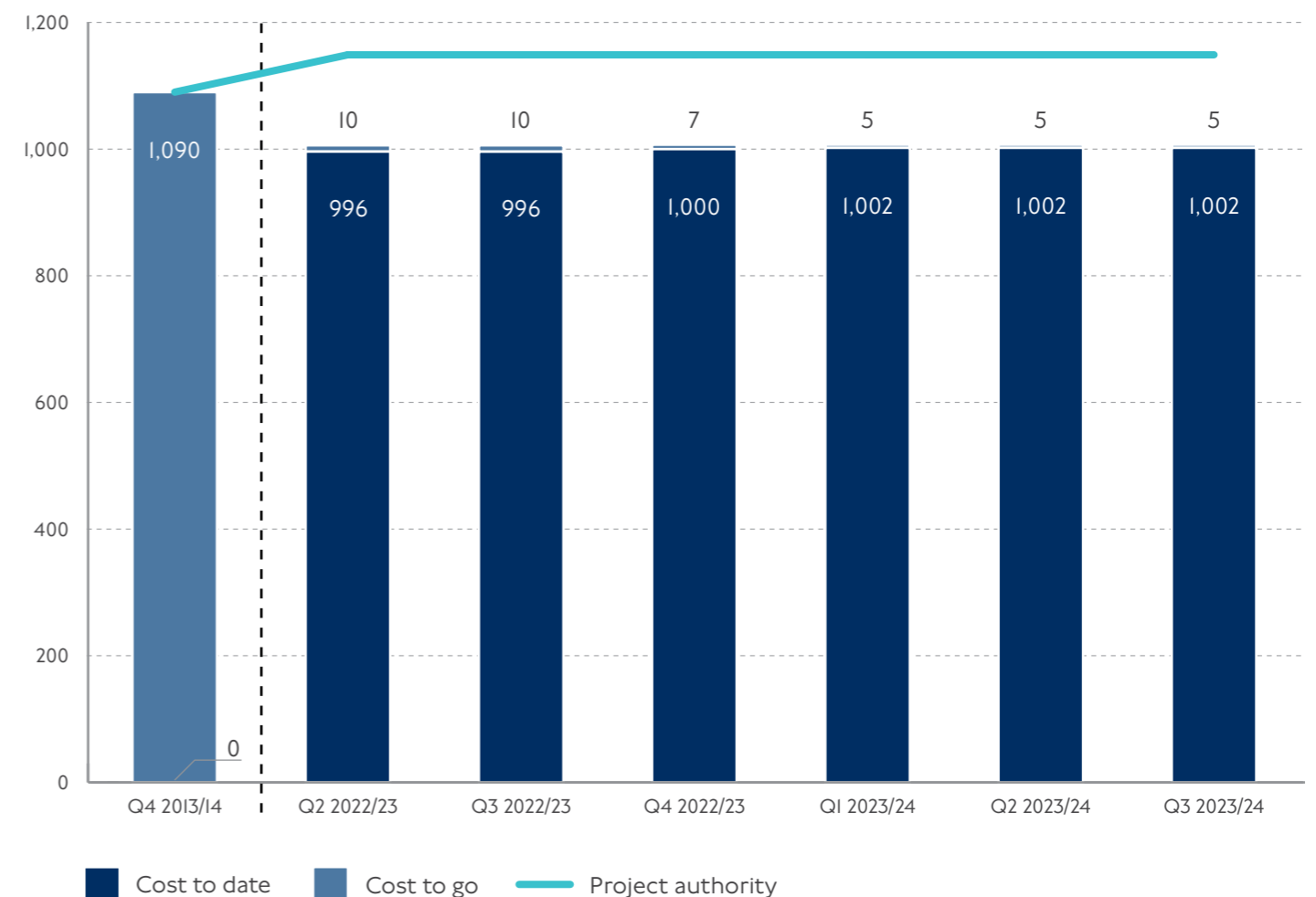
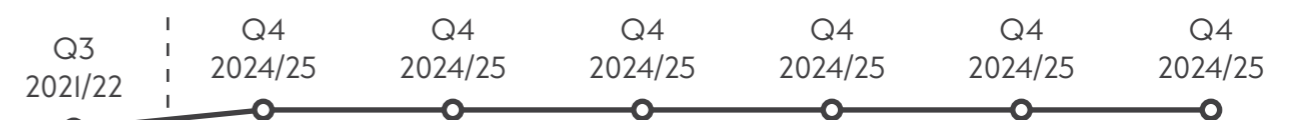
Since 21 May 2023, the Class 345 fleet has been operating the peak service of 24 trains per hour, consistently meeting the required daily availability level of up to 65 trains.

The train and signalling manufacturers continue with their programme of software upgrades to address residual reliability issues.

This has been accounted for in the rolling stock project forecast through to 2025.

### Estimated final cost performance over time (£m)

#### Forecast completion date





## Line upgrades

# Four Lines Modernisation

Forecast completion	Gross cost to date (£m)	Gross cost to go (£m)	Gross EFC (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
Q3 2025/26	5,332	184	5,516	5,520	4
Change since last Investment programme report					
3 quarters later	27	3	30	No change	

### Financial commentary

Since the last report our EFC has been updated to reflect the outputs of a detailed review of the signalling software schedule with our signalling supplier for the next two signal migration areas (SMAs) to go live (SMAs 8 and 9) and consequential updates to the schedule for the remaining SMAs beyond this, up to SMA14.

This has resulted in an increase to the EFC reflecting a revised forecast completion date for the final SMA (SMA14) of Quarter 3 2025/26. This has come principally from a revised assessment of the most likely timescales to develop, test and commission the software and complete operational readiness activities. This is a realisation of some of the risks and challenges that were highlighted to the Programmes and Investment Committee in our July 2023 annual update.

Separately there has been an increase to the forecast cost to complete the works at Neasden depot owing to delays to

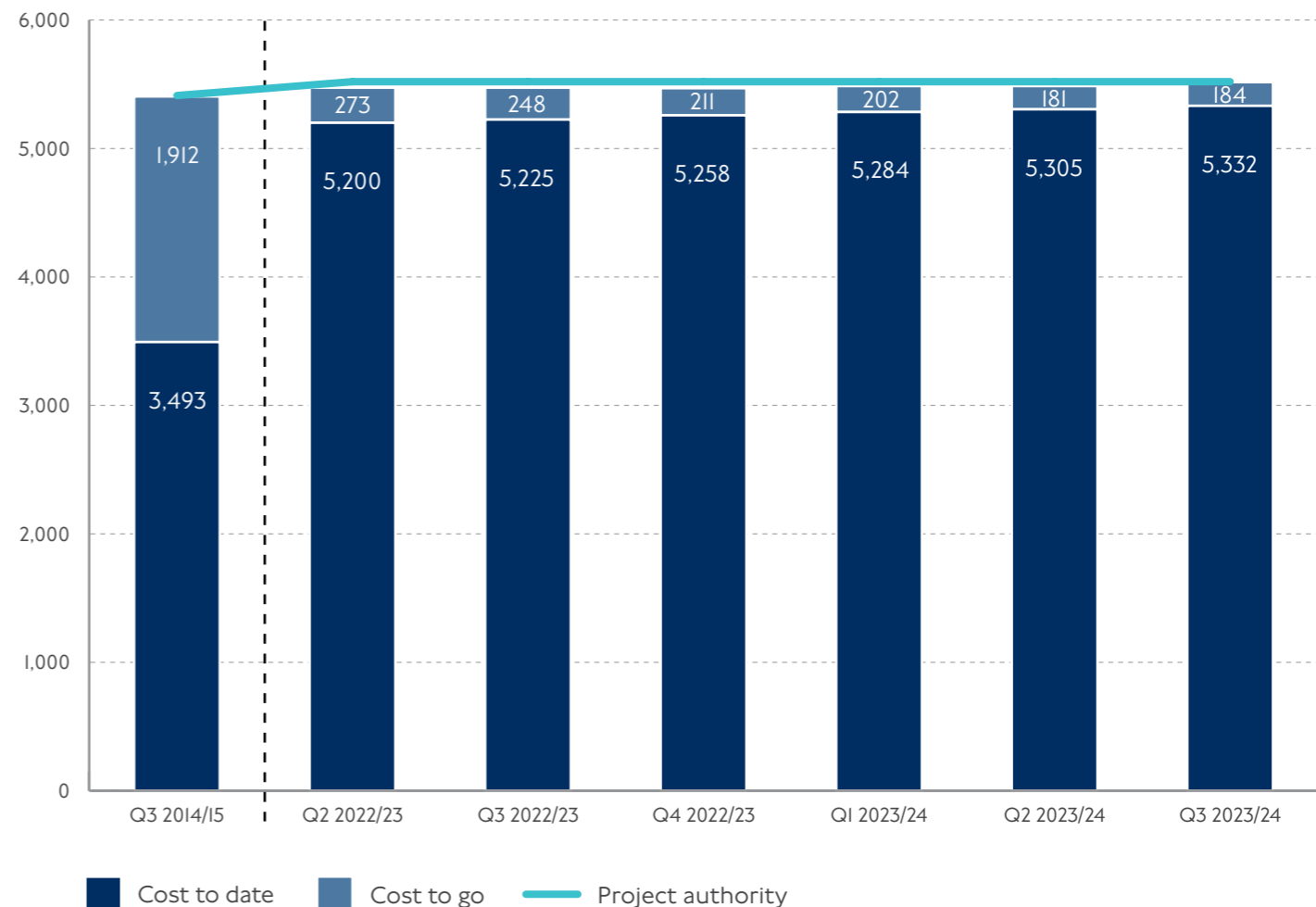
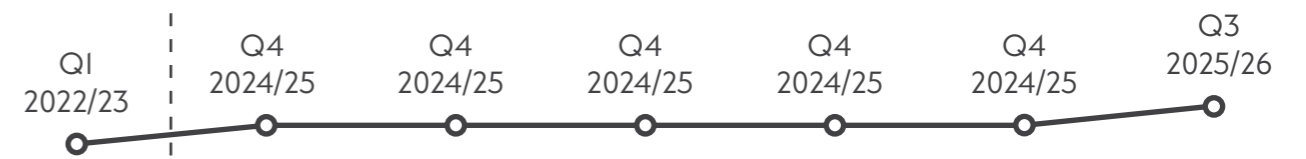
the site works due to challenging ground conditions, with a high volume of buried cables and pipes within the excavations that were not detailed in records and hazardous materials.

We continue to review opportunities and mitigations to offset the current risks underpinned by our ongoing review of the schedule and cost. We are not seeking to increase Programme and Project Authority at present as our team continues to review (with our signalling supplier) the schedule for the later SMAs, including assessing the benefits of different delivery strategies.

Four Lines Modernisation is a complex and challenging programme and remains under pressure as we progress with the development and commissioning of the most complex areas. We continue to explore a range of opportunities to mitigate cost pressures where possible, and a detailed assessment will be reported to the Programmes and Investment Committee in July 2024 as part of the annual review.

### Estimated final cost performance over time (£m)

#### Forecast completion date





### **Performance over time commentary**

The forecast completion date shows when the final signal migration area, SMA14 between Rayners Lane and Uxbridge, will be brought into service. The date has been delayed from the initial forecast made when the signalling contract was awarded in 2015. This is principally owing to challenges with complex software development, testing and commissioning, and closure availability, alongside the impact of the pandemic.

The forecast completion date has been revised since the last report and is now forecast to complete in Quarter 3 2025/26. This follows a detailed collaborative review with our signalling supplier specifically focusing on the next two SMAs to go live (SMAs 8 and 9) with consequential updates to the schedule for the remaining SMAs beyond this.

It also reflects the impact on our signalling software schedule arising from the need to accommodate additional fixes to resolve two software issues identified in the commissioned system. This was not unexpected, given the complexity of the signalling system, and these fixes were successfully implemented in August 2023.

SMAs 8 and 9 (Neasden and Harrow) are the most complex areas in the programme and present significant challenges associated with the integration of the new signalling system with the Jubilee line and Neasden depot train control software, along with the management of manually driven Chiltern trains, restricted access opportunities and significant operational training requirements.

Significant progress was made in developing and testing these areas in 2023, with positive progress in software development and successful site system testing being undertaken. This has increased our confidence in the maturity of the software for go live and enabled a better understanding of the challenges of these technically complex areas and therefore the schedule to complete.

We continue to work collaboratively with our signalling supplier to meet these challenges and implement measures to minimise or mitigate the risks associated with the delivery of the remaining SMAs.

### **Programme update**

The programme is delivered by progressively installing new signalling on sections of the railway known as signal migration areas (SMAs). The new automated signalling system is already in place at 62 stations, including the whole of the Circle and Hammersmith & City lines, as well as the east end of the District line. For comparison purposes, the Jubilee line has 27 stations. This means that two of the four sub-surface lines (and around 57 per cent of the Tube network in total) is now operated by an automatic train control signalling system.

The remaining areas still to go live with the new signalling system include the Metropolitan line north of Finchley Road (SMAs 8, 9, 13 and 14) and small sections of the west end of the District line.

The next SMA to be commissioned, covering the Metropolitan line between Finchley Road and Preston Road (SMA8), is targeted to go live in Quarter 3 2024/25.

This area is one of the most complex on the London Underground network. Metropolitan line trains share tracks with Jubilee line trains and the signalling system needs to enable trains from both lines to enter and exit the depot at Neasden.

We have increased our confidence in the system integration for this complex area through significant off-site testing on our simulators in Toronto, ensuring that we optimise efficient use of on-site planned closures. This includes successful works undertaken during a closure on 10-11 November to test the connection between the control systems of the Jubilee and Metropolitan lines to ensure communication between them. This is a significant step forward for the programme in advance of the commissioning of this area in 2024.

Beyond SMA8, further progress was made when in October we completed the second system test for SMA9 in the Harrow area, successfully testing the integration of Chiltern trains with the new signalling system for the first time.

Installation of trackside signalling assets in the areas that are yet to go live is also on target to be substantially complete by the end of March 2024.

Works are progressing on the planned upgrades to the heavy-lifting shed at Neasden depot. The design for the new staff accommodation block is planned to be completed in Quarter 2 2024/25. Once built, these facilities will enable the planned overhaul of Metropolitan line trains.



## Line upgrades

# DLR rolling stock and systems integration

Forecast completion	Gross cost to date (£m)	Gross cost to go (£m)	Gross EFC (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
Q2 2026/27	463	444	907	881	(26)
<b>Change since last Investment programme report</b>					
No change	55	(52)	3	No change	

### Financial commentary

Since the last report, the £3m change in EFC is due to income no longer being reported in costs, as in previous reports, but now reported as programme income. The cost pressures previously identified remain.

In Quarter 2, there were significant increases following the insolvency of the principal contractor delivering infrastructure works at Beckton depot and the reassessment of the likely outturn cost of all remaining works across the entire programme, including estimates for unprocured scope and future inflationary allowances. We continue to review options to mitigate these cost pressures where possible.

### Performance over time commentary

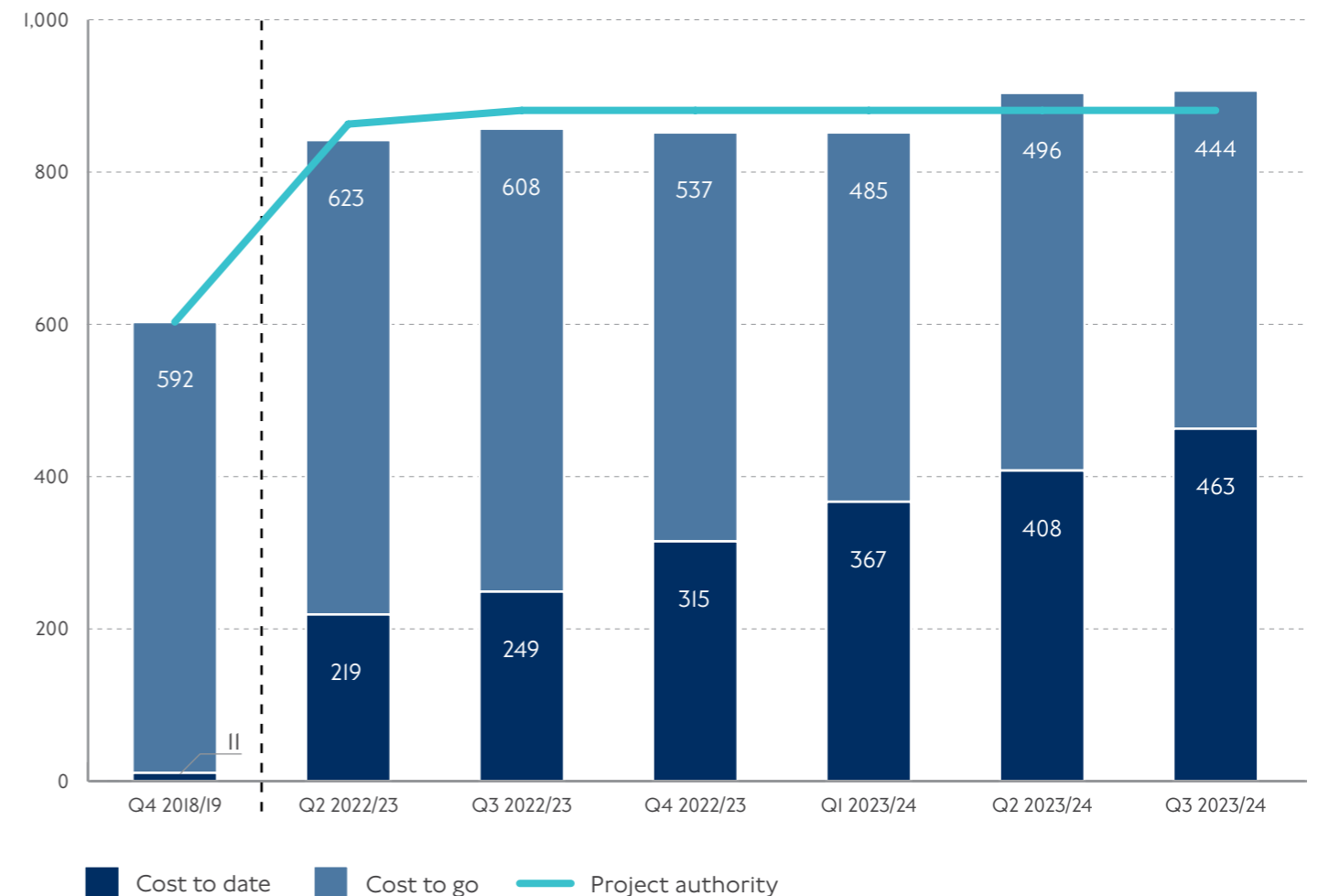
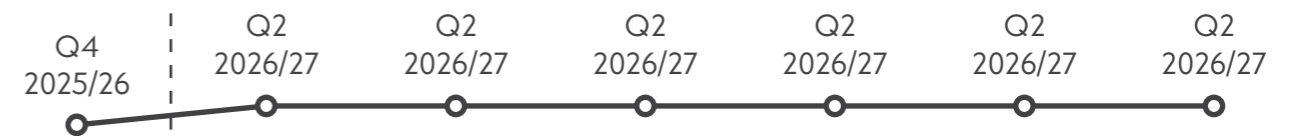
Since Programme and Project Authority was granted in 2019, we have received approval from the Government to purchase 11 additional trains funded through the Housing Infrastructure Fund.

