

Agenda

Meeting: Programmes and Investment Committee

Date: Wednesday 1 March 2023

Time: 10:00am

Place: Conference Rooms 1 and 2,
Ground Floor, Palestra, 197
Blackfriars Road, London, SE1
8NJ

Members

Ben Story (Chair)

Dr Nelson Ogunshakin OBE (Vice-Chair)

Seb Dance

Dr Lynn Sloman MBE

Peter Strachan

Cllr Kieron Williams

Government Special Representative

Becky Wood,

Copies of the papers and any attachments are available on [tfl.gov.uk How We Are Governed](https://tfl.gov.uk/How-We-Are-Governed).

This meeting will be open to the public and webcast live on [TfL YouTube channel](#), except for where exempt information is being discussed as noted on the agenda.

There is access for disabled people and induction loops are available. A guide for the press and public on attending and reporting meetings of local government bodies, including the use of film, photography, social media and other means is available on www.london.gov.uk/sites/default/files/Openness-in-Meetings.pdf.

Further Information

If you have questions, would like further information about the meeting or require special facilities please contact: Zoe Manzoor, Secretariat Officer; Email: [y_ZoeManzoor@tfl.gov.uk](mailto:ZoeManzoor@tfl.gov.uk).

For media enquiries please contact the TfL Press Office; telephone: 0343 222 4141; email: PressOffice@tfl.gov.uk

Howard Carter, General Counsel
Tuesday 21 February 2023

**Agenda
Programmes and Investment Committee
Wednesday 1 March 2023**

1 Apologies for Absence and Chair's Announcements

2 Declarations of Interests

General Counsel

Members are reminded that any interests in a matter under discussion must be declared at the start of the meeting, or at the commencement of the item of business.

Members must not take part in any discussion or decision on such a matter and, depending on the nature of the interest, may be asked to leave the room during the discussion.

**3 Minutes of the Meeting of the Committee held on 14 December 2022
(Pages 1 - 8)**

General Counsel

The Committee is asked to approve the minutes of the meeting of the Committee held on 14 December 2022 authorise the Chair to sign them.

4 Matters Arising and Actions List (Pages 9 - 12)

General Counsel

The Committee is asked to note the updated actions list.

5 Use of Delegated Authority (Pages 13 - 16)

General Counsel

The Committee is asked to note the paper.

6 Investment Programme Report - Quarter 3 2022/23 (Pages 17 - 92)

Chief Capital Officer and Director of Investment Delivery Planning

The Committee is asked to note the paper.

7 Independent Investment Programme Advisory Group Quarterly Report (Pages 93 - 96)

General Counsel

The Committee is asked to note the Independent Investment Programme Advisory Group's quarterly report.

8 TfL Project Assurance Update (Pages 97 - 98)

General Counsel

The Committee is asked to note the paper.

9 London Underground Enhancements Programme (Pages 99 - 116)

Chief Capital Officer and Director of Investment Delivery Planning

The Committee is asked to note the paper and approve a reduction in Programme and Project Authority.

10 Air Quality and Environment Programme (Pages 117 - 128)

Director of Investment Delivery Planning

The Committee is asked to note the paper and approve additional Programme and Project Authority to support the delivery of the programme and additional Procurement Authority to extend the contracts to continue activities in support of Road User Charging.

11 Healthy Streets Programme (Pages 129 - 150)

Chief Capital Officer and Director of Investment Delivery Planning

The Committee is asked to note the paper and approve additional unbudgeted Financial Authority and Programme and Project Authority to support delivery of the programme. The Programme and Project Authority request includes an element to enable the completion of the Old Street Roundabout project.

12 Technology and Data 2023/24 and 2024/25 (Pages 151 - 172)

Chief Customer and Strategy Officer and Director of Strategy and Chief Technology Officer

The Committee is asked to note the paper and approve increases in Programme and Project Authority for the programme and specific authorities for projects within that programme.

13 Expanding Pay As You Go on Rail in the South East (Pages 173 - 178)

Chief Customer and Strategy Officer and Director of Strategy and Chief Technology Officer

The Committee is asked to note the paper and approve unbudgeted Financial Authority for the receipt and expenditure of grant funding from the Department for Transport and approve Programme and Project Authority for the project.

14 Members' Suggestions for Future Discussion Items (Pages 179 - 182)

General Counsel

The Committee is asked to note the forward plan and is invited to raise any suggestions for future discussion items for the forward plan and for informal briefings.

15 Any Other Business the Chair Considers Urgent

The Chair will state the reason for urgency of any item taken.

16 Date of Next Meeting

Wednesday 17 May 2023 at 10:00am

17 Exclusion of the Press and Public

The Committee is recommended to agree to exclude the press and public from the meeting, in accordance with paragraph 3 of Schedule 12A to the Local Government Act 1972 (as amended), in order to consider the following items of business.

Agenda Part 2

- 18 Investment Programme Report - Quarter 3, 2022/23** (Pages 183 - 202)
Exempt supplementary information relating to the item on Part 1 of the agenda.
- 19 Independent Investment Programme Advisory Group Quarterly Report** (Pages 203 - 212)
Exempt supplementary information relating to the item on Part 1 of the agenda.
- 20 TfL Project Assurance Update** (Pages 213 - 218)
Exempt supplementary information relating to the item on Part 1 of the agenda.
- 21 Air Quality and Environment Programme** (Pages 219 - 228)
Exempt supplementary information relating to the item on Part 1 of the agenda.
- 22 Healthy Streets Programme** (Pages 229 - 234)
Exempt supplementary information relating to the item on Part 1 of the agenda.
- 23 Technology and Data 2023/24 and 2024/25** (Pages 235 - 236)
Exempt supplementary information relating to the item on Part 1 of the agenda.
- 24 Expanding Pay As You Go on Rail in the South East** (Pages 237 - 248)
Exempt supplementary information relating to the item on Part 1 of the agenda.

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Agenda Item 3

Transport for London

Minutes of the Programmes and Investment Committee Meeting

Microsoft Teams

10:00am, Wednesday 14 December 2022

Members

Ben Story (Chair)
Dr Nelson Ogunshakin OBE (Vice Chair)
Seb Dance
Dr Lynn Sloman MBE
Peter Strachan

Government Special Representative

Becky Wood

Executive Committee

Andy Lord Interim Commissioner
Stuart Harvey Chief Capital Officer

Staff

Helen Cansick Head of Infrastructure Delivery Planning (IDP), Healthy Streets Local Schemes
Andrea Clarke Director of Legal
Michael Cooper Director, Project Management Office
Nick Fairholme Director of Capital Delivery, Systems, Project and Programme Delivery
Mike Hardaker Director of Capital Delivery, Infrastructure
Shamus Kenny Head of Secretariat
Andrew Lunt Lead Sponsor IDP, Surface Major Projects
Zoe Manzoor Senior Committee Officer, Secretariat
Peter McNaught Director of Operational Readiness
Collan Murrey Head of Procurement
Kumaran Nagiah Chief of Staff, Major Projects
James Norris Head of Project Assurance
David Rowe Director of Infrastructure Delivery Planning
Rachel Sherry Finance Director, Major Projects
Jadon Silva Director of Procurement and Commercial

Independent Investment Programme Advisory Group (IIPAG)

Alison Munro Chair IIPAG

67/12/22 Apologies for Absence and Chair's Announcements

An apology for absence had been received from Councillor Kieron Williams.

As the Committee was unable to meet in person, the meeting was not quorate and so any decisions required would be taken by Chair's Action, following the discussion of the item with Members at the meeting. The meeting was being broadcast live on TfL's YouTube channel to ensure the public and press could observe the proceedings and decision-making.

The Chair agreed to accept the exempt information relating to the item on Old Street Roundabout Project - Healthy Streets Programme as a late report, as information in the paper was being verified at time of publication.

The Chair reminded those present that safety was paramount at TfL and encouraged Members to raise any safety issues during discussions on a relevant item or with TfL staff after the meeting.

68/12/22 Declarations of Interests

Members confirmed that their declarations of interests, as published on tfl.gov.uk, were up to date and there were no interests to declare that related specifically to items on the agenda.

69/12/22 Minutes of the Meeting of the Committee held on 19 October 2022

The minutes of the meeting of the Committee held on 19 October 2022 were approved as a correct record. The minutes would be provided to the Chair for signature at a future date.

70/12/22 Matters Arising and Actions List

Andrea Clarke introduced the paper, which set out progress against actions agreed at previous meetings of the Committee.

The Committee noted the updated actions list.

71/12/22 Use of Delegated Authority

Andrea Clarke introduced the item. Since the previous meeting of the Committee, there had been no use of delegated authority by Chair's Action nor Procurement Authority and Programme and Project Authority approved by the Commissioner or the Chief Finance Officer. There had also been no Mayoral Directions to TfL within the Committee's remit.

The Committee noted the paper.

72/12/22 Investment Programme Report - Quarter 2 2022/23

The Chair drew attention to an update that had been circulated to the Committee containing an updated graph for the lost time injury frequency rate (LTIFR) (page 9 of the Appendix), and minor formatting changes to the Appendix. The corrections would be published on the website following the meeting.

Stuart Harvey and David Rowe introduced the Investment Programme Report for Quarter 2 of 2022/23 and the related supplementary information on Part 2 of the agenda.

The paper provided an update on safety performance. Performance overall in relation to safety remained good. The trend on LTIFR remained well below target and focus would continue to be placed on learning from incidents to reduce harm to the workforce. In relation to Capital workforce, TfL had held a 'keeping in touch with our supplier event' to discuss safety issues and these events would continue to be held in the future. On the Silvertown Tunnel construction, the site had a safety stand-down following a safety incident earlier in December 2022, and TfL would continue to monitor safety issues.

Twelve of the 21 strategic milestones had been met. Three had been delayed in relation to: the Four Line Moderation Programme signalling system upgrade on the District line passenger services; the completion of phase one staff welfare improvement works on the London Underground (LU) – Infrastructure renewals programme; and the completion of heavy overhaul of the first 15 Metropolitan line trains in the LU Train Systems programme.

The delivery of the signal migration areas six and seven would be delivered in January and March 2023 (respectively), but there were challenges ahead with the project including the delivery of signal mitigation area eight. A review was being undertaken of the programme and a further update would be reported to the Committee in the next quarter.

Good progress had continued to be made in delivering major projects such as: Docklands Light Railway programme, the Piccadilly line upgrade, Elephant and Castle, High Speed 2 and the Silvertown Tunnel. While the estimated financial costs for some projects had increased, due in part to inflationary pressures, work was underway to address costs pressures and progress would be reported to the Committee.

The Bank station capacity upgrade was progressing well, with the delivery of the new interchange route, walkway and escalators in line with forecasts. The new Cannon Street ticket hall entrance would open in early 2023.

David Rowe provided an update on LU Enhancements, highlighting the opening of the new Brompton Road entrance at Knightsbridge, which was a strategic milestone. TfL had submitted a bid for Greater London Authority Levelling Up funding for improvements at Colindale and Leyton stations to facilitate step-free access and work to support new developments. A separate paper on LU Enhancements, and on step-free access, was scheduled for the meeting of the Committee in March 2023.

Other key achievements during the quarter included completing five escalator refurbishments and the further roll out of the Lowering Speed Limits Programme to London boroughs.

TfL had won two awards, the Health and Executive Beacon Award and a Quality Benchmarking Award, in recognition of the continuing work at Grange Hill and Chigwell to stabilise a large cutting on the Central line.

Progress continued to be made with the train systems programme, including the successful installation of major points and crossings at Tower Hill, and with the design and testing activities on the Central line fleet.

TfL remained on target to ensure 10 per cent of the London bus fleet were zero-emission by early 2023. Work continued on ensuring that Hammersmith Bridge remained safe and stable. It was proposed to carry out the works to the Rotherhithe Tunnel, after the Silvertown Tunnel had been opened, to mitigate the impacts on works, but interim measures would be taken to ensure it remains safe in the meantime. Officers were in the process of completing the draft replacement strategy for CR4000 trams and the Committee would be provided with an update in due course. TfL was also working with London Councils in light of the Department for Transport guidance and it would extend the e-scooter trial to 2024.

The Committee welcomed the transformation of Bank station and thanked staff for all their work on this.

Members sought assurances about safety issues following the incident at Eastleigh. The safety team had looked at the lessons learnt from the incident. Actions have been taken in TfL's own facilities, although reassurances were provided that such an incident could not happen at TfL facilities. There was also further discussion on the safety update regarding Silvertown Tunnel, and the Riverlinx safety stand-down. The Committee discussed the importance of monitoring this work in terms of compliance with health and safety requirements. TfL would continue to work with the stakeholders in relation to safety matters, including holding further meetings, and providing support where necessary, to ensure safety standards were followed.

It was confirmed that TfL had programmes in place to manage climate adaptations, and arrangements were in place to review such measures across the programmes. The Committee emphasised that further consideration should be given to the issue of climate change mitigation, particularly in planning infrastructure renewals on the Tube network and asset investment on streets – given the potential impact of record temperatures in the future. It was discussed that updates could be provided on this in the quarterly Investment Programme report to provide the Committee with greater visibility on the work in this area. The Chair also noted the merits of producing a project checklist, including details of such issues as climate change adaptations and would discuss this further with the Chief Capital Officer.

It was noted that the rising costs, due to inflation, were a recurrent theme throughout the report. However, Officers were working to manage the costs of projects and there was a strong process in place to manage risks. The Independent Investment Programme Advisory Group Chair also advised that discussions were taking place about the approach to estimating costs of projects and an update would be provide to the Committee in March 2023.

The Committee noted the report and the exempt supplementary information on Part 2 of the agenda.

73/12/22 Independent Investment Programme Advisory Group Quarterly Report

James Norris introduced the item, setting out the Independent Investment Programme Advisory Group (IIPAG) quarterly report for December 2022 and the related supplementary information on Part 2 of the agenda. The report set out work undertaken by IIPAG since the last report presented to the Committee in October 2022.

Alison Munro presented the Appendix summarising IIPAG activities over the quarter. The group had undertaken two sub-programme reviews for the London Underground Enhancements and Silvertown Tunnel items on the agenda. A report on the findings would be submitted to the Committee in March 2023. IIPAG had also recently completed a review of the London-wide Ultra Low Emission Zone extension.

Following three new member appointments, IIPAG now had a full membership. The group has a wide range of expertise and the appointments would further strengthen this, particularly in relation to cross-cutting work.

IIPAG had also undertaken a review of the tram replacement programme. It was satisfied with the level of benchmarking that had been carried out to support the options put forward. The group had also established a second sub-group with a good range of expertise, to support the establishment of the TTL Properties Limited company, in line with the model established for the Elizabeth line sub-group.

The Committee noted the Independent Investment Programme Advisory Group's quarterly report and the exempt supplementary information on Part 2 of the agenda.

74/12/22 TfL Project Assurance Update

James Norris introduced the paper, which provided an update on the project assurance work undertaken during Period 7 and Period 8 of 2022/23 (18 September to 12 November 2022) and the related supplementary information on Part 2 of the agenda. TfL Project Assurance had undertaken two programme reviews with the Independent Investment Programme Advisory Group (IIPAG) during the period, and four project assurance reviews, with IIPAG involved in two of them. This raised a total of 39 recommendations. The review also identified three critical issues as set out in the paper on Part 2 of the agenda.

The report also set out tracking information, highlighting the positive trend in closure rate and overdue actions, which was at an historic low.

The reviews had made a number of points about the strength of business cases and the approach to evaluating the outcomes of projects. Members sought assurances around the reasons for this.

TfL noted the importance of business cases in relation to capital decision-making, and these were being given due consideration. Teams were working to ensure that these documents were of a high quality and good progress continued to be made with strengthening capability. It was also noted that for all projects, TfL carried out a benefits

evaluation. This included undertaking more in-depth assessments for larger projects, in consultation with stakeholders, looking at the wider considerations. TfL also has a good track record in monitoring the benefits of projects. In summing up, the Chair noted the importance of this activity especially the work with stakeholders that supported schemes to seek support and align objections.

The Committee noted the report and the exempt supplementary information on Part 2 of the agenda.

75/12/22 Old Street Roundabout Project - Healthy Streets Programme

In accordance with section 100(B)(4) of the Local Government Act 1972, the Chair agreed to accept the exempt Part 2 information on this item as urgent business on the grounds that Members needed to consider the project update and not all information was available at the time the meeting papers were published.

Stuart Harvey introduced the paper, which provided an update on the costs and delivery of the Old Street Roundabout transformational project.

Since the update to the Committee in March 2022, the core structure of the new main station entrance had been installed and part of the new staircase was now open for customers to use. Work on the passenger lift has also been completed. Good progress continued to be made on the lift-car installation and with mechanical and electrical equipment upgrades.

There had also been further highways changes at surface level to facilitate sub-surface utility connections.

The Chair thanked Officers for the site visit in December 2022. He was pleased with the progress that had been made and found the update reassuring.

The Committee noted the paper and the exempt supplementary information on Part 2 of the agenda.

76/12/22 Road User Charging

David Rowe introduced the paper, which provided updates on the London-wide Ultra Low Emission Zone (ULEZ), its associated vehicle scrappage scheme and the Blackwall and Silvertown Tunnel User Charging.

The report also sought approval for additional Programme and Project Authority for the delivery of Road User Charging schemes.

The Committee sought assurances about the assessment of the charging within the wider Silvertown Tunnel business case and the benefits evaluation. In response, Officers confirmed that these had been considered as part of the development of the scheme.

The Committee sought assurances about the assessment of the charging within the wider Silvertown Tunnel business case and the benefits evaluation. In response, Officers confirmed that these had been considered as part of the development of the scheme.

It was also noted that TfL had published several documents for the existing ULEZ and vehicle scrappage scheme, that had helped inform the case for the expansion scheme. TfL would look to publish such reports for the London-wide ULEZ scheme, as well as a wider set of metrics.

The TfL Project Assurance team advised that it had carried out an assurance review of London-wide ULEZ, including the benefits and had made minor recommendations. Generally, it was satisfied with the quality of the documentation.

The Committee noted the paper and the exempt supplementary information on Part 2 of the agenda.

The Chair, in consultation with Committee Members, approved:

- 1 additional Programme and Project Authority of £173.5m to support the delivery of the following Road User Charging (RUC) projects: London-wide Ultra Low Emission Zone (ULEZ), scrappage scheme, Tunnel User Charging (TUC) and Direct Vision Standard Phase 2 (DVS2) giving a total Programme and Project Authority of £696.7m for RUC; and**
- 2 additional Procurement Authority in the sums requested in the exempt supplementary information on Part 2 of the agenda to extend the contracts with Capita Business Services Limited to continue activities to deliver system elements of the London-wide ULEZ and TUC.**

77/12/22 Members' Suggestions for Future Discussion Items

Andrea Clarke introduced the current forward plan for the Committee. The requests for further papers would be added to the plan.

The Committee noted the forward plan

78/12/22 Any Other Business the Chair Considers Urgent

There was no other urgent business to discuss.

79/12/22 Date of Next Meeting

The next scheduled meeting of the Committee would be held on Wednesday 1 March 2023 at 10.00am.

80/12/22 Exclusion of the Press and Public

The Committee agreed to exclude the press and public from the meeting, in accordance with paragraph 3 of Schedule 12A to the Local Government Act 1972 (as amended), when it considered the exempt information in relation to the items on: Investment Programme Report, Quarter 2 2022/23; Independent Investment Programme Advisory Group Quarterly Report; TfL Project Assurance Update; Old Street Roundabout Project Healthy Streets Programme; and Road User Charging

The meeting closed at 13.00pm.

Chair: _____

Date: _____

Programmes and Investment Committee



Date: 1 March 2023

Item: Matters Arising and Actions List

This paper will be considered in public

1 Summary

1.1 This paper informs the Committee of progress against actions agreed at previous meetings.

2 Recommendation

2.1 **The Committee is asked to note the Actions List.**

List of appendices to this report:

Appendix 1: Actions List

List of Background Papers:

Minutes of previous meetings of the Programmes and Investment Committee.

Contact Officer: Howard Carter, General Counsel
Email: HowardCarter@tfl.gov.uk

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Programmes and Investment Committee Action List (reported to the meeting on 1 March 2023)

There were no actions from the meeting held on 14 December 2022.

Actions from previous meetings of the Committee

Minute No.	Description	Action By	Target Date	Status note
72/12/21 (1)	<p>Investment Programme Report – Quarter 3, 2021/22: Value for money and Benefit-Cost Ratios</p> <p>The Committee asked that, where available, the value for money (VfM) calculations be included in future reports and, in instances where a project has been descoped, it be shown how that increased the VfM and how the Benefit Cost Ratio has changed.</p>	Stuart Harvey / David Rowe	Q1 2023/24	This information will be included in the Quarterly reports from Q1 2023/24.
56/10/22 (2)	<p>Investment Programme Report - Quarter 1 2022/23: Applying Lessons Learnt</p> <p>It was agreed that the Committee would receive an update on the lessons learned from recently completed successful projects.</p>	Stuart Harvey	June 2023	On forward plan.

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Programmes and Investment Committee



Date: 1 March 2023

Title: Use of Delegated Authority

This paper will be considered in public

1 Summary

- 1.1 This is a standing item on the agenda to inform the Committee of any use of delegated authority by the Committee, through Chair's Action, or of Procurement Authority and Programme and Project Authority (in respect of matters within the Committee's remit) granted by the Commissioner and the Chief Finance Officer in accordance with delegated authorities under TfL's Standing Orders since the last meeting of the Committee. The paper also provides information on Mayoral Directions to TfL within the Committee's remit.
- 1.2 Since the last meeting of the Committee, on 14 December 2022, there have been:
- (a) no use of specific authority delegated by the Board;
 - (b) no use of Chair's Action, save that decisions at the last meeting were taken by the Chair under Chair's Action as industrial action on the railways meant the meeting was held online;
 - (c) no approvals of Programme and Project Authority by the Commissioner nor by the Chief Finance Officer;
 - (d) two uses of Procurement Authority by the Commissioner and none by the Chief Finance Officer; and
 - (e) no Mayoral Directions within the Committee's remit.
- 1.3 A similar report is submitted to the Finance Committee and the Land and Property Committee in respect of the use of Chair's Action and of Authorities granted by the Commissioner and the Chief Finance Officer and of relevant Mayoral Directions that fall within the remit of those Committees.

2 Recommendation

- 2.1 **The Committee is asked to note the paper.**

3 Use of authority delegated by the Board

- 3.1 There has been no use of authority delegated by the Board since the last meeting of the Committee.

4 Use of Chair's Action

- 4.1 Under Standing Order 113, in situations of urgency, the Board delegates to each of the Chair and the Chairs of any Committee or Panel the exercise of any functions of TfL on its behalf, including the appointment of Members to Committees and Panels. Any use of Chair's Action is reported to the next ordinary meeting.
- 4.2 There has been no use of Chair's Action since the last meeting of the Committee:

5 Programme and Project Authority Approvals

- 5.1 To enable an appropriate level of governance, processes are in place for the authorisation, control and reporting of projects.
- 5.2 Programme and Project Authority will normally be granted by the Committee for all programmes and projects as part of the defined Programmes within the overall Investment Programme. Where individual programmes or projects have a value in excess of £50m and have not already received full approval as part of a Programme, requests will be submitted to the Committee for consideration. Those programmes and projects with an estimated final cost of £50m or below, which have been approved by the Commissioner or the Chief Finance Officer, will be reported to subsequent meetings of the Committee.
- 5.3 Where the main contract has not yet been awarded, the Financial Authority and Estimated Final Cost may not be stated because they are commercially confidential.

Approvals by the Commissioner and Chief Finance Officer

- 5.4 Since the last meeting of the Committee, neither the Commissioner nor the Chief Finance Officer has approved any Programme and Project Authority requests within the Committee's remit.

6 Procurement Approvals

Approvals by the Commissioner and Chief Finance Officer

- 6.1 Since the last meeting of the Committee, there have been two approvals of Procurement Authority requests by the Commissioner and none by the Chief Finance Officer within the Committee's remit:
- (a) East London Line Enhancements Surrey Quays GRIP 5-8 Station Upgrade Works – Variation; and
 - (b) DLR Rolling Stock Replacement Programme – Beckton Depot Maintenance Facility Building, Southern Sidings and Temporary Fit Out Shed – Contract Award.

7 Mayoral Directions to TfL

- 7.1 The Greater London Authority (GLA) Act 1999 (as amended) permits the Mayor to issue to TfL general directions as to the manner in which TfL is to exercise its functions or specific directions as to the exercise of its functions (or not to exercise a power specified in the direction). Directions are also often made in relation to the implementation of matters in respect of which the Mayor delegates statutory powers to TfL.
- 7.2 The Mayor makes Mayoral Directions through Mayoral Decisions. Papers for Mayoral Directions set out the financial and other implications. If those implications change over time, that will be reported to the GLA.
- 7.3 All Mayoral Decisions are issued in writing, with the information that is not exempt from publication included on the GLA's Decisions Database on its website: <https://www.london.gov.uk/about-us/governance-and-spending/good-governance/decisions?order=DESC>.
- 7.4 Mayoral Directions fall into three broad categories: those addressing technical issues relating to statutory powers; those related to commercial development activities; and those related to projects and programmes. Mayoral Directions relating to TfL are reported to the Board's Committees for discussion as soon as possible after they are received by TfL or published. Regular reports will list the relevant Directions for as long as they are applicable.
- 7.5 Annually the Audit and Assurance Committee considers the list as part of its consideration of the annual audit plan to ensure that appropriate audit resource is applied to assurance on TfL's work in implementing Mayoral Directions. This will also be kept under review at each quarterly meeting of that Committee.
- 7.6 A summary of current Mayoral Directions to TfL is maintained on the [How we are governed](#) page on our website, with links to the relevant Mayoral Decisions. That page will be updated as and when further Directions are made.
- 7.7 Mayoral Directions to TfL related to projects and programmes are reported to this Committee. There have been no Mayoral Directions to TfL within the Committee's remit since the last meeting.