The increase in EFC from Quarter 4 2018/2019 reflects the addition of £261m of grant funding from the Government to deliver the Housing Infrastructure Fund scope of works.

The EFC in Quarter 2 2023/24 reflects the initial estimates of the impact of the insolvency of the principal contractor delivering infrastructure works at Beckton depot and the reassessment of the likely outturn cost of all remaining works across the entire programme, including estimates for unprocured scope and future inflationary allowances.

### Estimated final cost performance over time (£m)

#### Forecast completion date







New DLR trains will start to enter passenger service later this year

### Rolling stock delivery

Manufacturing of the new rolling stock in Spain is continuing, with 22 trains completed. Main line testing is also progressing and signalling integration testing of the onboard vehicle signalling control system is underway.

The modifications to the train control software reduce the fixed power assets required to support the new trains. This will reduce embedded carbon in construction and provide an energy saving over the trains' lifespan. We estimate the carbon saving from reduced construction activity to be 358 tCO<sub>2</sub>e and work is ongoing to quantify the operational energy saving.

We encountered some challenges during integration testing works towards the end of 2023 which we are currently investigating. This has had an impact on delivery dates. We now expect the new trains to begin entering passenger service in Quarter 1 2024/25. Importantly, the end date for the renewal of the full fleet remains Quarter 2 2026/27.

### Beckton depot and network infrastructure

Following Buckingham Group Contracting Ltd, the principal contractor for the Beckton depot northern sidings contract, entering administration, we are implementing alternative arrangements to ensure the completion of these works. Works have now restarted on site with an alternative contractor and we anticipate bringing the northern sidings into use in Quarter 4 2023/24.

Construction has also begun on a second entrance at Blackwall station. The first power resilience contract has been awarded and works have started on site. Identified synergies on the delivery of these works will enable us to reduce railway closures, thereby minimising impacts on our customers.



## Line upgrades

# Piccadilly line upgrade

Forecast completion	Gross cost to date (£m)	Gross cost to go (£m)	Gross EFC (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
Q4 2026/27	949	2,101	3,050	2,994	(56)
<b>Change since last Investment programme report</b>					
No change	163	(163)	No change	No change	

### Financial commentary

A full update was provided in the annual programme review submission to the meeting of the Programmes and Investment Committee on 5 October 2023, which highlighted the current risks and challenges faced in the delivery of the Piccadilly line upgrade programme and how we are responding to them.

In Quarter 3 2023/24, the EFC has been held at £3,050m, which exceeds the Programme and Project Authority of £2,994m. While a view has been taken of the known new risks and challenges, it is not proposed to seek an increase in Programme and Project Authority at present until the conclusion of extensive work that is under way on alternative delivery plans, mitigation measures and opportunity development to inform the Stage I EFC position.

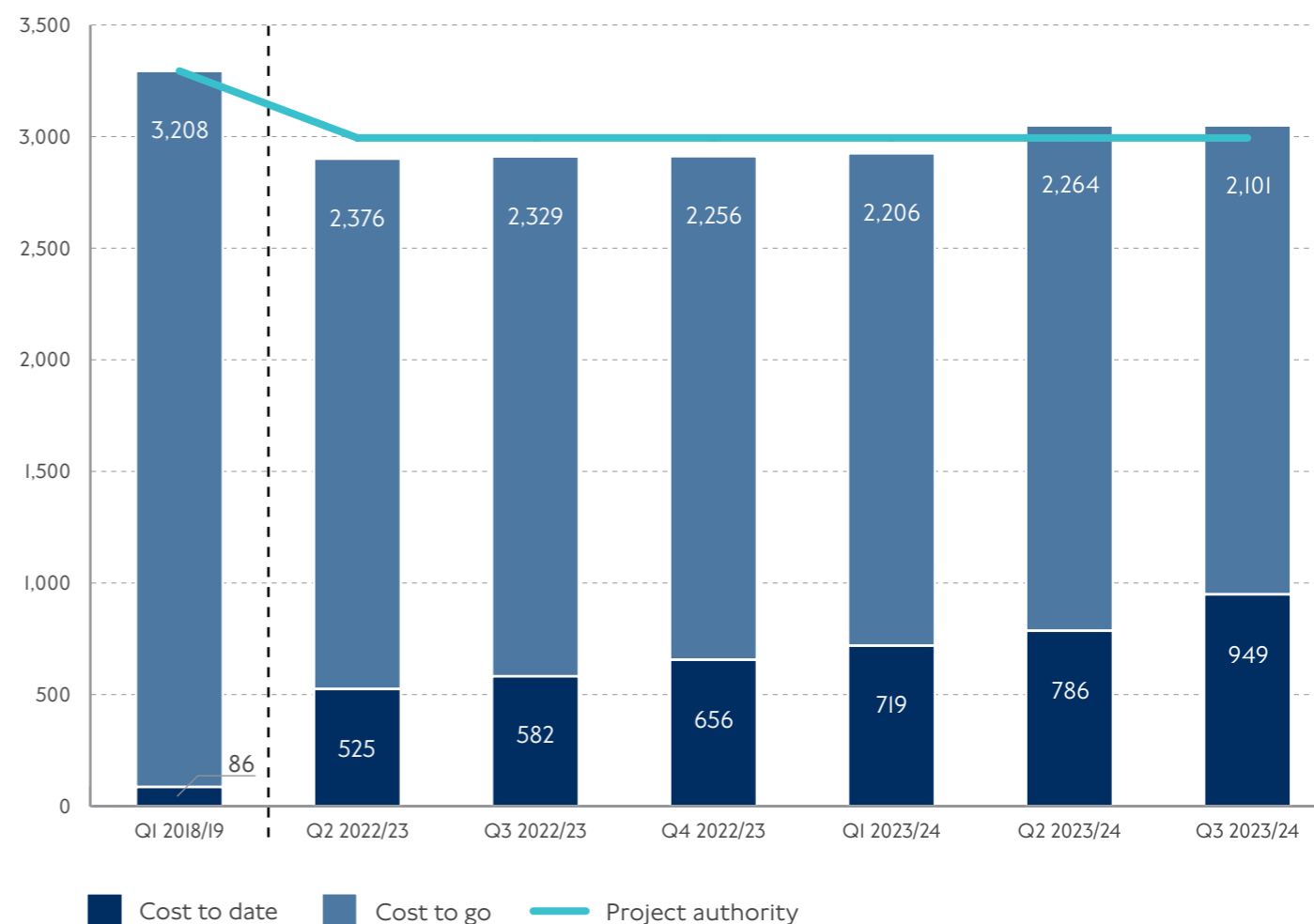
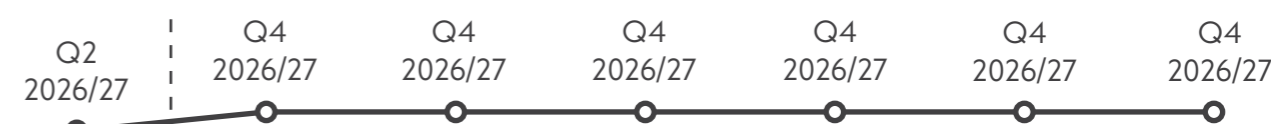
### Performance over time commentary

As previously reported and set out in the paper to the Programmes and Investment Committee at the meeting on 5 October 2023, schedule and EFC have been under pressure from several factors including increases in base costs due to emerging scope in the depot upgrades; industry price increases and indexation; programme risk and uncertainty provisions increasing to reflect schedule risks and the associated impacts.

In December 2023 the rolling stock manufacturer, Siemens Mobility Limited, notified us of a likely Compensation Event under the terms of the contract, the basis of which is that access to designated depots for the base order of 94 trains will not be available to Siemens Mobility Limited for the provisional acceptance of the train(s) relevant contractual dates.

### Estimated final cost performance over time (£m)

#### Forecast completion date





In response, a proposed extended rolling stock manufacturing and testing programme has been considered that offers advantages compared to alternative options such as storage of trains and risk to performance of trains after storage. This option also preserves the intent to introduce the service frequency increase to 27 trains per hour by 2027. This was endorsed by the Finance Committee on 22 December 2023 and is now being implemented.

In addition to the above we continue to progress actions to realise the range of programme-wide opportunities previously identified to reduce pressure on the Stage I EFC, including the revised delivery approach for the depot upgrades and improved risk management.

A 'dynamic EFC' approach continues to be taken and a partially mitigated EFC of £3,050m is reported at the end of Quarter 3, 2023/24 (£56m above the current authority). Efforts are now focused on achieving greater certainty around the delivery schedule and costs, with no intention to see an increase in authority until after these activities have been completed. We have now completed a schedule re-baselining exercise and are reviewing the EFC. This review is on target for completion in Quarter 4, 2023/24.

These actions mean that the first train will still arrive in London for testing in summer 2024 and will be introduced into service in 2025.

## **Programme update**

### **Rolling stock**

The manufacturing contract with Siemens Mobility Limited is progressing well, with the first fully assembled train continuing to be tested at Siemens' test and validation centre in Westphalia, Germany. The new train is undergoing pre-delivery performance and reliability proving prior to series production. The new train design had a media launch in November.

A rephasing of the timing of payments has been agreed in principle under the contract with Siemens Mobility Limited. This will not affect the delivery of the first train in 2024 for testing in London ahead of entering service in 2025 and will protect the planned Piccadilly line timetable uplift in 2027, ensuring Londoners will benefit from the new, higher-capacity walk-through trains.

These arrangements also mean that more new trains will be built in the Siemens Mobility Limited factory at Goole in Yorkshire, surpassing the 50 per cent originally planned, where Siemens Mobility Limited is investing up to £200 million and creating up to 700 jobs at the factory and up to 1,700 in the supply chain.

The new Siemens trains will recover energy through regenerative braking and more efficient propulsion. Traction energy consumption is expected to be reduced by around 20 per cent compared with the trains operating today.

Key performance indicators focusing on carbon reduction have been established and are regularly reported on. Carbon risks and opportunities are included in our internal programme performance report.

Work continues on revising the carbon baseline to reflect an evolving understanding of programme scope and design.

### **Enabling works for high voltage power**

The first major work packages are progressing as part of the Piccadilly line upgrade high-voltage (HV) power framework. The third batch of HV works, encompassing building extensions to Hatton Cross and Hounslow substations, was awarded following competitive tendering. The final batch has been issued for tender, with contract award expected in summer 2024.

Site enabling works have begun at Cockfosters substation in readiness for the installation of HV equipment. Detailed designs are nearing completion across multiple sites and start on site will begin in Quarter I of 2024.

### **One-person operation closed circuit TV (OPO CCTV)**

The OPO CCTV project successfully achieved its strategic milestone: Piccadilly line digital system for OPO CCTV for platform interfaces – detailed design complete. This is a significant milestone in the end-to-end system design.

## **Depots**

The first stage of the train maintenance depot upgrades at Northfields and Cockfosters is underway, starting with work to complete the three new siding roads at Northfields depot. These will support the leaf-fall timetable in October 2024.

At Cockfosters depot, site preparation and enabling works are progressing for the new wheel lathe facility and a contract for building construction is expected to be placed in early 2024. The contract for the new train simulator facilities at both depots has been awarded and design work has begun. The simulators will support the training programme for Piccadilly line train operators prior to the introduction of the new trains.

Work is also underway to provide initial maintenance facilities to enable the first new trains to be serviced within the existing depots. A contract has been awarded for the supply of two mobile train lifts to match the new train design, with the lift at Cockfosters to be installed first.

Progress continues to be made on the concept design for end-state depots. Three contractors have now been engaged to provide support through early contractor involvement for the design of the upgraded maintenance facilities and the track environment across both depots.



# Network extensions

## Silvertown Tunnel

Forecast completion	Gross cost to date (£m)	Gross cost to go (£m)	Gross EFC (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
Q4 2024/25	119	61	180	176	(4)
Change since last Investment programme report					
2 quarters earlier	1	4	5	3	

### Financial commentary

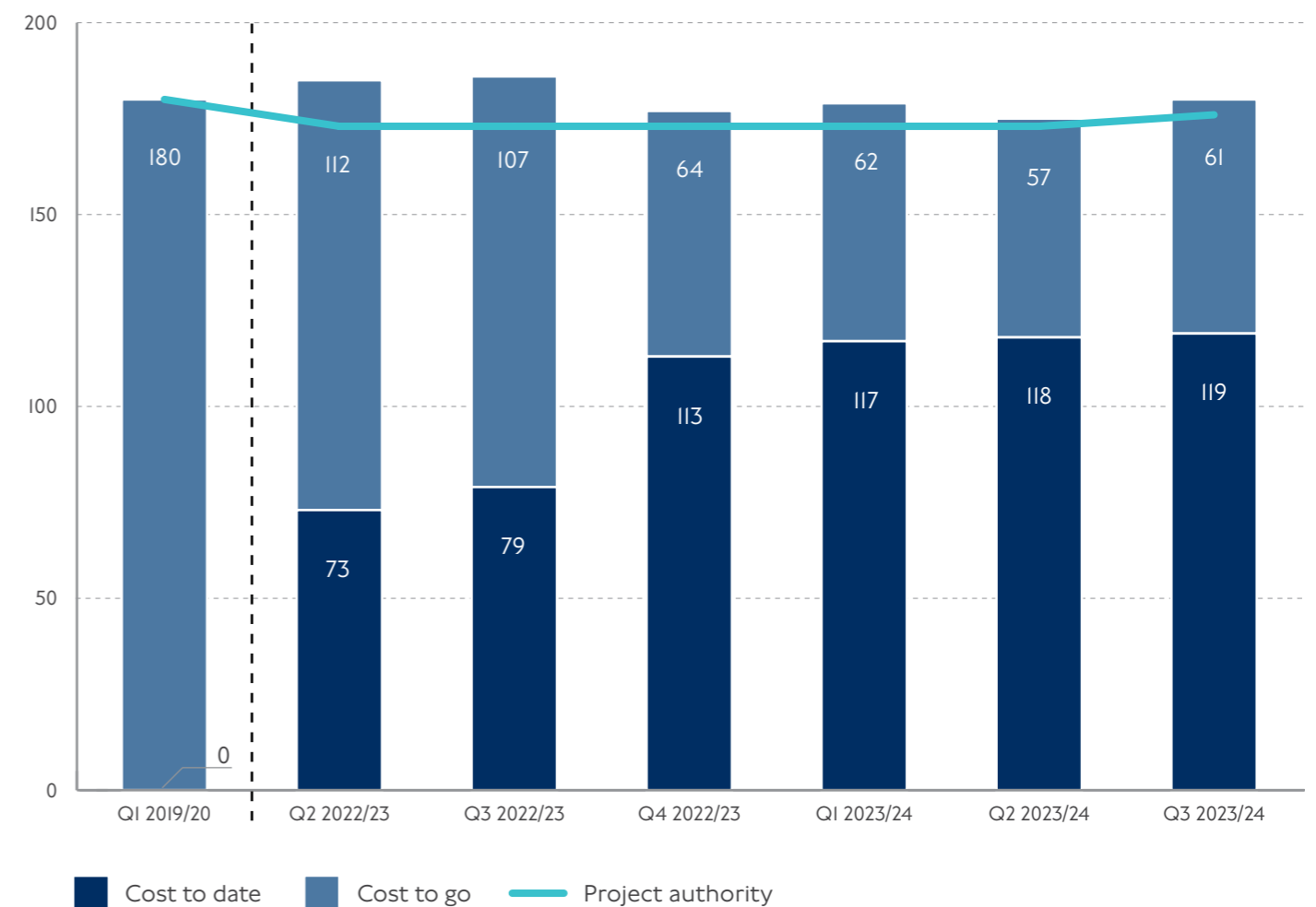
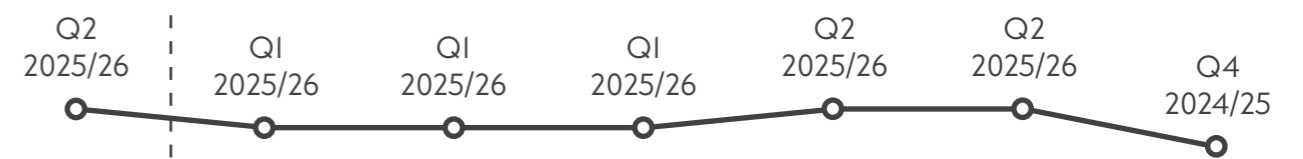
Following the full update at the Programmes and Investment Committee meeting in October 2023, the Programme and Project Authority was increased by £2.7m to include scope for the provision of bus infrastructure. The EFC is currently £4m over authority due to additional inflation assumptions being included for land purchase. The project team continue to look for ways to bring the EFC back in line. Following a series of reviews focused on programme mitigations, the permit-to-use date has improved and is now planned to be achieved in Quarter 4 2024/25.