List of appendices to this report:

None

List of Background Papers:

None

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Programmes and Investment Committee



Date: 1 March 2023

Item: Investment Programme Report Quarter 3 2022/23

This paper will be considered in public

1 Summary

- 1.1 The Investment Programme Report describes the progress and performance in Quarter 3, 2022/23 of a range of projects that will deliver world-class transport services to London.
- 1.2 A paper is included on Part 2 of the agenda which contains exempt supplementary information. The information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

2 Recommendation

- 2.1 **The Committee is asked to note the report and the exempt supplementary information on Part 2 of the agenda.**

List of appendices to this report:

Appendix 1: Investment Programme Report Quarter 3 2022/23

Exempt supplemental information is contained in a paper on Part 2 of the agenda

List of Background Papers:

None

Contact Officers: Alex Williams, Chief Customer and Strategy Officer
Email: GarethPowell@tfl.gov.uk

Contact Officers: Glynn Barton, Interim Chief Operating Officer
Email: GlynnBarton@tfl.gov.uk

Contact Officers: Stuart Harvey, Chief Capital Officer
Email: StuartHarvey@tfl.gov.uk

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Investment programme report

Quarter 3 2022/23
(18 September to 10 December 2022)

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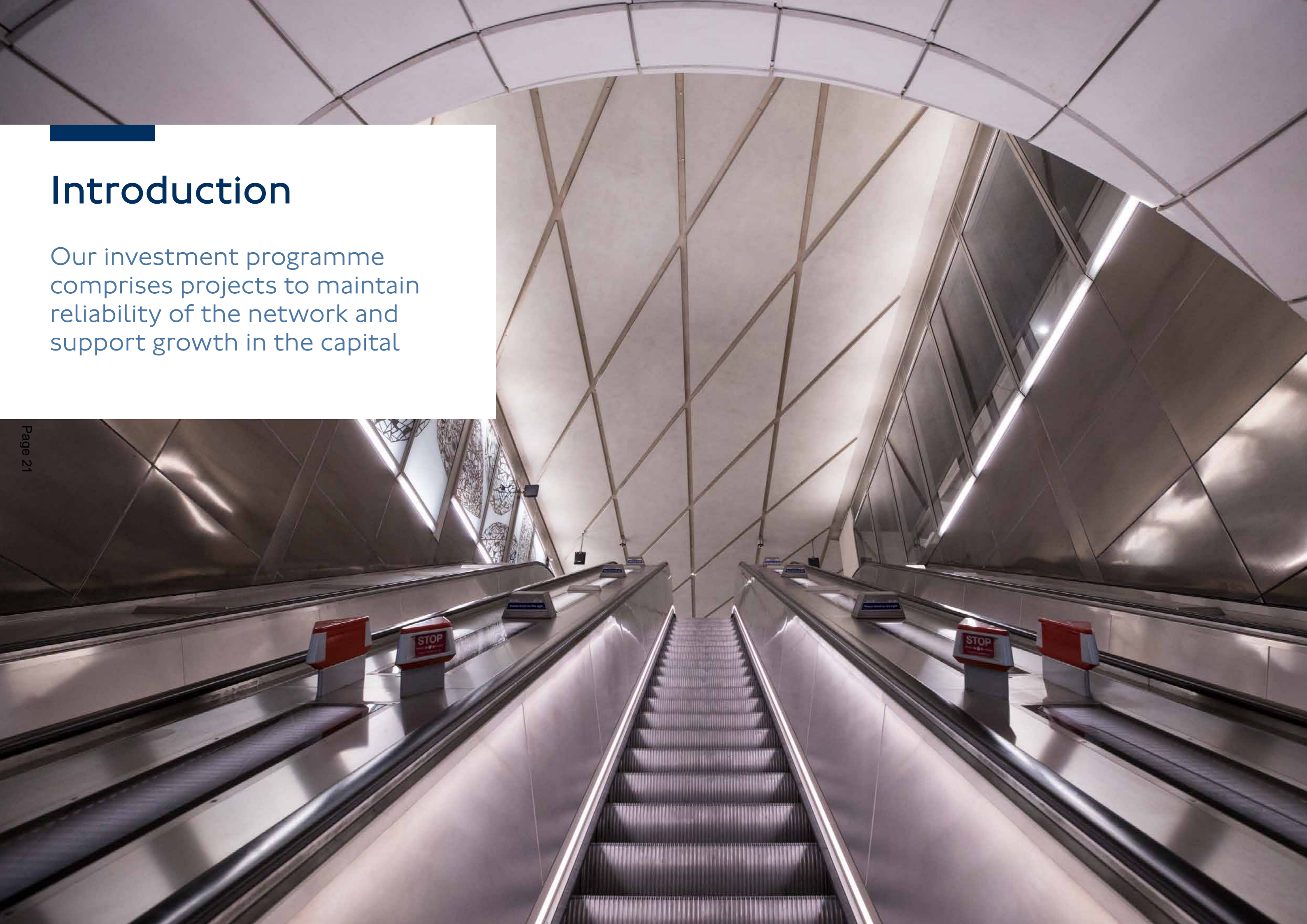
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Introduction

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



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, TfL Rail, 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

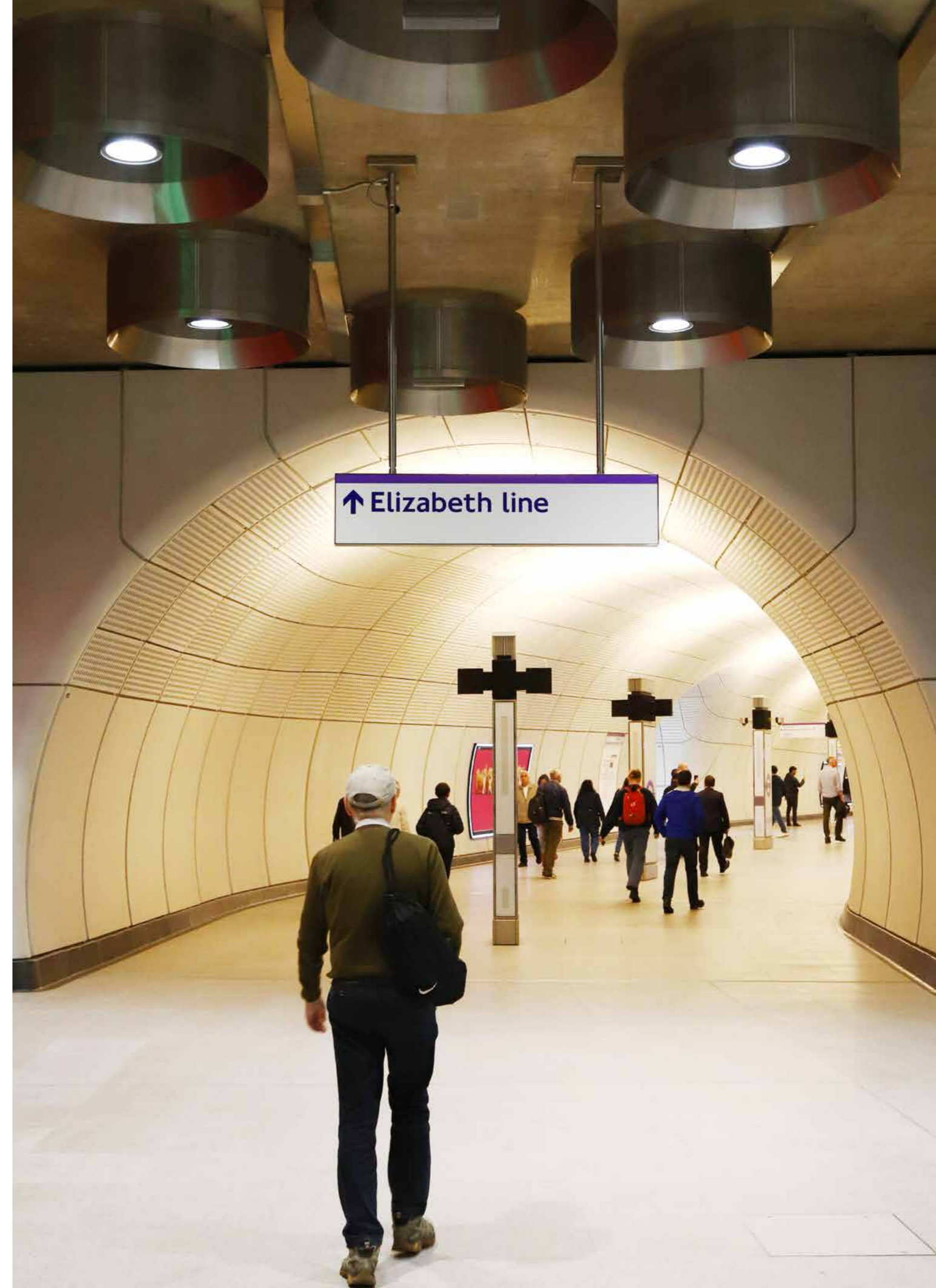
The report gives a progress update on the programmes and major projects that seek authority each year to the Programmes and Investment Committee. It includes programmes comprising renewals and enhancements to maintain reliability and support growth. Renewing and replacing our assets is our required baseline 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 18 September to 10 December 2022. For each key project or programme, the financial and milestone data represent the position at the end of Quarter 3 and includes 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, and 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 illustrates financial performance over the last four quarters. The commentary below the graph explains any specific trends or changes to trends over a snapshot in time.



By expanding our infrastructure we can unlock growth



Our projects help to improve the customer experience

Investment programme delivery structure

Our investment programme is delivered by the following areas of the business: Major projects, London Underground, Surface transport and Professional services. This is reflected in the structure of this report.

Major projects

This area is responsible for 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, the Elizabeth line and Crossrail.

London Underground

This area covers enhancements, infrastructure renewals, train systems renewals and technology.

Surface transport

This area comprises healthy streets, air quality, public transport and asset investment.

Professional services

Our professional services area comprises technology and data, media and our growth fund.

During Quarter 2, on 1 September 2022, we created a new director structure. The changes will see the majority of capital works fall under Capital, the area overseen by the Chief Capital Officer. However, more detailed assessments to determine which teams sit within each director area are still ongoing, so for consistency with Quarter 1 and Quarter 2, there has been no change to how this report is structured.

Our performance

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



Safety performance

Coronavirus remained the top cause of short-term staff absence but significantly decreased as a proportion of total staff absence, from 44 per cent in Quarter 2 to 27 per cent in Quarter 3. Mental health and musculoskeletal-related health remained the top two causes of long-term absence, which is in line with the national average. Our Occupational Health team continues to run events aimed at giving staff the tools to better look after their mental health.

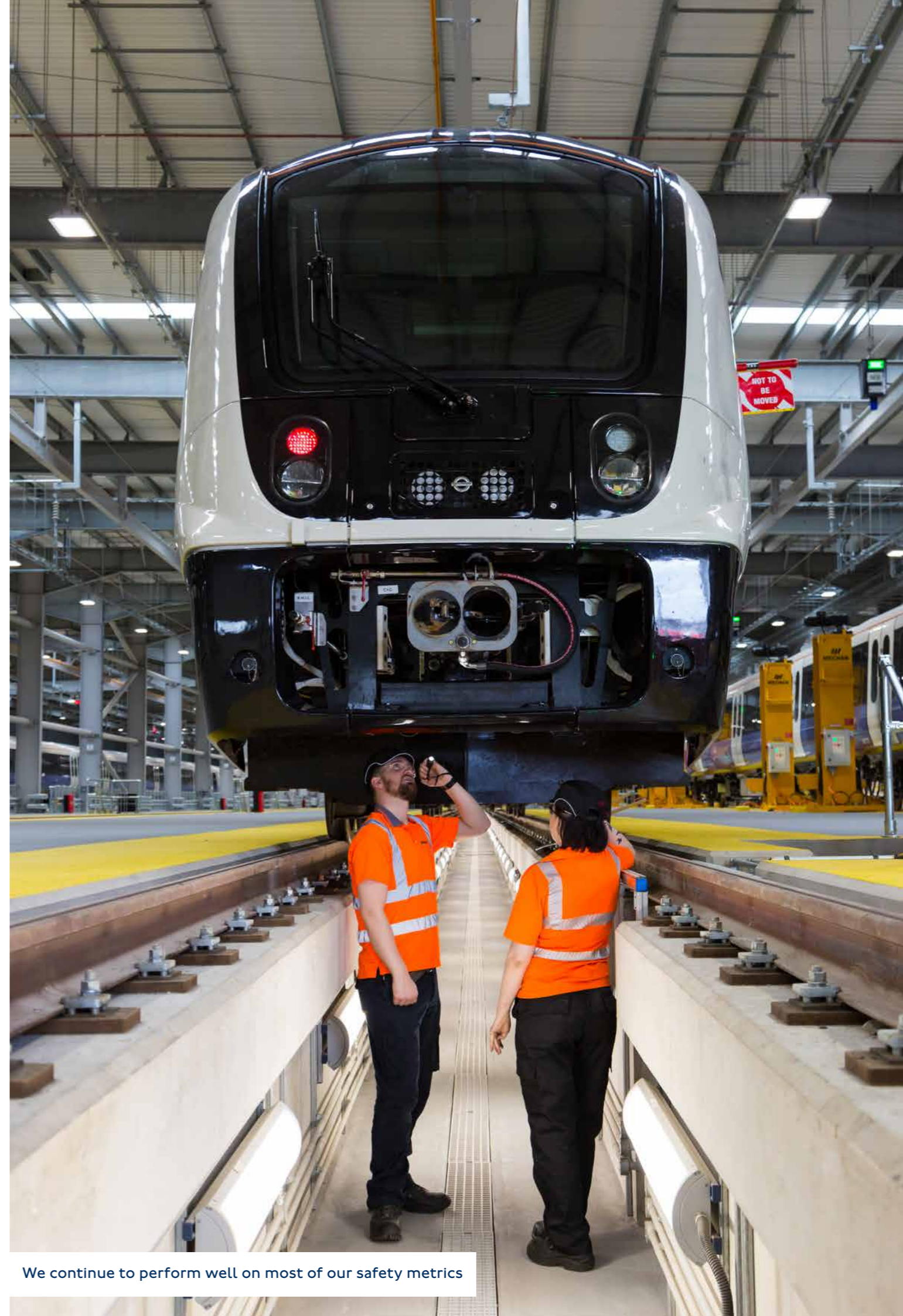
Capital delivery

Capital works cover a broad range of activities across the Major projects, Project and Programme Delivery, London Underground Capital Delivery and TfL Engineering. Some are essential asset renewals and maintenance to keep our

frontline service operating efficiently. Other activities represent new and significant investments to improve existing infrastructure. Within the Capital area, teams comprise employees from both TfL and supplier organisations. Likewise, work sites may be managed by us or by suppliers acting as our principal contractor. We do not distinguish between hours worked by our staff or by supplier's staff or by incidents within this section of the report.

Quarterly performance

To enable accurate analysis of data, some of our key measurables are quoted as a frequency rate per 100,000 hours worked. Frequency rates are calculated using a moving annual average based on performance over the previous 13 periods.

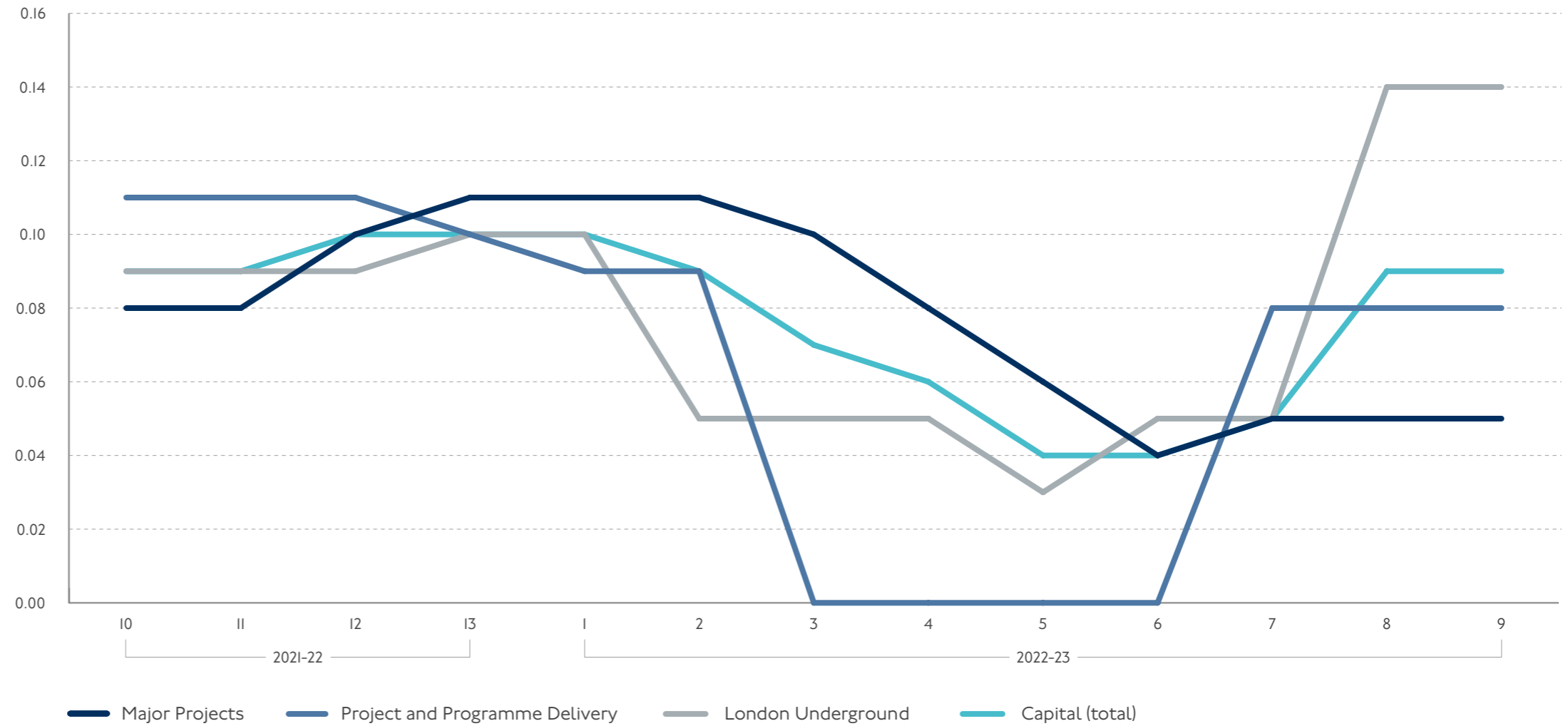


We continue to perform well on most of our safety metrics

In Quarter 3, there was a total of four incidents reported under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) within the Capital area, with the overall rate ending the quarter at 0.08; an increase on Quarter 2.

One of the injuries occurred within our Major Projects and Project and Programme delivery areas with the combined rate ending the quarter at 0.05. While this demonstrates an increase on Quarter 2, overall performance remains below the 2022/23 annual target of 0.10. The three further RIDDOR events this quarter occurred in London Underground, where all the incidents resulted in the person being off work for more than seven days.

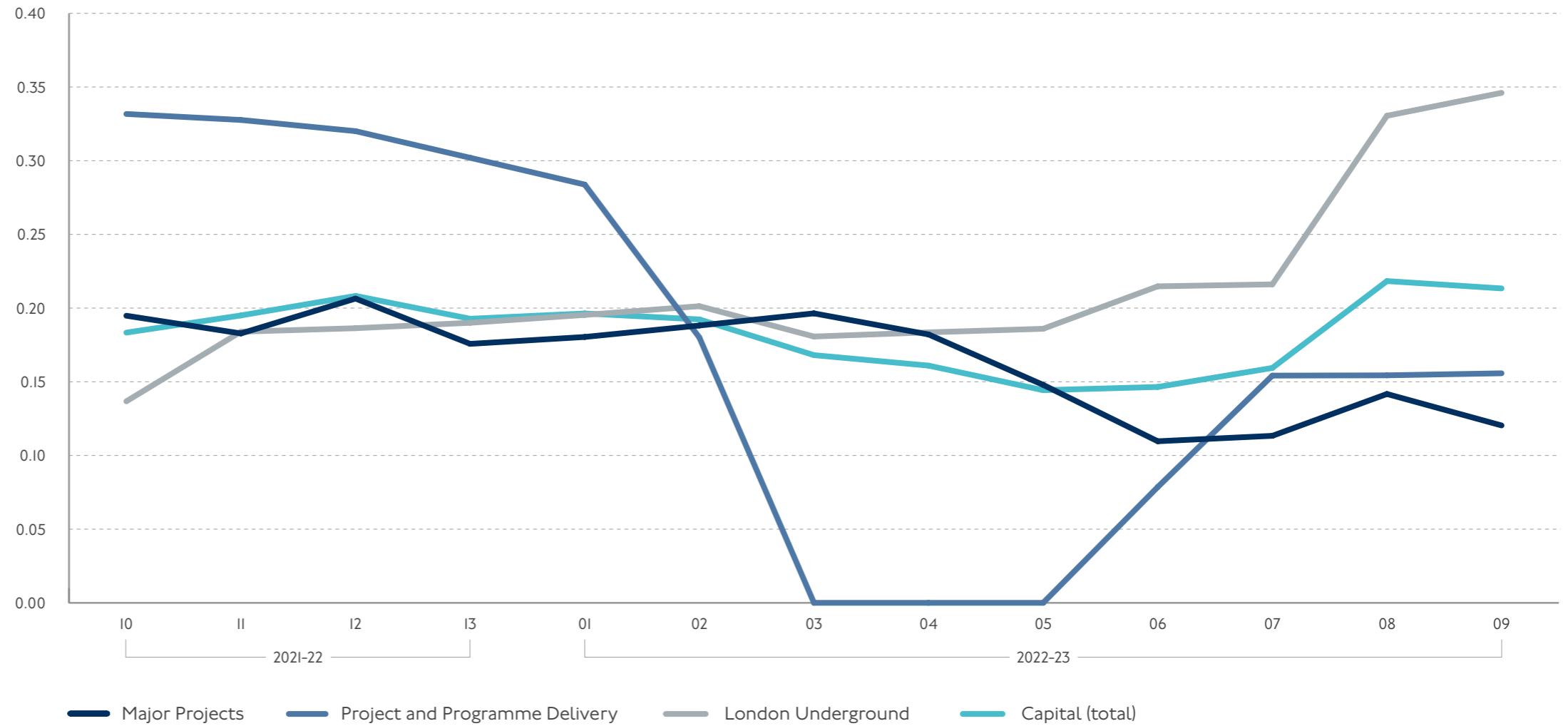
RIDDOR accident frequency rate
(per 100,000 hours worked)



Lost time injuries (LTIs) are injuries which cause an employee to be absent for one or more shifts. There were six LTIs reported in our Capital teams during Quarter 3, an increase of one when compared with Quarter 2. The lost time frequency rate for the Capital area ended the quarter at 0.21, an increase of 0.06.

Two of these LTIs occurred in our Major Projects and the Project and Programme Delivery areas, resulting in a combined LTI rate of 0.12, below the target of 0.25. The four additional LTIs occurred within our London Underground teams.

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

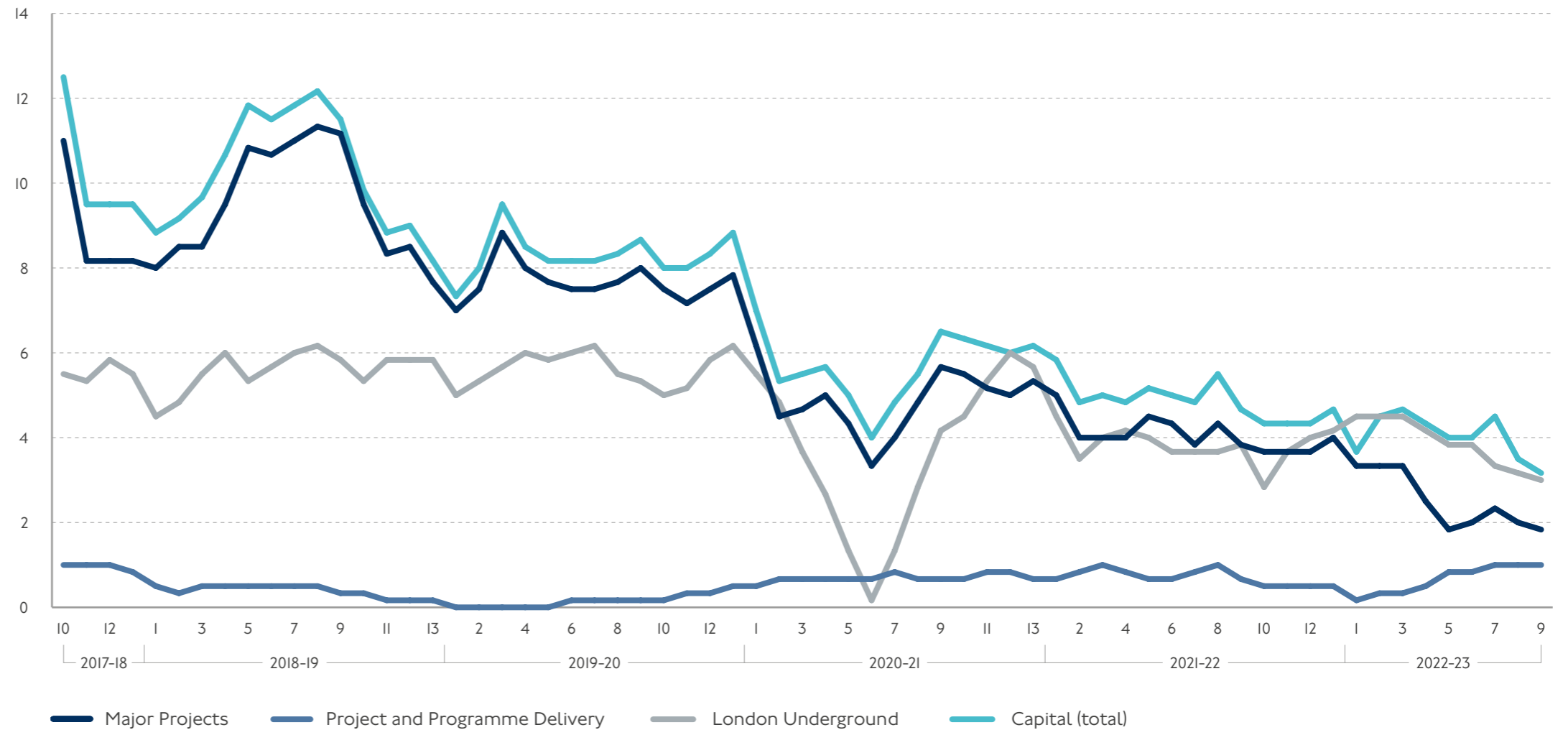


There were fourteen injuries reported in the Capital area during Quarter 3, which is a decrease of ten on the previous quarter. All were classified as minor injuries, which, given the range of activities and working environments our teams operate in, demonstrates a satisfactory degree of risk management. Cuts and abrasions were the top immediate cause of injury, and non-compliance with safe system of work practices was the most common cause.

In our Major Projects and Project and Programme delivery areas, the eight injuries that occurred fall well within our 'stretch target' of five injuries or fewer per four-week period, and the rate remains in line with our drive for improvement from last year.

In the London Underground teams there were five minor injuries reported for the quarter, a decrease of seven based on the last quarter. Within Engineering there was one minor injury reported in the quarter, a decrease of one in comparison with Quarter 2.

Total Capital workforce injuries
(six-period average since 2017/18)



Schedule performance

We have achieved a number of scheduled milestones throughout the year

DLR rolling stock

In April, dynamic testing (20,000km) started on the new DLR rolling stock.

Bank station upgrade

In May, following a 17-week closure, Bank station reopened with a new Northern line passenger concourse.

Piccadilly line upgrade

In June, the first car body was built and painted in the TfL livery.

London Underground

In June, seven new escalators were installed and brought into customer use.

In August, we completed the heavy overhaul of the first 15 Metropolitan line trains.

Barking Riverside

In July, operational service begun between Barking Riverside and Gospel Oak.

Old Street

In July, the new station entrance at Old Street opened.

Westminster Bridge

In July, we completed construction of the Hostile Vehicle Mitigation programme at Westminster Bridge.

A40

In July, we successfully completed the major joint replacement on the A40 Westway.

Borough station

In August, we completed the lift renewal and ticket hall enhancement at Borough station.

Silvertown Tunnel

In August, we began using the tunnel boring machine to bore in the southbound tunnel.

Brompton Road

In September, a new Brompton Road entrance opened at Knightsbridge station.

Major Asset Renewals Programme – Brent Cross

In October, we received the consultant's submission of the Options Assessment report for Brent Cross.

Cycle hire

In October, we launched e-bikes for hire as part of the cycle hire modernisation project.

Road User Charging scheme

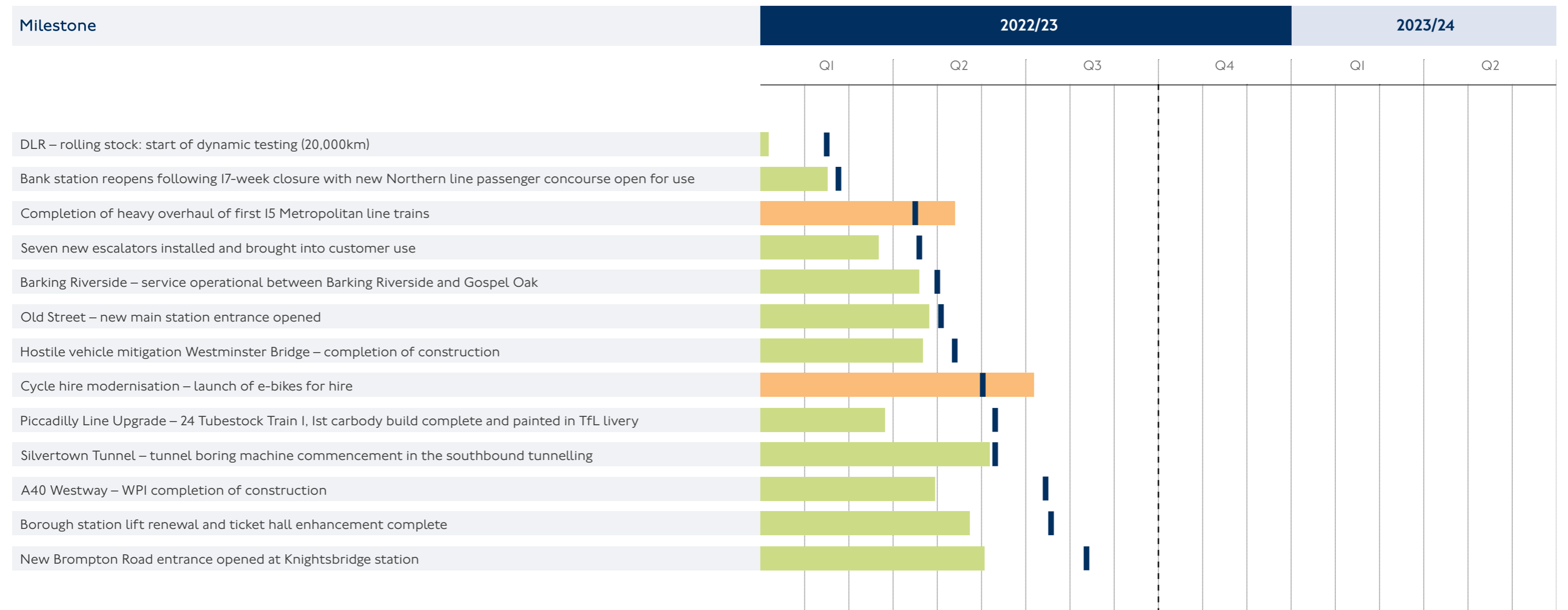
In November, we completed the statutory public consultation on the Road User Charging scheme.



Strategic milestones

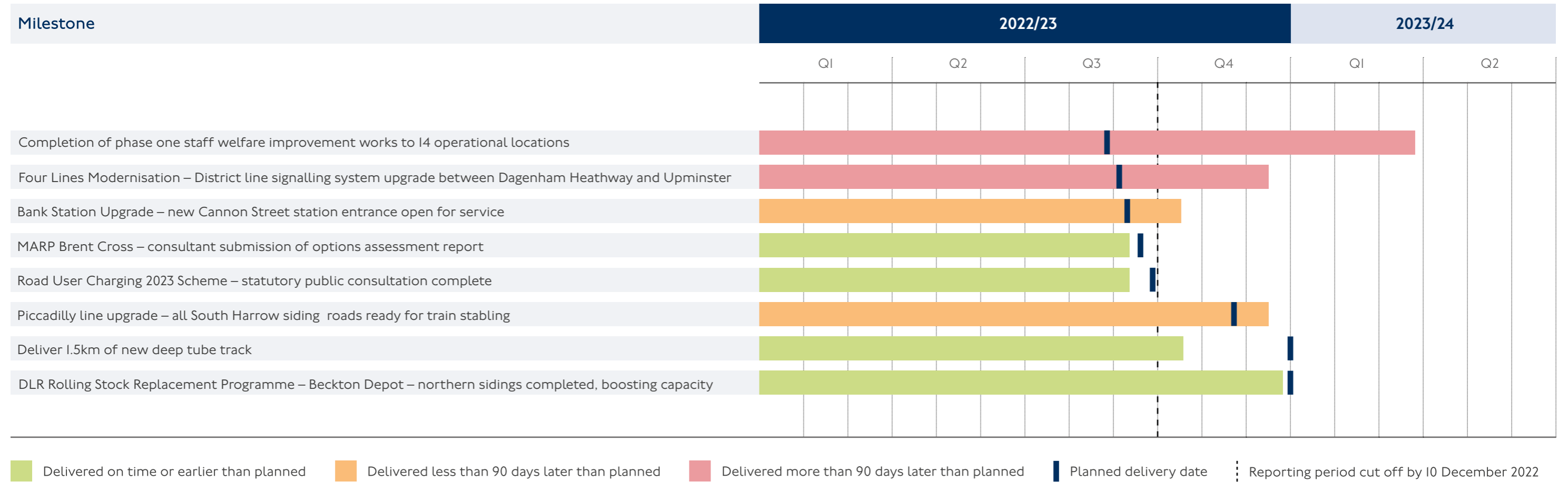
We have delivered 15 out of 21 strategic milestones either on time or early this year

These are our strategic milestones for 2022/23. The hollow box shows when the milestone was due to be met, while the coloured block shows 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 10 December 2022

Strategic milestones 2022/23 (continued)



Milestones forecast to be late

Four Lines Modernisation

Signalling system upgrade on the District line passenger services

Since commissioning signal migration area five from Barons Court and Fulham Broadway to Sloane Square on the District and Circle lines in March 2022, the underlying performance of the signalling system has been good. A revenue software uplift was rolled out in November 2022 to address a safety issue identified after signal migration area five entered revenue service. This means temporary mitigation measures can be removed.

Signal migration areas six and seven at the eastern end of the District line are planned to be brought into revenue service in January 2023 and March 2023 respectively.