### Performance over time commentary

The forecast end date is when the permit from an independent assessor to use the new Silvertown Tunnel is obtained. Following a series of programme mitigations, the planned permit-to-use date has moved to Quarter 4 2024/25.

### Estimated final cost performance over time (£m)

#### Forecast completion date



All numbers are shown as net of income and third-party contributions



### Programme update

Following completion of the tunnel cross-passage excavation activities, all main tunnelling works have now been completed. At the New Civil Engineer tunnelling conference and awards ceremony held in December, our main contractor, Riverlinx, won awards for Innovation in Tunnel Boring Machinery and Systems for the pressure ring launch and floating rotation, Tunnelling Contractor of the Year and Tunnelling Project of the Year (over \$200m).

The new Boord Street walking and cycling bridge across the A102 was opened on 10 November 2023, following installation of the permanent ramp on the north side. The new bridge provides a safe and easily accessible crossing on the Greenwich Peninsula for people walking and cycling, including cargo bikes, and will accommodate future neighbouring development proposals.

Works continued at the A102 road, following several productive weekend closures, and the southbound overbridge, which crosses over the new tunnel approach road, came into effect on 9 October 2023.

The introductory cross-river bus network for Silvertown Tunnel was finalised in March 2023, and following a competitive tender process over the summer was awarded to Go-Ahead London in September 2023. The network includes routes I08 (the existing service using Blackwall Tunnel), I29 and SL4, which forms part of the wider Superloop network.

They will begin operating when the Silvertown Tunnel opens in 2025. We will be working to deliver a zero-emission bus fleet across all three routes. The consultation for the cross-river cycle provision closed on 10 September 2023 and we received more than 680 responses. We are analysing those responses before deciding on the next steps.



Work continues on the new Silvertown Tunnel, opening in 2025



## Network extensions

# Bank station capacity upgrade

Forecast completion	Gross cost to date (£m)	Gross cost to go (£m)	Gross EFC (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
Q4 2022/23	695	9	704	702	(2)
<b>Change since last Investment programme report</b>					
No change	2	1	3	No change	

### Financial commentary

Despite the EFC remaining relatively stable since October 2020, since the last IPR report at P06 the EFC has increased by £3m. This is due to delays to completion of handover, revised estimates for the external surface works and delays to resolving matters with the City of London Corporation on the Arthur Street shaft.

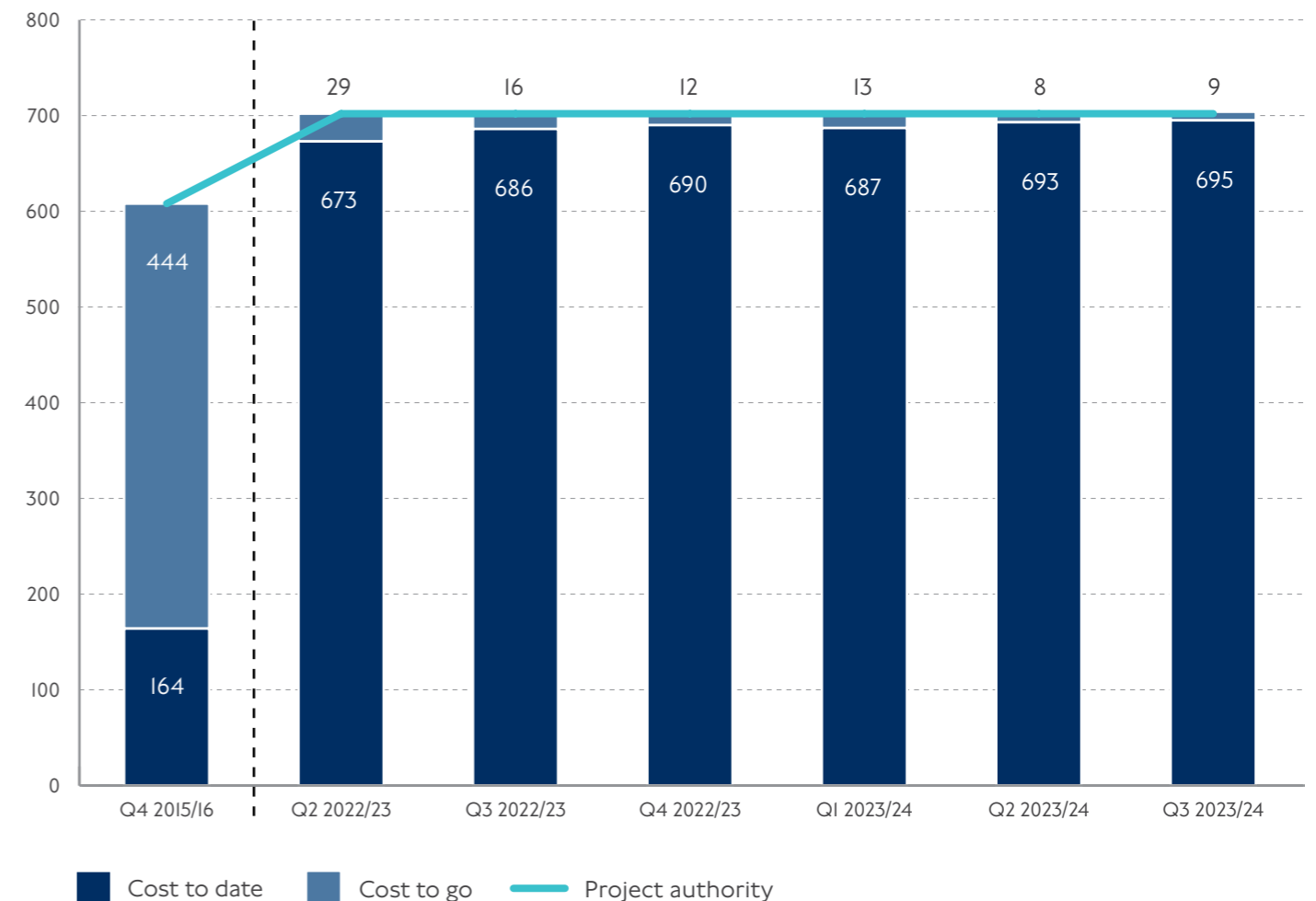
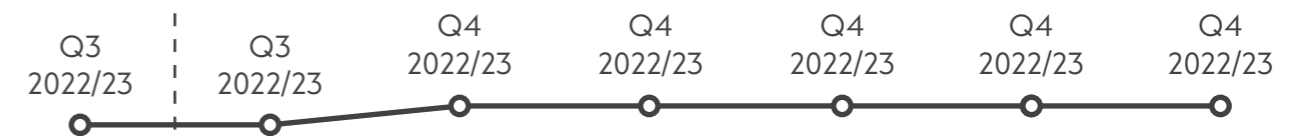
The project is still actively looking to reduce the EFC to bring this in line within existing Programme and Project Authority. This includes seeking agreement with the main contractor to agree a final account that will adjust the risk position that TfL holds. If the project is unable to reduce the EFC by PI2 2023/24, the project team will be required to seek additional authority from the Programmes and Investment Committee to ensure the value of work done (VOWD – costs from the beginning to the current point in time) does not exceed authority in the early periods of 2024/25.

### Performance over time commentary

The forecast end date represents the opening of the new Cannon Street ticket hall entrance at Bank station, which was achieved on 27 February 2023. Our estimated final cost has increased since the authority award in 2016, owing to site works being disrupted by the impact of the terrorist attack at London Bridge, the need for additional scope following the discovery of asbestos, and the impact of the coronavirus pandemic. In addition, the final phase of the programme was delayed by around three months owing to issues relating to the manufacture and installation of cladding panels and commissioning of safety-critical systems.

### Estimated final cost performance over time (£m)

#### Forecast completion date





### Programme update

This complex project has increased the station's capacity by approximately 40 per cent, improved passenger flows and reduced journey times, enhancing the overall customer experience. Improvements include step-free access to and from the Northern line, improved access to and from DLR platforms, two new moving walkways, 12 new escalators and two new lifts. There are also more direct routes within the station and a new entrance on Cannon Street.

Designs for junction modification works between Arthur Street, King William Street and Upper Thames Street have been accepted by the Corporation and there was a successful public consultation. An S278 agreement has been signed between parties for the City of London to carry out works on the Cannon Street pedestrian crossing. The reinstatement design for Arthur Street (following infill of the shaft) has been agreed with the Corporation.



Work at Bank station has improved the experience for customers



# Rail and station enhancements

This programme brings together London Underground and surface-related enhancements to create a single focus for an improved transport network





# Rail and station enhancements

Forecast period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2025/26	98	224	322	1,027	705
<b>Change since last Investment programme report</b>					
No change	20	(13)	7	5	

## Financial commentary

An additional £20m of Programme and Project Authority was approved at the July 2023 Programmes and Investment Committee meeting, allowing us to carry out planned enhancements work across the programme. The Programme and Project Authority of £1,027m reflects spend outside of the review period, therefore, prior to 2022/23 and beyond 2026/27.

The forecast between 2022/23 and 2025/26 has increased by £7m, predominantly driven by cost increases of £1.4m for the London Trams Sandilands programme to complete final stages of planned delivery.

## Performance over time commentary

The total cost shows little movement from the previous quarter but there has been good progress in conversion of the £20m of cost to go into spend to date when compared with Quarter 2. Some delays have resulted in delivery moving into Quarter 4 and later years. Increased authority recognises the longer-term forecast for the programme.

## High Speed 2

Since the Department for Transport's (DfT) announcement in March that it will pause construction at Euston station and rephase its delivery, and the Government's Network North announcement in October significantly scaling back the project, we have continued to engage collaboratively with High Speed 2 (HS2) Ltd (the company developing the new high-speed rail network) and other Euston Partnership members including Network Rail, DfT, London Borough of Camden, the GLA and Lendlease, the masterplan development partner.

We are continuing to work with HS2 and partners on options to reduce costs while ensuring effective functionality of TfL infrastructure and operations, such as the London Underground and bus stations at Euston. However, there is concern that some of the fundamental safeguards and agreements contractually secured under the protective provisions agreement may be at risk as part of the cost savings requirements.

Environmental requirements and carbon reduction targets for new or altered assets have been incorporated into the functional requirements and have been cascaded to the HS2 Ltd supply chain.

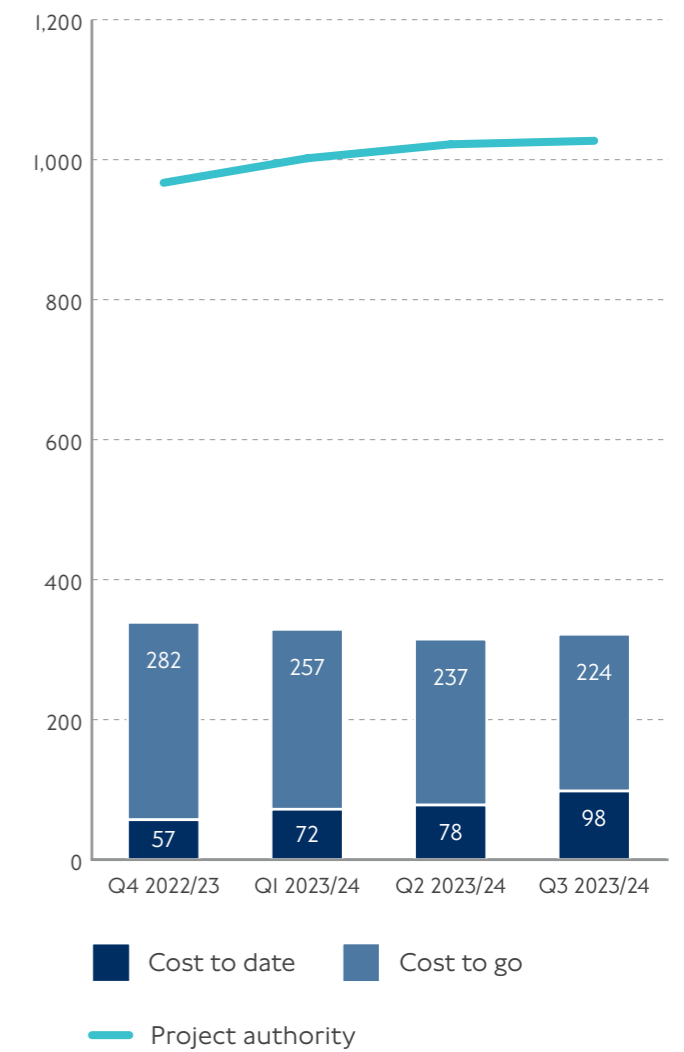
With the link to Euston now delayed further, Old Oak Common will become a temporary terminus for HS2 services for up to a decade. We have made the case to the Government to procure additional Class 345 Elizabeth line trains to ensure sufficient capacity for passengers coming from HS2 services to continue their journey into central London.

There has been some meaningful progress in relation to the provision of level boarding for Elizabeth line rolling stock at Old Oak Common, with the DfT providing support for HS2 to undertake additional design work to investigate the lowering of tracks. We continue to actively engage with HS2 and Network Rail on this proposal.

## Elephant & Castle

A new station entrance and Northern line ticket hall will support the creation of 5,000 new homes and 10,000 new jobs in the area around Elephant & Castle station. This new entrance will significantly increase the station's capacity to meet both existing and new demand for Tube services, as well as delivering vital step-free access to the Northern line platforms.

**Rail and station enhancements performance over time (£m)**





Procurement arrangements for the new tunnels continue to plan, with evaluation of tenders underway. Environmental requirements have been incorporated into tunnelling package contract documents and the contract is planned to be awarded in Quarter 2 2024/25. As a precursor to the main tunnelling works, the pre-tunnelling ancillary works made excellent progress and we achieved completion on time in early January 2024. These works allow the main contractor to focus on tunnelling activities, without the added complications of relocating services or needing to strengthen existing platforms.

All these works, plus the station box, are known as Stage 1 works and are fully third-party funded. Construction of the station box continues, with excavation to deep basement levels making progress. The developer is planning to handover the station box by Quarter 1 2025/26, as agreed.

Options have matured for the fit-out of the station box and tunnels, including bringing the new station entrance into use (known as Stage 2), and Stage 2 was included in the draft Business Plan approved on 22 December 2023.

#### **East London line enhancement programme**

Balfour Beatty has been appointed to deliver the signalling enhancement to the East London line funded by the Housing Infrastructure Fund, and the detailed design is complete. Following procurement of the necessary power infrastructure reinforcement, we have progressed the design elements of the work. We are also continuing to work on the necessary signalling upgrades, with a series of signal diversions completed successfully and wayside installations ongoing.

#### **Surrey Quays**

Our main contractor, Morgan Sindall Infrastructure, continues with the detailed design of the Surrey Quays station upgrade. The civils and architectural elements of the design have progressed, and we have completed establishing the offices and compound on site. Enabling works, including the diversion of utilities and railway systems both inside and outside the rail corridor, have begun and, where required, were safely completed ahead of the Christmas closure. Following a successful Christmas closure, which included changes to the existing platform 2 escape stairs and partially demolishing the existing platform 2, we have begun piling works.

#### **Tram replacement rolling stock**

Our rolling stock replacement programme will replace the life-expired Bombardier CR4000 trams, which are experiencing declining reliability and have one of the lowest states of good repair across our fleets.

Following a recent assurance review, a standard selection questionnaire was issued to the market on 3 January this year. Design development for the depot and power interventions are ongoing.

#### **DLR**

##### **DLR Thames Wharf**

Feasibility-level design and initial value engineering work has now concluded for a new station at Thames Wharf in line with the revised masterplan for the Thameside West development.

We are working with the GLA to build a funding package for the next stage of works, which includes completing concept level design. This funding package is likely to include contributions from TfL, the GLA and local developers.

#### **DLR Royal Docks**

The GLA-funded Royal Docks station programme is aligned with the emerging aspirations of the Royal Docks and Beckton Riverside Opportunity Area Planning Framework. This framework aims to improve accessibility and reduce congestion to enable an additional 3,000 homes to be built.

The programme has completed concept design for capacity enhancements at Pontoon Dock station, and we are working with the GLA and third parties to secure a full funding package for the delivery of the works.

#### **London Underground**

The London Underground enhancements and station developments project covers a range of improvements, mainly to stations and depots. We continue to improve stations by carrying out capacity upgrades and delivering projects that increase and improve accessibility and relieve congestion.

#### **Step-free access**

Design work has taken place at each of the eight identified stations to determine the feasibility of installing step-free access. Surveys are being undertaken and a single preferred option has been identified for each location. Initial build plans and cost estimates for each site are being finalised.

A review of Burnt Oak and Northolt stations, which were both in detailed design when they were paused during the pandemic, is ongoing. Updated costs, construction programmes and benefits projections are being produced to determine the viability of proceeding to the construction phase of these projects.

The preliminary study to identify opportunities for step-free access at the southern end of the Northern line continues. Stations are being scored in multiple categories to assess the difficulty and likely cost. An update will be provided later this year detailing the next steps.

We also continue to engage with local authorities, developers, and businesses in other areas of London to explore available options to introduce further step-free access to stations. Feasibility work at other stations could be progressed if investment is provided by these organisations.

#### **Waterloo – Elizabeth House**

We continue to finalise agreements to ensure step-free access to the Northern line platforms is secured before the redevelopment of Elizabeth House is completed. This would involve constructing lift shaft structures and connections to the northbound platforms to enable the future fitout of the lift shafts.

#### **Paddington – Bakerloo line**

We are working with a third-party developer to deliver a new step-free ticket hall at the Bakerloo line. Installation of cabling, services and finishes for the new ticket hall and step-free access areas continues.



### Colindale

Colindale is one of London's fastest-growing areas, and we are working to increase capacity and deliver step-free access at this station. This involves the reconstruction of the ticket hall above the tracks which will also enable the redevelopment of TfL-owned land for residential use. Following the announcement in January 2023 that the GLA was successful in provisionally securing funding from the Government's Levelling Up Fund, we submitted a detailed business case to the DfT in November 2023. This was approved at the DfT's Roads and Local Investment Committee on 14 December, which enabled us to let the primary construction contract on 18 December. Official main works started on site on 8 January 2024.

### Knightsbridge

The project is forecast to deliver step-free access from the new Hoopers Court entrance by May 2024, with three new lifts making the station step-free from street level to platform. Boarding ramps on both platforms will help customers to board Piccadilly line trains step-free.

### West Ham

We are working with a third-party developer, Berkeley Homes, to build a new ticket hall to serve the Twelve Trees Park housing development, comprising 3,847 units delivered in four phases. The main construction works associated with the new entrance started in summer 2022.

Progress in 2023 was slower than planned due to complexities in closing out several design matters which could only be addressed once Berkeley Homes appointed their principal contractor. Good progress

has now been made in resolving these and the superstructure works are expected to begin in January 2024. It is anticipated that the new ticket hall will open in September 2025, depending on the wider site works.

### Stratford

Construction works are under way for delivery of the urban realm and new southwestern station entrance. Following completion of the piling for the new entrance, work on the new entrance structure has begun along with works on transforming part of the operational parking area into a new urban area. We remain in close communication with funders of the scheme, London Legacy Development Corporation and London Borough of Newham, as the works proceed. The project is forecast to finish in March 2024. The project also continues to liaise with the Network Rail project to deliver a new customer lift connecting the Jubilee line concourse to the western subway.

### Leyton

This scheme involves the creation of a new ticket hall to provide increased capacity and step-free access by means of an overbridge and lifts. The works will support the many thousands of new dwellings being built in the area.

Following the announcement in January 2023 that the GLA was successful in provisionally securing funding from the Government's Levelling Up Fund, we submitted a detailed business case to the DfT in November 2023. This was approved at the DfT's Roads and Local Investment Committee on 14 December. Pre-construction surveys are under way, with the main site works programmed to begin in August 2024.



We are working to deliver step-free access at eight stations



# Safe and healthy streets

This programme brings together bus enhancement and healthy streets projects to create a single focus for investment in healthy streets and enhancements for bus users





# Safe and healthy streets

Forecast period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2025/26	244	436	680	588	(92)
<b>Change since last Investment programme report</b>					
No change	41	(41)	No change	(229)	

## Financial commentary

Our Safe and healthy streets programme continues in line with the funding settlement conditions agreed with government over the two-year period for 2022/23 and 2023/24. We will continue to provide funding to London boroughs for investment in their streets, although this is accounted for as operating expenditure. The total investment in active travel, across both operating and capital expenditure, is an average of £150m per year net of income across our Business Plan 2022/23 to 2025/26.

The Programme and Project Authority shown in the last report included authority for spend prior to financial year 2022/23. The updated authority covers financial year 2022/23 to financial year 2025/26 only to match the forecast period and only includes authority for those commitments we expect to make in Quarter 4 of financial year 2022/23 and early next year. The programme will return to the Programmes and Investment Committee to request further authority for the remainder of the financial years 2024/25 to 2025/26.

Investment in Quarter 3 was £41m, bringing spend to date this year to £114m, including efficiency savings of £5m. This compares to a year-to-date budget of £123m, with the shortfall due to slower than expected remobilisation of internal and external resources. We are closely monitoring our delivery and fully expect to meet our commitments.

## Performance over time commentary

Following the government funding settlement and the TfL Board agreement of the 2023 Business Plan, investment in Safe and healthy streets has continued to accelerate each quarter. This includes continued investment and commitment to deliver the walking and cycling, bus and Vision Zero action plans.

The paper to the December 2023 Committee meeting set out a request for an additional £42m of Programme and Project Authority to cover expected commitments to be entered into in Quarter 4 and next year and updated the authority to reflect the forecast period.

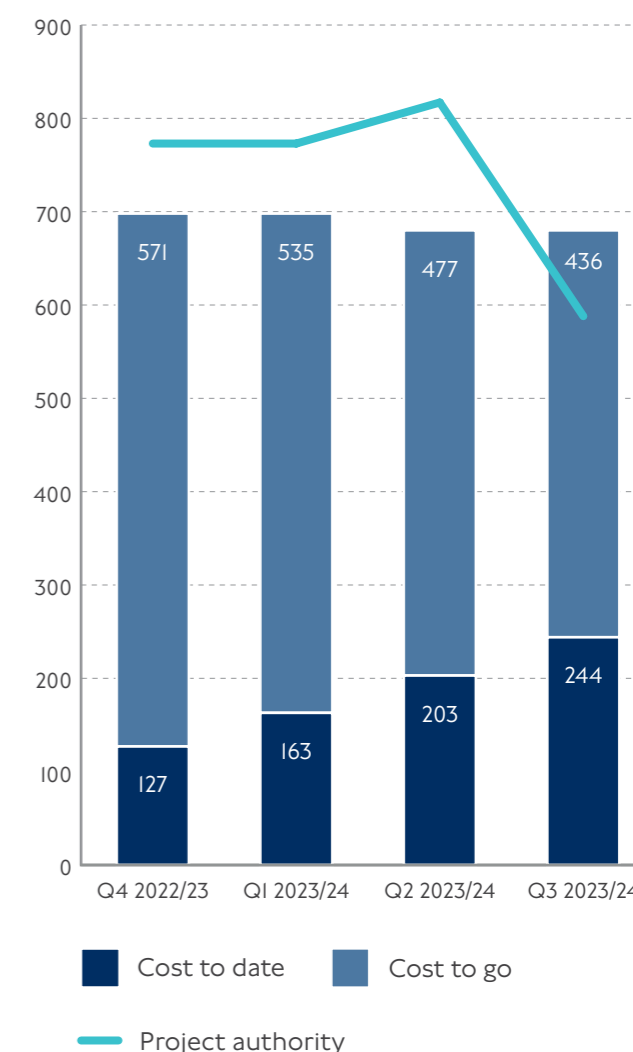
## Programme update

The Safe and healthy streets programme continues to reduce road danger in line with the Mayor's Vision Zero strategy, as well as making it easier to walk, cycle and travel by bus across London. It will also accelerate progress towards mode shift, decarbonisation, economic recovery and tackling health inequalities.

The programme has made strong progress against strategic targets for the year – exceeding the target for the cycling infrastructure kilometres and the Vision Zero target relating to lower speed limits by reducing the speed on 150km of our road network.

Some challenges have hampered progress on the Bus priority programme, largely relating to securing stakeholder support for reallocating road space from private vehicles to buses. Across TfL and the London boroughs, some post-pandemic mobilisation challenges persist – for example, in securing skilled project staff and coordinating the work associated with this programme and a backlog of utility company road space requests for maintenance. Nonetheless, we remain world-leading in our approach to creating healthy streets for London, and have successfully made permanent the majority of beneficial trial schemes which were delivered at pace during the pandemic.

## Safe and healthy streets performance over time (£m)





### **Old Street station and roundabout**

The Old Street roundabout project will bring safety improvements 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 Old Street Underground station and the shopping arcade.

Construction of the new London Underground main station entrance has continued and is scheduled for completion in March 2024.

Works have also continued on the surrounding peninsula area with final paving works and installation of new street furniture, trees and planting for the new public space. Two of the new pedestrian crossings onto the peninsula area were opened in October 2023, and the final crossing and the public space opened on 21 December 2023.

Construction of the new passenger and goods lifts have been completed ahead of testing for February 2024. Refurbishment continues of the subsurface concourse area with installation of new mechanical, electrical and communications equipment. Delivery and installation of new fire doors, security gates and shop fronts is progressing and is expected to be completed by April 2024.

Completion of all testing is now April 2024, with all handover and assurance completed by June 2024.

### **Cycling infrastructure**

#### **Cycleway 4 London Bridge to Greenwich**

The London Borough of Southwark is continuing to construct the temporary scheme for Lower Road between Rotherhithe roundabout and Surrey Quays Road, which will complete the final section of a protected cycling route between London Bridge and New Charlton. Works are expected to be completed by February 2024.

#### **Cycleway 9 East Kensington Olympia to Brentford**

The construction work for a new segregated cycleway between Kew Bridge and Watermans Park was completed in October and connects the area with Chiswick, Gunnersbury and Hammersmith. The next section, Watermans Park to Brentford Magistrates' Court, started on 23 October 2023 as planned.

#### **Cycleway 23 Lea Bridge to Dalston**

Construction of segregated cycleways around Lea Bridge roundabout is progressing well, with all kerbing, paving, resurfacing and lining of the cycleway completed and upgraded signals commissioned on 20 December 2023. Resurfacing of the carriageway around Lea Bridge roundabout began on 8 January 2024 and was completed on 26 January 2024. Construction of Lea Bridge Road started as planned on 24 July 2023 and is being delivered by the London Borough of Hackney.

#### **Cycleway 37 Mile End to Westferry Lane**

Work to deliver the permanent scheme at Mile End Road junction was due to begin in February 2023 but the London Borough of Tower Hamlets is seeking changes to elements of the proposals and consequently has not signed a section 8 agreement permitting the works. We have written to the London Borough of Tower Hamlets to highlight the importance of resolving any outstanding matters so this safety critical scheme can be delivered.

#### **Cycleway 50 Finsbury Park to Tottenham Hale**

Construction of the section on our roads from Caledonian Road to Finsbury Park was completed on 8 January 2024. Consultation and monitoring will then begin while the scheme is in operation.

### **Vision Zero**

#### **Lowering speed limits**

Lowering the speed of vehicles in London is key to reducing both the likelihood of a collision and the severity of the outcome. The second phase of the programme is underway aiming to provide a 20mph speed limit on 220km of our roads by May 2024, with 215km implemented to date.

This quarter, we introduced a 20mph speed limit on the A205 corridor in Greenwich and across TfL roads in the Royal Borough of Kensington and Chelsea as well as a new 30mph speed limit on the A4180 Ruislip Road in the borough of Ealing. We are nearing completion of works to lower the speed limit to 20mph on sections of roads in the boroughs of Greenwich, Lewisham, Lambeth, Southwark, Wandsworth and Merton. These came into operation on 18 December 2023.

Mounted banners on lamp columns have been installed across these corridors to help raise driver awareness of the new 20mph speed limit. A radio and digital advertising campaign ran from 18 September to 18 December 2023 to complement the changes.

Detailed design is under way to lower the speed limit to 20mph on selected roads in the boroughs of Greenwich, Newham, Wandsworth, Richmond, Sutton and Merton, and on the A312 Harlington Road in West Hounslow. A new 30mph speed limit is proposed on the A4 Great West Road in Hounslow. A new 40mph speed limit will also be introduced on the A406 North Circular Road in Enfield and Waltham Forest. These projects are scheduled for delivery by May 2024 and will complete phase two of our lowering speed limits programme.

Outcome definition work is taking place on identifying where complementary speed-reducing features such as green infrastructure, lane reallocation and raised crossing points can be installed to provide a self-enforcing speed limit where it has recently been introduced, in line with DfT guidance on setting speed limits.

#### **Safer Junctions programme**

We have made improvements at 44 out of 73 junctions identified as the most dangerous junctions on our roads, defined as those with some of the highest collision rates involving vulnerable road users. Construction work continues on the Holloway Road/Drayton Park safer junction scheme, which is on track to complete in Quarter 4 of 2023/24 financial year.





We are introducing a range of features to improve bus safety

Further design and survey work is continuing at pace on the Battersea Bridge safer junction scheme, with construction due to start in Quarter 3 of 2024/25 financial year, pending approvals, funding and coordination with other works on the network. We are continuing with design and planning work on the remaining safer junctions and are committed to public engagement on potential changes to 10 further locations by the end of 2024. We intend to start engagement on designs for Seven Sisters Road/Woodberry Grove and Cannon Street/King William Street by Quarter 2 of financial year 2024/25.

#### Pedestrian safety

Design work continues on more than 40 schemes across London, at locations where there is an identified road safety concern.

Construction was completed in early December at the junction of A205/ Lancaster Avenue in Lambeth, improving a pedestrian crossing and reducing vehicle speeds. Construction of a new pedestrian crossing in Grosvenor Place in Westminster began in early January 2024. Construction also started in November 2023 on a new pedestrian crossing on Cavendish Road in Clapham.

Across 2024/25, we plan to deliver pedestrian safety improvements at a number of locations, including King's Cross, the A23 in Lambeth, Redcliffe Gardens in Kensington and Chelsea, and the A5 Edgware Road in Westminster.

#### Bus priority

We continue delivery of new bus lanes, contributing to a target of 10km by the end of March 2024. To date, 5.4km has been delivered on borough and TfL roads. More bus lane schemes are planned for delivery in Quarter 4. Signal timing reviews have been completed at a total of 806 sites to provide additional priority for buses, well exceeding the target of 700 for the year. Two-thirds of buses in London approaching traffic signals either arrive on a green signal or receive some form of bus priority.

More than £10m of funding has been allocated to London boroughs to deliver enhanced bus priority on their local road networks. As well as new bus lanes, this investment will deliver other bus priority features such as new bus gates, the removal of pinch-points and changes to the operating hours of bus lanes. The London Borough of Newham is continuing to construct a scheme that will provide 700m of new bus infrastructure, with further significant bus lane delivery planned in the boroughs of Brent, Enfield and Hounslow in Quarter 4 2023/24. Barking & Dagenham Council recently completed more than 200m of new bus lane at Wood Lane.

We have identified a suite of activities to improve bus priority across the 10 Superloop routes. Improvements include traffic signal upgrades, new and improved bus lanes, and removing pinch-points. In some locations, a holistic corridor-based investigation is being progressed to focus on end-to-end bus priority. Signal timing reviews have already been reprioritised to include Superloop corridors.



## Transformational schemes

### Catford town centre

We continue to work with Lewisham Council to support their ambition to create a greener town centre for Catford, ensuring it is a pleasant place to live, work and visit, and improve transport in the area. Following the public consultation, we published our response to issues raised at the end of November, outlining our intention to proceed with the scheme, subject to approvals and funding. The concept design is progressing well, and we submitted a planning application for the scheme on 19 December 2023.

To fund this scheme, we are applying for finance through the DfT's Major Road Network fund and the business case is being considered at the DfT Roads Investment Committee in February 2024, ahead of ministerial and HM Treasury review in Quarter 1 2024/25.

### Lambeth Bridge

We are continuing to develop the detailed design to improve safety and security at Lambeth Bridge, which is one of the three most dangerous junctions in London for cycling. We received funding from the Programmes and Investment Committee in October 2023 to undertake construction works from 2024/25. We relocated the palm tree from Lambeth Bridge northern junction into Churchill Gardens in December 2023 and are working with utility companies with the aim of starting works prior to the main construction works. The design is progressing as planned and we aim to complete this by Quarter 1 2024/25 and start the main construction works from Quarter 2 2024/25.

### Nine Elms highway scheme

We continue to work with Wandsworth Council to bring forward improved cycling, walking and public transport for existing and new residents, businesses and visitors to the Vauxhall Nine Elms Battersea opportunity area. The design for the eastern section from Vauxhall to Duchess Bridge is complete and, subject to approvals and funding, we will start construction in Quarter 4. In parallel we will progress with the design of the western section from Duchess Bridge to McDuff Road.

### Borough funding

We support boroughs to deliver a range of healthy streets improvements on local roads and have allocated £78.9m funding for delivery in 2023/24. Boroughs are currently working on around 600 Healthy Streets schemes funded from the Safer corridor and neighbourhoods programme. These include walking, bus priority, cycling and safety schemes delivering a range of active travel benefits on borough roads.

### Bus safety

We published our Bus safety strategy on 7 September 2023, setting out our vision for a safe and attractive bus network and aim to ensure that nobody is injured or killed on our bus network by 2041. We have successfully reached the milestone of having more than 1,000 buses in London's fleet, meeting the Bus Safety Standard, and we are continuing to make good progress with retrofitting technology onto the fleet.

We are now introducing several safety features from the Bus Safety Standard onto vehicles that entered the fleet before the safety features were mandatory, but which still have a substantial number of years of London service ahead. This will deliver safety benefits that were not available at the point of manufacture. These upgrades include intelligent speed assistance, which automatically restricts bus speeds to local limits, and a camera monitoring system, which replaces mirrors with high-performance cameras to improve driver visibility and reduce blind spots. Fatigue-detection technology is also being fitted in a widescale trial.

### Bus customer action plan

We published our Bus action plan in March 2022, which outlines how we will build and broaden the appeal of the bus service. This includes delivering a step-change in customers' perceptions and experiences of bus travel, which can be achieved through offering better information and meeting expectations of a modern and comfortable experience at bus stops and on buses.

In 2022 we launched a package of co-ordinated enhancements to customer features, both on the buses and along 18 stops on Route 63 between King's Cross and Honor Oak.

We delivered a new fleet of 29 electric buses with enhanced customer features. These features include a skylight, high-backed seating, USB charging and phone holders, a new moquette to help mark out priority seats, wood-effect flooring, stop-buttons on the back of seats, and enhanced on-bus customer information screens.

Trials are also underway on new types of digital information screens at 18 stops. New digital colour displays within bus shelters give customers the same live bus arrival information that is offered on London's traditional dot matrix countdown signs, alongside a variety of other live mapping and travel information such as disruptions and diversions.

We are currently developing our plans for the next stage of this work and will be establishing targets and milestones in the coming periods.



# Environment

This programme comprises environmental projects and includes the new green project pipeline that is being developed





# Environment

Forecast period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2025/26	328	249	577	1,013	436

Change since last Investment programme report					
No change	101	(119)	(18)	59	

## Financial commentary

The forecast cost has reduced overall by £18m since the last quarter. This is driven largely by a re-baselining of the forecast as projects mature and we have a better understanding of our likely costs reducing risk provisions predominately in the Tunnel user charging and Detroit projects.