Bank station upgrade

New Cannon Street station entrance open for service

The final phase of testing and commissioning critical systems required to open the new Cannon Street entrance has been delayed owing to ongoing manufacturing and installation issues with the cladding panels. The new entrance is expected to open in early 2023.

London Underground – Infrastructure renewals – Built environment and civils

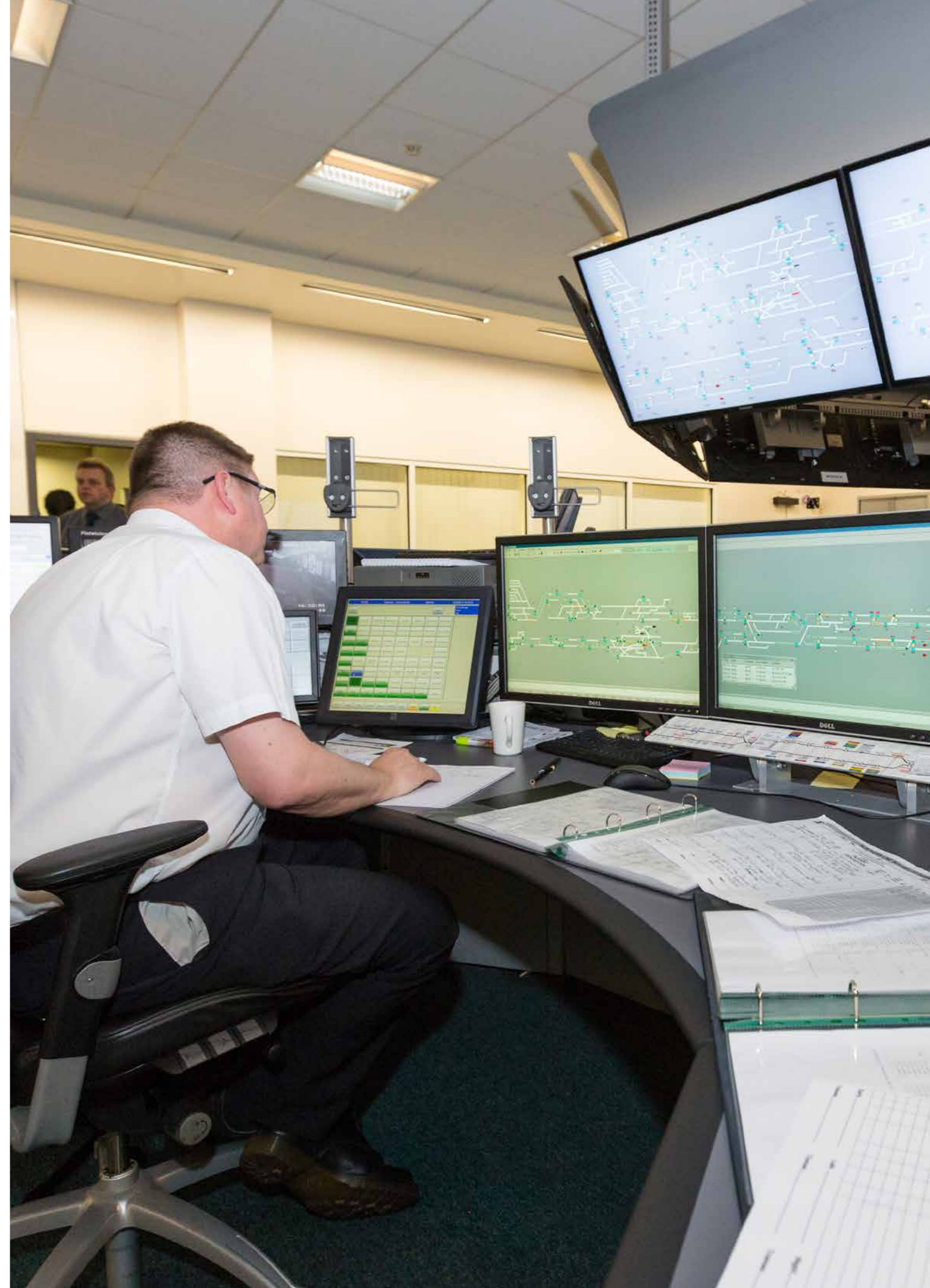
Completion of phase one staff welfare improvement works

The staff welfare improvement project is under way across a number of locations but has uncovered additional necessary compliance works across most of these locations. This has resulted in additional works and delays. This means the forecast completion date is now late and unrecoverable against the milestone date. Additional costs incurred in this project will need to be offset with other work across the programme.

London Underground – Train systems – Passenger fleet

Completion of heavy overhaul of the first 15 Metropolitan line trains

The project delivery timescales were delayed due to the slower than expected ramp up of bogie production. This was in turn due to delays in material deliveries from suppliers and development and approval of work instructions. The production rate was subsequently improved, however, strikes held by the RMT and Aslef unions on 27 and 30 July 2022 further impacted production by two working days during this period, with the final train being completed on 12 August, 28 days later than the target date.



We continue to upgrade our signalling systems

Major projects

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



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	996	10	1,006	1,149	143
Change since last Investment programme report					
No change	No change	No change	No change	No change	

Financial commentary

No movement to report.

Performance over time commentary

The forecast end date represents the delivery of the rolling stock and depot, including all additional changes. Since the authority award in 2013/14, our forecast end date has been delayed by approximately four years owing to delays to the overall Crossrail programme. Our authority increased in 2018/19, when five units were added. Since the authority was awarded in 2013/14, the EFC dropped from £1,090m to £1,006m because the trains have since been part of a sale and leaseback arrangement. They are now being leased from 345 Rail Leasing Limited on a 20-year agreement and the costs charged as operational costs.

Programme update

Class 345 trains

All remaining seven-car Class 345 trains have been converted to nine-cars. An all nine-car Class 345 passenger service is running between Elizabeth line stations from Reading and Heathrow to Abbey Wood, and from Shenfield to Paddington, with a peak service of 22 trains per hour in the central section.

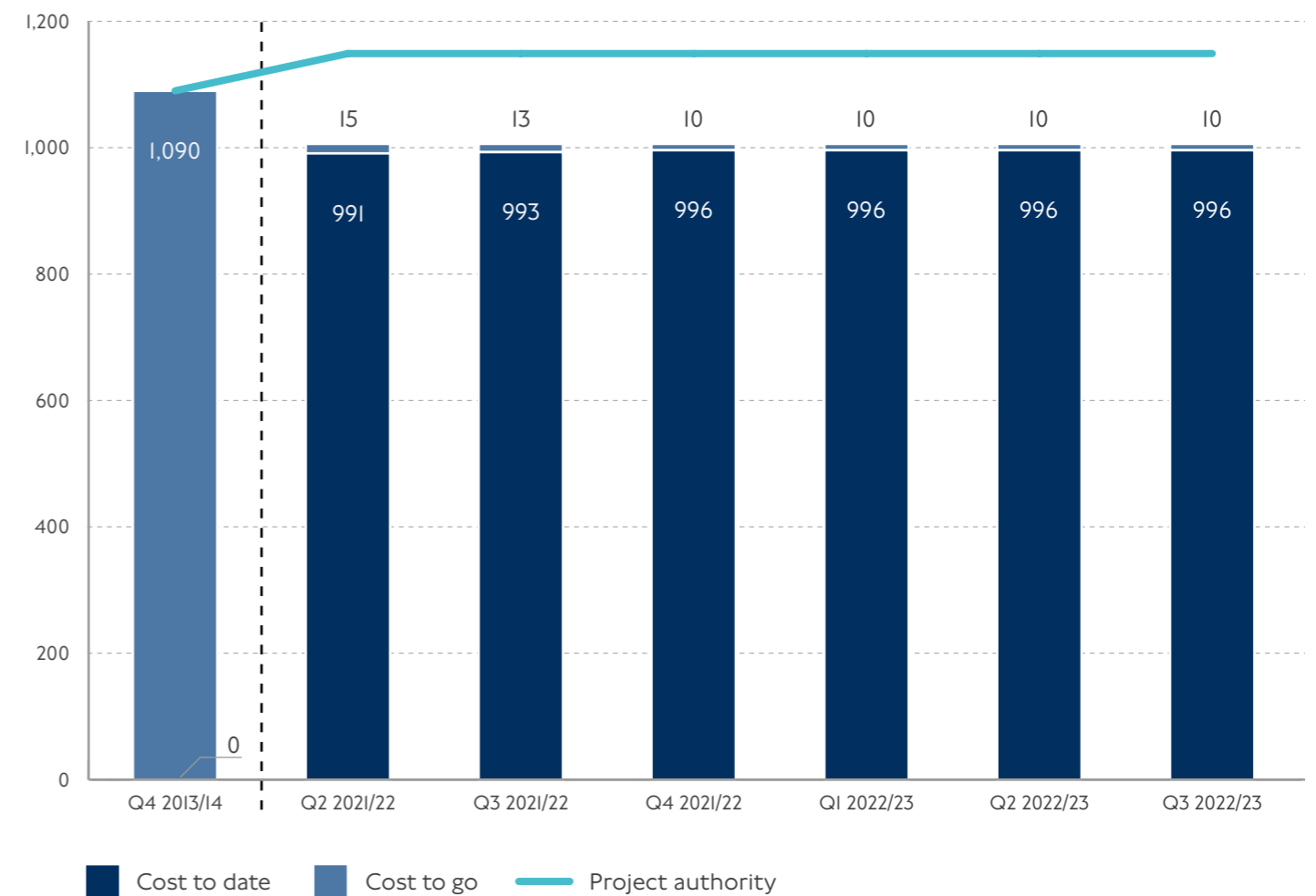
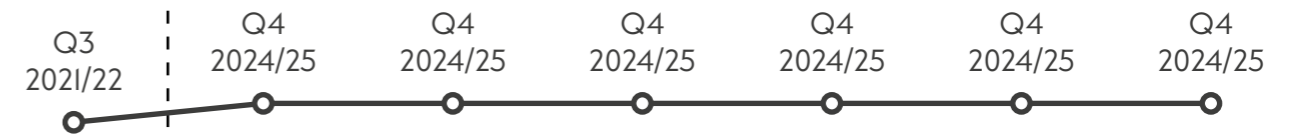
The manufacturers continue to apply incremental updates to the train and signalling system software, and we have provided for this in the rolling stock project forecast through to 2025.

Challenges

Fleet reliability has improved significantly through Quarter 1 and Quarter 2 but Alstom, the manufacturer, is carrying out further reliability-focused modifications to secure further improvement in Quarter 4.

Estimated final cost performance over time (£m)

Forecast completion date



Crossrail

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)
Q1 2023/24	15,781	150	15,931	15,888*	(43)
Change since last Investment programme report					
No change	44	(50)	(6)	99	

Financial commentary

In Quarter 3, the EFC reduced to £15,931m, £6m lower than the Quarter 2 forecast. This reflects the reduced risk profile after November 2022 when the west and east sections of the railway were integrated with the central section. The £150m cost to go represents all required works to achieve end-to-end integration in May 2023, including signalling, communications and controls software updates in the first half 2023, aligned with the current transition and close out strategy for the programme.

Crossrail continues to be focused on managing the risks associated with implementing the additional functionality required to complete the final integration of the railway, alongside achieving the required level of operational resilience.

Performance over time commentary

The reported forecast end date represents operation of the full peak timetable. At this point the peak time frequency will increase from 22 to 24 trains per hour

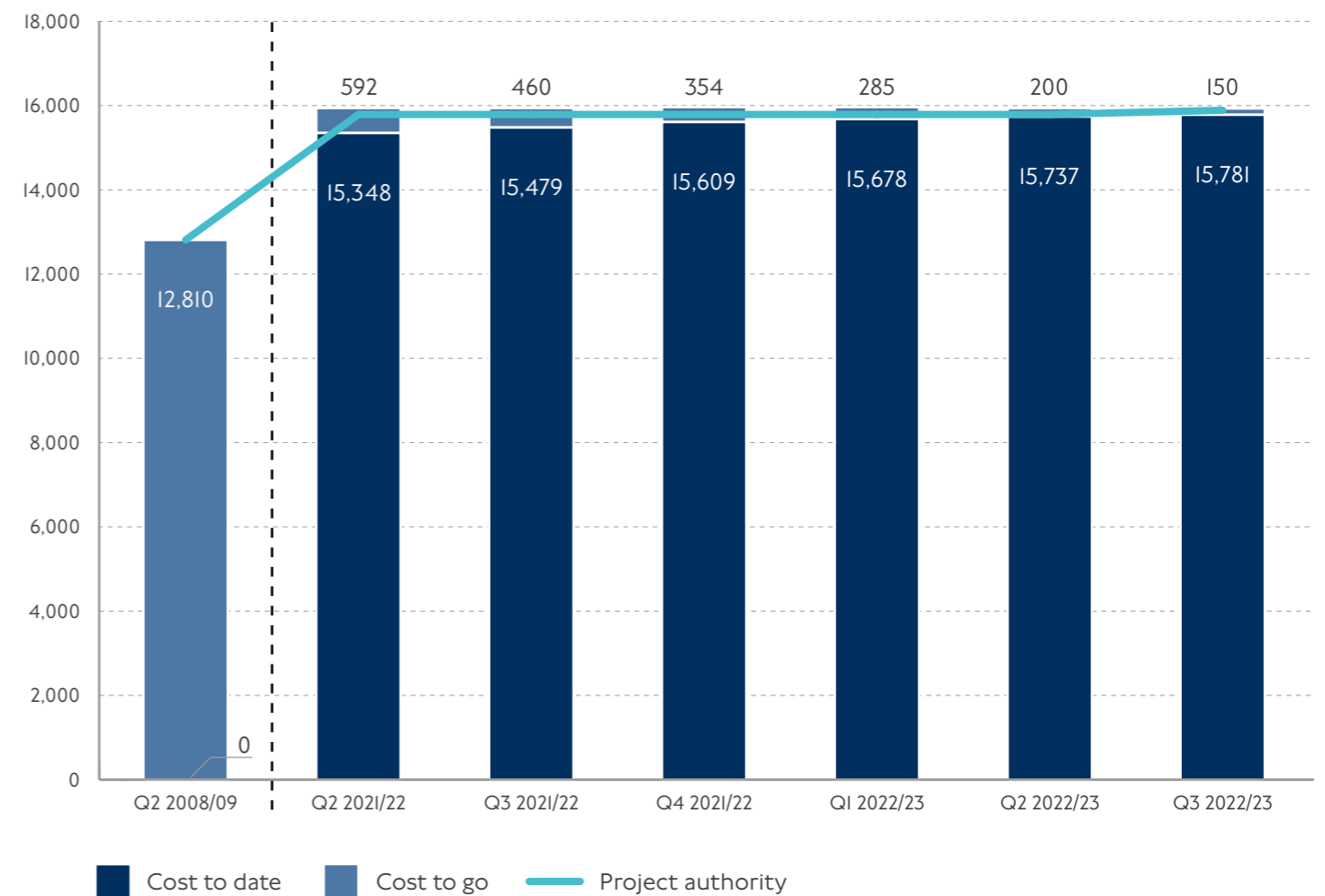
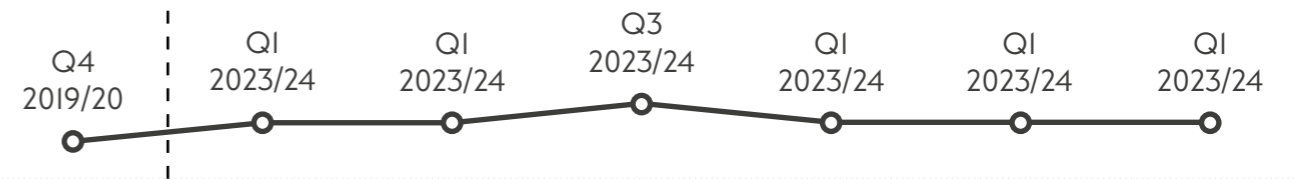
between Paddington and Whitechapel, with 16 trains per hour off-peak. Direct services from Shenfield to Heathrow Airport will also begin. The original forecast end date was autumn 2019. However, the schedule at that time assumed that installation of critical systems, construction of stations, and testing and commissioning could all be completed in parallel towards the latter stages of the programme. This was ultimately not achievable and led to a delay in completion. In addition, the pandemic had an impact on productivity in 2020, although this has been mitigated from a schedule and cost perspective.

Since setting Delivery Control Schedule 1.2 in August 2021, costs have remained largely stable due to active management of the EFC. We have realised several opportunities and risk retirements over this period through focused cost reduction initiatives, delivering as close as possible to the forecast schedule and a revised risk profile. The EFC has therefore been reduced by £31m to £15,931m since the Quarter 1 update.

* Excludes on-network works carried out by Network Rail

Estimated final cost performance over time (£m)

Forecast completion date



Programme update

The Crossrail project is now in the final phase, with the final stage on track to be delivered by the end of May 2023.

At this point, the line will move to a service frequency of 24 trains per hour in the central section, up from the current 22 trains per hour. This increase will be facilitated by delivery of the auto reverse functionality. This uplift will take place in line with the National Rail timetable change scheduled for 21 May 2023.

A full closure of the Elizabeth line's central section took place during the Christmas period, and this meant that a number of works were successfully completed.



Elizabeth line trains will increase in frequency in May 2023

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)
Q4 2024/25	5,225	248	5,473	5,520	47
Change since last Investment programme report					
No change	25	(25)	No change	No change	

Financial commentary

The EFC has remained in line with Quarter 2. Inflationary pressures on the heavy lifting shed and staff accommodation block at Neasden depot and increased risk relating to the signalling design in the Uxbridge interoperable area have been offset by small cost reductions/efficiencies in other areas. In addition, an updated inflation rate for the Thales contract using their pay inflation assumptions and our updated Finance Group guidance has helped offset cost pressures.

Our forecast completion date, for when the final signal migration area I4 between Rayners Lane and Uxbridge will be brought into service, remains Quarter 4 2025.

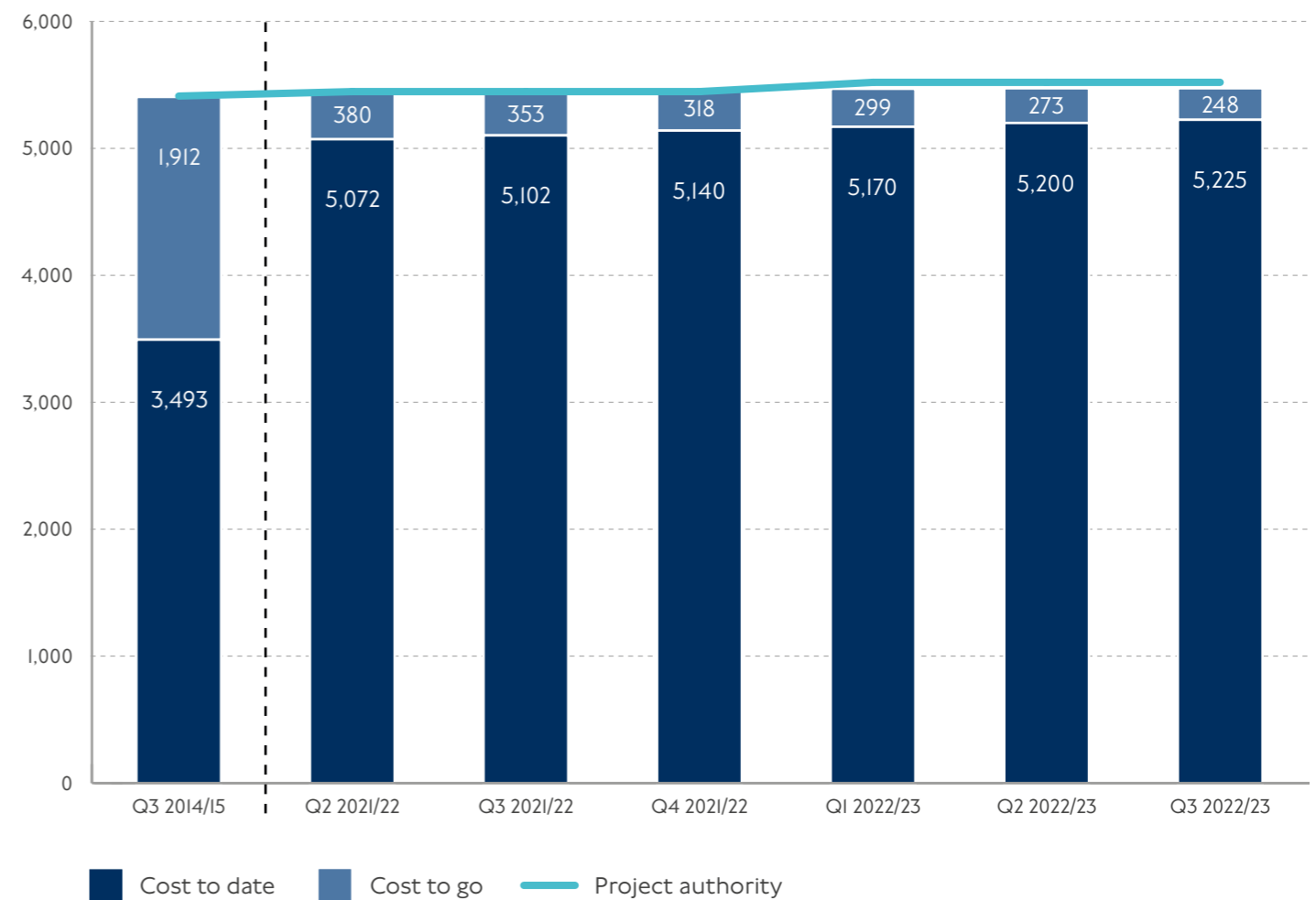
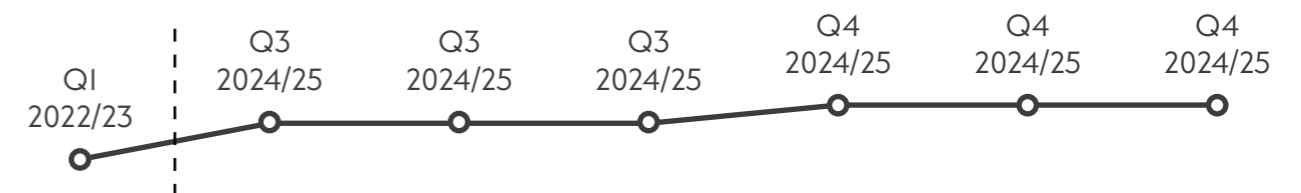
Performance over time commentary

The forecast completion date shows when the final signal migration area I4, between Rayners Lane and Uxbridge, will be brought into service.

Our forecast completion date for signal migration area I4 has been delayed during 2022, principally owing to challenges with complex software development, testing and commissioning, closure availability and the impact of the coronavirus pandemic.

Estimated final cost performance over time (£m)

Forecast completion date





Our signalling upgrades make journey times quicker for customers

Programme update

We continue to make good progress on the programme, which is delivered by progressively installing new signalling onto sections of the railway called signal migration areas. The signalling section between Stepney Green and Becontree, called signal migration area six, went live on 15 January. This represented a major achievement for the programme as it completes the roll out of the new signalling on the Hammersmith & City line, further improving reliability for customers.

The area now operating under the new signalling covers 52 stations and four complex junctions, including the entirety of the Circle and Hammersmith & City lines. By way of comparison, the Jubilee line has 27 stations.

We are planning to introduce signal migration area seven from Dagenham Heathway to Upminster in March 2023.

This will extend the roll out of the new signalling system on the District line and connect the first depot to the network. Software development continues for future signalling migration areas covering the Metropolitan line between Finchley Road and Preston Road (signal migration area eight), including the interface with Neasden depot and the Jubilee line.

Design and installation of trackside signalling assets continues on the Uxbridge (signal migration area 14) and Amersham (signal migration areas 13 and nine) branches of the Metropolitan line beyond Preston Road. Installation is targeted for completion in March 2023.

The procurement is in progress for the planned upgrades to the heavy lifting shed at Neasden depot and the new staff accommodation block. When complete in 2024, this facility will enable the planned overhaul of Metropolitan line trains.

Line upgrades

DLR rolling stock and systems integration

(includes Housing Infrastructure Fund)

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	249	608	857	881	24
Change since last Investment programme report					
No change	30	(15)	15	18	

Financial commentary

Since the last report, the EFC has increased by £15m to £857m, primarily driven by inflationary pressure on material costs being greater than originally anticipated. However, we continue to review options to mitigate and offset these cost increases.

Performance over time commentary

The forecast end date has not changed since the last report.

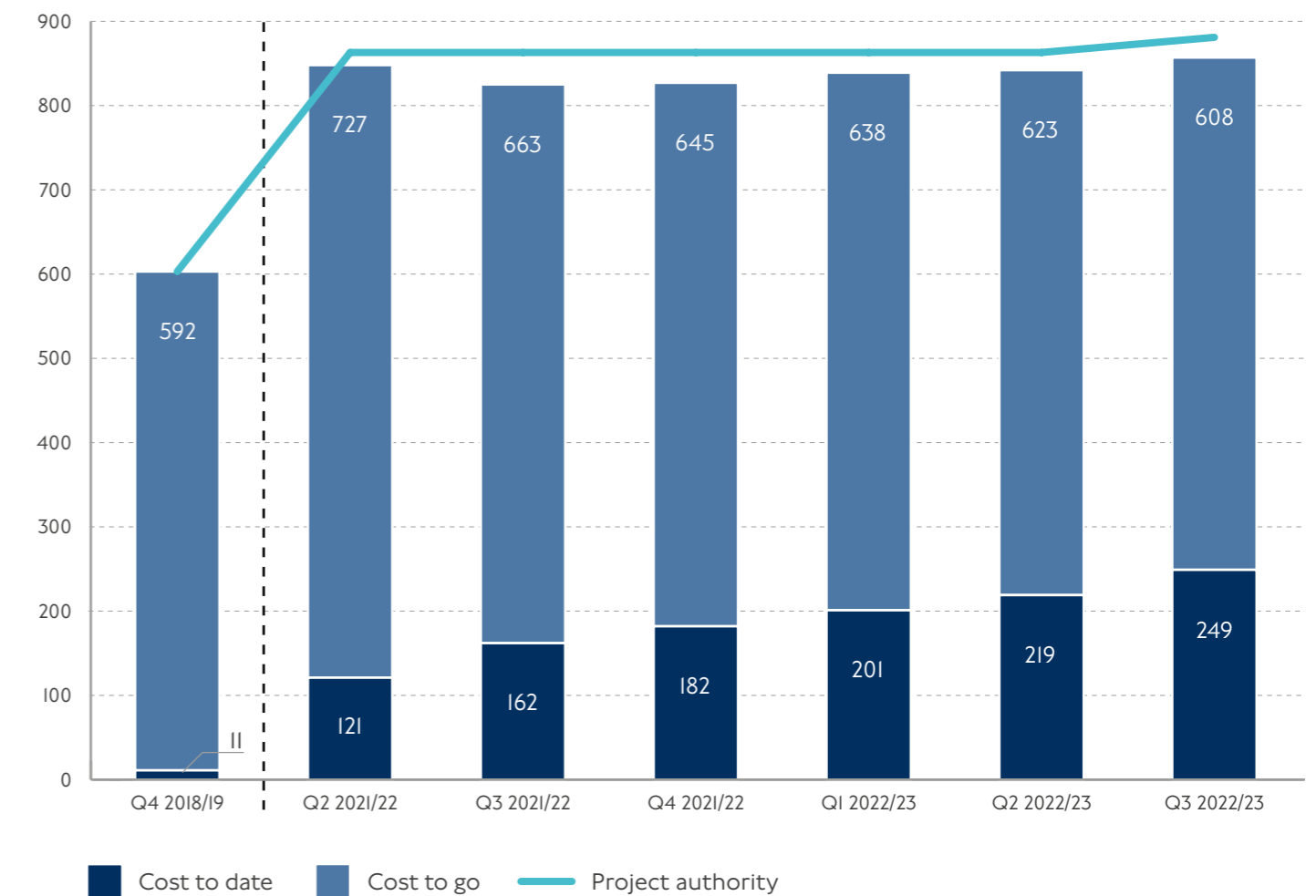
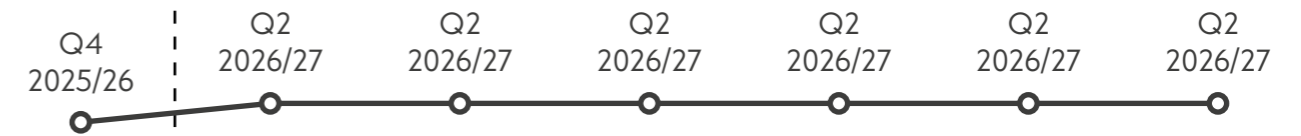
Since the original grant of programme and project authority in 2019, we have received approval from the Government to activate

an option to purchase 11 additional trains which are funded through the Housing Infrastructure Fund. The increase in EFC from Quarter 4 2018/2019 reflects the addition of £261m of grant funding from central government to deliver the Housing Infrastructure Fund scope of works.

We reduced our EFC to reflect procurement savings and by taking a proactive stance for the remaining risk exposure as the rolling stock design approached completion. However, this is offset by countervailing inflationary pressures during 2022.

Estimated final cost performance over time (£m)

Forecast completion date



Programme update

Rolling stock delivery

The manufacture of the new rolling stock in Spain is continuing to plan with seven trains completed and undergoing testing before delivery of the first train to Beckton.

This arrived in early January 2023, meaning the programme continues to be two months ahead of target performance. We anticipate having completed the manufacture of 12 trains by the end of the 2022/23 financial year.

Beckton depot and network infrastructure

At Beckton, critical works to complete the changeover of the signalling power supplies on the Northern Sidings works and to install new transformer rectifiers in the substation were successfully completed in line with the revised programme. This is following the cancellation of previous possessions for other operational priorities resulting from Operation London Bridge.

The contract for the maintenance facility building and additional southern sidings have now been awarded. This is the largest procurement of the programme after the rolling stock contract.

In October 2022, we began signalling testing on the DLR network with the existing fleet in preparation for the arrival of the new trains which began in early January 2023.

We have awarded the contract for the design and build for a second entrance at Blackwall station which is essential for unlocking the full fleet roll out.

Housing Infrastructure Funding

We have received confirmation from the Government to activate an option to purchase 11 additional trains which are funded through the Housing Infrastructure Fund. This will provide additional capacity and unlock further housing benefits in the Royal Docks and Isle of Dogs.



We are ahead of target on our new DLR rolling stock

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	582	2,329	2,911	2,994	83
Change since last Investment programme report					
No change	57	(47)	10	No change	

Financial commentary

Since the last report, our EFC has increased by approximately £10m, and £5m of this relates to the inflationary impact which now supersedes previous assumptions reflecting external market forces. A further £5m increase relates to our South Harrow sidings works which has increased due to increased materials and labour costs required to complete the project. Our forecast completion remains early 2027.

Performance over time commentary

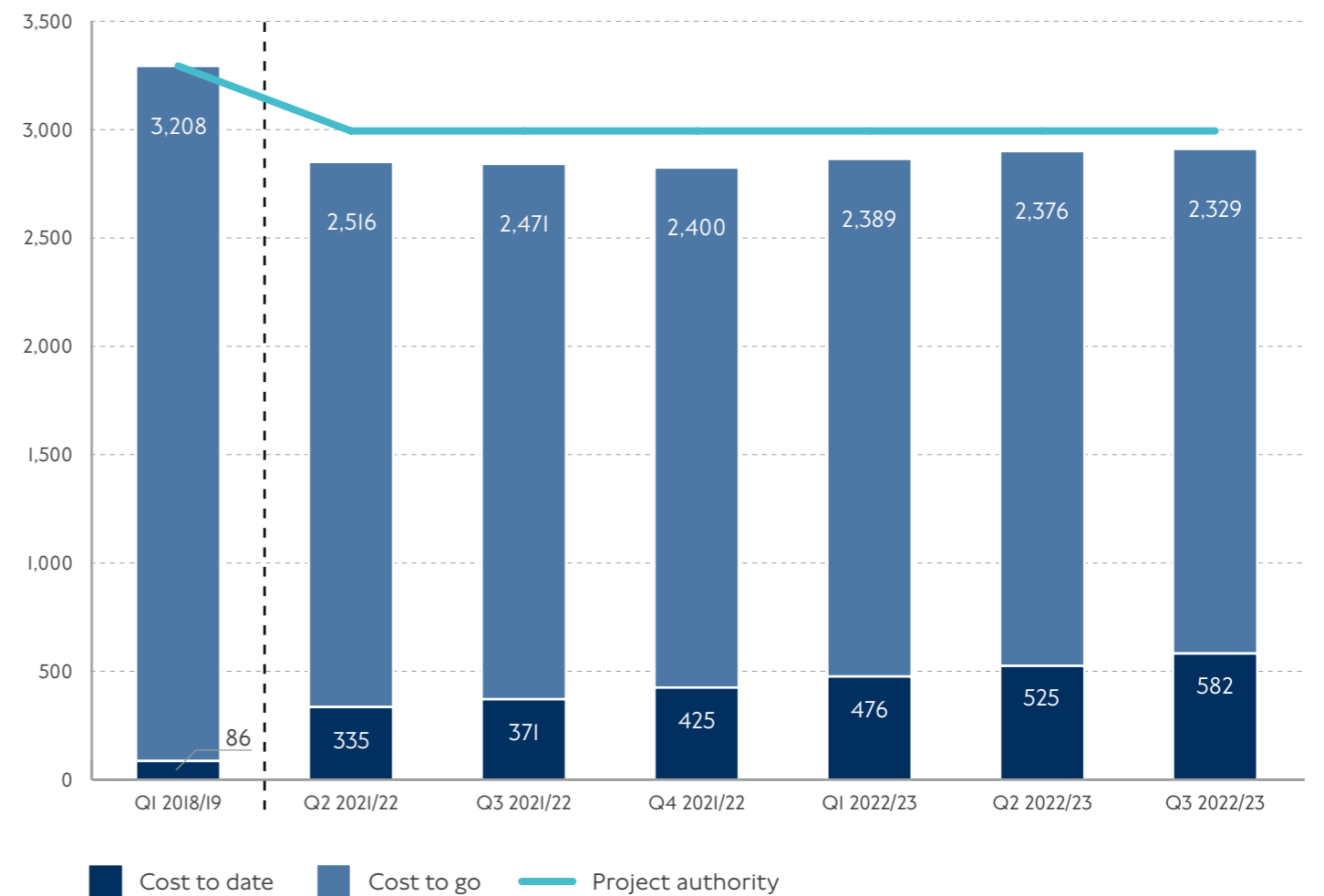
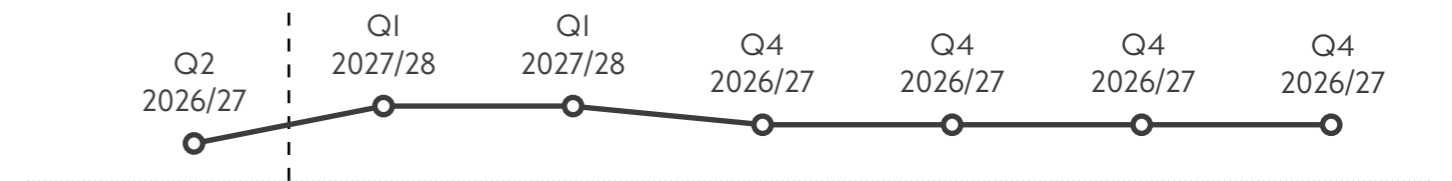
The forecast end date represents the date when the new Piccadilly line trains and all supporting infrastructure will be in operational use. Since authority was originally awarded in May 2018, our forecast end date has been delayed from 2026 to 2027.

This was driven by a decision to defer the start of third party spend by six months, where possible, to help mitigate funding challenges due to the pandemic. As a result of an in-depth review of the critical path activities and driving schedule efficiency, the forecast completion has been brought forward from Quarter I 2027/28 to Quarter 4 2026/27. The new trains are now expected to begin entering service from summer 2025.

Since July 2021, industry price increases have led to updated inflation indices within our business, adding £85m to the overall EFC since the beginning of the financial year. This is being contained within the overall project authority through an ongoing focus on active opportunity management.

Estimated final cost performance over time (£m)

Forecast completion date





A computer-generated image of the new Piccadilly line trains

Programme update Depots and stabling

Enabling works have begun at Northfields and Cockfosters depots to prepare for the start of major upgrades to provide maintenance facilities for the new trains. Extensive vegetation clearance and ground works have been carried out at Cockfosters to enable construction of a new wheel lathe facility, which forms the first stage of construction at this site.

The depots' concept designs had to be updated as the original wheel lathe design could not be delivered. The programme delays from this, compounded by resource shortages, have caused knock-on impacts to the depots migration plan with this now misaligned to the train introduction need by dates and migration strategy. Full impacts of this, as well as possible mitigations, are being worked through collaboratively between project, Siemens and operations and maintenance colleagues. We expect to have an output with possible options for mitigation in Quarter 4 of 2023.

New rolling stock

In December, Siemens completed the manufacture of the second in type key motor car shell for the first new Piccadilly line train. This follows the successful assembly of the first intermediate motor cars back in June. This keeps us on target for the first train to be fully formed and ready to start testing from summer 2023.

Signalling

The legacy signalling team and our internal delivery partners commissioned legacy signalling modifications into service at Holborn station. These are to adjust for trains that are longer and have different sight lines from the driver's cab.

High voltage power

The direct current power team completed the delivery of the direct current cabling required to connect the new sidings at South Harrow with the substation at Sudbury Hill. In total, the team have now delivered and installed 8.2km of direct current cabling and 1.4km of alternating current cabling. This supports our key milestone to bring all 12 sidings at South Harrow into use to support the upcoming timetable change in May 2023.

Lighting main upgrade

In September, we awarded Arcadis the contract for the lighting main upgrade concept design work. This will enable Arcadis to produce seven separate concept designs (based on geographical areas of the Piccadilly line which require upgrade).

Once the concept works are complete, the project will progress to tender for design and build works. Completion of the lighting main upgrade is a key deliverable within the infrastructure programme supporting the roll out of the new trains.

Green agenda

The project team has set key performance indicators across the programme focusing on how they will reduce carbon, the values of which are reported.

Top carbon risks and opportunities are reported in our internal Programme Performance report.

Objectives have been set for all staff to attend carbon literacy training courses to support the delivery of carbon savings within the programme. Work continues on revising the baseline to reflect a developing understanding of the programme.

Network extensions

Silvertown Tunnel

Forecast completion	Net cost to date (£m)	Net cost to go (£m)	Net EFC (£m)	Programme and project authority (£m)	Variance: EFC versus authority (£m)
Q1 2025/26	79	107	186	173	(13)
Change since last Investment programme report					
No change	6	(5)	1	No change	

Financial commentary

The EFC is currently £13m over the approved programme and project authority of £173m, owing to inflation increases and the agreed Safe Stop undertaken because of the coronavirus pandemic. The main change in EFC since the last report is owing to further inflationary pressure. We continue to seek opportunities to reduce cost and risk exposure, including non-essential scope.

Performance over time commentary

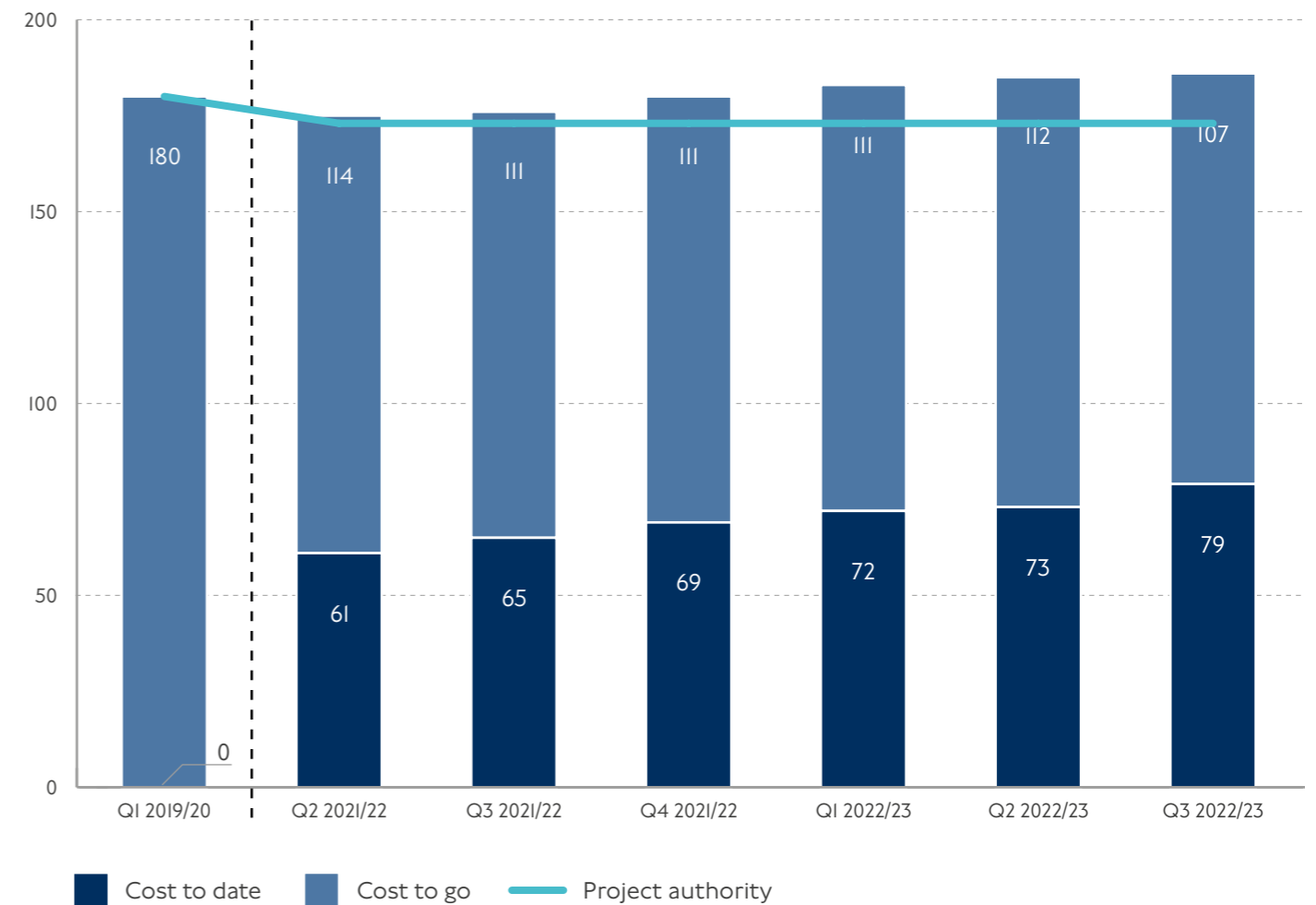
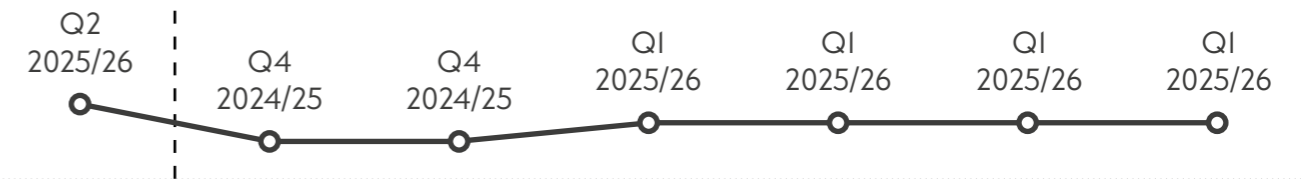
The forecast end date is when the permit from an independent assessor to use the new Silvertown Tunnel is obtained.

In 2020/21, the EFC increased owing to additional costs for the implementation of the Road User Charging infrastructure. However, the EFC was reduced in Quarter 1 2021/22 after this scope and budget were transferred to the Road User Charging portfolio to achieve synergies with our other Road User Charging schemes.

Higher than originally assumed inflationary pressures in 2022/23 have resulted in an increase of around £4m in the EFC. Also, during 2022/23, there have been shortages of skilled labour and supply of construction materials which have resulted in the permit to use date moving from April to June 2025.

Estimated final cost performance over time (£m)

Forecast completion date



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

Programme update

Good progress continues to be made on issuing notices for permanent land acquisition, with these planned to be completed by the end of 2022/23 financial year.

The start of tunnelling began at the end of August 2022 and the tunnel boring machine achieved a peak production of 32 metres per day, an outstanding output for the biggest tunnel boring machine in the UK. It remains on target to arrive safely in the rotation chamber in February 2023, which completes the southbound tunnel drive and marks a significant milestone for this programme. We then will have to turn the machine 180 degrees in the rotation chamber for the northbound tunnel drive, which is another extraordinary piece of engineering.

Our contracts for further transport and traffic monitoring, as well as socioeconomic and environmental monitoring are progressing well, with significant further modelling and analysis work now under way. This will support us in setting the initial user charges at Silvertown and Blackwall tunnels, developing the new cross-river bus services, and enabling a refreshed assessment of the scheme's environmental effects in advance of opening in 2025.



We're working on the southbound section of the Silvertown Tunnel

Network extensions

Barking Riverside Extension

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 2022/23	329	(1)	328	329	1
Change since last Investment programme report					
No change	1	(1)	No change	No change	

Financial commentary

The EFC has remained stable since the last quarterly report.

Performance over time commentary

Our forecasted end date for when services will run between Gospel Oak and Barking Riverside has been delayed since the programme and project authority was approved in 2018, following the discovery of uncharted utilities and the Safe Stop because of the pandemic. The Safe Stop resulted in rail systems works being replanned and Network Rail possessions rebooked, with the EFC increasing because there are only two opportunities a year for a four-day possession. Signal sighting concerns have resulted in additional works to resolve the issue and have impacted planned completion by the contractor.

Programme update

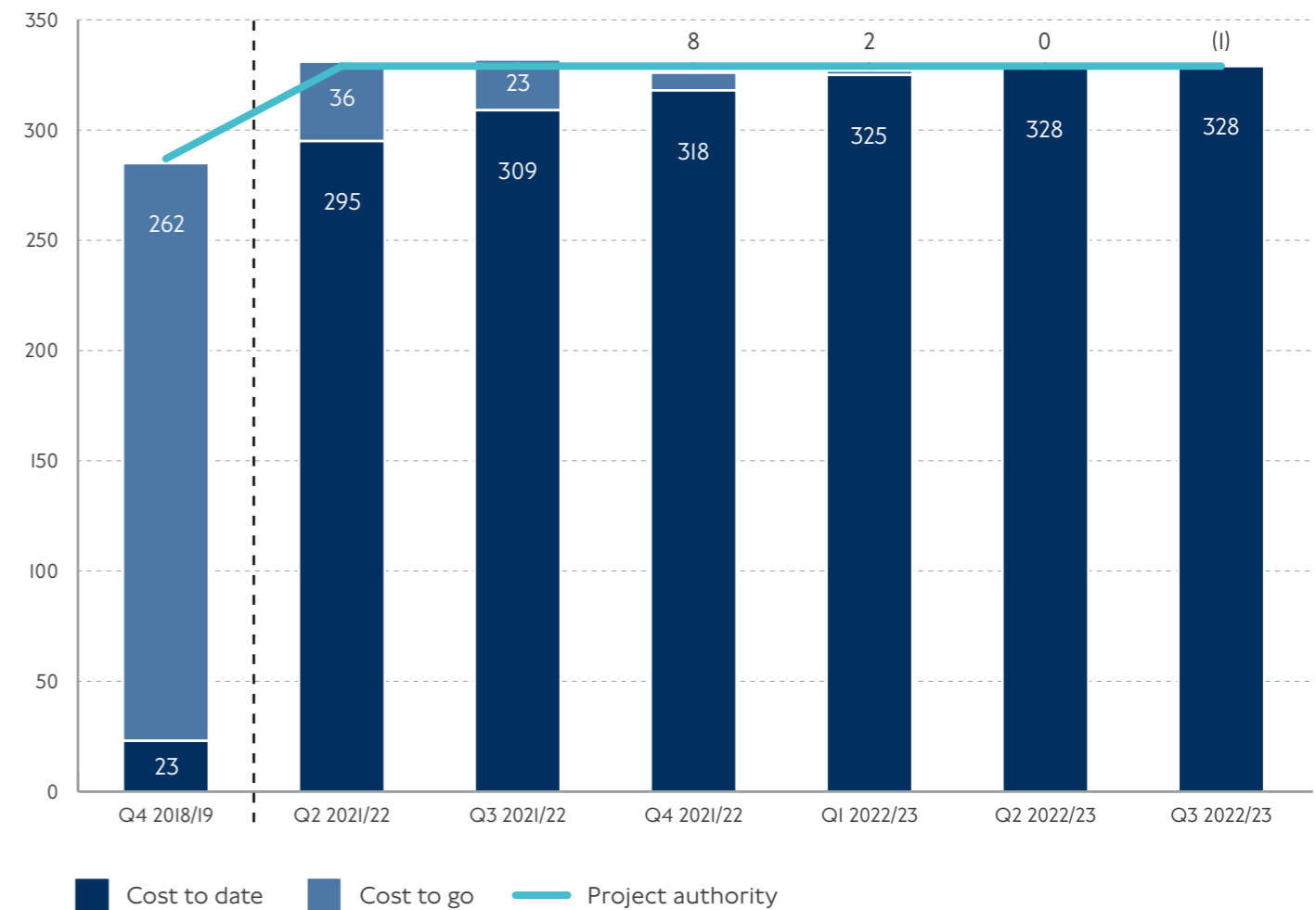
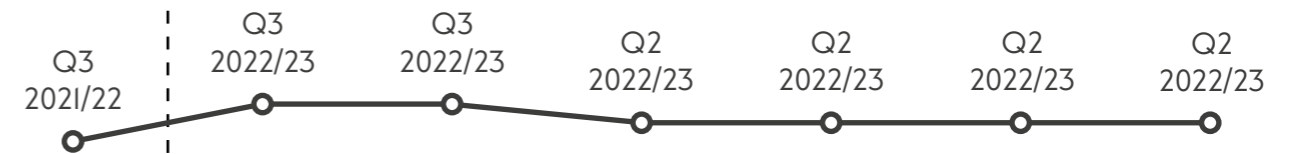
The new extension between Gospel Oak and Barking Riverside opened on 18 July 2022 and has been running a good service.

Asset handover to Network Rail is progressing with track and signals being the last main asset groups still to be transferred to Network Rail. The project team is working with the Network Rail sponsor and maintenance teams to achieve this transfer by February 2023. The transfer of station assets has also begun with London Overground.

The banner repeater signal will be commissioned at the end of January 2023 following confirmation of a possession by Network Rail. The current industrial relations issues within Network Rail increases the risk that the final snags and defects cannot be completed as planned if possessions are cancelled. The project team and Network Rail are working closely to reduce this risk.

Estimated final cost performance over time (£m)

Forecast completion date



Major station upgrades

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	686	16	702	702	—
Change since last Investment programme report					
1 quarter later	13	(13)	No change	No change	

Financial commentary

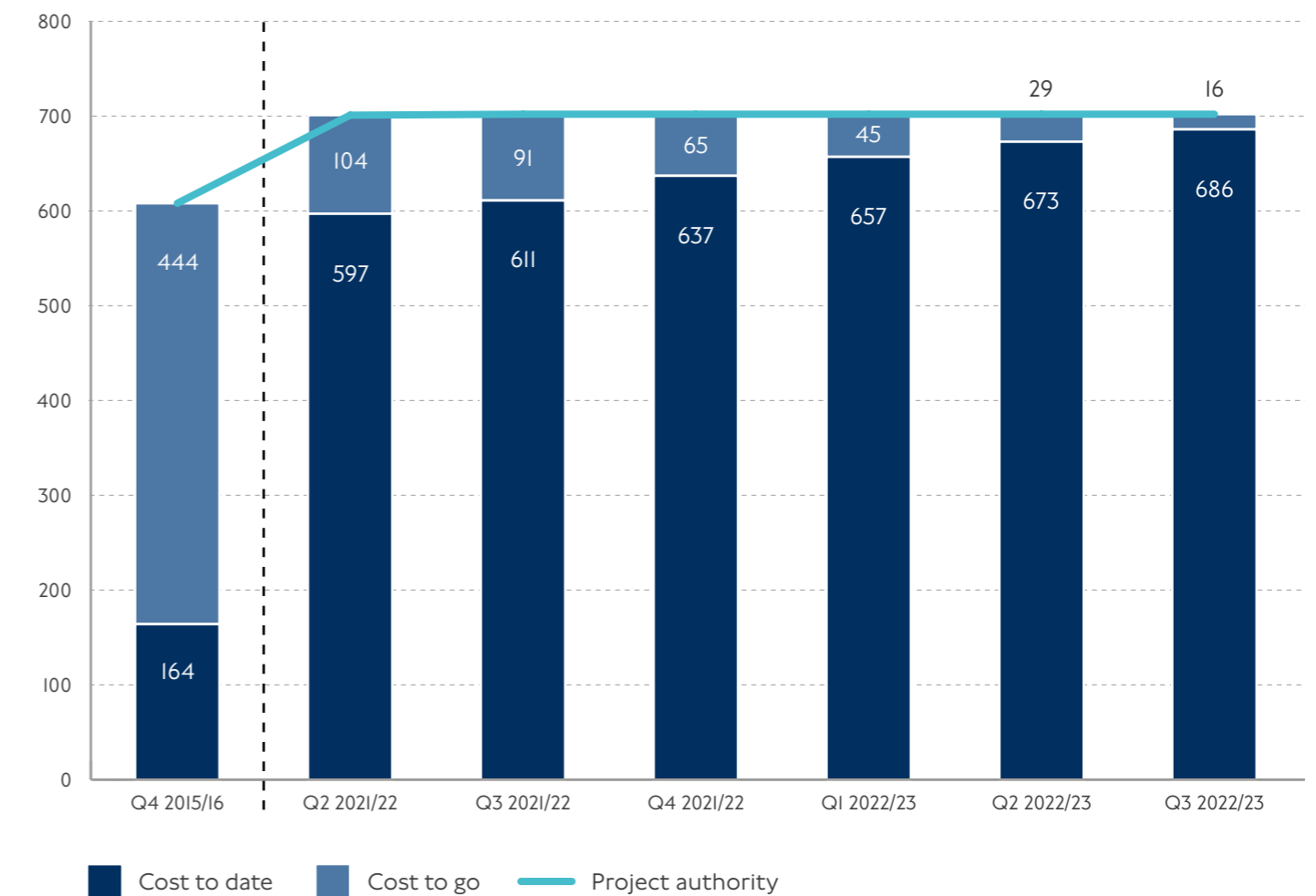
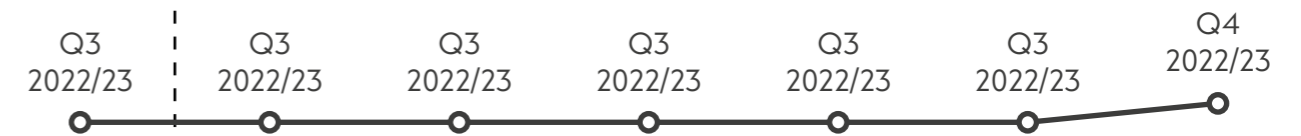
The EFC has remained stable since the last report and spend is in line with current forecasts. The opening of the Cannon Street station entrance has been delayed from December 2022 to early 2023 owing to cladding panel manufacture and installation issues.

Performance over time commentary

The forecast end date represents the opening of the new Cannon Street ticket hall entrance at Bank station. 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 pandemic. The completion of this final section of the project has been delayed from December 2022 to early 2023 due to cladding manufacture and installation issues.

Estimated final cost performance over time (£m)

Forecast completion date





We continue to upgrade Bank station to improve customer flows

Programme update

Bank station will see its capacity increase by 40 per cent when upgrade work finishes in early 2023. The capacity upgrades are alongside additional upgrades that will improve the passenger flows and overall experience. Improvements include step-free access to the Northern line, improved access to DLR platforms, two new moving walkways, 12 new escalators and two new lifts to serve the Northern line and DLR. There will also be more direct routes within the station and a new station entrance on Cannon Street.

The new interchange routes between the Northern line, Central line and DLR have now been successfully brought into customer use. These new interchanges include six new escalators and two new 100-metre moving walkways, significantly improving journey times for our customers by up to nine minutes between the lines.

The final phase of the project will provide a large new street-level entrance on Cannon Street. This will include six further escalators between street level and the Northern line platform level, step-free access to the Northern line for the first time and improved step-free access to the DLR via new lifts. Works are progressing on this final phase, with the continued installation of the wall cladding and the floor and ceiling finishes. There has been some delay to the installation of the wall cladding which has had a knock-on impact on other elements of the planned work including final testing and commissioning of systems and services. We plan to bring the main entrance into passenger use early in 2023.

Works to demolish the remaining basement levels of the original building in readiness for over-site development are complete.

Alongside the construction work, we have run a communications campaign to raise awareness of the improvements and build excitement for project completion.

Elephant & Castle

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 2027/28	20	67	87	87	—
Change since last Investment programme report					
No change	3	(4)	(1)	6	

Financial commentary

In Quarter I the stage one EFC increased by £3m due to applying revised inflation assumptions against specific commodities and using market intelligence. The Programmes and Investment Committee approved an increase to authority of £5.5m in October which is reflected in the above table.

This increase in inflation has not been applied to the cost of the station box being constructed by the developer, as this is a price that was fixed under the development agreement of December 2021. We continue to develop our understanding of the project risks, and actively seek to ensure risk provision is proactively managed and appropriate.

Performance over time commentary

During 2022/2023, the project EFC increased owing to the impact of inflationary pressures. In October, the Programmes and Investment Committee approved an increase of £5.5m to authority to cover the inflationary increase and bring forward scope from stage two to lower the risk of future communication works. The

EFC will continue to be challenged, and opportunities have been reflected in our decision to engage the construction market much earlier than is the norm, providing suppliers with more time to identify opportunities in a competitive market.

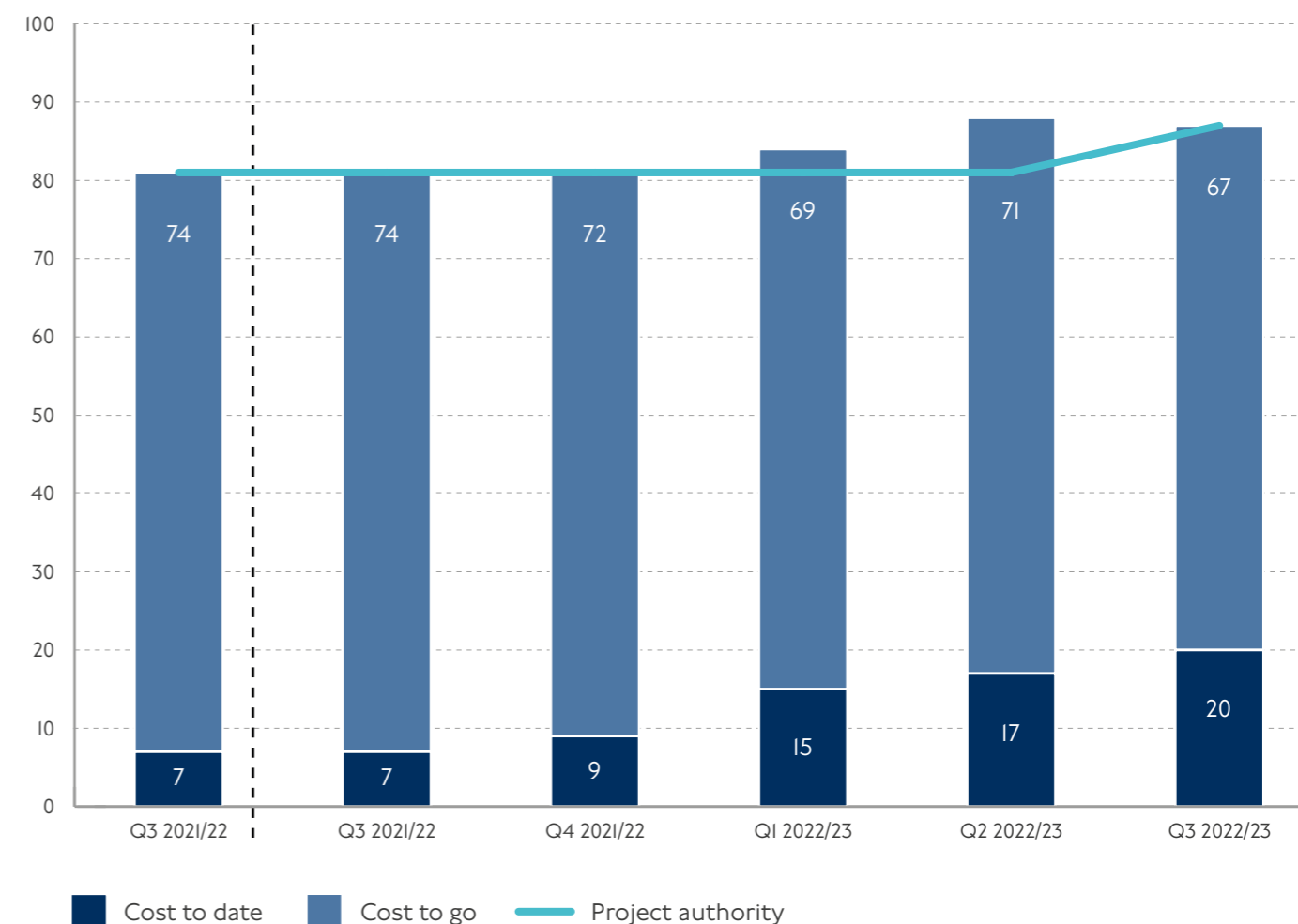
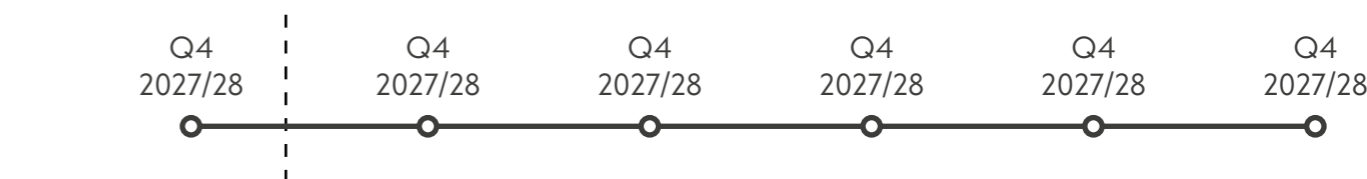
Programme update

We are pushing ahead with the procurement arrangements for the new tunnels, with an invitation to tender scheduled for May 2023. A contract for essential pre-tunnelling ancillary works has been tendered and responses are currently being analysed. Contract award is planned for February 2023.