Programme and Project Authority covers spend outside the EFC window of 2022/23 to 2025/26.

## Performance over time commentary

A paper was approved during the quarter to grant the portfolio a further £59m of Programme and Project Authority to provide additional support to Londoners through the scrappage scheme in 2023.

We have seen a reduction in forecast spend, owing to efficiencies surrounding road user charging schemes and reduced risk provisions on existing schemes as we mitigate risks.

## London-wide Ultra Low Emission Zone\*

On 29 August 2023, the Ultra Low Emission Zone (ULEZ) expanded to cover all London boroughs. A report published on 31 October 2023 showed that vehicle compliance in outer London has increased by 10 per cent, from 85 per cent when the Mayor announced the consultation for the proposed expansion in May 2022, to 95 per cent. In addition, the number of non-compliant vehicles seen driving in London on an average day has decreased by 77,000 compared to June 2023, a reduction of 45 per cent.

Since 30 January 2023, the largest vehicle scrappage and support scheme of its kind in the UK has been available to assist Londoners with adapting their non-compliant vehicles. Up to 19 November 2023, more than 40,000 applications had been approved, which equates to nearly £140 million of support for eligible Londoners.

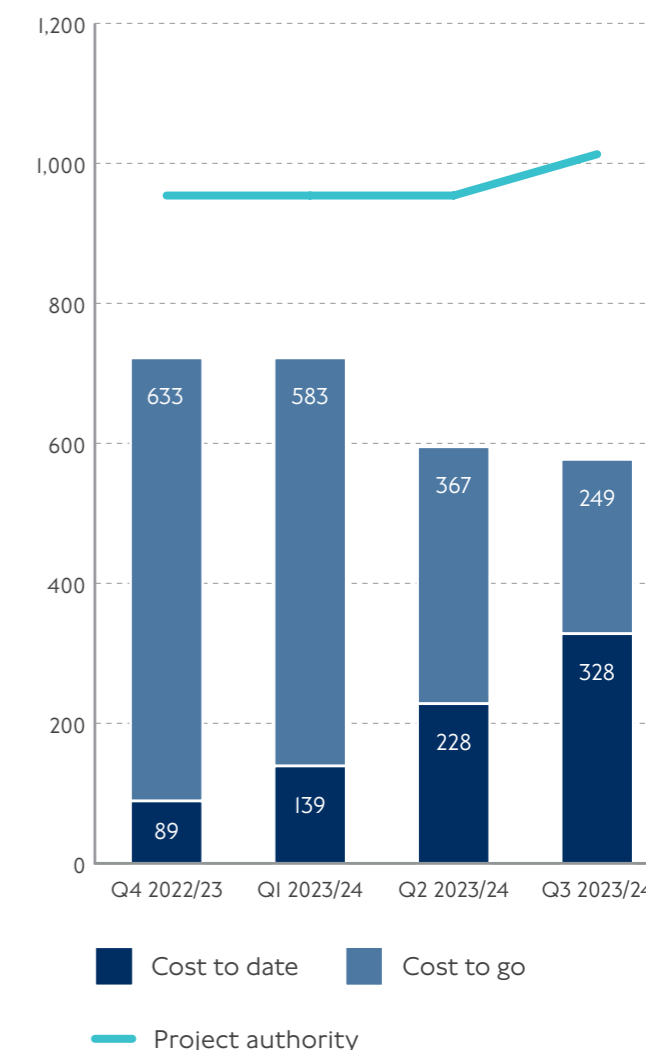
The London-wide information campaign, launched in January 2023 to raise awareness of the ULEZ expansion, has continued past the launch date, encouraging Londoners to check their vehicle and emphasising the health benefits of the scheme. We are also continuing to work with stakeholders, including London boroughs and home counties, MPs and London Assembly members, businesses, community groups and organisations representing disabled people, as well as a wide range of other Londoners to raise awareness of the ULEZ expansion and the scrappage scheme.

We have installed an extensive camera network to support the effective operation of the scheme. Up to 18 December 2023, we had installed 2,261 new cameras, with a total of more than 3,500 cameras enforcing road user charging schemes in London. We have also installed 2,579 signs, of which 940 are boundary signs.

Unfortunately, there have been a significant number of incidents of vandalism on ULEZ cameras and signs. All incidents are reported to the police. A number of individuals have been arrested and charged, and one convicted. We are working closely with our contractors and the police. Where necessary, cameras are repaired or replaced.

\* This includes other road user charging schemes

## Environment performance over time (£m)





### **Direct Vision Standard phase two**

Since March 2021, all heavy goods vehicles (HGVs) over 12 tonnes are required to obtain a safety permit to operate in London as part of the London HGV safety permit scheme. This scheme contributes to the Mayor's Vision Zero strategy by improving HGV drivers' visibility, thereby reducing the risks HGVs present to vulnerable road users. It is run in partnership with the boroughs through London Councils. Vehicles that do not meet the minimum one star on the Direct Vision Standard rating, introduced in 2019, are required to fit additional 'safe system' measures to the vehicle. Since March 2021, the scheme has been enforced by a penalty charge notice.

From 29 October 2024, the minimum rating to operate without fitting additional safety measures goes up to three stars. A consultation ran between 14 February and 3 April 2023 seeking views on the proposed progressive safe system (PSS), which enhances the current system to reflect technological development since it was originally designed. London Councils approved this and other scheme changes in June 2023, and operator guidance and specifications for the PSS were published on 4 September 2023.

These changes will build on safety improvements from the current scheme, which saw the number of fatal collisions where vision is a contributing factor fall by 75 per cent from 2018 to 2023 (from 12 to three).

### **Electric vehicle infrastructure delivery**

London is expected to need between 40,000 and 60,000 electric vehicle charging points by 2030, including up to 4,000 rapid chargers. Estimates show that a quarter of these could be accommodated on public sector land. This infrastructure could help support a reduction of carbon dioxide emissions of between 1.5 and 2.6 million tonnes per year. The Mayor has committed to supporting the continued rollout of charging points alongside the private sector, to help meet exponential growth in demand and contribute towards achieving a net zero carbon London by 2030.

The first tranche of our electric vehicle infrastructure delivery programme will provide rapid and ultra-rapid charging points across 100 parking bays on our roads. Charge-point operator Zest was contracted for an initial batch of 39 charging bays across 24 sites in May 2023, and two further batches of 25 sites in November 2023.

We have completed a preliminary assessment of more than 2,400 sites across the GLA estate which has allowed us to accelerate the release of further batches to the market. In addition, we have reviewed current assessment criteria to bring forward new sites across our land and wider GLA land. We have also initiated a second tranche of delivery, to identify a pipeline of sites to be delivered on both our own and GLA Group member land.

In addition to the rollout of rapid electric vehicle charging points, the Office for Zero Emission Vehicles has recently announced that London will receive almost £39m of

funding through the DfT's Local Electric Vehicle Infrastructure fund. This will primarily be used to accelerate the delivery of low-powered charging infrastructure on borough highways. This includes residents without access to off-street parking, and builds on the 400 fast-charging points that will be delivered by London boroughs by March 2024 using £9.7m of the Local Electric Vehicle Infrastructure pilot funding and additional borough delivery funded by the Government's on-street residential charge point scheme.

### **Zero-emission bus fleet**

Since reaching the milestone of 1,000 zero-emission buses in August 2023, we now have more than 1,300 in the fleet and are progressively adding to this total. Our target is to reach 1,400 by the end of this financial year.

The 1000-bus milestone was marked by a Mayoral launch in August 2023 at Edgware bus garage, showcasing a wrapped electric bus operated by Metroline. We also celebrated the introduction of more than 80 new zero-emission buses in Sutton on routes 80, 93, 154, 164 and 213. This large addition to Sutton's fleet means that more than half of the journeys taken by bus in Sutton are now via zero-emission buses, thereby further improving local air quality.

Currently, 14 per cent of our bus fleet operates with zero-emission buses, including hydrogen, battery electric and opportunity charged electric buses. This progress is key as it contributes to our wider ambition to transform TfL to become the strong, green heartbeat of London.

Work continues on the route 358 electric opportunity charging trial, which is expected to go live in the coming months. Once completed, the trial will use pantograph charging infrastructure at either end of the bus route in Bromley, one of the longest routes in the bus network, alongside the introduction of 20 new single-deck electric buses with enhanced customer and safety features.

We are currently on track to transition to a fully zero-emission bus fleet by 2034. With additional government funding, this target could be achieved by 2030.

Since 2016, the number of fully zero-emission bus routes has increased from five to more than 60, with around a further 15 routes using a mixture of zero-emission and low-emission buses. The number of zero-emission buses on London's roads has increased by more than 3,000 per cent since 2016, growing from 30 buses to more than 1,300 buses.

Zero-emission buses help Londoners breathe cleaner air and further contribute to the decarbonisation of the transport network, which is crucial to our work to meet the Mayor's mission for London to be a net zero carbon city by 2030. Through the decarbonisation of London's bus network, we will save an estimated 4.8m tonnes of carbon by 2034 or an estimated 5.5m tonnes of carbon by 2030 with government funding.





All new buses in our fleet meet the latest safety standards

Our zero-emission bus fleet is the largest in western Europe and has the lowest carbon dioxide emissions per passenger kilometres compared to other global cities such as New York, Paris and Vancouver. All new buses joining the fleet will have enhanced customer features, such as improved flooring, seating, lighting and customer information, and will meet the industry-leading Bus Safety Standard.

In addition to this, the investment in zero-emission buses supports around 3,000 jobs across the UK, in locations such as Ballymena, Falkirk and Yorkshire. By creating capacity and certainty for a wider zero-emission bus market, this investment is paving the way for green national economic growth. Our funding pipeline for zero-emission buses also lowers costs for other local authorities by creating economies of scale.

#### **Waste heat**

Waste heat from London Underground ventilation shafts is a constant and reliable source of energy. Much of it is simply released into London's air. This project will capture thermal energy from the ventilated air to feed to local users, powering heating and hot water in nearby buildings.

Feasibility studies have been conducted for six ventilation shafts, to explore the scale of opportunity. This project could contribute to serving thousands of residential premises, plus commercial and public buildings such as schools. The proposed supply of waste heat would reduce a requirement for gas combustion and could therefore be associated with improved air quality through a decrease in carbon emissions.

Current activity is focused on accelerating the delivery of an initial ventilation shaft site, and to identify an appropriate energy supplier. Following their appointment and design work at this first location, work will continue to identify future waste heat opportunities across our estate. Other sites for harnessing heat, including pumped water systems, are being explored across the London Underground network. We also continue to receive considerable interest from the market at a variety of locations.

A significant project milestone was achieved on 16 November, with a preferred delivery and commercial approach confirmed for the first site. Market engagement continues and will be used to finalise the procurement strategy and compile a delivery schedule. Plans for a longer-term delivery strategy are under way.



### **Solar private wire**

As London's single largest consumer of electricity, it is our responsibility to identify and utilise renewable energy sources.

The Solar private wire project presents an opportunity to directly receive zero-carbon (solar-generated) electricity from decentralised sources, bypassing the national grid and distribution network operators and associated charges. This has the twin benefits of guaranteeing renewable energy, while also offering financial savings.

Initial investigations suggest our power network can accommodate 64 megawatts of renewable energy, equivalent to five per cent of the annual load.

The intention is for a solar collaborator to carry out detailed project identification, design and delivery. We would ultimately purchase the energy to assist with powering the London Underground network. We are on track to conduct a tendering exercise from early 2024 and once a contract is secured with a preferred delivery partner, work will begin on baselining a design and delivery schedule across a variety of proposed sites.

### **Buildings decarbonisation**

We are one of London's largest landowners, with roughly 6,000 registered structures of a wide variety of building types across our estate. These include stations, depots, river piers, head offices and approximately 3,000 rental properties and housing developments. We are also the single largest energy consumer in London (with electricity consumption equivalent to roughly 457,000 homes).

Emissions from our buildings represent around 11 to 12 per cent of our total operational carbon emissions. Due to the high number of fossil fuels being used (mainly for heating systems), these will be reduced less by grid decarbonisation than other operational emissions areas. The heat decarbonisation programme has been created to prioritise the removal of fossil fuel heating systems.

The strategic objective of the programme stems from our Corporate environment plan, published in 2021. This states our ambition to achieve net zero carbon across all operations, including head office buildings, by 2030.

Desktop modelling of decarbonisation initiatives was produced as part of a deep-dive report completed in 2022. This study focused on our buildings estate to create a carbon baseline for our entire property portfolio and assessed the potential costs, benefits and business case of a package of decarbonisation interventions rolled out at many sites across the network. Following the report, further studies were completed at eight priority locations.

Work is currently under way to progress these initial feasibility studies and to complete studies for a further 14 sites. A further round of prioritisation will take place after that, to inform a delivery schedule that maximises value for money. It is our intention to create a rolling programme of heat decarbonisation projects that replace fossil fuel heating systems with low carbon alternatives.

Some funding has been secured to support delivery from 2023/24 to 2026/27. However, additional third-party funding will be required to enable delivery of this programme. Grant funding has been secured through the Public Sector Decarbonisation scheme and a second bid for funding was submitted in November 2023. The outcome of this bid will be known at the end of Quarter 4 2023/24. If successful, this will accelerate delivery of heat decarbonisation projects at three priority sites by March 2026.

The programme achieved a significant milestone on 20 December 2023, where requirements were confirmed.



# Technology

This programme comprises two technology programmes, Operations technology and Technology and data, with a small number of new rail and sponsored-services technology projects





# Technology

Forecast period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2025/26	313	546	859	783	(76)

Change since last Investment programme report					
No change	49	(91)	(42)	(299)	

## Financial commentary

The £76m forecast versus authority is due to the Programmes and Investment Committee's approval of Programme and Project Authority in July 2023 only covering commitments for the financial year 2025/26.

We are putting a request to this Committee meeting (February), to cover all Programme and Project Authority required for financial year 2025/26.

The forecast reduction of £42m since the last quarter reflects reductions in the current and last financial year as part of business planning, £39m of which is for Operations technology projects.

## Performance over time commentary

The Programme and Project Authority shown in the Quarter 2 report included £217m prior to financial year 2022/23 and £82m after financial year 2025/26. The updated authority covers financial year 2022/23 to financial year 2025/26 only, to match the forecast period.

Projects with the highest spend in the last quarter include the Connectivity asset renewal programme, Project Hina (a project to replace ticket reader technology for buses to aid revenue collection), London Underground station security integration, Project Oval (DfT initiative to expand the acceptance of contactless pay as you go to suburban rail services across south-east England), station WiFi rollout, deployable enforcement cameras, surface data network transformation and the Performance assurance fund.

## Operations technology Enforcement, compliance, safety and security

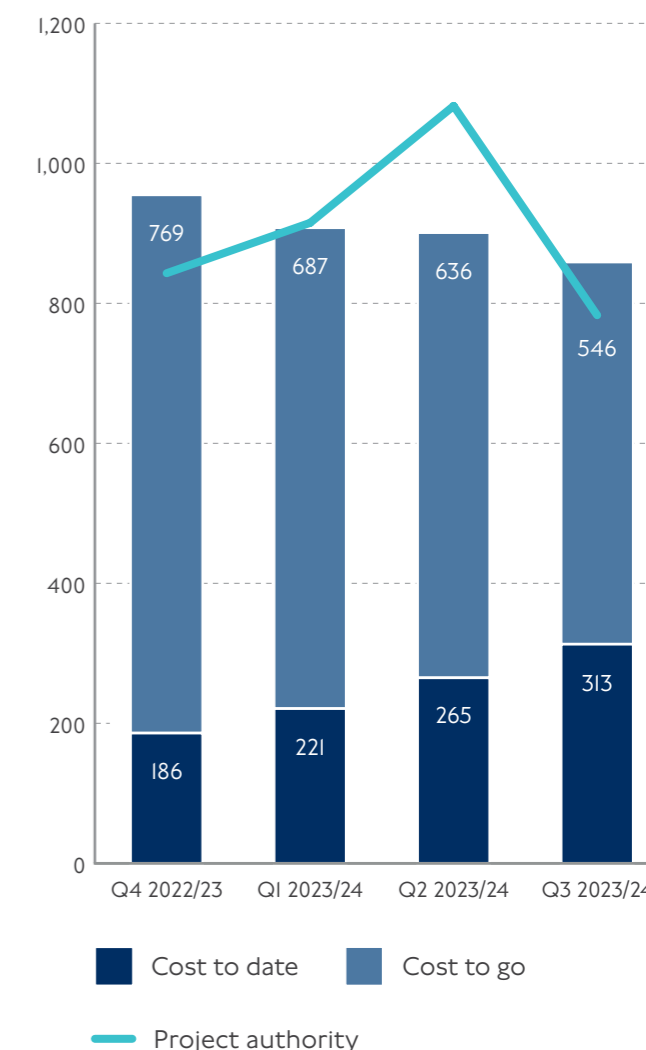
Work continues on the rollout of deployable enforcement cameras on our road network, enabling us to target specific safety and non-compliance hotspots and make a significant contribution to meeting our Vision Zero goal. They are currently operational at 43 high-priority locations. We have identified sites for a second phase of cameras to be installed in 2023/24 and are well underway with this year's delivery

programme. We are constantly reviewing our approach to ensure that site selection maximises safety and public transport benefits. Any money recovered from penalty charge notices will be reinvested in maintaining a safe and efficient road network for everyone travelling in London. The cameras are used for enforcement of civil traffic rules only and are fully compliant with data protection legislation.

On average, we manage 10,000 cases of work-related violence and aggression every year. As part of delivering the work-related violence and aggression strategy, the operational employee safety programme has rolled out an additional 700 body-worn video cameras since September to employees most at risk. In total, we have rolled out 6,200 body-worn video cameras and they are now part of essential equipment. Significant progress has been made to distribute 300 emergency communication devices by the end of 2023.