Additionally, we are progressing the procurement of a package of work to determine optimal options for the eventual fit-out (known as stage two). Invitations to tender were issued in October 2022 and the contract was awarded in January 2023. A successful bidder has been selected which aligns with the approved procurement strategy. Construction of the station box by the developer continues apace, with station box piling completed.

Estimated final cost performance over time (£m)

Forecast completion date



High Speed 2

Forecast completion	Cost to date (£m)	Cost to go (£m)	EFC (£m)	Programme and project authority (£m)	Variance: EFC versus authority (£m)
Q2 2033/34	28	41	69	34	(35)
Change since last Investment programme report					
No change	2	(2)	No change	No change	

Financial commentary

Programme and project authority is £35m lower than EFC, as it is granted on an annual basis for the following year's spend. Approval of the authority for the next financial year is planned for summer 2023. All costs are fully reimbursable from the third-party High Speed 2 (HS2) project. As part of the annual Programmes and Investment Committee submission, authority was increased by £6m in May 2022.

The reported forecast end date was amended to 2033 in the last report and still reflects the earliest completion date of works at Euston as advised by HS2 Ltd.

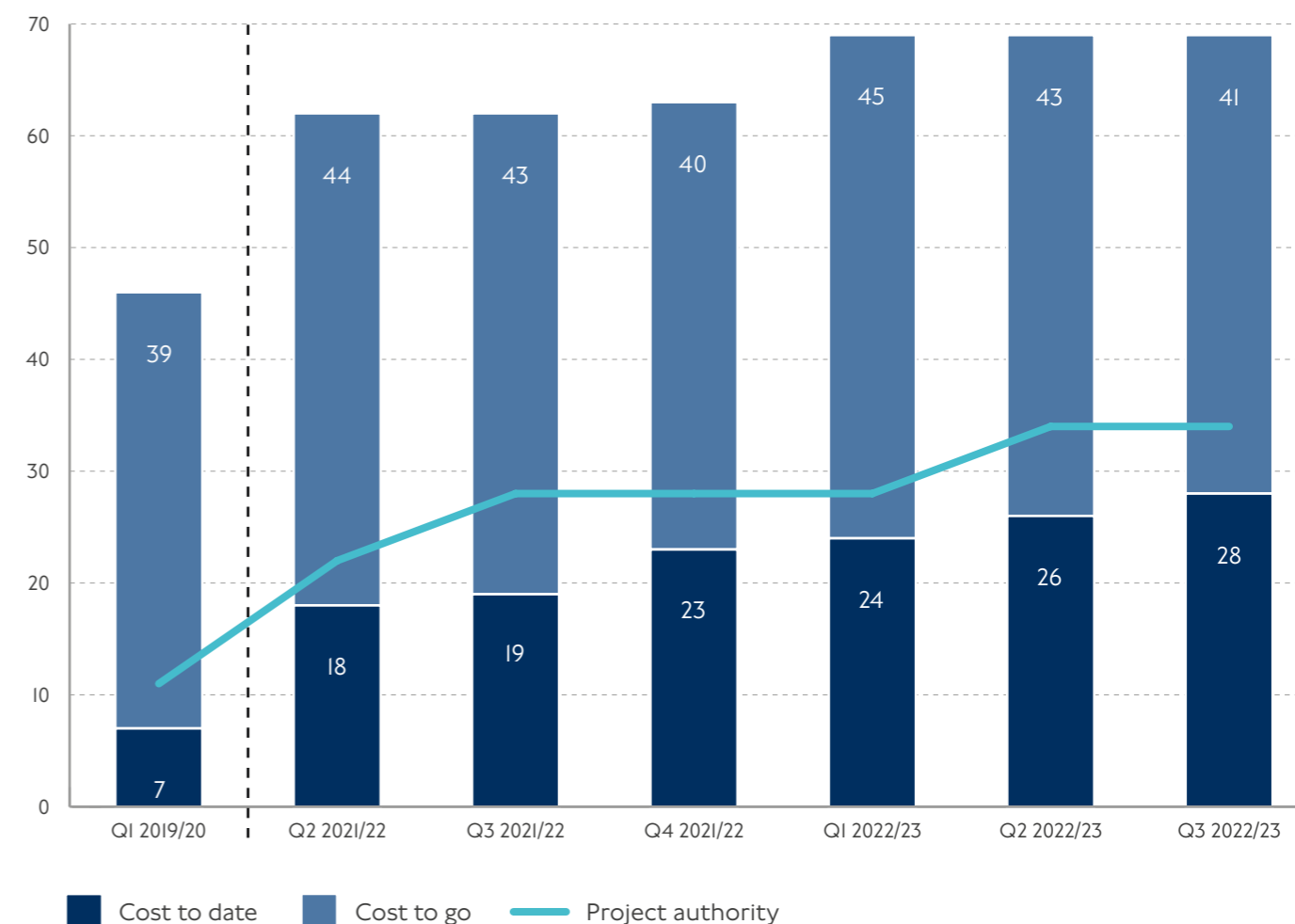
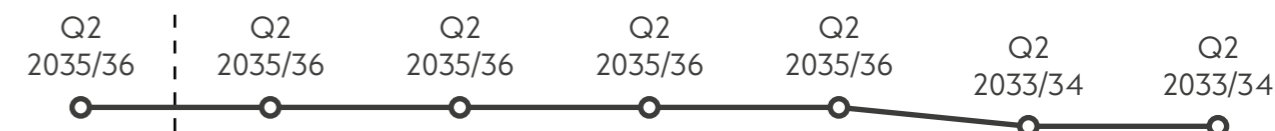
Performance over time commentary

The forecast end date was amended in Quarter 2 from 2035/36 to 2033/34 to reflect the earliest completion date of works at Euston, as advised by HS2 Ltd. This programme comprises our new assets, infrastructure and operational facilities at Euston and Old Oak Common to interface with the new railway.

Since 2019, the forecast costs have increased due to increased scope being requested by HS2 Ltd, which are fully recoverable. As part of the annual Programmes and Investment Committee submission, the project and programme authority was increased by £6m in May 2022.

Estimated final cost performance over time (£m)

Forecast completion date



Programme update

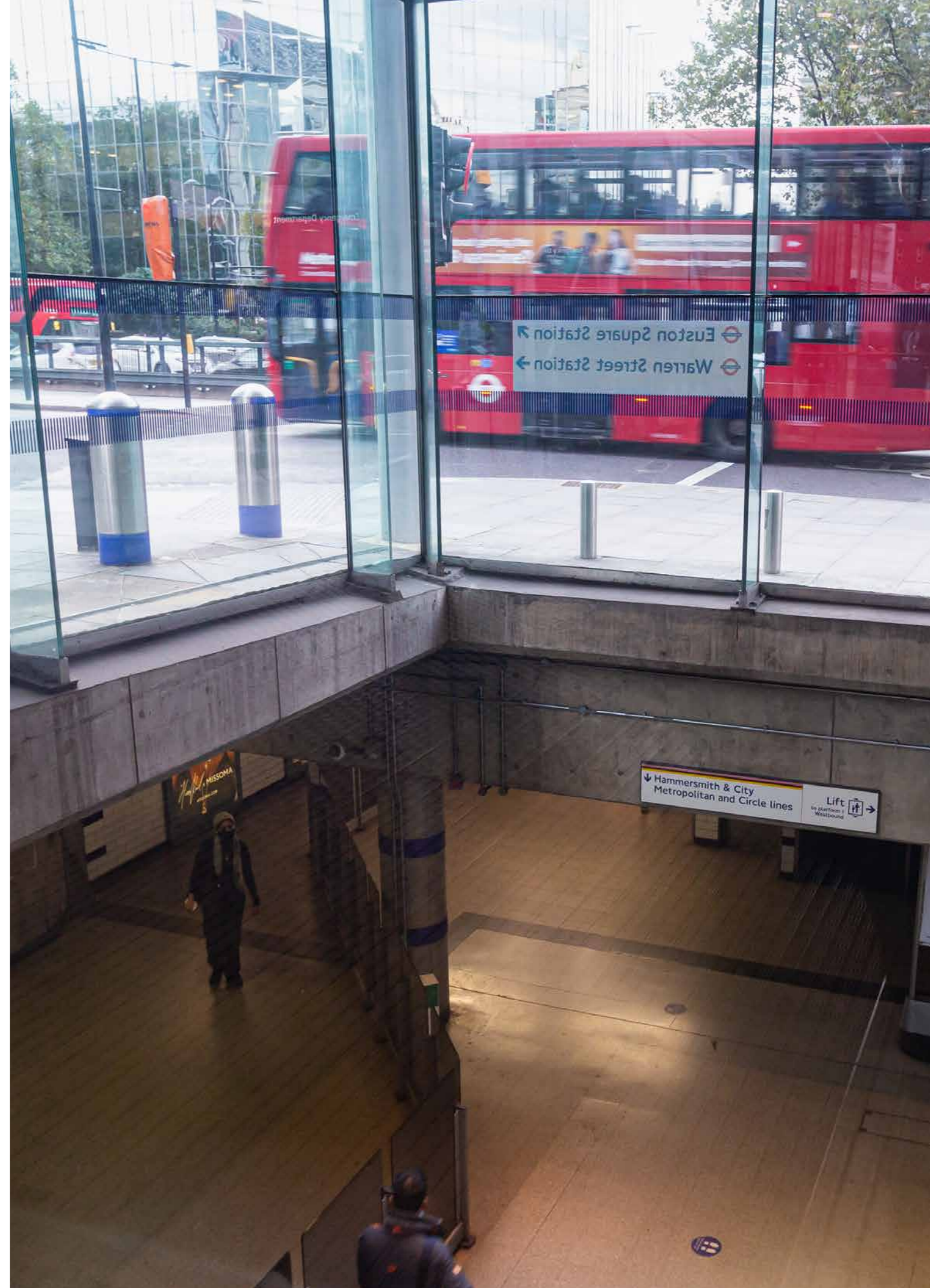
HS2 Ltd's construction of the new Northern line traction substation and ventilation building continues at Euston with construction activity now focused on the basement box sub-structure. Design of the Tube station and interchange box at Euston is progressing, and we continue to attend workshops and support design reviews.

HS2 Ltd is carrying out an assessment of the feasibility of transporting materials by rail or conveyor from Euston, as recommended by Douglas Oakervee in a review commissioned by the Department for Transport (DfT). Outcomes are expected to be shared in early 2023. The Commissioner and Chief Executive of the London Borough of Camden have written to the Chief Executive of HS2 to express our concerns about road safety, air quality and congestion if HS2 continues with its intention to transport spoil by road.

HS2 began carrying out works on Euston Road on 9 January. There will be lane and footway closures on the Euston Road for the next seven years as it completes utilities diversions, and to enable construction of the permanent works for the new Euston Square and Euston London Underground station upgrades. We are working closely with HS2 Ltd on a travel demand management campaign for road users who will be affected and advising customers travelling through the area to check their journeys before they travel, in case of any disruption.

We continue to work with The Euston Partnership to ensure our requirements are met for the future bus station, taxi rank, cycle parking and London Underground station at Euston. Engagement with the partnership on the integrated development of the Euston campus also continues, including the refurbishment of the existing Euston Network Rail station.

At Old Oak Common, we continue to work with HS2 Ltd on the design development of the new surface intermodal area to ensure our requirements are met for buses, cycling and the new Elizabeth line station. Detailed planning and interface work is being developed to consider Network Rail's planned extensive blockade programme over Christmas 2023 to ensure the impacts on our networks, services and programmes across our capital and operations programmes are understood and mitigated where necessary.



HS2 has begun construction works at Euston

Railway systems enhancements

Forecast completion	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: EFC versus authority (£m)
2018/19 to 2028/29	148	15	163	171	8
Change since last Investment programme report					
No change	2	(2)	No change	No change	

Financial commentary

The EFC has remained stable since the last quarterly report and spend is in line with current forecasts.

Performance over time commentary

Our costs and authority both reduced in Quarter 4 2021/22, driven by the decision to defer the enhanced signalling for the Jubilee line and fleet improvements, and to descope these projects from this programme owing to funding challenges in the wake of the coronavirus pandemic.

Programme update

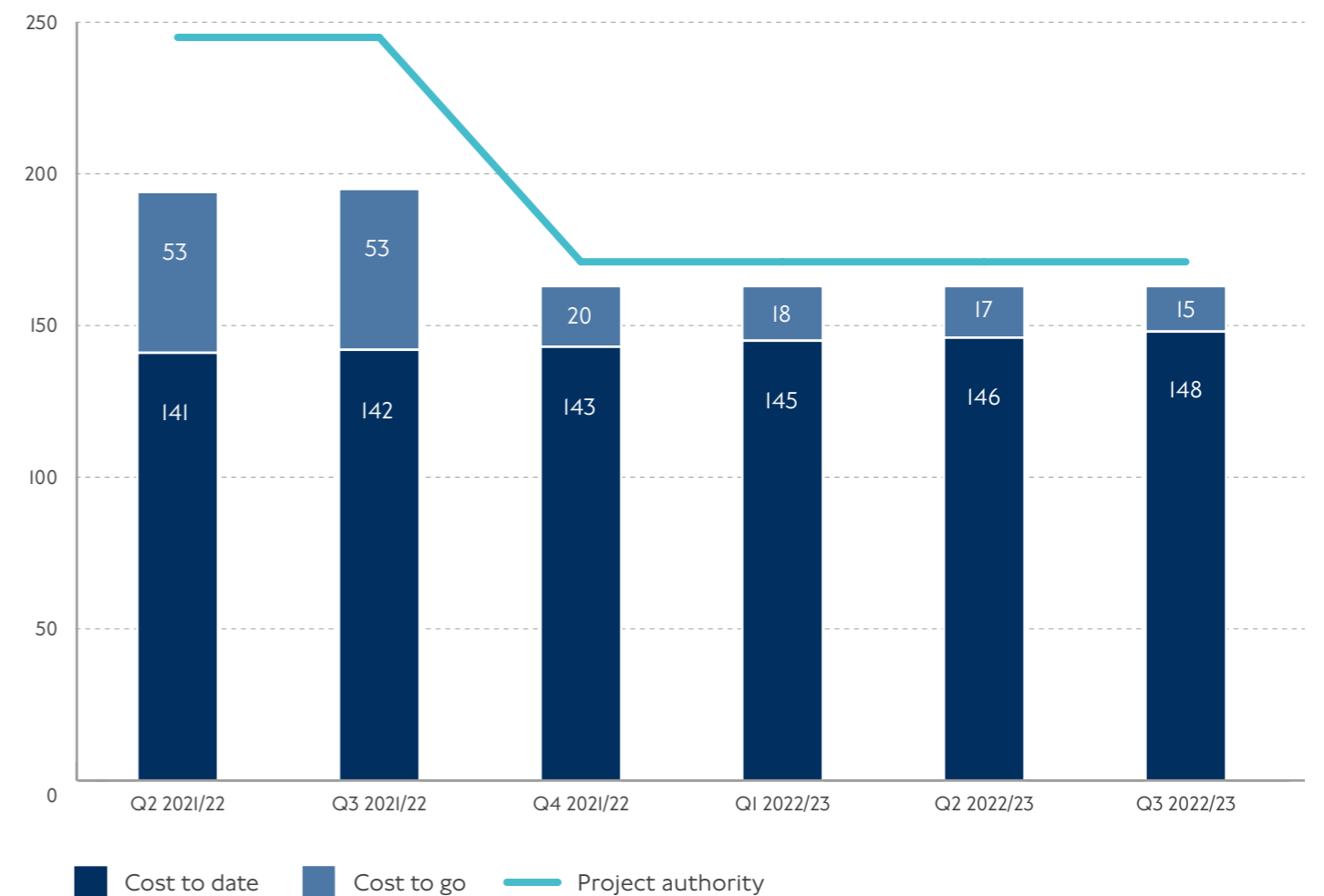
Delivery of the scheduled Northern line signalling software updates continues, with the first release targeted for commissioning on the railway in the second quarter of 2023 and the final in the fourth quarter of 2023. The software updates address residual issues and requirements following completion of the Northern Line Extension and the Bank station closure works.

Delivery of the Jubilee line signalling software updates also continues, with the updates addressing residual issues. The first software release was commissioned onto the railway in Quarter 3 2022, and the final software release is being planned, accounting for dependencies on other projects such as the Four Lines Modernisation programme.

The enhancement work for the Northern line power supply is due to be completed in Quarter 1 2023. This will provide system capacity and resilience for reliable services during planned or unplanned outages.

The rolling stock works to enable an increase in entry and exit speeds at Neasden depot are on target for completion in Quarter 1 2023. These will support Metropolitan line service uplifts being delivered as part of the Four Lines Modernisation programme.

Estimated final cost performance over time (£m)



London Underground

We deliver enhancements using internal and third-party investment to provide increased accessibility and station capacity improvements. Our three renewals programmes ensure the safety and reliability of the existing network across infrastructure, train systems and technology



Train systems

Forecast completion	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2027/28	152	1,828	1,980	1,791	(189)
Change since last Investment programme report					
No change	51	(66)	(15)	No change	

Financial commentary

Forecast cost has been aligned to the 2023 Business Plan, following an exercise to prioritise our spend on renewals across the business. Our forecast through to 2027/28 includes projects in the later years which are not yet fully developed. Authority will be sought for these projects when we have greater certainty of costs and timings.

Performance over time commentary

Trains systems spend in the quarter was in line with budget, taking our year-to-date spend to £15m. Improved performance reviews are helping us to improve our forecasting, increase our delivery confidence and are the basis for the revised forecast cost in the quarter, which has been reduced by £15m. These reviews enable us to focus on key issues such as identifying cost savings, ensuring we can attract and retain team members with the appropriate skills, cost inflation and supplier performance.

We have delivered £5m of cost reductions in the year so far and have been working with an external expert to review our internal processes and identify further efficiencies which will be applied to other asset areas.

Programme update

This programme delivers critical renewals across multiple asset groups that form an integrated train system. The programme includes work on track assets, passenger fleets, engineering fleets and signalling assets.

Our track assets are an essential component of a safe and reliable railway. Track is continually degrading and needs rolling maintenance and renewals to keep it in good working order. We must renew two to three per cent of our track every year (based on a 20–60-year lifespan), as well as making ongoing component replacements to maintain safety and reliability. Where possible, we also aim to install high-integrity, low-maintenance modern track forms to replace legacy track, some of which has been in service since the early 1900s. This modern track is more stable and reliable.

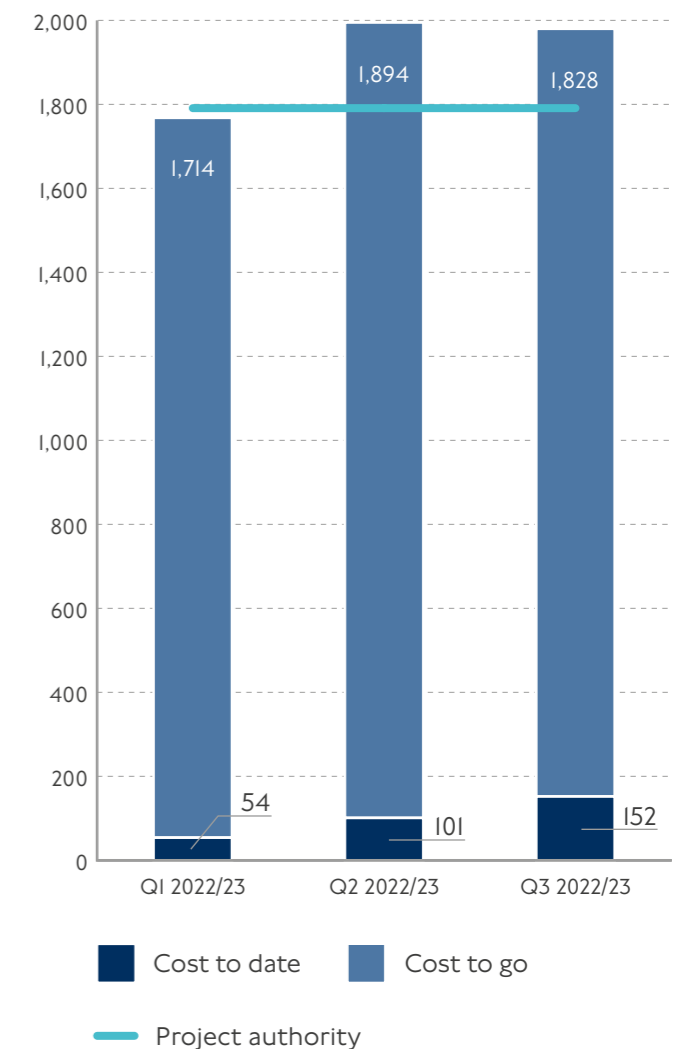
We have more than 600 Tube trains operating across 11 lines, with the oldest trains having entered service in the 1970s. Interventions are based on our long-term fleet cost model, which feeds into our long-term capital plan.

To ensure train fleets remain safe and reliable for an increasing in-service life, we conduct a range of planned interventions consisting of heavy overhauls and renewals (mid-life refurbishments and life-extension projects). In addition, we deliver specific work to improve accessibility and customer satisfaction, such as better lighting and CCTV. These works address changes in regulations arising from safety issues, poor reliability and performance, unacceptable costs or system obsolescence.

Our heavy overhauls work delivers large-scale activities on our existing fleet of passenger rolling stock and rail adhesion trains to ensure all core systems meet the required standards. The work requires each train to be removed from service for several days or weeks, and includes overhauling suspension, wheelsets, motors, brake systems and auxiliary equipment.

Signalling and control upgrades continue to keep our systems up to date and in serviceable condition. This avoids higher costs at a later stage, while also ensuring safety is paramount, continued reliability and that the overall cost is spread across a closely monitored timeline.

Train systems performance over time (£m)





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We have converted old rail to a more modern type of track

The engineering vehicle fleet supports the track renewals programme and comprises battery locomotives, wagons for different activities and plant equipment such as cranes and tampers. We aim to improve the reliability of this non-passenger fleet, responding to component obsolescence problems and supporting our overarching aim of mechanising track-based activities where possible. Our intention is to facilitate enhanced productivity and an improved safety culture.

Over the quarter the programme has delivered notable successes, including track renewals exceeding the scorecard levels as a result of increased funding and delivery optimisation; maintaining the high rate of train completions in fleet heavy overhauls; successful deployment of the rail-mounted cranes for renewals projects; and completion of five sites of signalling renewal for the Bakerloo line control system upgrade. In addition, we have completed energy efficient LED lighting conversions on 12 trains in the fleet, which will support lower operating costs and our wider climate adaptation aims.

Core track renewals

Between July and September, we converted a total of 1,312 meters of bullhead rail with the more modern flat-bottom form. In addition, we completed 416 meters of deep Tube reconditioning works, bringing the deep Tube total delivered to date to 907 metres against a required scorecard run rate of 750 metres.

Points and crossings

As reported previously in July 2022, we installed a new set of points at Tower Hill. In October 2022, the new automatic signalling was commissioned, and the points are now in operational use. The points will provide reversing capability which will improve service recovery during disruptions and reduce the closure limits during engineering works.

Victoria line (fleet overhaul and depot signal renewals)

Work continued on upgrading the pressurised ventilation fan system to reduce maintenance costs, with a further nine trains completed, taking the total to 36 of 47 trains. Delivery of the coupler overhauls continued, with an additional 10 completed taking the total to 34 of 47. Door overhauls continued to plan and 14 trains have completed their phase one works.

Metropolitan line (fleet overhaul)

Having reviewed the performance and reliability of the Metropolitan line trains, our Engineering team has determined that they can stay in service for longer than previously anticipated before requiring a heavy overhaul. This has meant that we can revise the delivery rate to two trains per period, which aligns with the available in-year budget. The project has delivered six additional bogie overhauls, taking the total to 24 out of 60 trains.

District line (fleet overhaul)

Work continued to prepare for the start of bogie overhaul on the District line, which is planned to follow directly after the Metropolitan line overhaul scheduled for completion in summer 2024, albeit the start date has moved to align with the revised delivery rate (as above).

Jubilee line (fleet overhaul and component renewal)

The first phase (pull-forward) of the overhaul programme was completed ahead of schedule, and the second, more significant, phase continued. While challenges were faced with materials supply, the first train has now been returned to service and the second train has been lifted. The project has supported mitigations needed to keep the trains in operation until heavy overhaul takes place. A competitive tender to fix the underframe cracking issues has been issued and an investigation into extending the life of train management systems is under way. Delivery of these works is important to improve the recent service performance challenges on the Jubilee line.

Piccadilly line (fleet overhaul and signalling renewals)

We have completed new flooring of the trains as part of the life extension works. The disruption to wheel and motor overhauls owing to supply chain issues has been addressed and recovery is under way and anticipated to be complete by the end of the financial year. We have now completed 52 per cent of the second lift cycle to take the fleet to the end of its operational life.

Rewiring of the interlocking machine room at Acton Town has progressed through design and is anticipated to start on site in Quarter 4 2022/23 with the project team in the latter stages of mobilisation.

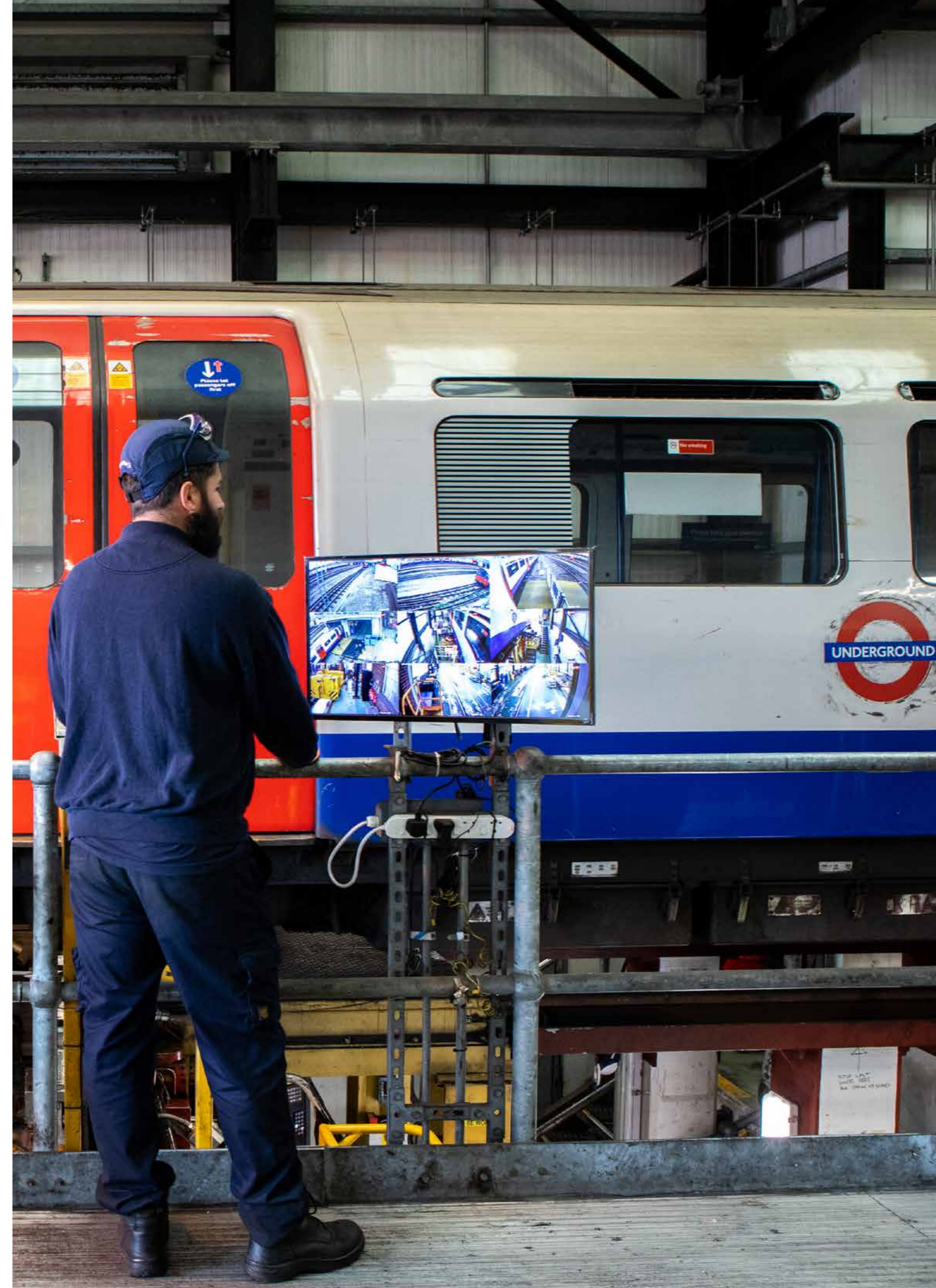
Central line (fleet renewals and signalling renewals)

Production readiness of the fleet has entered the final stages for CCTV, LED lighting, and saloon car mechanical systems. The alternating current traction system is in final sign-off stage with the majority of hardware agreed. The outstanding issue is the modification of the auxiliary power units, which are to be reworked with new and improved safer component design. The conditional assessments for the programme lift were completed in January 2023. New doors tender returns are being reviewed and materials for the pull-forward scope have also been procured to support doors overhauls. Delivery of these works are important to mitigate the ongoing service performance challenges on the Central line.

Progress continues on the Central line signalling life-extension projects, with design work continuing for the obsolete systems. Plans are maturing for installation of assets on site in Quarter 4 2022. These works will utilise both internal delivery and our contractor installing assets at different sites to ensure efficient delivery. An outline specification and design has been completed for an enlarged testing facility at Ruislip depot to support the renewed train borne signalling equipment through its life.

Bakerloo line (fleet overhaul and LED lighting conversion)

Work has continued on ongoing heavy overhaul activities. There has been some disruption to materials supply, but this is expected to be recovered by the end of the financial year. We have started to install new LED lighting on the 12th train.



We are replacing obsolete systems on the Central line



We monitor and reduce the impacts of poor rail adhesion

Bakerloo, Central and Waterloo & City lines (accessibility)

The first Bakerloo line train fitted with a wheelchair bay, as well as new grab-poles and floor coverings that comply with the Rail Vehicle Accessibility Regulations. It entered service on 28 October from Stonebridge Park depot.

This marked a new milestone for the line as station platform works have also been completed at Paddington and Oxford Circus. On the Central line the first two trains have wheelchair bays installed as part of fleet renewals programme mentioned above. The Waterloo & City line trains also had multi-purpose bays fitted in Quarter 2 this year.

Depot control systems

The Northumberland Park depot re-signalling works are informing the emerging depot control strategy which is being aligned across London Underground. This incorporates assumptions and requirements to support the introduction of new trains on the Piccadilly line and the existing systems at depots.

Incremental signalling upgrade

The procurement of signalling equipment and design works is ongoing for the Bakerloo line control room fit out works and the control system upgrade.

We continue to install the key signalling and control interface equipment in equipment rooms on the Bakerloo line. Five sites have been completed, with Edgware Road and Oxford Circus currently under way.

The design stage of replacement central computers for the Jubilee and Northern lines is progressing well, with initial site works completed to enable further installation at Christmas 2022. The procurement activities leading to award for the replacement of train operator displays on the same lines is also under way with award forecast for Quarter I 2023.

Network wide signalling renewals

Removal of capacitors containing PCB (Polychlorinated Biphenyl), has been instructed across the London Underground network by the Environment Agency. The removal of these capacitors is under way. New capacitors have been procured and installation is due to start in Quarter 4 2022/23 in late January 2023.

Rail adhesion train (fleet overhaul)

Preparations for the overhauls to start in the new year have started and are ahead of plan. The timely delivery of this work is essential to ensure the impacts of poor rail adhesion during the leaf fall season are mitigated.

Mechanised track renewal vehicle

The first live site for our prototype mechanised track renewal vehicle has been booked between South Kensington and Knightsbridge on the Piccadilly line and is expected to start trials in February 2023. Opportunity to use the vehicles for spoil collection at other sites is being explored to reduce reliance on heavy goods vehicles. At the same time, the prototype wagons from the world's largest rolling stock manufacturer in China is undergoing dynamic testing in Chinnor and Tuxford.

Rail-mounted crane

The rail-mounted cranes from Kirow in Germany were successfully used to replace the traction isolation switches to make them compliant with the Electricity at Work Regulations in Ruislip depot. Tandem lifting approvals are under way, with assurance tests booked at Neasden depot by the Four Lines Modernisation programme.

Track recording vehicle

Concept design for the track recording vehicle replacement has begun and the draft technical documents for the London Underground engineering review were received in January 2023. Static testing of the modified track recording vehicle has passed on the Circle, District, Hammersmith & City and Metropolitan lines and the programme lift scope has been agreed.

The delivery of the engineering vehicles overhaul programme has been impacted by supply chain issues. Progress was made to close out snagging issues and gradually bring the wagons back to Ruislip depot. The team collaborated with the Four Lines Modernisation project team to confirm the schedule for signalling fitment and overhauls on the Matisa points and crossing tampers.



We have successfully tested our modified track recording vehicle

Infrastructure renewals

Forecast completion	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2027/28	47	568	615	1,192	577
Change since last Investment programme report					
No change	18	(31)	(13)	No change	

Financial commentary

Forecast cost is below authority following the consolidation of previous separate asset areas into a single portfolio and alignment to the 2023 Business Plan. Alignment to the Business Plan follows an exercise to prioritise our spend on renewals across the organisation in light of our available funding, and we will continue this process to ensure we deliver the optimal outcomes within our funding constraints. The surplus authority will be addressed in the next Programmes and Investment Committee submission.

Performance over time commentary

Infrastructure renewals continues to meet budget with spend in the quarter of £18m, after embedding £2.5m of cost savings in-year. Improved performance reviews are helping us to improve our forecasting and increase our delivery confidence. These reviews enable us to better focus on key issues such as identifying cost savings and efficiencies, attracting and retaining people with the appropriate skills, cost inflation and supplier performance, and are the basis for the reduction in forecast cost in the quarter.

Programme update

The infrastructure renewals programme delivers critical interventions to the assets that support the London Underground network. The programme includes work on the built environment, civils and structures, power assets, as well as lifts, escalators and building systems assets. The work bank is prioritised to address asset condition concerns to maintain the safety and reliability of the railway.

We have 30,000 building and civil assets across the network, providing structural support, stability and protection. The asset base includes more than 16,000 bridges and structures, 235km of embankments and cuttings, as well as tunnels, lighting masks and flood protection assets.

Our complex building systems assets (mechanical, fire, communications, power and electrical) ensure that stations, depots and other sites operate safely and effectively. The work is prioritised on the state of good repair of the assets and to address specific asset condition concerns.

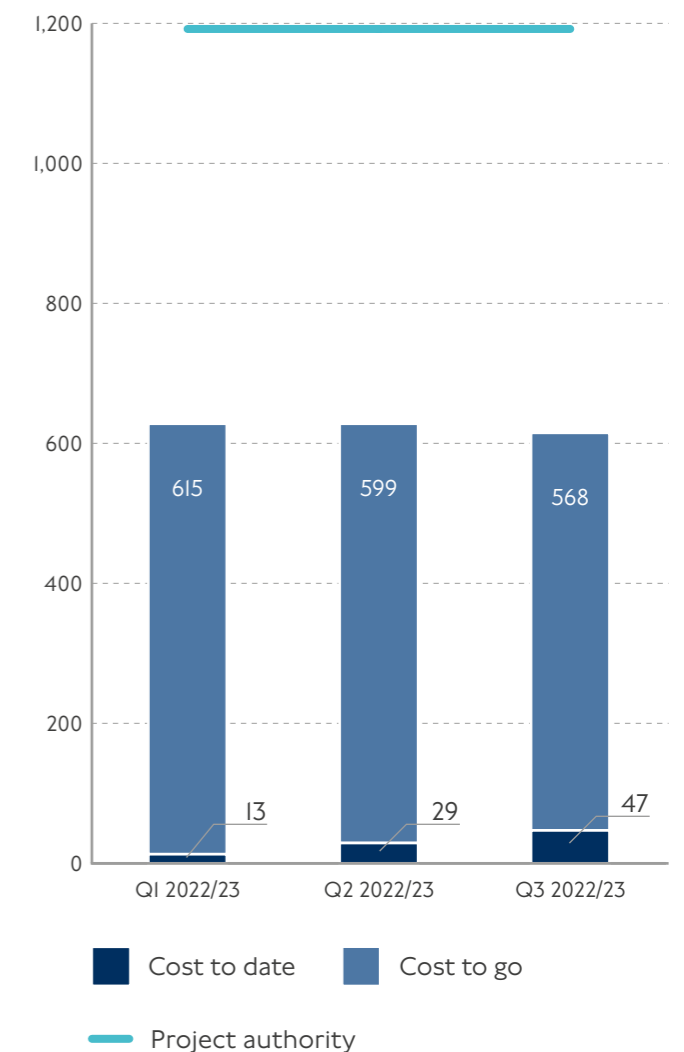
London Underground is the largest consumer of power in London. We operate our own high-voltage distribution network and backup power generation. Based on the state of assets and their expected lifespan, we deliver a rolling programme of renewals to maintain the integrity of power delivery to the railway.

We have 526 escalators, 327 lifts and six passenger conveyors on the London Underground network. These are essential to ensuring customers have safe, reliable and quick access to our services. We deliver a rolling asset renewal programme aiming to deliver renewals and replacement to escalators every 40 years and lifts every 20 to 40 years, depending on the type. This means replacing around 2.5 per cent of escalator and four per cent of our lift assets each year to maintain the current level of good repair.

Key successes across the programme include improved progress on our strategic milestones, forecasting the completion of concrete foundation works 30 days ahead of schedule on our stabilisation project at Grange Hill to Chigwell. This will stabilise a large cutting on the Central line and reduce the risk of asset failure.

The rolling programme of systems works, including lifts and escalators, continues to plan with two Jubilee line escalator works completed this quarter. We are also on track with our work to deliver energy efficient LED lighting changes at 20 stations in the next financial year. This will reduce operating costs and support our wider carbon reduction aims.

Infrastructure renewals performance over time (£m)



Water ingress remediation

Feasibility surveys for remedial works have been completed at St Paul's and Chancery Lane and options are being finalised. Concept designs at Liverpool Street and Charing Cross are also being completed. Concept design continues for Mayor Sworder's Arches in London Bridge and targeted drainage surveys began in January 2023. A tender is being carried out for tag and trace surveys which we expect to be complete by mid-June 2023.

Cutting and embankments

Works continue to schedule on stabilising the cutting between Grange Hill and Chigwell on the Central line to ensure the continued safe running of the railway. Piling works are nearly complete and are 30 days ahead of the scheduled strategic milestone target date.

The full project is due to be completed in May 2023, but we are investigating a possible extension to enable associated bridge works to be undertaken which would provide a significant cost saving from integrated delivery.

Works to remediate the cutting between Rickmansworth to Chorleywood (Metropolitan line) are continuing and are due to finish on site in July 2023. Feasibility works for five future interventions to embankments and cuttings continue to progress at priority locations.

Plaistow roof replacement

Works to replace the life-expired roof at Plaistow substation are progressing ahead of plan. The existing roof has been fully removed and the new roof is due to be installed by summer 2023.

Welfare facility renewals

Works to improve the condition of welfare facilities and environment for staff are ongoing at several locations, including Piccadilly Circus, Marble Arch and Leicester Square. Delivery timescales have been impacted by additional fire compliance requirements and poor asset condition being discovered during intrusive works.

King's Cross St Pancras communication systems

Works to replace a range of obsolete communications equipment at King's Cross St Pancras station, including station management systems, video, audio and alarm systems are in the final stage of the systems migration.

Jubilee line communication systems

Detailed designs are complete for Bermondsey and Canning Town, the final two stations, to replace station information management systems, public address and voice alarm systems, as well as the passenger help point systems. Canada Water and Southwark upgrade works have begun installation works, while site works progress to programme at the remaining four stations: London Bridge, Canary Wharf, North Greenwich and West Ham.

Jubilee line ventilation systems

We are progressing with works to upgrade the obsolete tunnel ventilation control panels and to refurbish the fans of the staircase pressurisation system at the Jubilee line extension stations (Southwark to Canning Town) and intermediate shafts. Half of the intrusive surveys for this project are now complete. Replacements of the ventilation management systems are progressing to programme.



We're improving our station information systems on the Jubilee line



Page 6

Our escalator works help increase capacity at stations

Smoke and heat ventilation

We are progressing with work replacing and refurbishing life-expired components that form part of the smoke and heat exhaust ventilation systems that are located in the roofs of Bermondsey station and Stratford Market depot. The detailed design for both locations has now been completed and approved.

Marylebone escalators

Work is ongoing on the final escalator refurbishment and is due to be finished in early 2023. This will include the completion of the wider station gateline and an additional escalator providing additional station capacity to support any future increase in customer demand.

Jubilee line extension escalators

This rolling programme of escalator refurbishments has delivered two further refurbishments in this quarter, taking us to a total of six in the financial year as planned. Works are ongoing on the next three refurbishments at Waterloo and London Bridge. The programme for the remainder of 2022/23 has been re-prioritised based on the latest asset performance data and the opportunity has been taken to replace the obsolete fire detection system on the passenger travellers at Waterloo.

Liverpool Street escalators

Works are under way to install 12 sets of fire doors ahead of the replacement of three escalators. Four out of the 12 sets of fire doors have now been installed, with works under way on the next two sets. All works are due to complete in early 2023.

Holloway Road lifts

The concept design is now complete and the instruction to design and manufacture the lifts is to be issued imminently. Works are due to start on site in spring 2023.

Secondary lifts

There is a programme to replace the existing nine hydraulic lifts with improved traction lifts. This will improve reliability reducing customer disruption and maintenance costs. Instruction to manufacture the first three lifts has been issued to the contractor. Detailed design has started on a further two lifts.

Uninterruptable power supply

Works have now completed for tranche one, with all 22 life-expired units replaced and commissioned to ensure a continuous power supply to critical signalling assets on the railway. Procurement for the award of a new contract to replace the next tranche of 31 units is forecast to complete in December which will enable continuous delivery into 2023/24.

Offline battery power inverters

An offline battery power inverter is a battery system present on all sub-surface stations that powers emergency lighting in the event of a power loss. There are around 260 located across the network and they are a critical asset as failure could result in station closures as emergency evacuation is compromised.

Design works have started with our contractor to mitigate the obsolescence risk of the first 20 units. Internal scoping has begun for further units which are likely needed in the short term while strategy work is progressing on the longer-term solution.

Traction power

Site work has continued for the replacement of 11 traction isolation switches at Ruislip depot to address equipment non-compliances and removal of operational restrictions. The first depot possession took place in November utilising the newly commissioned Kirow rail-mounted cranes to support the project and provide a cost saving by eliminating the need to use externally provided equipment.

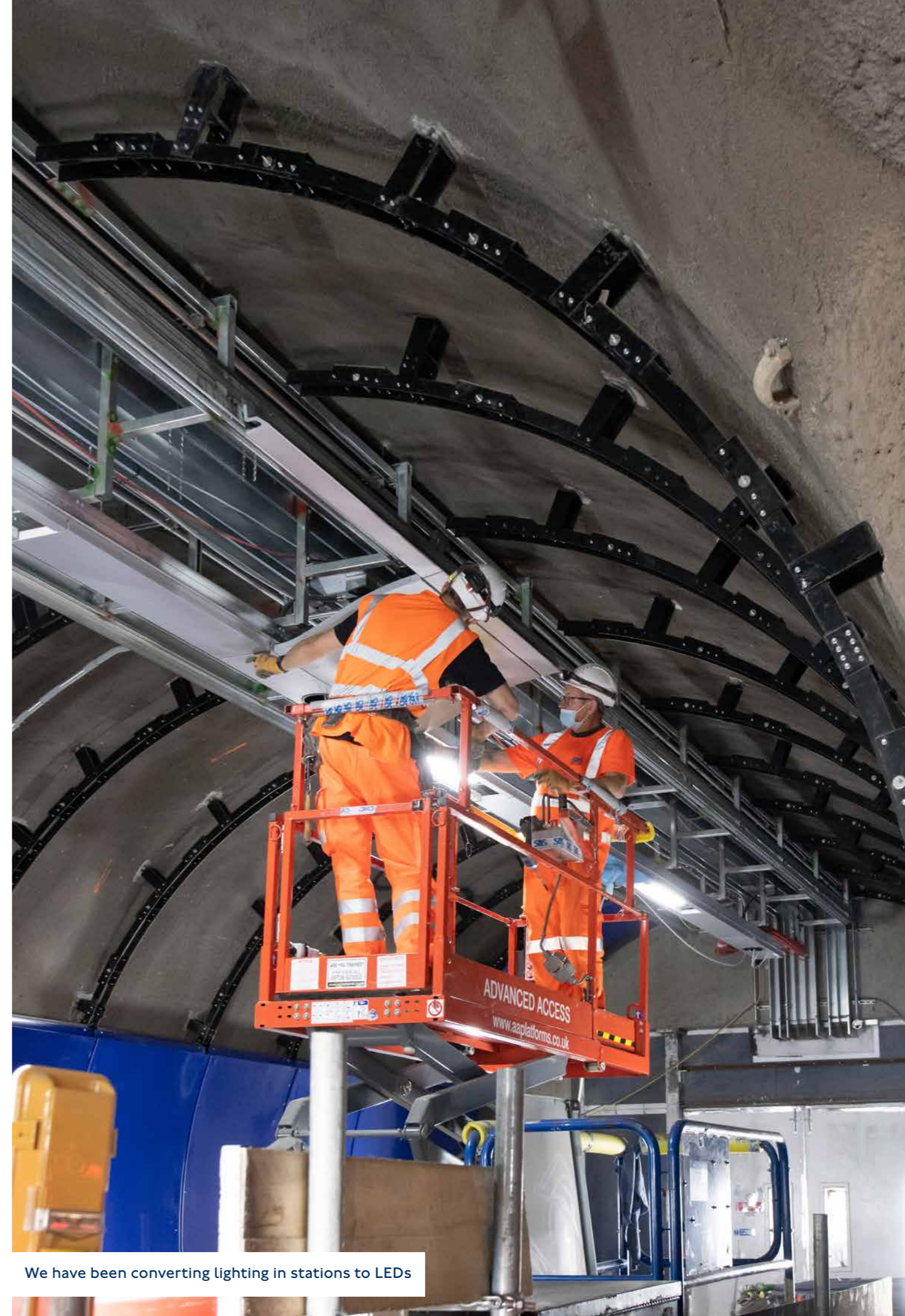
A contract was awarded in May 2022 for the replacement of the direct current traction switchboard at Holborn. Progress is being made on the design, with our contractor beginning detailed site investigations to assess strengthening works required to house the new equipment.

Power control

The new system for control went live in October 2022 for all lines except the Northern and Central lines, which were always planned to be delivered after the initial commissioning. Following the go live, a number of snags were identified, with 75 per cent of these now closed out. Focus is now on enabling the Central and Northern line commissioning in Quarter 4 2022/23 and Quarter 1 2023/24 respectively.

LED lighting

Progression of these works continues, with teams mobilising and contracts in place for replacements at King's Cross and two prioritised depots. Conversion of lighting at smaller stations is being delivered internally and is ramping up to previous delivery rates. It is expected that 20 stations will be delivered in the next financial year.



We have been converting lighting in stations to LEDs

Enhancements

Forecast completion	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2027/28	553	56	609	655	46
Change since last Investment programme report					
No change	5	(5)	No change	No change	

Financial commentary

The enhancements programme reports the gross costs of projects over their whole life. No further programme and project authority has been sought since the last report. Important to note that the cost to go is based on the current business planning assumptions for the prioritisation and affordability of Enhancements.n.

Performance over time commentary

The enhancements programme has delivered more than £1.3m of efficiencies in the quarter and expects to achieve its full year budget. Continuing focus of cost improvement is expected to yield more savings in future periods.

Programme update

The enhancements programme covers a range of improvement projects, 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.

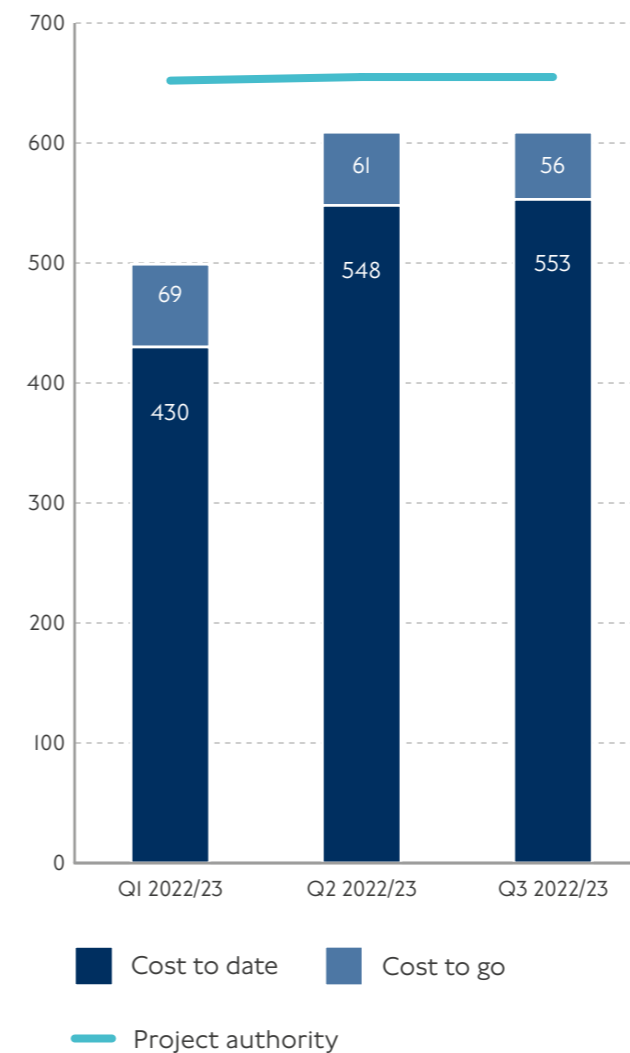
Owing to less funding being available for step-free access improvements and congestion relief schemes, a number of projects are paused while we investigate third-party funded options.

The Programme had a successful quarter with all schemes in delivery showing continued progress, as well achieving significant milestones on new third-party funded opportunities at King's Cross St. Pancras and Hounslow West.

Work is under way to determine the future priorities for step-free access following the publication of the results of our consultation in November that closed earlier this year.

Our draft Business Plan, which was published on 7 December 2022, illustrates the importance of step-free access and includes support towards such schemes, while recognising that in order to maximise value it is necessary to target locations that also attract third-party funding.

Enhancements performance over time (£m)



Step-free access

We have secured third-party funding to support the design of an improved step-free scheme at Hounslow West and delivery of additional step-free access to King's Cross St. Pancras station.

Following the publication of our step-free access consultation, we are continuing the process to develop a prioritised list of different step-free options. This takes into account the results of the consultation as well as funding considerations and complexity of schemes. This work is forecast to be completed in Quarter 4.

Tottenham Hale

The project is set to complete snagging on site by the end of 2022/23. Financial close is due in Quarter 1 2023/24. Network Rail continue to plan works to complete the customer corridor connecting the new ticket hall to the Network Rail Access for All bridge.

Paddington – Bakerloo line

The final structural works to connect the old ticket hall to the new are nearing completion. Step-free access lift installations are also near completion, with fit out and service installations continuing. The project is expecting to open in summer 2023, with testing and commissioning of the enhanced and step-free entrance to begin in spring 2023.

Colindale

In January, we were successful in securing funding from the Government's Levelling Up Fund. While awaiting the outcome of the funding bid, we have been working closely with the London Borough of Barnet and other partners to prepare for delivery. We will now be refreshing the existing design for this project that will support the development of the local area with an improved station and the provision of step-free access to the Northern line.

Hounslow West

A new 100 per cent affordable housing development on the site of the station car parks was granted planning consent by the London Borough of Hounslow on 2 December. The scheme is being brought forward by A2Dominion, working with TTL Properties. This will include significant improvements to the station itself. In parallel, a preferred option for upgrading the step-free access provision has been identified and funding options are currently being developed.

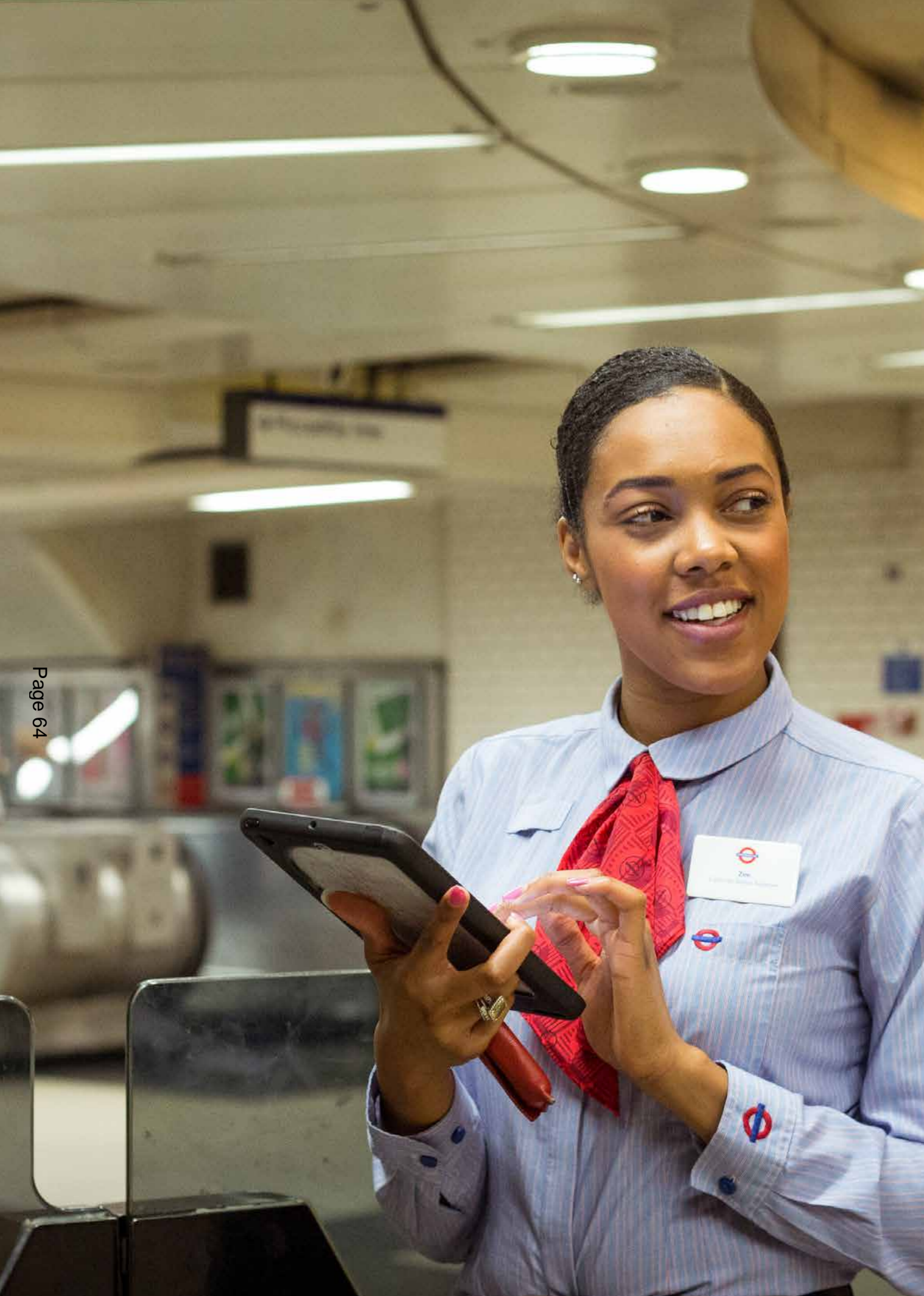
King's Cross St Pancras

A development agreement was entered into in September 2022 which delivers improvements to the entrance on the south side of Euston Road. The developer has submitted conceptual design proposals for the King's Cross Euston Road entrance and we are working closely with their team to review these. The scheme unlocks a London Underground retail opportunity to mitigate any increase in operational cost as a result of a new lift in place between the street and Tube station.



We are collating a priority list of step-free options

JAY
by ARICO



Knightsbridge station will have step-free access by summer 2023

Knightsbridge

Following the opening of the new Brompton Road entrance last quarter, we are on target to open the new Hooper's Court entrance which will provide step-free access in summer 2023. The project is currently undertaking works to bring the disused sub-level passageway, staircase and cross passageway back into customer use, which have been closed to the public since the 1930s. On completion of these works, these will form part of a new step-free access between street and platform level.

Leyton

In January, we were successful in securing funding from the HM Government Levelling up Fund. This will enable us to progress this scheme which will provide step-free access and wider station improvements to support the local area. While awaiting the outcome of the funding bid, we continued to work with our partners at the London Borough of Waltham Forest to finalise the concept design, which is expected to complete later in the financial year.

London Bridge

We are working with a third-party developer, Great Portland Estates, to open a new Borough High Street entrance. This would result in reduced journey times and congestion at street level, especially on Borough High Street itself. The project is currently awaiting the outcome of a planning inquiry related to the developer's planning application.

West Ham

We are working with a third-party developer, Berkeley Homes, to deliver 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 are progressing well, with the construction of the bridge deck completed and the superstructure to begin being erected in March 2023.

Cable service diversions in the pavement are under way to enable construction of the staircase serving the footbridge linking the street with the podium of the new development. A second footbridge across the railway to the south of the station was installed in October 2022 and is expected to be completed during spring 2023 but will not be brought into public use until the development opens. The main structure of the new road bridge carrying Stephenson Street over the railway began installation in January 2023 and will continue through to summer 2023.

Waterloo

As part of a wider redevelopment scheme at Waterloo that will see Elizabeth House demolished, we are progressing agreements to ensure step-free access to the Northern line platforms is secured. This would involve constructing lift shaft structures and connections to the northbound platforms during the progression of the development works. This will enable the future fit-out of the lift shafts after the development, subject to future affordability.

Stratford

Detailed design of the new south-western entrance nears completion and will enable the work to be on site in early 2023. It is a collaborative venture between the London Legacy Development Corporation, London Borough of Newham and the GLA, which are fully funding the capital works. We are coordinating with Network Rail which is designing a new customer lift for the underpass connecting the Jubilee concourse with other platforms within the station which will reduce congestion in the station and improve reliability.

Acton warehouse

The demolition contract was awarded in October 2022 and work has started to remove the roof panels and enable service diversions. Demolition of the structure will begin in early 2023 with completion this financial year.