As part of the Station security technology improvement programme, we have started the design of critical incident management functionality for 40 stations. The delivery of this functionality in 2024 will enable us to manage these stations during a critical incident and other key events. We are rolling out safety improvements to our CCTV estate and we can now remotely view CCTV at a further seven stations. We are also improving passenger help points, making sure emergency calls are handled promptly by those best able to help. We have prioritised improvements at 15 stations initially, with further improvements planned in 2024.

## Technology performance over time (£m)





### Network and public transport management

We are delivering innovative new road management systems which will reduce delay, improve journey times and encourage a shift to more sustainable modes of transport.

For the common operating view incident management system, we are working to complete the final two releases by the end of 2023/24, which will enable more effective and efficient management of the road network and incidents through an integrated interface to the variable message signs on the street.

Delivery of the real-time optimiser system is now in the final stages of testing prior to the system going live in Quarter 4 2023/24. This will optimise traffic signals and respond to multiple modes of traffic, improving network performance. Further enhancements to the system are planned for 2024.

The requirements for video analytics have been captured and an options assessment phase is now in progress. This will be followed by the procurement phase starting in financial year 2024/25. This project will provide full real-time modal count data for all modes, enabling us to make data-led intelligent network management decisions.

We are maintaining and developing technology to operate our public transport networks and improve the customer experience. This includes upgrading the critical technology systems that underpin the bus network, such as the iBus system which provides real-time information on bus locations.

At its meeting on 6 December 2023, the Programmes and Investment Committee granted procurement authority for the iBus 2 project. The contract finalisations process is underway, with the contract award notice expected in February 2024.

Procurement has progressed for the new Countdown 3 system, where the past few months have focused on the evaluation of suppliers and business case development to appraise the best option ahead of contract award in July 2024.

The replacement booking and scheduling system for Dial-a-Ride was launched in November 2023, giving customers the option to book online and enabling us to deliver more trips with the same number of vehicles.

### Cycling and micromobility

Procurement is ongoing for a new operating contract for the Santander Cycles scheme, as the existing contracts expire from 2025. The procurement is due to complete in 2024.

More member hires took place in calendar year 2023 than at the same point in any previous year, meaning we're on track to have a record year. In total, more than 6.4m member hires have taken place already this year. More than 700,000 hires have also now taken place on e-bikes.

The London e-scooter rental trial has been operating since June 2021, with 10 participating London boroughs. For the period ending 22 October 2023, more than 3.1 million e-scooter trips have been taken as part of the trial. Following the extension of UK-wide e-scooter trials by the DfT, the next phase of the London trial with suppliers Dott, Lime and Voi began on 25 September 2023. This phase will ensure we continue to learn about e-scooters and their role in London's transport network. It will also present opportunities for operators to test new onboard safety technologies, including pavement-riding detection, tandem-riding detection and acoustic vehicle alerts.

### Connectivity

We awarded a contract in November 2023 that will renew essential communications infrastructure on London Underground prior to obsolescence. This work will ensure that critical information like signalling, CCTV and radio continues to be transmitted, facilitating continued operation of the London Underground network. As it rationalises multiple existing systems, it will be cheaper to operate and reduce our carbon footprint. In 2024, we plan to begin feasibility work on extending this network.

### Digital asset management

We are continuing to consolidate our asset management systems into a single platform to better manage the performance of our key operational assets across London Underground and improve delivery of critical maintenance works. The migration of our asset information to the new system is due to complete in April 2024.

We are also fully digitising asset management capabilities across our estate in order to manage our assets more efficiently. This will also allow us to introduce next-generation tools to support our decision-making, such as an asset investment decision support system, to help us to make strategic investment decisions in a consistent, transparent and evidence-based way.

### Tools for planning, automation and staff

We are preparing to replace devices for employees as well as renewing the system used to manage access to the London Underground network during engineering hours. More than 4,000 people per night work on the network, and ensuring access is appropriately controlled and managed is critical to their safety.



## Technology and data

### Payments

On 13 November 2023, we introduced changes to our online payment services for Oyster to allow many non-UK cards to be accepted for the first time. This change will make it easier for visitors to top up their Oyster card via our website and mobile app.

### Digital workplace

We continue to focus on Our future desktop (successor to Windows 10) and have awarded a contract to Specialist Computer Centres Ltd to assist with the technical and service design collateral. We have also purchased 1,440 laptops which will be used to refresh laptops across the organisation to ensure they are Windows 11 compatible and meet our baseline specifications.

To assist with embedding persona-led technology and service offerings, we have awarded a contract to Nomensa that will establish initial personas (and potential offerings) through a series of interviews and workshops with a subset of frontline and field colleagues.

We have completed our first targeted printer refresh and consolidation across our head office buildings, replacing end-of-life devices with efficient multi-functional devices. The reduction in print devices reflects both the reduced footfall in our offices and also the reduced print demand due to greater environmental awareness and the increased availability of alternative technology options.

### Networks

Work to extend mobile coverage on the Tube has continued this quarter, with the first four Elizabeth line stations. Uninterrupted 4G and 5G coverage will be rolled out to all underground ticket halls, platforms and tunnels on the Tube and Elizabeth line networks, of which 80 per cent will be connected by the end of 2024.

Our project to replace the end-of-life data network services that underpin virtually all surface services continues to progress. To date, we have migrated 4,433 of 4,596 (96 per cent) sites to the new network delivered by Capita. Of the migrated sites, 49 are currently operating on an interim 4G-based solution.

### Technology services operations

As a central part of the GLA family we are undertaking several initiatives, termed IT shared services (ITSS), that will see TfL assume responsibility for agreed IT systems and services across the GLA family. We recently rolled out our IT services and devices to a pilot group in the GLA, the Mayor's Office for Policing and Crime and the Old Oak and Park Royal Development Corporation. We are gathering useful data from them to support the wider roll out in 2024.

Similarly, the ITSS initiative with London Legacy Development Corporation (LLDC) continues, with the detailed planning phase due to complete in the next quarter. We expect to have assumed responsibility for LLDC IT shared services by March 2025.



A unified system will help us manage operations across London



The reseller framework project has started the first phase of the procurement process which will facilitate the continued delivery of a compliant and competitive route to market for commonly used IT products and services. We are working to award a new reseller framework by September 2024 and provide a new IT product catalogue in 2025.

#### Enterprise resource planning

The replacement of the expiring SAP HR system continues, although we need to defer the launch from April 2024 to October 2024 to accommodate London Underground pay award changes in the April payroll and to overcome elements of customisation to our salary data that go back 20 years.

For our core SAP ERP system and its upgrade to SAP S/4 HANA, we are on track for our first major milestone to issue the market tender in March 2024.

The Operational workforce management project is now fully underway with design and build activities, and the supplier, UKG, brought on board. The next major business milestone is the launch of UKG workforce dimensions for the rostering and scheduling of compliance, policing on streets, London Underground revenue control and bus operations colleagues in March 2025 as part of phase I. This will be preceded by a working pilot from October 2024 to ensure operational readiness. Phases 2 and 3 will then look to deploy the solution across the majority of operational teams in 2026.

#### Contact centre operations

Contracts have been awarded to Journeycall and Marston Holdings for the contactless payment card contact handling service. The service is scheduled to be transitioned from the incumbent between February and May 2024. The first transition is 40 per cent of calls to Journeycall in February, followed by the remainder of calls to Marstons in March. All correspondence is expected to transfer in April.

The street faults re-tender has concluded and the contract was awarded to the incumbent, My Society, in September 2023.

Responses for the re-tender of the interactive voice response contract have been received and are being evaluated ahead of a contract award in June 2024.

#### Data analytics

We recently concluded a series of data maturity assessments across the organisation, using the government model as a framework. Some common themes have emerged in terms areas of strength and areas that we will prioritise as we articulate our vision for data and develop our strategy roadmap. We have set the direction and vision for data, co-curated our data principles, and have begun evaluating a selection of initiatives which align with key strategic priorities, demonstrate early value and address maturity pain-points. Our draft data strategy went live on 5 January 2024, and we are targeting the end of the financial year for the draft to be submitted for TfL endorsement, allowing time for engagement with the Executive leadership team.

Our safety, health and environment data storage solution is undergoing user acceptance testing, giving users hands-on experience with the new data platform. Our irregular travel analysis platform, which tracks fare evasion and where it occurs more frequently, continues to be re-platformed to production following successful prototypes. This offers users greater confidence in the overall quality of the data and an improved formal support wrapper.

#### Digital

The TfL Go app has now been downloaded more than 5.5 million times and was used by more than 837,000 customers in December 2023. Further app updates have been released in response to customer feedback. These include making it easier to set your location when planning a journey rather than always defaulting to your current location.

We have made further progress on the integration of payments into TfL Go. However, concurrent work on the backend mobile payments API must be completed before we can launch to the public. This will now be later in 2024.

Plans to augment our back-end delivery capability will now begin following business plan approval in December 2023. Once work starts, this will help accelerate delivery in line with business ambition.

#### Technology challenges

Global semi-conductor supply issues have distorted our delivery due to long lead times and pricing that increases at short notice. Though the worst of this is now behind us, it has impacted our ability to procure and implement new IT infrastructure and has increased project costs. We now have mitigations in place for our pipeline and live projects. However, we are still exposed to risk on ad hoc projects, small works, or short-notice changes, including emergency works.

Resourcing continues to be a challenge, with numerous campaigns unable to fill all required vacancies. This issue is most notable for senior or specialist roles. There is a similar challenge in our customer community, with business engagement in projects an ongoing challenge due to business-as-usual operational demands which must take priority. There are issues with supplier resource which have affected delivery this year, however there are signs that the resource pressures in the supply chain are starting to ease.



# Street, bus and rail-sponsored service renewals

This programme groups together renewals of Streets, Buses, River Services, London Overground, DLR and London Trams. These programmes share a common approach to work-bank management and by joining together associated activities such as bus-focused renewals this offers improved investment prioritisation and efficiencies





# Street, bus and rail-sponsored service renewals

Forecast period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2025/26	302	454	756	1,137	381

Change since last Investment programme report					
No change	61	(53)	8	No change	

## Financial commentary

In May 2023, the Programmes and Investment Committee endorsed the creation of the Street, bus and rail-sponsored services programme. This new programme includes renewal projects previously reported in the Surface assets and Public transport portfolios. This consolidation of projects gives a single focus to maintain a good state of repair on the surface transport network.

There have been minor movements since the previous quarter, with the forecast having been updated to reflect the value of prioritised scope identified through the asset strategy prioritisation exercise that was completed across the business planning period.

## Performance over time commentary

Forecast over the last four quarters has been stable. The Quarter 3 forecast reflects minor movements to prioritised scope.

## Programme update

The programme brings together renewals that were split across our Surface assets and Public transport programmes. These programmes share a common approach to workbank management and through joining together associated activities, such as bus-focused renewals, improved investment prioritisation and efficiencies can be applied. The Surface assets programme consists of a capital programme, surface operations assets, surface major assets and Local Implementation Plan Bridges and Roads. The remainder of the portfolio consists of renewals as bus, rail and sponsored services renewals, and supports investment needed to maintain the safety, performance and reliability of the DLR, London Trams, London Overground, cable car, cycle hire, new Routemaster buses and Woolwich Ferry.

Delivery in 2023/24 is on track to achieve the planned outputs and benefits, therefore mitigating asset risk. However, the level of planned investment is significantly below that required (up to 50 per cent lower on some asset types) to remove the backlog of renewals and maintain service levels. Planning work for 2024/25 is underway but, due to constrained budgets, several projects will need to be deferred. Securing third-party funding, for example through the DfT's Major Road Network programme, is therefore essential to mitigate asset risks.

## Streets

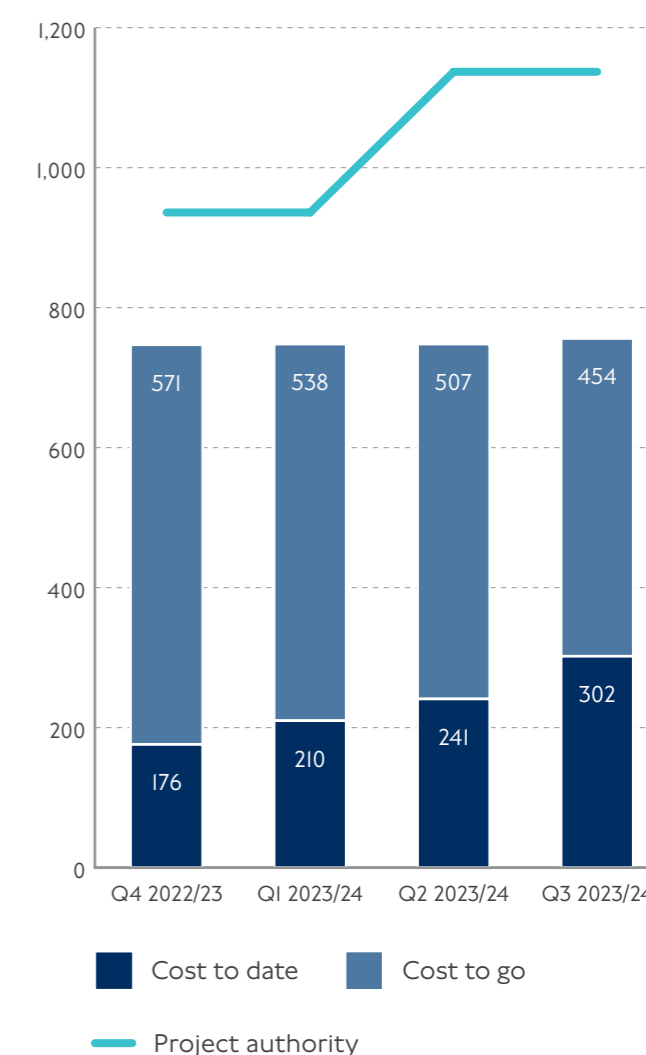
### Blackwall Tunnel southbound

This project aims to renew critical systems that support tunnel operation, including lighting, concrete repairs and CCTV. Following detailed modelling assessments, we have selected a preferred construction option: a series of weekend and night closures to minimise impacts on people and goods needing to cross the river. We appointed Tarmac Kier JV as design and build contractor in April 2023 and plan to complete the design work by September 2024 with delivery timescales subject to budgets and value for money.

### Gallows Corner

The Gallows Corner flyover in Romford is one of our highest-priority assets for renewal due to its age, condition and the current restrictions in place. Following the completion of feasibility work, we have selected a preferred option to fully refurbish and strengthen the flyover which has 30 per cent of the scheme carbon compared to the alternative of a full replacement.

Street, bus and rail-sponsored service renewals performance over time (£m)



EFC reflects forecast starting 2022/23 vs authority which includes legacy Public Transport portfolio starting 2017/18



The concept design using the existing foundations to support the new deck structure has been completed. The business case was approved at the DfT's Roads Investment Committee and is progressing through further government approvals including ministerial approval. We have completed the tender for the design and build stage of the project. The contract has now been awarded and the detailed design stage instructed. Approval of the business case is essential ahead of the delivery stage contract.

#### **A40 Westway**

Following successful completion of the major joint replacement, the project is now focused on delivering the remaining scope. This includes further joint replacements, parapet renewals and repairs to concrete deterioration.

Concept design work for the remaining elements has been completed and we have awarded the contract for work on seven expansion joints. Detailed design has begun with a plan for implementation in Quarter 2 2024/25. We will also be progressing with the design of work on three expansion joints to establish the earliest opportunity to replace these remaining vital components. The progress of concrete repairs and other works will start at a future date subject to budget availability.

#### **Hammersmith Bridge**

The London Borough of Hammersmith & Fulham started stabilisation works in 2022. The majority of the works are now complete, ensuring Hammersmith Bridge is safe and can remain open to pedestrians and cyclists in the short term. Alongside the DfT we continue to support the borough in developing a business case for the longer-term strengthening works to fully restore the bridge.

#### **Carriageway renewal**

Plans are currently in place to deliver 200,000 square metres of resurfacing against an initial target of 127,900 square metres. Overprogramming has been used and this will continue for the next period. In the last quarter we have delivered schemes at A406 North Circular Road westbound (Melville Gardens to Green Lanes), A12 Colchester Road, A1400 Roundabout, A21 Farnborough Way and A205 Upper Richmond Road (Carlton Drive to Kendal Place).

#### **Buses**

##### **Kingston Cromwell Road bus station**

The major redevelopment of Kingston Cromwell Road bus station will significantly improve the bus experience for our customers. The works will deliver a bus station that offers a better customer experience, is easier to navigate, and is greener and more energy efficient.

The new bus station includes the introduction of energy-efficient lighting, energy-efficient buildings with a low environmental impact, a new sustainable urban drainage system, new vegetation including a green bus station canopy edge, and the introduction of solar panels.

The build began in August 2023 and works are planned to complete by Quarter 2 of the financial year 2024/25.

#### **New Routemaster refurbishment**

This programme is the mid-life refurbishment of 998 TfL-owned New Routemaster (NRM) buses. To date, 502 NRMs have been refurbished, 189 of which were during 2023/24. The target for this financial year is to complete a cumulative total of 595 refurbishments.

The programme has successfully delivered enhanced customer experience improvements while driving revenue, safety benefits and a reduction in operational costs. It relies upon refurbishment centres based across the UK and has a fully UK-based supply chain.

#### **River services**

We have completed our five-year maintenance cycle on both Woolwich Ferry vessels, in line with our regulatory obligation. Both vessels have now received Lloyds Class approval, with derogation in place to complete Lightship Surveys before March 2024.

Additional layby berth options continue to be reviewed, with the opportunity to use existing assets instead of building new ones. Meetings have been held with the Royal Borough of Greenwich to agree next steps in using their existing berth. The auto-mooring scheme is ready to undertake a feasibility study to understand options available for future mooring requirements and to build a strong business case.

Telent have begun installing our customer help points at the ferry terminals.