Substation ventilation

Following the completion of 17 substations which are now fully upgraded, good progress continues to be made at Shepherd's Bush, Victoria and Notting Hill Gate. Development of the final two sites is now at an advanced stage, with the contract awarded for Bouverie Place on 30 June 2022 and Barons Court expected to be awarded in early 2023.



Work will begin in early 2023 on a new entrance at Stratford

Technology

Forecast completion	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: EFC versus authority (£m)
2022/23 to 2027/28	18	185	203	226	23
Change since last Investment programme report					
No change	7	(147)	(140)	No change	

Financial commentary

Forecast cost has been aligned to the 2023 Business Plan, which follows an exercise to prioritise our spend across the business in light of our available funding. As a result, the forecast costs have been reduced as future projects which are not yet mature have been removed. These projects will be subject to future prioritisation reviews.

Performance over time commentary

The portfolio has met our budget in the quarter, with a spend of £7m. Improved performance reviews are helping to drive better confidence in our delivery and the portfolio is expected to meet its full year budget. Forecast costs have been adjusted in light of prioritisation and ongoing deliverability reviews.

Programme update

Our technology assets include a network-wide radio system and data network, as well as all the software to manage our assets and deliver customer service. The London Underground technology programme is a rolling annualised programme, consisting

predominantly of renewals works, with projects added each year based on prioritisation of business needs.

Networks and connectivity

We are continuing to work well with our suppliers to upgrade key components of our Connect radio system, focusing now on rolling out new radio hardware base-stations. We have replaced key hardware at more than 200 of the required 293 locations and have met our strategic milestone for this financial year. This work will enable the Connect system to continue to function into the 2030s, and we are now starting work to ensure the long-term future of our operational networks.

We have also delivered Critical Incident Management, a range of interventions that help us to respond effectively to emergencies or safety incidents, at a total of 81 stations. These improvements enable us to effectively manage these stations during a critical incident and other key events. We are continuing to roll out this important safety functionality, and plan to have completed all works by early 2025.

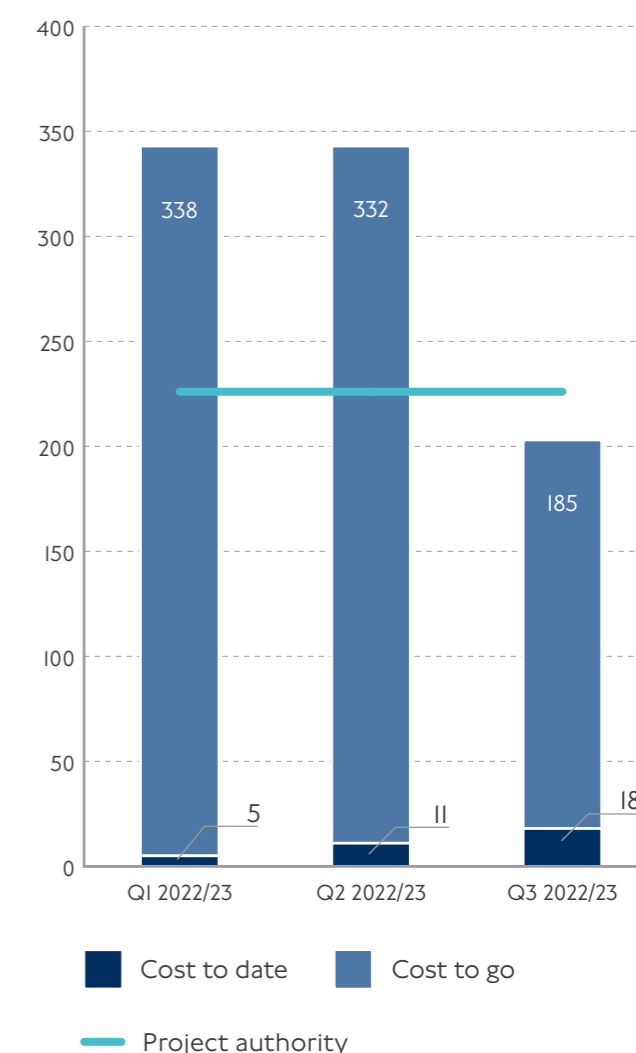
Assets and staff tools

To improve our approach to asset management and long-term planning, we are consolidating our asset management information systems into a single tool for London Underground and London Trams. We are currently migrating London Underground assets onto this new single platform and have successfully completed the migration of several significant asset classes. Delivery has been delayed by around five months, primarily due to supplier performance. In response, we have brought all remaining elements of scope in-house and are now working to complete delivery in late 2023.

We have finalised the development of our new Competency Management System for train operations and brought this tool into service on the Piccadilly line on 5 December 2022. We are now closely monitoring the benefits of this new system and will use this information to inform a potential expansion of the tool to other areas of the business.

Finally, we have started work with our supplier to enhance our planning systems for station and track works as part of the RailSys project. This work will consolidate our works planning into a single integrated system, thereby improving efficiencies and reducing safety risks.

Technology performance over time (£m)



Surface transport

This comprises Healthy Streets, air quality, asset investment, public transport and surface technology



Healthy Streets

Reporting period	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: Forecast vs authority (£m)
2020/21 to 2024/25	332	410	742	531	(211)
Change since last Investment programme report					
No change	30	145	175	No change	

Financial commentary

The five-year forecast from 2020/21 to 2024/25 has increased by £175m since the last report to align with the latest Business Plan and to reflect gross expenditure on third-party funded projects.

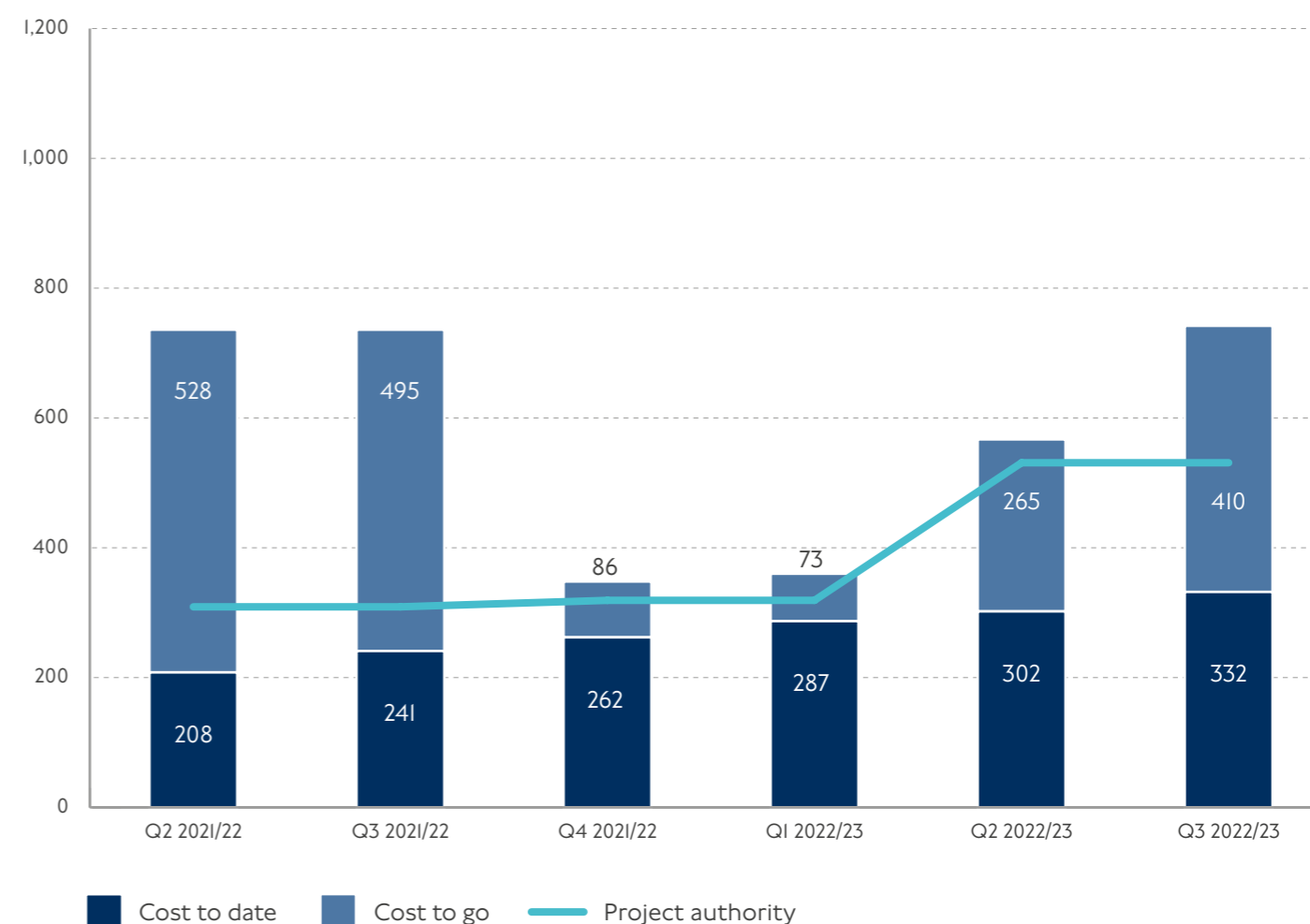
Our capital programme is in line with the funding settlement envelope agreed with Government over the two-year period for 2022/23 and 2023/24. This delivers our committed projects, with additional scope for capital renewals and active travel that have been enabled by the funding agreement. We will continue to provide funding to boroughs for investment in their streets, although this is accounted for as operating expenditure. The total investment in safe and active travel, across both operating and capital expenditure, is an average of £150m per year across the Business Plan 2022/23 to 2025/26.

Performance over time commentary

Over the last six quarters, forecast spend on Healthy Streets was significantly reduced to reflect our ongoing funding constraints during the coronavirus pandemic as we forecast spend in line with a managed decline scenario. Following the latest funding announcement for Active Travel and 2022/23 to 2025/26 Business Plan, the Healthy Streets forecast has increased to £742m over five years and the projects have been remobilised.

The programme and project authority has remained at £531m following approval at the October 2022 Programmes and Investment Committee meeting. The approval covers forecasted spend to March 2024. The remaining £221m (£742m less £531m) of spend to March 2025 will be requested at a future Programmes and Investment Committee.

Estimated final cost performance over time (£m)



Programme update

The Healthy Streets programme continues to reduce road danger in line with the Vision Zero action plan, 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.

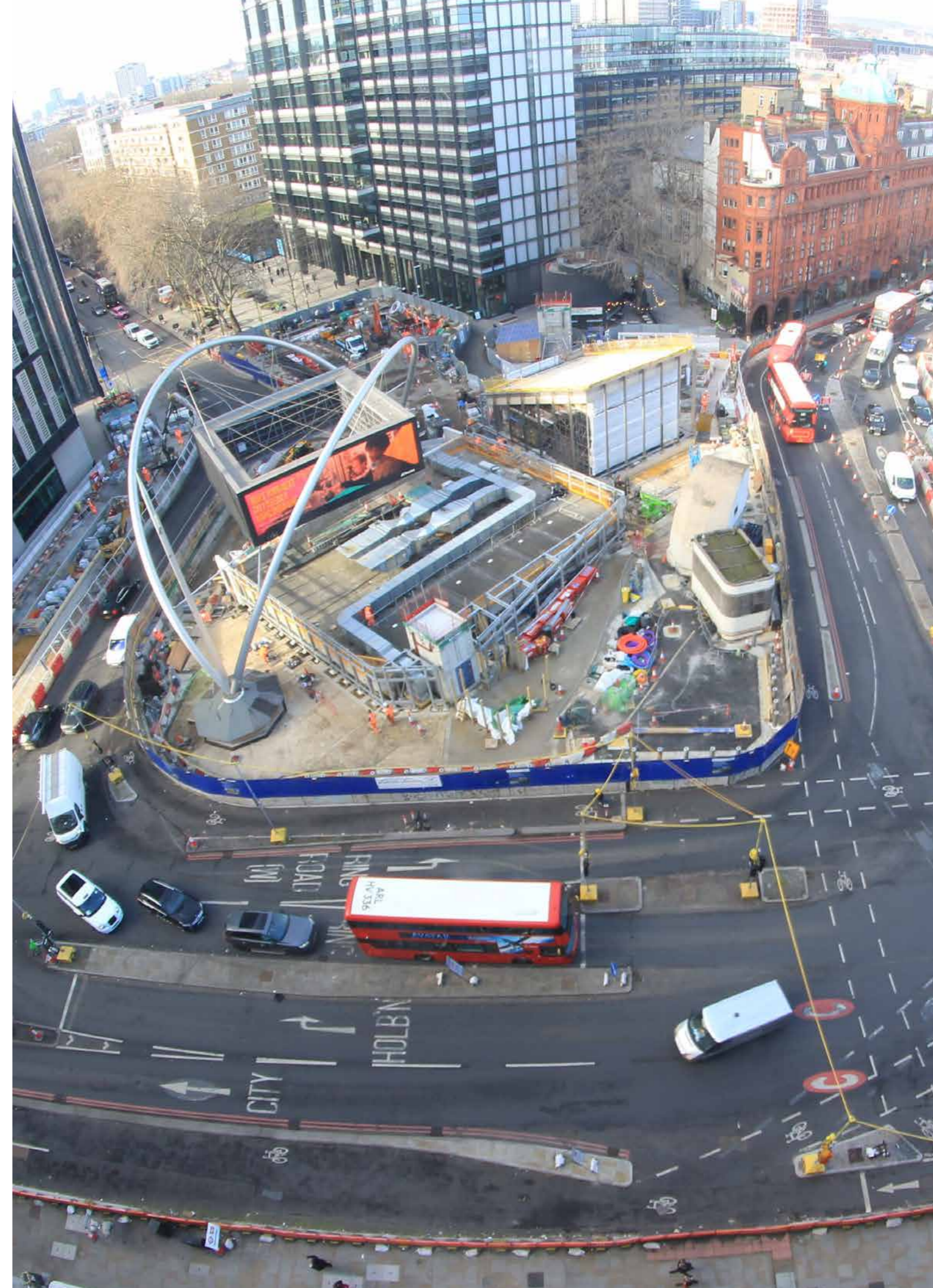
Recent highlights across the programme include the end to five public consultations for the temporary schemes installed as part of London's pandemic response. The responses are being analysed and decisions as to whether to retain, change or remove these temporary schemes will be made in early 2023. The London Borough of Camden carried out a public consultation on proposals for a Healthy Streets and safety scheme at High Holborn, Drake Street and Proctor Street. Works have completed on improvements to the temporary extension of Cycleway 4 through Greenwich and a new section of Cycleway 9 through Watermans Park. Lower speeds have been implemented on the A12 through Gants Hill in Redbridge and we have completed 227 traffic signal timing reviews to enable faster bus progression at junctions, saving more than 5,000 passenger hours every day. The longer-term funding settlement has also meant that boroughs have been able to progress a range of new Healthy Streets investments across the capital, including a cycle cross on Vigo Street across Regents Street to unlock a cycle route between Soho and Mayfair.

Old Street Roundabout

Construction has continued with the highway works on the four approach arms to the junction, including the infilling of Subway 3 on the south-western side of the junction. Building work to the superstructure for the new main station entrance continues, with the green roof and glazing having started in January.

Works to the existing roof structure have continued, with installation of the external steelwork. Construction of the new passenger and goods lifts has continued with installation of the new lift cars now completed, ahead of standalone testing in spring. Refurbishment of the subsurface concourse area has continued with installation of new mechanical, electrical and communications equipment and installation of new shop fronts for the retail units. The power supply to the new switch-room to enable testing, commissioning and handover of the new assets was completed in January.

Once complete, the new design will make this busy location much safer and more inviting for those using sustainable transport modes. Cyclists will have segregated cycle lanes throughout the junction, and people walking in the area, using the station and changing between lines, will experience a major improvement in the quality of the built environment.



Work has begun on the new Old Street station entrance

Cycleway 4 London Bridge to Greenwich

Snagging work and pre-handover inspection walks continue along Evelyn Street from Bestwood Street to Deptford Church Street following completion of construction works in September. The project team, representatives from the supply chain and key stakeholders met with the walking and cycling commissioner Will Norman, and Councillor Louise Krupski, Lewisham's Cabinet Member for Environment and Climate, for a press opening event on 27 September. The Royal Borough of Greenwich's works to Creek Road Bridge are scheduled to begin from March 2023. The London Borough of Southwark started works on the temporary scheme for Lower Road in November 2022 between Rotherhithe Roundabout and Surrey Quays Road, which will complete the final section of a protected cycling route between London Bridge and New Charlton.

Cycleway 9 East Kensington Olympia to Brentford

Snagging works on Hammersmith gyratory were completed on 11 November while those on Chiswick High Road from Chiswick Lane to Goldhawk Road are nearing completion. Works on Chiswick High Road between Chiswick Lane and Heathfield Terrace are being delivered by the London Borough of Hounslow and progressing well following the start on site on 13 October. Owing to the proximity of retailers, the works were paused during the Christmas period and resumed on 3 January.

Cycleway 23 Lea Bridge to Dalston

The detailed design for Lea Bridge Roundabout is progressing and construction planning is well advanced ahead of planned start on site in early March 2023.

Cycleway 37 Mile End to Westferry Lane

Detailed design for the permanent scheme at Mile End Road junction is progressing and construction is planned to begin from late February 2023. Detailed design for the temporary to permanent scheme on Burdett Road is progressing and construction is planned to follow Mile End Road junction in November 2023.

Cycleway 50 Finsbury Park to Tottenham Hale

Detailed design for the TfL Road Network section from Caledonian Road to Finsbury Park is progressing and construction is planned for February 2023.

Responding to the coronavirus pandemic

The DfT's active travel fund has now delivered more than 25km of new or improved cycling infrastructure. Boroughs worked tirelessly to deliver ambitious schemes within short timescales, significantly expanding London's cycle network. Building on the success of the programme, cycling delivery will continue across London via the borough cycling programme. The programme will see both delivery and design of new cycling schemes by the end of this financial year.

Work continues on the Future of Temporary Schemes programme to determine the next steps for each scheme delivered through the Streetspace for London programme. Recent progress has included public consultations being held for the Park Lane and CS7 Clapham to Oval schemes. We will now review responses and scheme monitoring data to decide on the future for both schemes. We have also recently concluded public consultations for experimental schemes at Mansell Street, Cycleway 8 between Lambeth Bridge to

Chelsea Bridge, A21 Lewisham to Catford, and Bishopsgate.

Works to deliver improvements to the Cycleway 4 Extension scheme between Greenwich and Charlton have now been completed ahead of the scheme's transition from a temporary scheme to an experimental scheme in early 2023. We have also made some further improvements to the Park Lane scheme, including a new toucan crossing at Stanhope Gate to link cyclists from Park Lane to Mayfair.

London boroughs continue to work towards implementation of the new Low Traffic Neighbourhood schemes delivered under the active travel fund. Barking and Dagenham is in the final phase of delivery of its four schemes with Pondfields now complete and Barking Town Centre to follow, and Haringey has delivered Low Traffic Neighbourhoods at Bounds Green and St Anne's (Green Lanes). All schemes delivered through the fund are expected to be complete by the end of this calendar year.

Lowering speed limits

Lowering the speed of vehicles in London is key to reducing both the likelihood of a collision occurring and the severity of the outcome. The second phase of the programme is under way, and as detailed in the recent Vision Zero progress report, aims to reduce speeds on a further 140km of our roads.

Raised pedestrian crossings will soon be introduced at eight locations in Westminster and Enfield to further reduce danger to people walking and increase compliance with the newly reduced speed limit, as well as introducing accessibility benefits for mobility-impaired customers.

A new 20mph speed limit was introduced on 1.5km of the A205 in Wandsworth in early December 2022 and an extension to the existing 30mph speed limit at Gants Hill town centre came into force in early October 2022. Detailed design work is under way for proposals for a 40mph speed limit on the A4 Bath Road (currently 50mph).

In November 2022, we began local engagement on proposals to introduce a consistent 20mph speed limit across the majority of roads in Camden, Islington, Hackney, Tower Hamlets and Haringey, and detailed design is under way. By April 2023, we plan to reduce the speed limit on a further 28km of our road network.

A further 65km of our roads across the boroughs of Greenwich, Lewisham, Southwark, Lambeth, Wandsworth and RB Kensington and Chelsea is nearing completion of concept design. A new 30mph speed limit on A4180 Ruislip Road in Ealing is in detailed design. These projects are scheduled for delivery by October 2023.

The remaining 12km of our roads are in concept design. This will see new 20mph speed limits on selected roads in Wandsworth, Richmond, Sutton and Merton, as well as the A312 Harlington Road West in Hounslow. A new 30mph speed limit is proposed on the A4 Great West Road in Hounslow and new 40mph speed limits will be introduced on A4 Bath Road in Hillingdon, to complement proposed pedestrian safety improvements, as well as A406 North Circular Road in Enfield and Waltham Forest. These projects are scheduled for delivery by March 2024.



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Lowering speed limits is a key way to reduce collisions

Safer Junctions

In April 2017, the Safer Junctions programme highlighted 73 of the most dangerous junctions on our road network, defined as those with the highest vulnerable road user collision rates. Improvements have been made at 43 of these junctions. Design work continues on the remaining 30 junctions, including detailed design of York Road roundabout and Holloway Road/Drayton Park, which are respectively delivering motorcycle and pedestrian safety measures.

A new 20mph speed limit was introduced in early December 2022 on A205 Upper Richmond Road through the junction with Putney Hill/Putney High Street. This is the first phase of a three-stage approach to reduce road danger at this location.

In November 2022, we began consulting the public on the second phase of improvements at Battersea Bridge junction with Cheyne Walk, which will include new crossings on the remaining arms of the junction, as well as safety improvements for cyclists. In November 2021, a new pedestrian crossing was commissioned at Battersea Bridge, where a person was tragically killed at the beginning of 2021.

We are committed to public engagement on potential changes to 10 further Safer Junctions by the end of 2024.

Bus Priority Programme

We have been undertaking a desktop assessment to identify additional locations across London where more bus lanes would improve bus reliability and journey times. Through internal consultation and assessment, we have identified around 30km of bus lane based on strategic data and available road space. Two thirds of these locations are on the borough road network and were shared with the boroughs in January to take forward into feasibility. This is to meet the Government target of delivering 25km of new bus lane by March 2025. Currently 2.84km has been delivered and we are on target to deliver a total of 10km by March 2024.

We have worked to reprioritise both the TfL-led and the borough-led bus priority programme. Through consultation with the boroughs, we have been able to fund 85 bus priority schemes in 2022/23. These include some for delivery, starting this financial year, such as Prince Regent Lane in Newham – which will see 600 metres of new bus lane constructed – and funding for design work which will move into construction in 2023/24. We have also been able to offer design support to boroughs through our embedded resource contract.

Changes to 65 of our traffic signals to improve bus journey times have been identified for 2022/23 and 12 upgrades have already been implemented with 53 on track for the end of March. By the end of 2022/23, a total of 1,200 signal timing reviews will be completed.

Air quality

Reporting period	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: Forecast vs authority (£m)
2020/21 to 2024/25	268	445	714	459	(225)
Change since last Investment programme report					
No change	18	158	177	No change	

Financial commentary

The five-year forecast cost from 2020/21 to 2024/25 has increased by £177m since the publication of the last report. This is primarily due to the inclusion of the scrappage scheme customer payments following Mayoral approval and funding from the GLA's grant of £110m. The Quarter 3 forecast reflects an increase of £80m for renewal delivery of road user charging schemes such as the re-let of contracts and delivery of the business operations system in-house. This increase is part of the first draft of the renewals prioritisation exercise which was finalised in January 2023. There has also been re-phasing within the portfolio after the go live date was changed from October 2025 to September 2026.

The forecast vs authority variance of £255m includes programme and project authority of £174m to support the delivery of the following road user charging projects: London-wide ULEZ, Scrappage Scheme, Tunnel User Charging and Direct Vision Standard Phase 2. This was approved at the Programmes and Investment Committee meeting on 14 December 2022 (PI0).

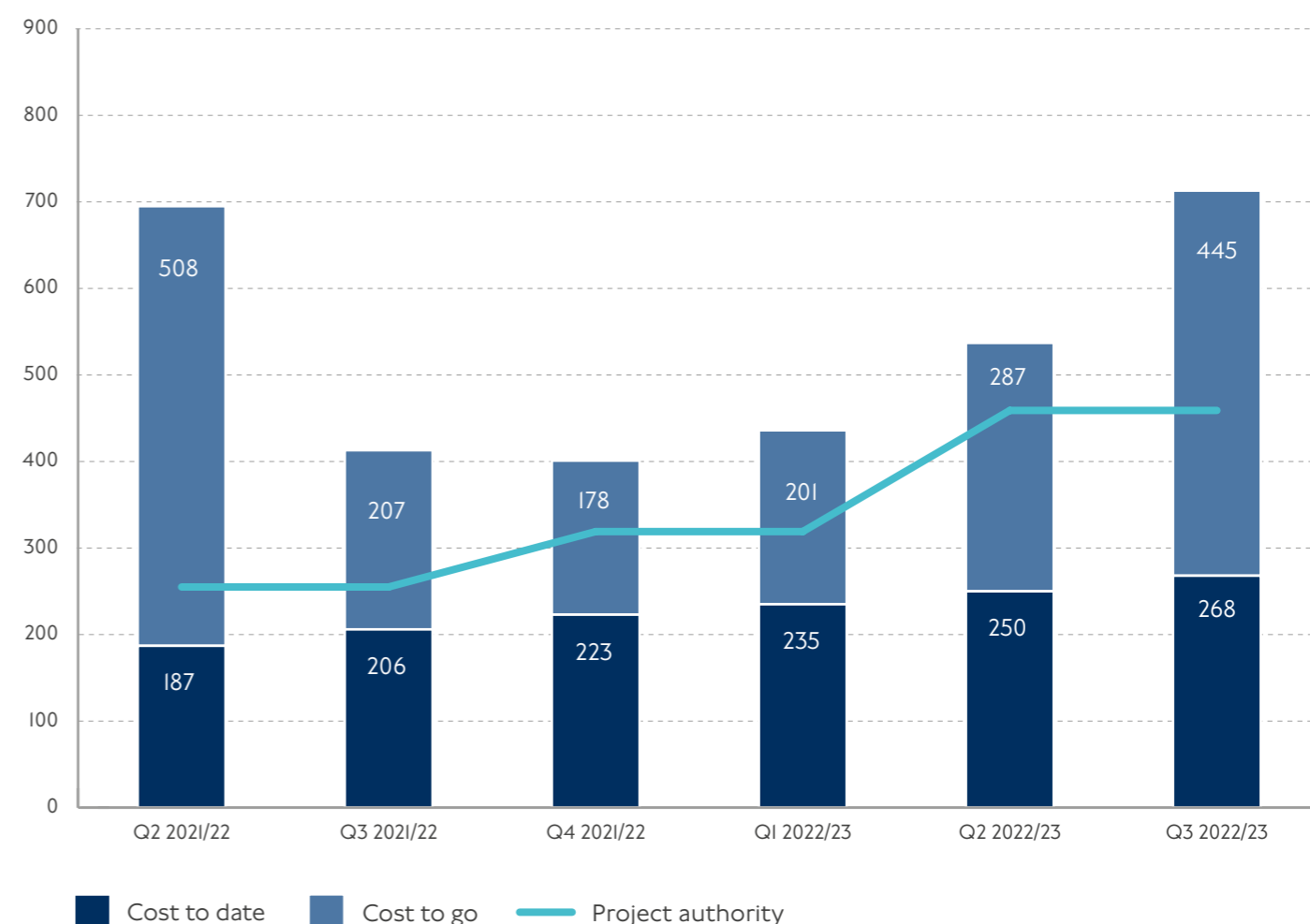
Performance over time commentary

Over the last six financial quarters, our forecast cost has fluctuated, driven by funding challenges brought about by the pandemic, which has meant several projects had to be put on hold. However, since Quarter 1 2022/23 and the funding agreement that was confirmed in August 2022, the position has improved. The ULEZ expansion for 2023, following Mayoral approval, as well as the associated scrappage scheme, is now part of the portfolio forecast.

Programmes and Investment Committee approved £174m programme and project authority on 14 December 2022, this was a request covering Capita costs for Tunnel User Charging, London-wide ULEZ, Scrappage Scheme and Tech and Data support across Direct Vision Standard Phase 2, London-wide ULEZ and Tunnel User Charging.

A further request will be made next financial year in the Air Quality sub-programme's Programmes and Investment Committee paper in March to further bridge the gap of the £255m.

Estimated final cost performance over time (£m)



Programme update

Electric vehicle infrastructure delivery

It is expected that London will need between 40,000 to 60,000 electric vehicle charging points by 2030, including up to 4,000 rapid chargers. 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 roll out 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.

We have now assessed more than 1,600 individual sites across the GLA estate, with the first batch of 25 sites released to the market on 30 November, as planned. As well as evaluating bids from prospective suppliers, we will be looking to accelerate the release of further batches in the new year. We are also exploring options to broaden the numbers of sites that we can release to the market, to help deliver the volume of charging infrastructure set out in the London electric vehicle strategy by 2030.

Zero-emission bus fleet

We continue to add zero-emission buses to the London fleet as quickly and affordably as possible, with an aim to make the entire fleet zero-emission by 2034, plus options for bringing this forward towards 2030 if funding for vehicles and infrastructure can be provided by the Government.

There are now more than 915 zero-emission buses in the fleet, operating across multiple bus routes in London, helping to reduce carbon dioxide emissions across the capital. We continue to remain open to trialling new zero-emission technology; the fleet already includes 20 double deck hydrogen fuel cell buses and in October 2022, 18 new double deck buses, which are boosted by a high-powered pantograph ('opportunity' charging infrastructure) located at Bexleyheath bus garage on route 132, joined the fleet. Additionally, in November 2022, we launched one of the new single deck opportunity charged buses that will be used on route 358 from next year, operating with 20 new electric buses and with charging infrastructure at either end of the route – both types of technologies can support longer mileage routes in London.

We are aiming for around 10 per cent of our 9,000-strong fleet to be zero-emission by early 2023, subject to manufacturing supply chains and vehicle delivery, and the essential upgrade of power at multiple bus garage sites around London.

A move towards zero-emission will not only support the Government's wider plans to cut carbon dioxide emission in the UK by 68 per cent compared to 1990 levels by 2030, but support British manufacturing, innovation and jobs – and reduce reliance on vehicles powered by fossil fuels.