Work is ongoing on the linkspan (a type of drawbridge used to allow moving vehicles on and off the ferry) and the works are on target to complete by June 2024.

#### **London Overground**

We are in the last stages of negotiations with Network Rail on the replacement of the East London line signalling control system. Procurement of the new system will begin in April 2024.

Rhomberg Sersa UK has been selected to replace a total of 2,700 insulated track baseplates within the Thames tunnel. They delivered 135 insulated baseplates and prepared a further 1,000 of the new baseplate locations over the 2023 Christmas period. They plan to complete the works in August 2024.

The Class 378 train cab simulator renewal is now complete and in service.



## **DLR**

Procurement activities for the renewal portfolio continue, with priority given to critical and safety-related projects. We are looking to achieve efficiency where possible through early engagement with our contractors to understand where value can be achieved.

The replacement bogie frame project for the B92 train type is progressing well. DLR has, in consultation with the franchise operator, developed a new strategy to recover spare bogies from the B92 units being scrapped, which has resulted in a £700,000 saving to the programme while maintaining a sufficient amount of spares. Wheel slip protection trials have been completed. Software installation has begun for the plan to upgrade all I10 train units.

Long-line public address system installation is continuing at 10 stations. This system is used for station announcements which are essential for evacuations as the majority of DLR stations are unstaffed. The works are ahead of programme and are due to complete four months ahead of schedule and on budget. The works will finish on site April 2024.

## **Signalling**

Station controllers are an integral part of the DLR signalling system and the equipment is becoming obsolete. A replacement contract has been awarded to Thales this period, following a successful negotiation. This is the biggest signalling infrastructure renewal project the DLR will undertake over the next five years. The existing first-generation station controllers will be replaced with fourth-generation controllers which will support the roll-out of the new DLR trains in 2024 and expansion of the DLR network. Loop cable renewal continues with the majority changed on the west, Stratford International and east routes of the network.

## **High-voltage projects**

High-voltage projects were impacted by the UK Power Networks (UKPN) sub-station fire at Poplar in March 2022. As a result, UKPN completion of power supply has been delayed until spring 2024, requiring some key projects to be re-programmed so as not to affect services. The Poplar DC switchgear has been commissioned into service. Works have completed on shore supply at Beckton and have begun at Poplar depot, which provides power in the workshops to move trains without the third rail traction system. Poplar depot power supply has been sectionalised and works completed at Royal Mint Street for additional low-voltage supply to the substation. A contract has been awarded to replace eight transformer rectifier units to support the new trains project.

## **Low-voltage renewals**

Canary Wharf and Heron Quays low-voltage renewals are progressing, with the Herons Quays planned to be completed in Quarter 4. West India Quay lighting renewal has been commissioned into service.

An opportunity has arisen to change the ceiling tiles at Canary Wharf, for which we have completed the scope, and the works are ready for tender. Low-voltage distribution upgrade works continue with 80 per cent of the works completed. The remaining LED renewals work has been tendered and are being reviewed ready for appointment in the first quarter of 2024/25.

## **Platform resurfacing**

The second phase of platform resurfacing has started, with designs approved for All Saints, Royal Albert and Prince Regent. Construction work has begun at Royal Albert, with the team using existing possessions and engineering hours. We have completed the Bank tunnels cross-passage door surveys, which will allow us to agree product selection with our contractors. Station equipment rooms surveys have started to ascertain the scope required to bring the rooms to meet fire-rating standards. A contract to replace the existing carbon dioxide fire suppression with a technical gas has been awarded and has begun.

## **Track fixing**

Track-fixing works continue, and we completed more than 1,000 baseplates in Quarter 3. Switch and crossings renewals of 1,126 points were undertaken over Christmas, during a week-long closure. Trials have started at Bank tunnel to mitigate against structural clearance issues.

## **Lift upgrades**

The lift system upgrade project has started on the next phase of 46 lifts. Three escalators at Cutty Sark have been refurbished and returned to service. Two escalators at South Quays will return to service following refurbishment in February 2024. Work has begun on lift renewals at Westferry and Stratford International stations. We have also begun mid-life refurbishment on the escalators at East India station. Lift renewals have begun at Stratford International, Westferry and Limehouse stations.





A programme of regular renewals keeps our trams running safely

### London Trams

Installation work for both the wayside and on-tram upgrades to communications equipment are now complete, and we have begun deployment of a correct-side door-enabling system on the Bombardier CR4000 trams, with completion currently forecast for Quarter 4 of 2023/24. Our renewals programme continues across five asset groups: rolling stock, power, civils, systems and permanent way infrastructure.

### Track renewals

A nine-day part closure of the tramway was completed in October as planned, during which 720m of drainage renewal works was completed between Sandilands and Addiscombe tram stops. A new cable route and cable installation work within Sandilands tunnels was also completed in this closure, in preparation for commissioning of a new UKPN power supply for the tunnel lighting in Quarter 4 of 2023/24.

The Church Street track renewal was completed in April 2023 under the new embedded track renewals framework contract. The next package under this contract is the East Croydon and George Street track renewal which is currently planned to be completed during two track closures, one in February 2024 and another in April 2024. Shirley Hill road crossing renewal, which was initially planned for delivery in October 2023, has now been deferred to Quarter 2 of 2024/25 to allow time for additional design options to be considered.

### Birkbeck tram stop

We completed site investigations to replace the retaining wall and step-free access ramp at Birkbeck tram stop and identified that an updated design is needed. The design plans have been issued to the contractor for pricing and the works are planned to start in Quarter 4 2023/24.

### London Trams depot

In May 2022, we awarded a contract to replace fire doors at the London Trams depot and ensure compliance with current fire safety standards. However, due to supplier delays, works restarted in October 2023 to enable completion by March 2024.

The invitation to tender has been issued for TfL's first net zero carbon project – Therapia Lane depot decarbonisation – with work currently forecast to start in Quarter 3 of 2024/25.



# London Underground renewals

This programme delivers critical renewals across multiple asset groups that form an integrated transport system, including whole-life asset interventions on our train systems and wider infrastructure. The programme also includes renewals for the Elizabeth line and our colleague welfare projects





# London Underground renewals

Forecast period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and Project Authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2025/26	604	1,044	1,648	3,721	2,073
<b>Change since last Investment programme report</b>					
No change	101	(465)	(364)	563*	

## Financial commentary

Quarter 3 continues the strong performance observed this year with a cost-to-date increase of £101m. The Programme and Project Authority movement of £563m\* is due to additional authority being approved at the Programmes and Investment Committee in October 2023.

Key movements for the ramp up observed this quarter include fleet overhauls accounting for £40m and track renewals accounting for £27m, with the balance delivered across the remaining asset areas. Cost to go and forecast cost have reduced by £465m and £364m respectively due to the rephasing of spend until after 2025/26, which is outside the reporting period.

The variance between cost to go and authority is due to requested authority for years beyond the forecasting period.

## Performance over time commentary

In 2022/23 and up to Quarter 3 2023/24, London Underground renewals have delivered £604m of spend to date. In the year to date, £15.4m of cost savings and efficiencies have been delivered. The reduced cost to go between Quarters 2 and 3 is due to the recent five-year reprioritisation exercise undertaken as part of the recent business plan prioritisation process.

## Network-wide track renewals

Between September and November 2023, we replaced 1,584 metres of old bullhead rail on timber sleepers with modern high-integrity, low maintenance, flat-bottomed rail on concrete sleepers. In addition, we completed 468 metres of deep-tube renewals reconditioning works, thereby improving reliability and reducing noise.

Weekend possessions this quarter delivered the following:

- In September, 353 metres of ballasted track renewal (BTR) through Hammersmith platform 2 on the Piccadilly line
- In October, 96.5 metres of BTR and 203 metres of track drainage renewal/repair between South Kensington and West Kensington on the District line
- In November, 360 metres of BTR between Alperton and Sudbury Hill on Piccadilly line

Completion of the quarterly BTR works resulted in achievement of the programme strategic milestone to deliver 1,750 metres of new London Underground track by the forecast date of 27 November 2023.

Track renewals are currently on target with the total year milestone to deliver 3,500km of DTR/BTR.

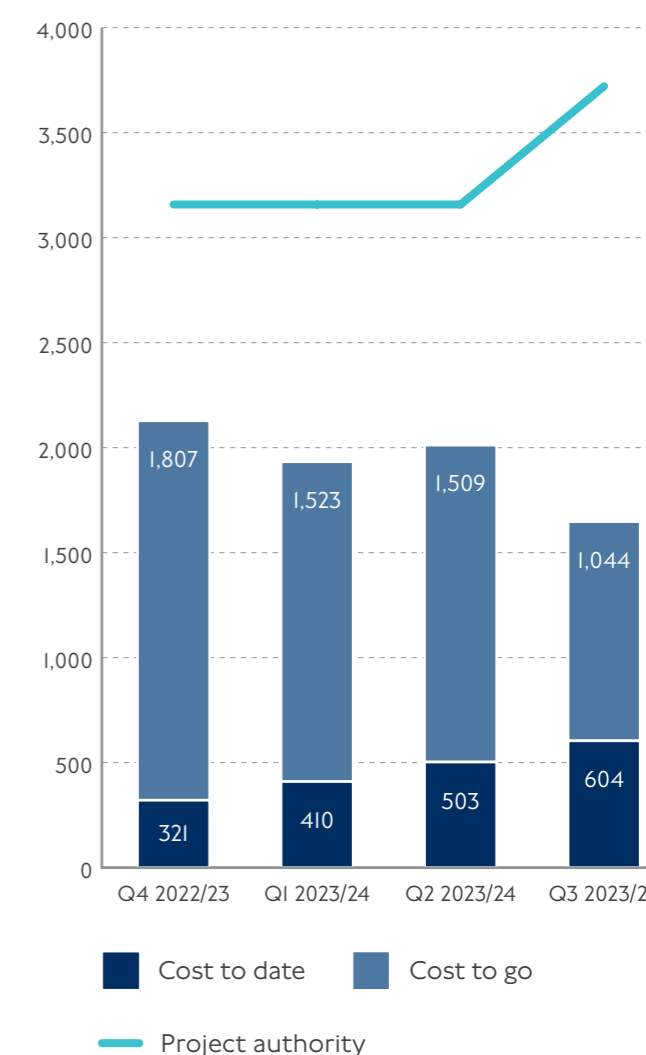
## Victoria line (fleet overhaul and depot control system renewals)

Overhaul of the trailer wheelset has been completed on 33 of the 47 trains and phase two of door overhaul completed on 18 of 47 trains.

## Metropolitan line (fleet overhaul)

Overhaul of bogies (the structure which supports the train carriages and includes wheels, bearings and axles) continues to plan with work on 50 of 60 trains completed.

London Underground performance over time (£m)



\* PPA understated in Q2 – actual value £3,162m and a change of £559m



### **Metropolitan line (Liverpool Street escalators)**

We completed removal of the three escalators and civils enabling works has started. Parallel works to the electrical and fire systems continue as planned.

### **District line (fleet overhaul)**

Preparations continue to start the overhaul of the S7 fleet (Circle, District and Hammersmith & City lines) but later than previously planned (now 2025/26) and at a reduced rate of one train per period due to financial constraints.

### **Jubilee line (fleet overhaul and component renewal)**

Programme lift completed on 21 of 63 trains and contract award is anticipated in February 2024 to repair the underframe cracking and to modify components.

### **Jubilee line (station communication and ventilation systems)**

Station communication systems renewals are progressing to plan with works on site at West Ham and Canary Wharf completed in Quarter 3 2023/24. Installation works continue to plan at the remaining four sites on the east end of the Jubilee line. Communications installation work at all sites is scheduled for completion in March 2024.

We are progressing with works to upgrade the obsolete tunnel ventilation control panels and refurbish the fans of the staircase pressurisation system from Southwark to Canning Town and intermediate shafts. The overall ventilation programme is scheduled to finish in September 2026.

### **Jubilee line (escalators)**

This rolling programme of escalator refurbishments has delivered three further repairs in Quarter 3 at London Bridge, Waterloo and Bank stations in line with the programme.

Works are continuing on the next three refurbishments at Canada Water, Bank and London Bridge stations to be completed in Quarter 4 2023/24. These works continue to incorporate the opportunity to renew fire linear heat detection systems in the escalator machine chambers.

### **Jubilee and Northern lines (incremental signalling upgrade)**

The detailed design stage of replacement of central computers for the Northern line is progressing well, with installation works started for the first pair of computers. The design for works to replace the train operator displays on both lines is ongoing.

### **Northern line (Kentish Town escalators)**

Works have progressed for the replacement of both escalators and station improvement works under a station closure running for 12 months to June 2024. Ticket office demolition is also complete.

### **Piccadilly line (fleet overhaul and signalling renewals)**

Programme lifts, door overhauls and wheel overhauls are all progressing to plan with the first phase of door overhauls completed.

### **Piccadilly line (Holloway Road lifts)**

Due to a quality issue with materials, the bring into use date has now slipped to mid-March 2024.

### **Central line (fleet and signalling renewals and incremental signalling)**

On 24 November 2023, the Central line improvement programme successfully introduced the inaugural refurbished train into service. Subsequently, on 15 December, the Mayor of London personally rode this train, emphasising his commitment to enhancing network security and ensuring the safety of London residents through the implementation of CCTV systems

Feasibility and planning for the first tranche of the incremental upgrade to the signalling interlocking computers on the east end of the line continues, with full contract award expected in the last quarter of 2025.

### **Bakerloo line (fleet overhaul, LED lighting conversion and signalling upgrade)**

A total of 15 programme lifts, four heavy overhauls and six mini-overhauls have been completed.

We continue to install the key signalling and control interface equipment in lineside rooms. 12 out of 16 sites have been finished, with Lambeth North recently completed as planned.

We achieved the 75 per cent LED conversion target on the trains in November 2023.

### **Bakerloo line (Marylebone escalators)**

The work was finished on the final escalator replacement in late September 2023. The completion of the wider station gateline and an additional escalator will provide increased station capacity to support future customer demand. Fire hydrant upgrade works and station welfare renewals are progressing to programme.

The gateline works are now forecast for completion in March 2024 following the need to replace the complete sliding Bostwick gate.

### **Bakerloo, Central and Waterloo & City lines (accessibility)**

The DfT has responded on the draft Rail Vehicle Accessibility Regulations (RVAR) exemption for the Bakerloo line expiring at the end of 2023. We have engaged with DfT to plan public consultation in 2024. Customer feedback has been received and is being reviewed on the first fully RVAR compliant Central line train.

### **Rail adhesion train**

Overhaul of the second Central line rail adhesion train was completed, ready for leaf-fall season. Preparation works to start overhaul of the District line rail adhesion train are continuing.

### **Mechanised track renewal vehicle**

Final adjustments to the mechanised renewal vehicle (MRV) have been made following consultation with trade unions, including the addition of a deployable ladder for welfare access. Final trials are scheduled for March 2024, following which the MRV will be available for booking for other project works.

### **Modular points and crossings**

Work to assure that Kirow cranes are safe to use in sub-surface environments is continuing. Remaining open and tunnel sections tandem lift safety assurance approvals are due to be delivered in July 2024.



### Remote track monitoring

The project is delivering new equipment which will be installed on two wagons to enable track condition recording, which will increase service reliability and provide critical data to keep the network safe. A feasibility study is expected to finish in April 2024.

### Engineering vehicle overhauls

The battery locomotive and repair process for the bogie frames is currently under trial, with completion expected by June 2024. Successful completion of this trial and testing will enable the full production programme for the bogie frame repair and overhaul to begin. This will be an integral part of the battery locomotive overhaul programme, including a similar strategy for the traction motors. In addition, we are presently mobilising a workshop facility at our Acton works depot, where we will be utilising directly employed maintenance teams who will carry out overhaul works on our fleet of engineering wagons. The team is currently in the mobilisation phase, with the full overhaul programme expected to be underway mid-2024. In addition, work to overhaul our second Matisa tamper is due to start in February 2024 with completion expected mid-2024.

### Network-wide water ingress remediation

Contract award for delivery at Mayor Sworder's arches sub-station at London Bridge is scheduled for April 2024. Concept design for remedial works at St Paul's and Chancery Lane stations is due to be completed in August 2024. Detailed designs at Liverpool Street and Charing Cross are due to be completed in April 2025.

### Network-wide cutting and embankments

Works continue to stabilise the cutting between Grange Hill and Chigwell stations on the Central line to ensure the continued safe running of the railway, including strengthening the N3I footbridge and drainage works. The project is due to finish on site in March 2024.

The final elements of cutting-stabilisation works at Park Royal to Alperton and Rickmansworth to Chorleywood were delivered in November 2023.

Procurement of pre-construction ground investigation activities for embankment and cutting stabilisation projects between Finchley Central and Mill Hill East, and at Triangle sidings are being progressed, with start on site due in May 2024. Ground investigation survey works will start on site in March 2024 between Debden and Loughton and in April 2024 between Northolt and South Ruislip.

### Plaistow power substation roof replacement

All scope for the roof works and colleague welfare improvements have now been delivered. During the works, we identified leaks in the station roof. Rectifying this requires a possession with Network Rail to access the source of the leak and we are working with them to deliver this work in due course.



London Underground renewals improve accessibility and safety



### **Station platform remediation works**

Remedial works at 10 sites will start on site in April 2024 and are scheduled to be completed in February 2025. Design of the remaining platforms selected for remediation is continuing, and site works for those are scheduled to start in 2025.

Platform remedial works at Plaistow station are due to be completed in March 2024.

### **Welfare facility renewals**

Colleague welfare facility improvements include works at mess rooms, kitchens, locker rooms, changing rooms and shower and toilet facilities across London Underground. Eight sites have been completed including Piccadilly Circus, Holborn and Liverpool Street, meeting our strategic milestone. Mobilisation works at three more sites have started with progress on prestart documentation underway, additional sites to follow.

### **Smoke and heat exhaust ventilation systems**

We are replacing and refurbishing the life-expired components that form part of the smoke and heat exhaust ventilation systems located in the roofs of Bermondsey station and Stratford Market depot, scheduled for completion in late 2024.

### **Secondary lifts (supporting step-free access)**

Work at Green Park station is now planned to start in March 2024, delayed due to late submission of electrical designs and issues with the procurement process for the comms design-and-build package. During this delay we will undertake enabling works to reduce the impact on the programme.

Works at Hounslow East and Bermondsey stations are progressing to plan.

### **Uninterruptable power supply**

Site works began in September 2023 to replace 31 life-expired uninterruptable power supply units on the Victoria line to ensure a continuous power supply to critical signalling assets. The first tranche of nine planned for Quarter 3 2023/24 have all been commissioned and design work has started for the next tranche.

### **Offline battery power inverters**

There are around 260 offline battery power inverters located across the network which are critical assets that power emergency lighting in the event of power loss.

As part of the replacement programme, 20 units have been successfully commissioned so far, and the contract for a second tranche of 40 was awarded in October 2023. Manufacturing is on track for the first unit to be factory tested in March 2024. This contract includes product development changes and recycling of key components that will help mitigate the obsolescence risk of the remaining units. Internal scoping and market engagement is in progress for further units as part of the strategy work on the longer-term solution.

### **Traction power**

Design work is in progress for the replacement of traction isolation switches located in sidings on Central and Bakerloo lines, continuing the programme to address equipment non-compliances and removal of operational restrictions. The works were planned to begin in 2024/25 but may need to be deferred to prioritise spending in more critical areas.

The construction of a new room to house a replacement switchboard at Holborn was completed to plan in April 2023. These complex works are being implemented under special access arrangements which have progressed well. Site testing and quality checks of the new equipment are in progress with commissioning activities scheduled to complete by February 2024.

### **LED lighting**

Good progress has been made across the delivery programme with works nearing completion at Hainault and Ruislip depots, and works started at Stonebridge Park depot.

The conversion of approximately 1,900 lights at Oxford Circus was completed in October 2023, ahead of planned completion by February 2024. We expect to save 63 tonnes of carbon dioxide equivalent per year, as LEDs consume up to 60 per cent less energy than fluorescent lighting. We have received positive feedback from customers and colleagues who appreciate brighter lighting levels.

We have awarded a contract and started the phased conversion of King's Cross St Pancras station. Continuation of these works in 2024/25 remains subject to budget prioritisation constraints. Conversion of lighting at smaller stations is being delivered internally, with a team mobilised to deliver 22 priority stations during 2023/24. In Quarters 1 and 2 2023/24 we delivered 5.5 stations. This quarter, we delivered at the same rate of 5.5 stations.

### **East Ham wall rebuild**

We are working to deliver a permanent solution to rebuild a wall at East Ham. The project aims to carry out the required temporary works, including propping of a partially collapsed wall, ahead of a permanent solution being installed. Access to the site is challenging, as it is bordered by private residences on one side and vital cables for railway operation on the other. As the worksite is constrained, we are closely considering welfare facilities to secure a suitable location. There is a strong focus on reviewing and mitigating the key risks regarding our assets, the public and residents. Subject to the acceptance of the access licences and Party Wall Act notices being agreed with residents and necessary design work, works could start in mid-2024.





New digital signalling has been installed on the Elizabeth line

#### **Elizabeth line renewals**

In Quarter 3, re-railing of Connaught tunnel at the Royal Docks and points at Custom House were delivered successfully. A replacement staircase has been prefabricated and will be installed at Ilford in a possession in February 2024. Ten of the 20 voltage transformers that required renewal were replaced in October and November possessions, with the remainder planned for the end of March 2024.

Chevron lighting is being progressed using engineering hours. Delivery of the digital private network signalling system replacement for the previous system, to ensure continuity of operationally critical communication systems, was completed in January 2024. Further tasks, for example staff training, are required to close this project in March 2024.

#### **Railway systems enhancements**

Delivery of the scheduled Northern line signalling software updates continues, with the first release commissioned on the railway at the end of October 2023. This was delayed from July 2023 due to the need to correct identified concerns with the user controls at Highgate service control centre and the train operator displays. These software updates address residual issues and requirements following completion of the Northern line extension and the Bank station closure works. The final software release is scheduled for Quarter 2 2024/25. This has been rephased to accommodate other projects that are dependent on the same supplier key resources including the Four Lines Modernisation and DLR rolling stock replacement programmes.

Delivery of Jubilee line signalling software updates continues and the rolling stock on-board signalling software was updated in Quarter 3 2023/24. The final software release is currently scheduled for Quarters 3 and 4 2025/26. This is dependent on delivery of the Four Lines Modernisation programme at the interface with the Jubilee line taking place in Quarter 2 2024/25.

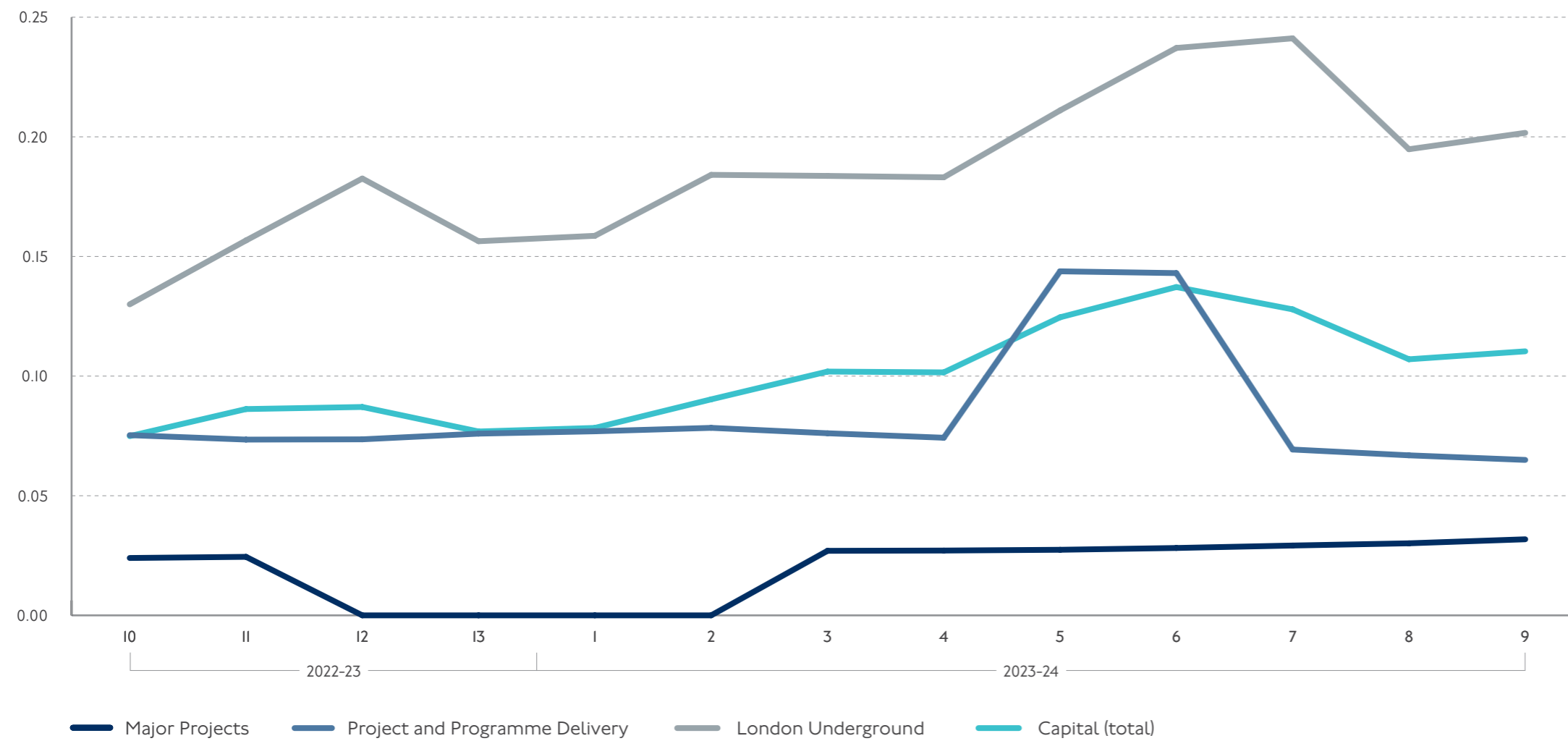


## Appendix

# Our safety performance data

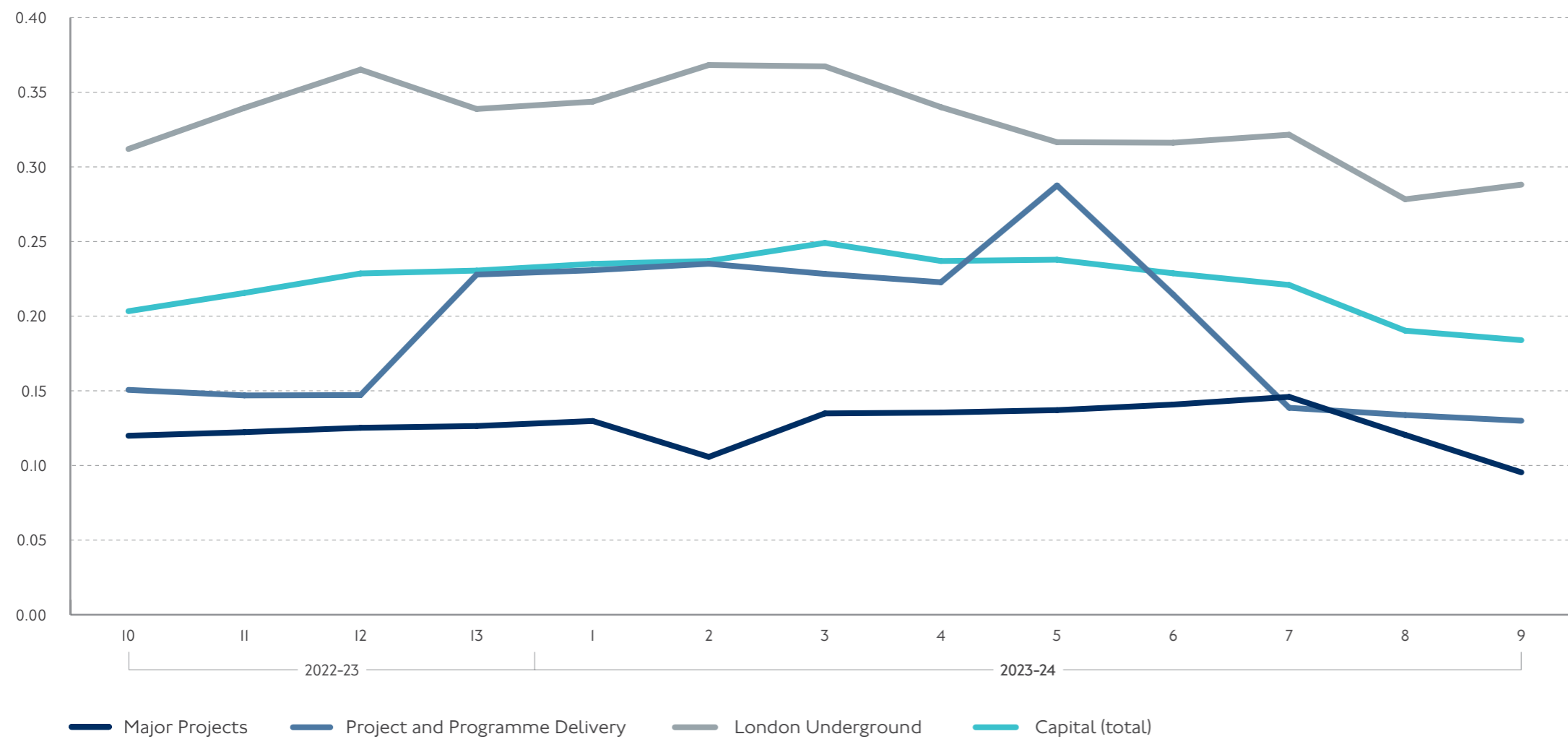
We track the number of injuries among our workforce to show our progress towards our safety ambitions

**RIDDOR accident frequency rate**  
(per 100,000 hours worked)



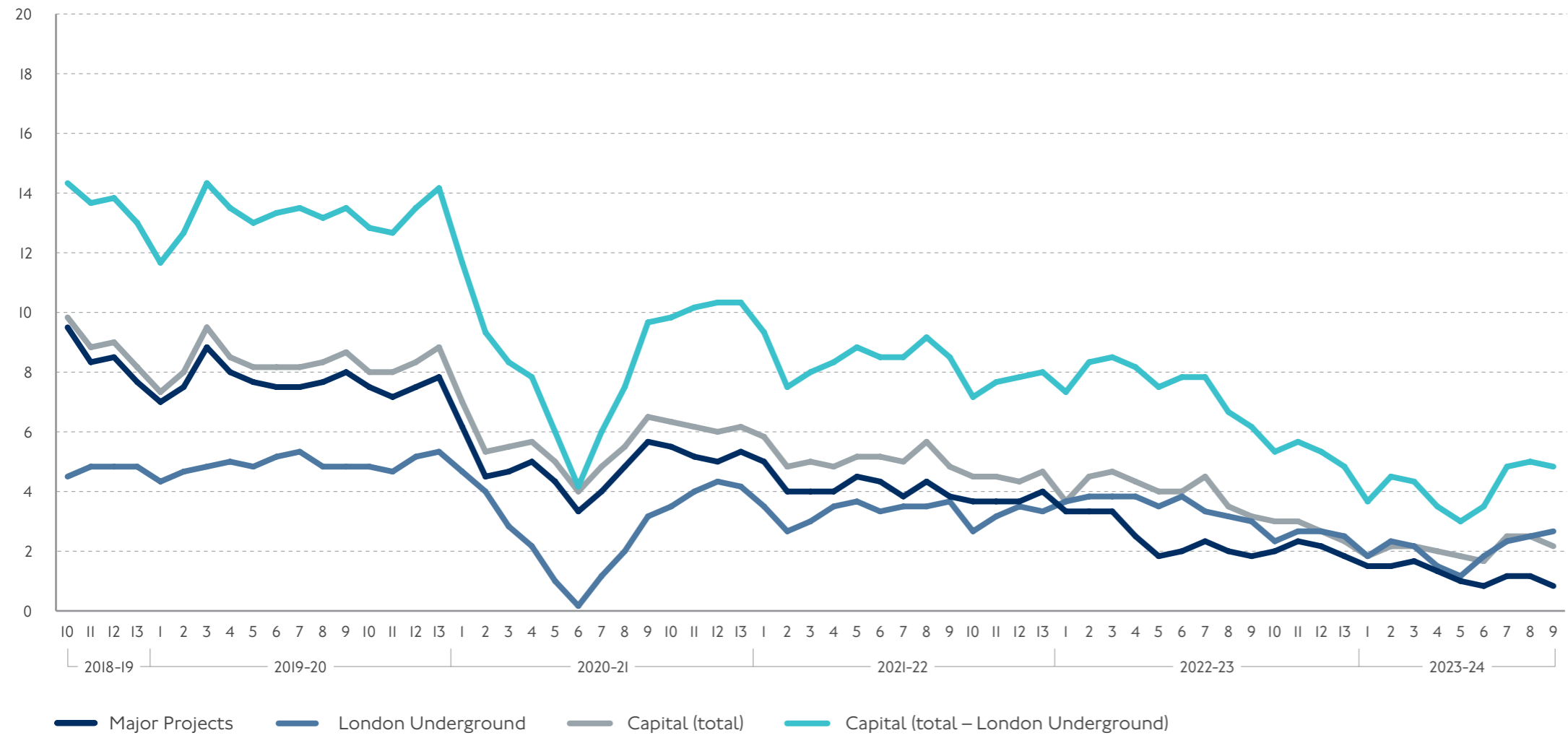


**Lost time injury frequency rate**  
(per 100,000 hours worked)





**Total Capital workforce injuries**  
(six-period average since 2018/19)





---

## About us

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' and helping to create a safer, 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 by walking, cycling or using public transport by 2041. To make this a reality, we prioritise safety, sustainability, health and the quality of people's experience in everything we do.

We run most of London's public transport services, including the London Underground, London Buses, the DLR, London Overground, Elizabeth line, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the IFS Cloud Cable Car.

We manage the city's red route strategic roads and are responsible for the maintenance, management and operation of more than 6,000 sets of traffic lights across the capital. The London boroughs are responsible for all the remaining roads within their boundaries. The experience, reliability and accessibility of our services are fundamental to Londoners' quality of life. Safety remains our number one priority and we continue to work tirelessly to improve safety across the network for both colleagues and customers.

Our vision is to be a strong, green heartbeat for London. We are investing in green infrastructure, improving walking and cycling, reducing carbon emissions, and making the city's air cleaner. The Ultra Low Emission Zone, and fleets of increasingly environmentally friendly and zero-emission buses, are helping to tackle London's toxic air. We are also improving public transport options, particularly in outer London, to ensure that more people can choose public transport or active travel over using their vehicles.

That is why we are introducing the outer London Superloop bus network, providing express bus routes circling the entire capital, connecting outer London town centres, railway stations, hospitals and transport hubs.

We have constructed many of London's most significant infrastructure projects in recent years, using transport to unlock economic growth and improve connectivity. This includes major projects like the extension of the Northern line to Battersea Power Station and Nine Elms in south London, as well as the completion of the London Overground extension to Barking Riverside and the Bank station upgrade.

The Elizabeth line, which opened in 2022, has quickly become one of the country's most popular railways, adding 10 per cent to central London's rail capacity and supporting new jobs, homes and economic 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 using information, data and technology to make services intuitive and easy to use and doing all we can to make streets and transport services accessible and safe 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. By working together, we are creating brighter journeys and a better city.



© Transport for London

March 2024

[tfl.gov.uk](https://tfl.gov.uk)