Road User Charging

On 25 November 2022 the Mayor announced his decision for the Ultra Low Emission Zone (ULEZ) to be expanded London-wide to tackle the triple threats of air pollution, the climate emergency and congestion. The announcement follows a public consultation on the proposals which ran between May and July 2022, in which 59 per cent of respondents agreed that more needed to be done to tackle toxic air.

The ULEZ expansion is forecast to make further progress to reduce air pollution by reducing nitrogen oxides emissions from cars and vans in outer London by 10 and seven per cent respectively, and reducing PM2.5 car exhaust emissions in outer London by nearly 16 per cent, benefiting five million outer London residents. Expanding ULEZ London-wide will save 362 tonnes of nitrogen oxide in outer London, a 57 per cent increase on what the central London ULEZ achieved in its first year of operation. The expansion will come into effect on 29 August 2023 and will operate across all London boroughs up to the GLA boundary.

The ULEZ expansion is now accompanied by a new £110m scrappage scheme which launched on 30 January 2023 and applications are now being accepted to support Londoners on lower incomes, disabled Londoners, charities and small businesses and sole traders. Successful

applicants will receive a grant to scrap or – for the first time – retrofit their vehicle for certain vans and minibuses. Car owners can opt to receive a smaller grant accompanied by up to two free annual bus and tram passes. New measures are also being introduced to support disabled people, including extending the existing exemption periods for London's disabled drivers, and further support is being offered to Londoners through removal of the fee for drivers to sign up to Auto-Pay for the ULEZ and Congestion Charge.

Asset investment

Reporting period	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: Forecast vs authority (£m)
2020/21 to 2024/25	293	275	567	494	(73)
Change since last Investment programme report					
No change	27	(38)	(11)	No change	

Financial commentary

The five-year cost forecast from 2020/21 to 2024/25 has reduced by £11m since the publication of the last report, as it was necessary to defer activities under several larger schemes to ensure that an affordable programme aligns with our most critical asset priorities.

This deferral has also lowered the required programme and project authority up to 2024/25 by the portfolio. The current level of programme and project authority granted in May 2022 covers some, but not all, of the expected spend for 2024/25, so further authority is likely to be required to ensure sufficient funding for that period, though the level of funding needed will be kept under constant review.

The portfolio is actively seeking further funding from external sources, such as the DfT's Major Road Network programme, to enable an acceleration of key renewal schemes such as the Gallows Corner flyover and Brent Cross structures.

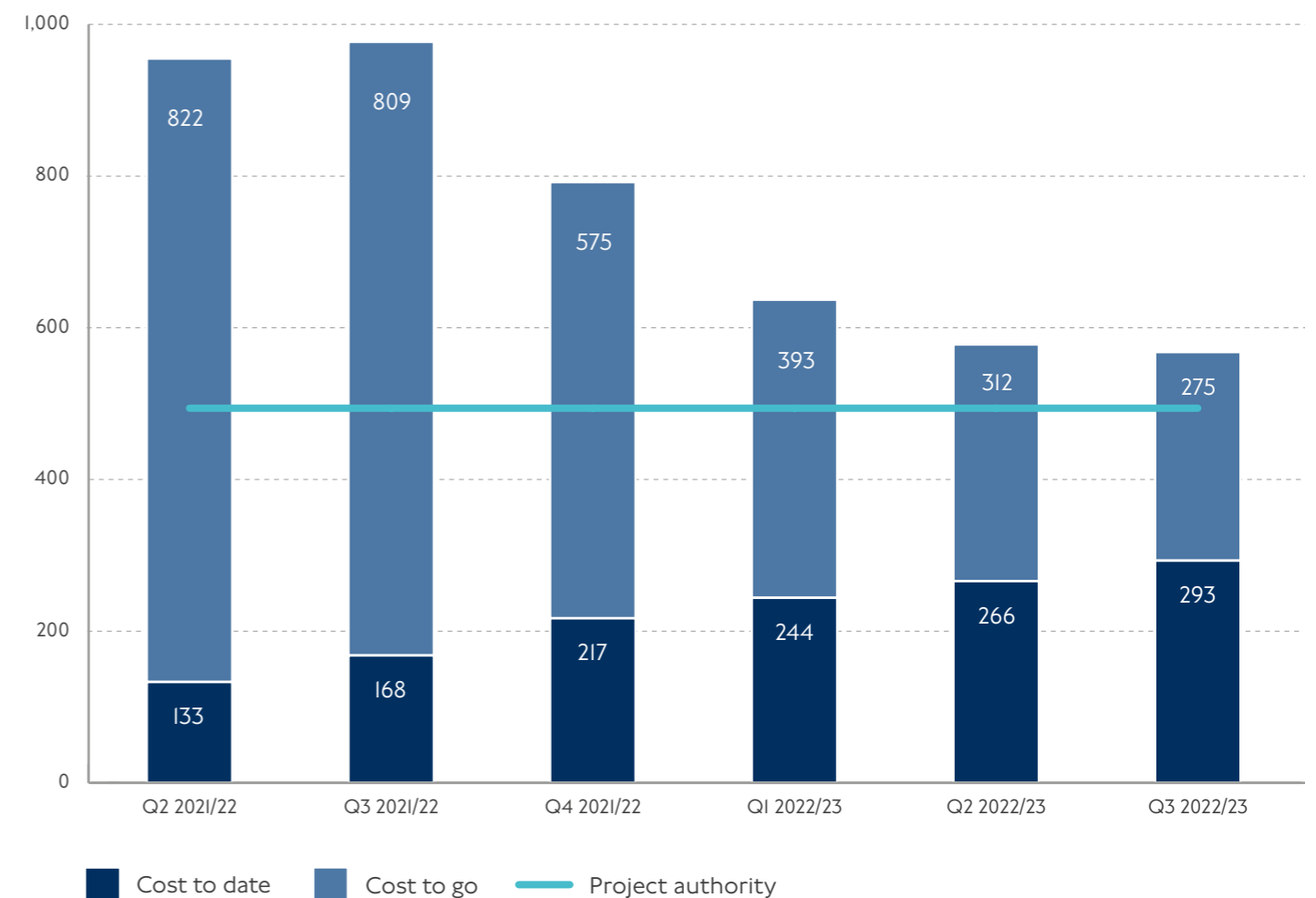
Also, the asset investment portfolio has delivered £5.5m of cost reductions so far this financial year, as project teams found more efficient ways of working and gained increased value for money from suppliers. This represents an improvement on the savings found at this same stage of the previous financial year.

Performance over time commentary

Over the last six financial quarters, our forecast cost has seen a general decreasing trend, driven by funding challenges following the recent pandemic. This has resulted in several projects being deferred.

Due to the above, our programme and project authority was not required to be increased at the May 2022 Programmes and Investment Committee meeting. This includes all spend up to the end of 2023/24.

Estimated final cost performance over time (£m)



Programme update

Work is under way to ensure the safety and operability of our highest priority assets that need urgent renewals, including critical tunnels and structures.

Blackwall Tunnel southbound

The 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. The tender documents for the detailed design and build stages were issued in September. We plan to appoint a contractor to progress the next stages of the project by April 2023, subject to the updated business case demonstrating the scope, cost and programme provides the best value for money solution.

Gallows Corner

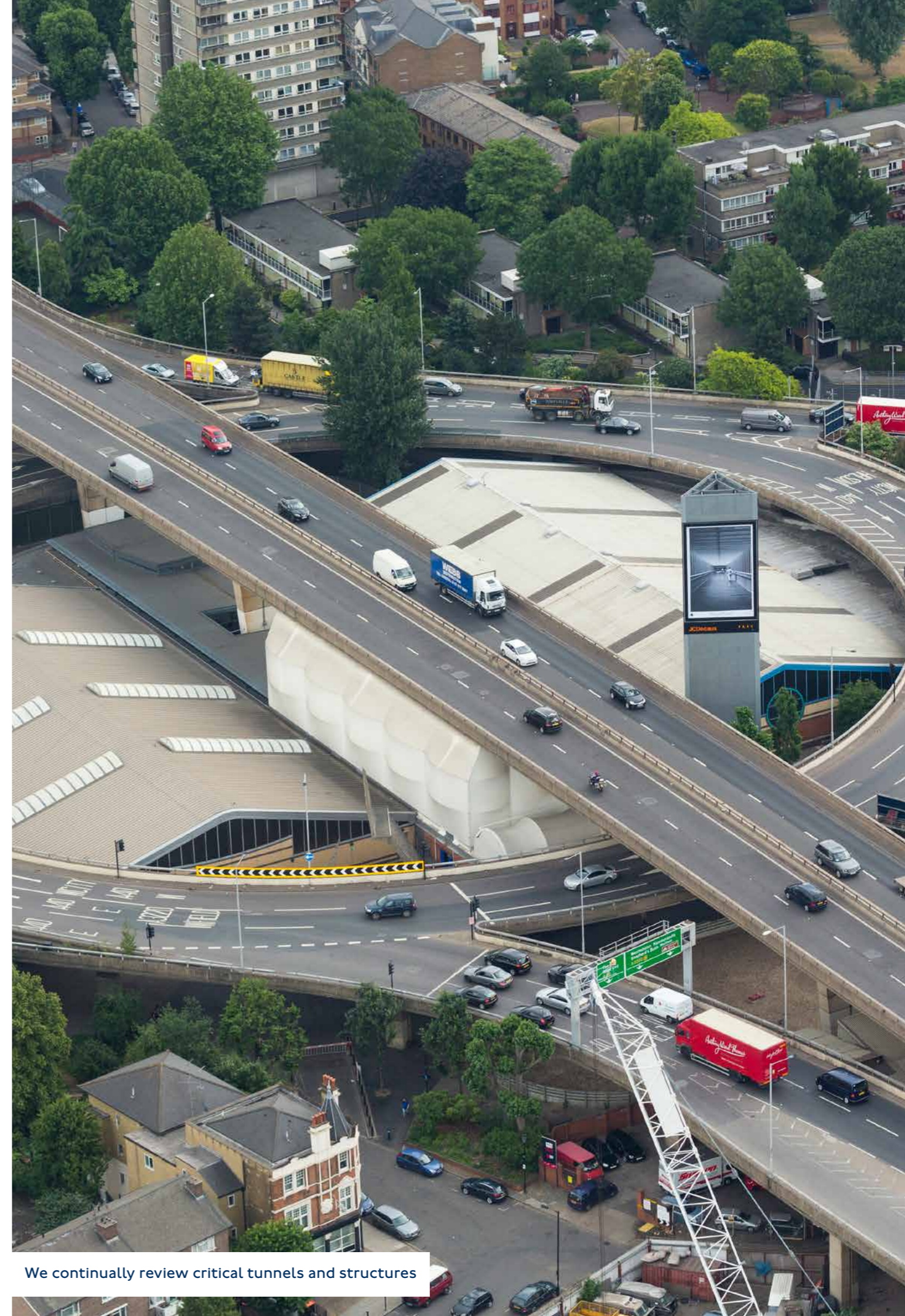
The Gallows Corner flyover is one of our highest-priority assets to renew due to its age, condition and the current restrictions in place. Following the completion of design and feasibility work, we have selected a preferred option to fully refurbish and strengthen the flyover. We have briefed external stakeholders who are supportive of the selected option. The option selected has 30 per cent of the scheme carbon compared to the alternative of a full replacement. We submitted a draft outline business case to the DfT seeking a funding contribution through the Major Road Network Programme and they have sent us comments.

Site investigation works are complete and the result of these are due by early 2023. As assessment of the existing foundations has begun. A separate concept design contract has also been awarded and will utilise the investigation and assessment outputs to ensure a robust design is completed. We are now updating a final version of the outline business case which we will submit to the DfT following completion of the foundations assessment in February 2023.

A40 Westway

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

Concept design work for the remaining elements has been submitted and will be signed off early in the new year. Planning work to determine the best delivery approach for the remaining joints considering asset risk, financial constraints, network access and the route to market is under way and expected to be finished by early 2023.



We continually review critical tunnels and structures



The design of the refurbished Rotherhithe Tunnel is complete

Rotherhithe Tunnel

We have completed the design work and preparation of tender documents for the detailed design and build procurement stages of the refurbishment project.

However, due to the need to retain sufficient cross river travel opportunities while the works take place at the Blackwall Tunnel, the next nearest road crossing in the east, it is now expected that the full refurbishment of Rotherhithe will not take place until after the Silvertown Tunnel opens in 2025.

A series of short-term capital interventions are being put in place to ensure the tunnel remains safe and operable until the main refurbishment project is progressed. The procurement activity for some of the short-term capital interventions, including the fire main and tunnel lighting, has been completed and a contract awarded to progress feasibility work. Investigations works are being planned and will start in early 2023. Options for delivery will be developed by May 2023 to inform decisions on the best value for money.

Hammersmith Bridge

We released our third of the share of the costs for the stabilisation works, which meant that the London Borough of Hammersmith & Fulham started works earlier in 2022. These works are expected to be completed in early 2023. Alongside the DfT, we continue to support the borough in developing a business case for the longer-term strengthening works.

Carriageway renewal

Work to renew a revised target of 230,000 square metres of carriageway continues at pace, with more than 100,000 square metres delivered to date. We have now completed 20 resurfacing schemes, which includes recently completed works on the A127 westbound Southend Arterial Road from Cecil Avenue to Hall Lane, A3 Kingston bypass northbound and A501 Marylebone Road. In the next quarter we plan to deliver more schemes on the network, including A4 Cedars Road, A205 Tulse Hill and A10 Rectory Road. Design work to facilitate future years' renewals is also progressing well with 24 preliminary designs and sixteen detailed designs now completed.

Public transport

Reporting period	Cost to date (£m)	Cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: Forecast vs authority (£m)
2020/21 to 2024/25	170	295	466	283	(183)
Change since last Investment programme report					
No change	12	(46)	(33)	No change	

Financial commentary

The £186m variance to forecast versus authority is due to programme and project authority only being sought up to 2023/24 and future known commitments, whereas the forecast cost is to the end of 2024/25 for all known expenditure. There is no change to the programme and project authority approved in the July 2022 Programmes and Investment Committee submission.

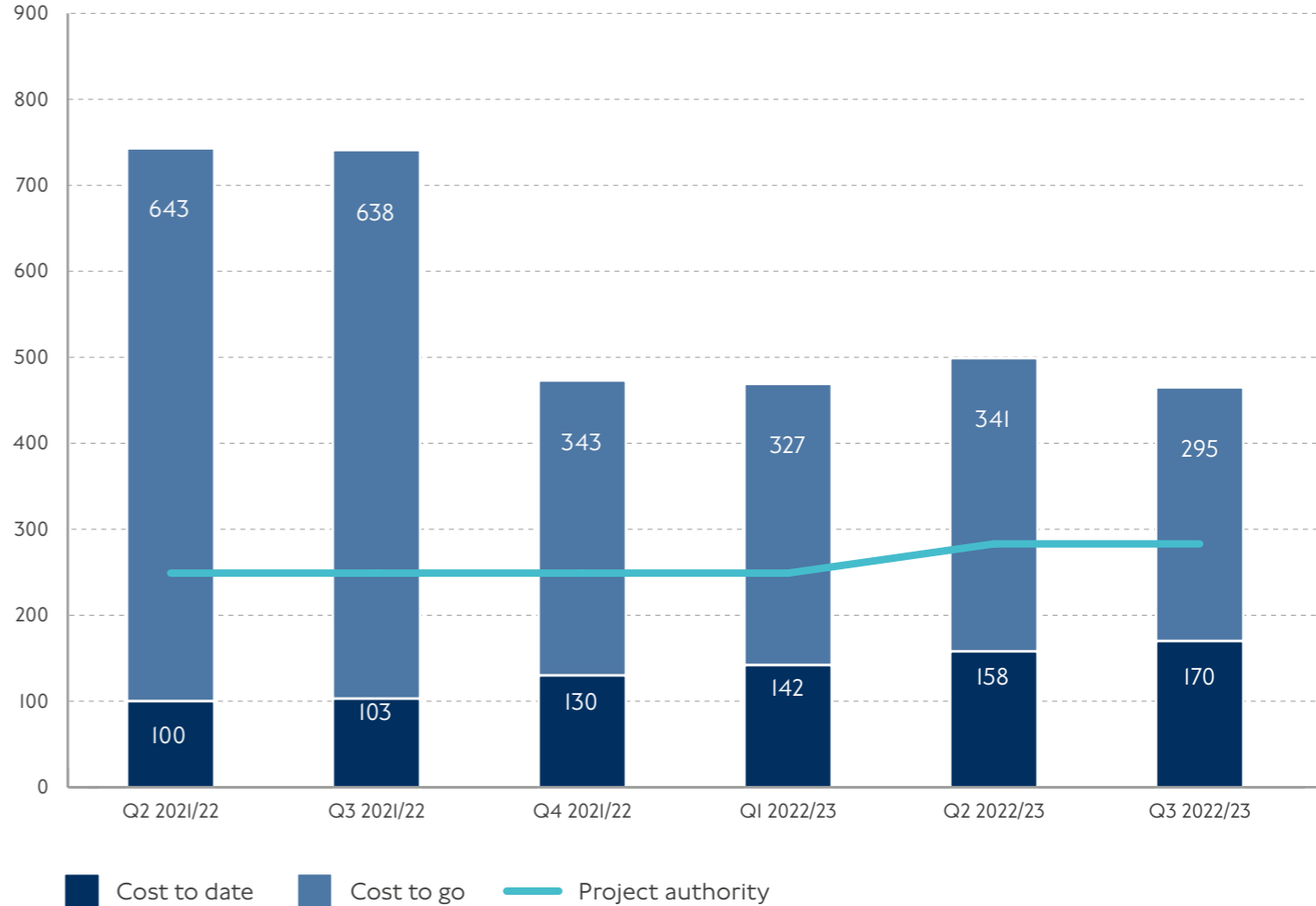
The Quarter 3 forecast reflects an increase of £1m for renewal delivery across the rail network of assets to help ensure our network remains reliable. This increase forms part of the first draft of the renewals prioritisation exercise which was finalised in January 2023.

The East London line Housing Infrastructure Fund programme was granted programme and project authority at the Programmes and Investment Committee meeting in July 2022 of £92.65m for phase one. The workstreams include Surrey Quays, signalling, power and bus upgrades at Canada Water. The Quarter 3 forecast reflects a £45.8m reduction in the five-year view mainly due to £10m slippage on phase one into 2026, in addition, the phase two reported EFC now sits in line with the funding awarded. Funding against phase two, which includes additional train stabling and Surrey Canal station to be confirmed.

Performance over time commentary

Over the last six financial quarters, our forecast cost has seen a general decreasing trend, driven by funding challenges following the recent pandemic. This has resulted in several projects being deferred.

Estimated final cost performance over time (£m)





We are upgrading signalling and power on the London Overground

Programme update

London Overground

In support of the Housing Infrastructure Programme funded upgrade works on the East London line, we are now at the detailed design stage. Phase one of the two-phased approach includes expansion of the existing Surrey Quays station, together with power and signal upgrades to support significantly more housing in key opportunity areas.

In addition to the main Surrey Quays stations works, as per the Grant Determination Agreement, the team is also progressing traction power and signalling upgrades to support service capability uplift above 16 trains per hour. We entered into the design contract with Network Rail on 7 October for the power upgrade and we are progressing the invitation to tender for the signalling works.

Class 710 trains

Manufacturer Alstom has delivered 50 of 54 Class 710 trains to London Overground. The last four trains are expected to be accepted in Quarter 4 2022/23 and Quarter 1 2023/24 dependent on material supply for pre-sale defect rectification and completion of the delayed train control software development testing.

London Overground renewals

Renewals delivery has been accelerated during the last quarter with contractual commitments of circa £800,000 agreed. Works delivery has begun for the telephone switching upgrade, lineside and station SCADA renewals and lifts renewals, which together will deliver more than £1.3m of renewal works.

Complex renewal schemes continue to progress well. A number of rooms are nearing completion on the Operational Building Complex accommodation reconfiguration project, with full completion forecast for early March 2023. The detailed design has been completed and accepted for the Class 378 train cab simulator renewal. In addition, a compliant bid has been received for the replacement of the East London line signalling control system through the R for London Infrastructure Improvement Framework (IIF) and is under evaluation.

DLR

Procurement activities for the renewal portfolio continue, with priority given to critical and safety-related projects. The team, including our contractors, continues to assess the impact of price rises and the availability of materials such as steel and resources in the current volatile market. Retaining key staff is a concern, with several engineers having left the business this period. Recruitment is challenging to attract and retain competent staff in commercial, sponsorship and engineering teams.

The replacement bogie frame project for the B92 train type is progressing well and the software trials will take place from 25 to 27 January 2023. If successful, the full roll out will be delivered over the next 16 weeks. The software install is required on all I10 train units.

High voltage projects were impacted by the UK Power Networks substation fire at Poplar in March 2022, which required some key projects to be re-programmed so as not to impact services. The Poplar transformer has been installed successfully and it is now in service.

Automatic people counters at 26 stations have been installed and commissioned into service across the network. For the renewal of long line public address systems, site installation has begun. This system is used for station announcements, which are essential for evacuations as the majority of DLR stations are unstaffed.

Canary Wharf and Heron Quays low voltage renewals have started works on site after designs approval. We will replace old lighting with new LED fittings and expect to see significant drops in our consequent power usage at these key stations.

The lift system upgrade project continues to make good progress, with more than 80 per cent of the lifts now completed and back into service. Escalator refurbishments at Cutty Sark and Tower Gateway return to service this period. South Quays escalator refurbishment has begun.

Platform surfaces and stair treads have been completed. Works have started on the listed Limehouse arches with agreement reached with the Canal & River Trust to work above their main canal feed into Limehouse Basin.

The GLA-funded Royal Docks stations programme has completed an update of the costs for design and construction works at Pontoon and Royal Victoria which are now being assessed against budget. An options study has also been progressing for the proposed new station at Thames Wharf.



We're installing new software on I10 DLR train units

London Trams

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 categorisations across our fleets. Early market engagement is complete, which has informed the procurement strategy. It was confirmed at our internal Investment Group meeting that replacement of the CR4000 trams is the preferred option following the stage gate two review, however, full funding for replacement of the trams, alongside our other rolling stock, has not yet been established.

Initial assessments of infrastructure requirements to facilitate a new fleet have also been completed, which have informed the overall programme update.

Installation work for both the wayside and on-tram upgrades to communications equipment was paused in December 2021 so that the project team could investigate and rectify an increase in the number of communication faults, which are affecting the reliability of tram operations. Wayside site installation works are currently ongoing, which are a precursor to deployment of a correct-side door enable system on the Bombardier CR4000 trams. The wayside installation works were completed in mid-November 2022.

Our renewals programme continues across five asset groups: rolling stock, power, civils, systems, and permanent way infrastructure.

The first phase of the Mitcham-to-Mitcham Junction ballasted track renewal works was completed as planned during a 10-day part closure of the tramway from 4 to 12 April 2022. The second phase was delivered during another 10-day part-closure of the tramway from 22 August to 1 September 2022. The final phase is scheduled for delivery during a planned 12-day closure in February 2023.

The tender process for a new framework contract for embedded track renewals was concluded in June 2022, and the contract was awarded in August 2022. It was originally planned to deliver Church Street track renewal as the first package under this contract in October 2022, however this has now been rescheduled for April 2023 owing to delays for materials with a longer procurement lead time to delivery.

Site work started in April 2022 to replace the retaining wall and step-free access ramp at Birkbeck tram stop. Following completion of site investigations, the current plan is to re-phase the works, with a target start on site in Quarter 1 of 2023/24 and bringing into use by Quarter 2 of 2023.

This is to allow for an additional utilities survey to take place to facilitate lowering of shallow services by the utility companies, and for the contractor to adequately protect mature trees within the worksite.

Following detailed investigations and asset condition assessment, the recommendation to proceed with replacing the underframe of Tram 2547 (Bombardier type tram) was accepted and Alstom instructed to proceed with the works to return the tram to service in August 2023.

A contract was awarded to start the planned works in May 2022 to replace fire doors at the London Trams depot and to ensure compliance with current fire safety standards. However, due to supplier delays, works are now expected to start in February 2023.

The tender process to refurbish key components of the CR4000 Bombardier tram fleet (flooring, doors and rooftop) was concluded in June 2022, and the contract was awarded in August 2022.

The passenger information display on the Stadler Variobahn Trams was replaced in December 2022.

Woolwich Ferry (London River Services)

The Woolwich Ferry resilience and renewals programme is made up of schemes across several disciplines, which are all currently at various stages of the project delivery life cycle.

The key aim of these schemes is to reduce operating expenses, maximising use of assets and exploiting opportunities to generate additional revenue where possible. Projects in the resilience and renewals work bank will support the delivery of the Woolwich Ferry business strategy, improve operational safety and make the services more reliable.

The focus for the past few periods has been on establishing clear priorities across the work bank. This includes high priority maintenance schemes such as the link-span maintenance contract which is currently out for tender and the dry-dock/refit works, which will procure a contractor before the end of 2022/2023.

Technology

Reporting period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: Forecast vs authority (£m)
2020/21 to 2024/25	73	163	236	173	(63)
Change since last Investment programme report					
No change	8	37	45	No change	

Financial commentary

The five-year forecast for 2020/21 to 2024/25 has increased by £45m since the last report. This is primarily due to the alignment of the work programme against available funding and this increase forms part of the first draft of the renewals prioritisation exercise expected which was finalised in January 2023.

The £63m variance to forecast versus authority is due to programme and project authority only being sought for 2022/23 and future known commitments whereas the forecast cost is to the end of 2024/25 for all known expenditure.

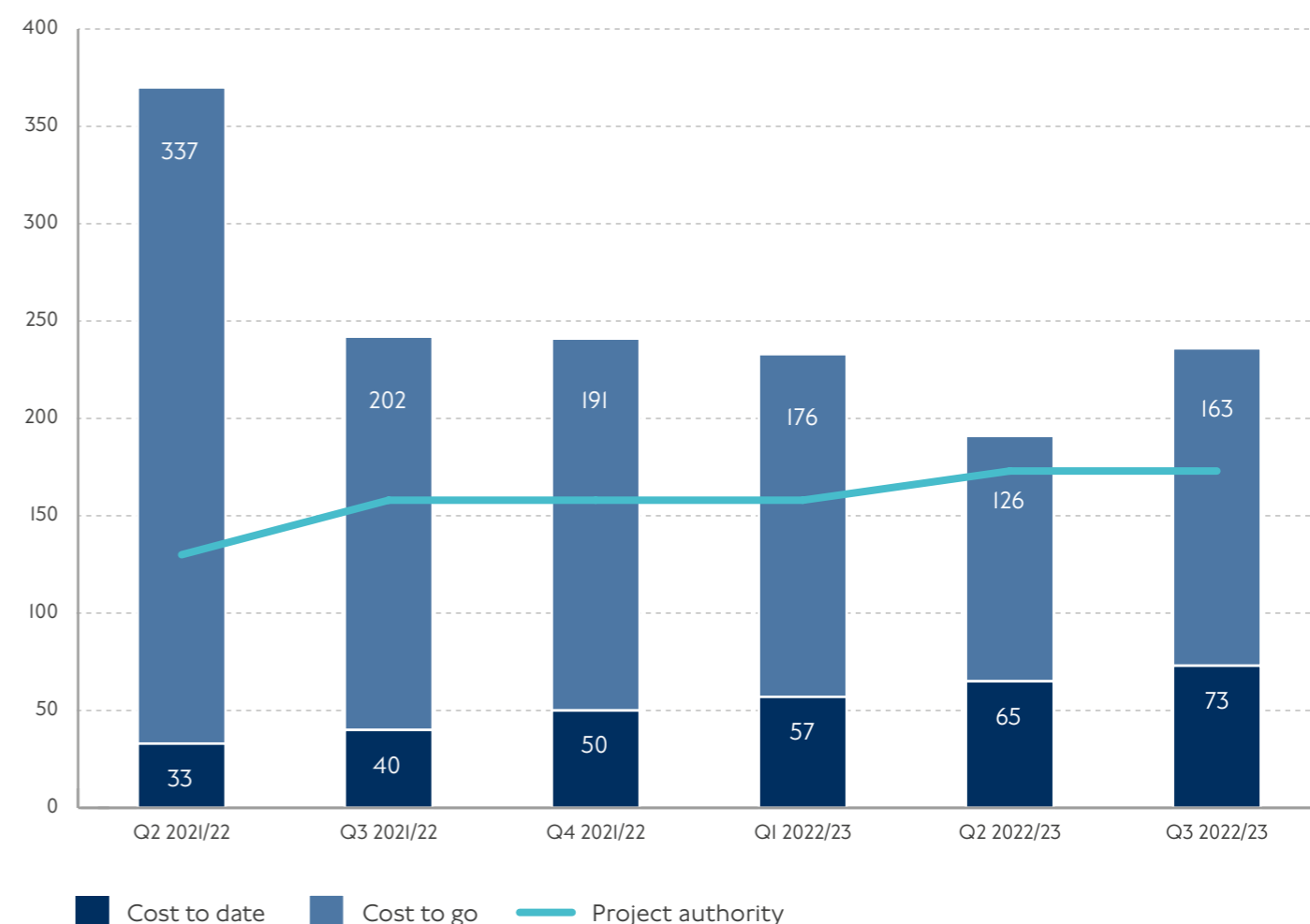
The Technology portfolio continues to face financial constraints and key decisions are needed on prioritisation of schemes in order to meet contractual, legal, safety and regulatory requirements.

Performance over time commentary

Over the last four quarters, forecast spend for Surface Technology was significantly reduced to reflect our ongoing funding constraints during the coronavirus pandemic as we forecast spend in line with a managed decline scenario. This meant that only the enhancements required to secure legal compliance or future financial sustainability could be progressed.

Further programme and project authority will be sought from the Programmes and Investment Committee in July 2023 which will bridge the gap of £63m.

Estimated final cost performance over time (£m)





We're rolling out enforcement cameras on our roads

Programme updates Compliance, enforcement and safety technology

We are continuing to progress the roll out of deployable enforcement cameras on our road network. These cameras enable us to target specific safety and non-compliance hot spots and are expected to make a significant contribution to helping us meet our Vision Zero goal. They are currently operational at 43 high-priority locations, selected on the basis of their recent safety and compliance records and have already resulted in more than 50,000 penalty charge notices being issued. We are now closely monitoring changes on driver behaviour and road safety, with early indications suggesting that the cameras have already delivered some significant benefits with improved compliance at multiple sites. To build on this early success we have begun a second phase of camera installations, aiming to further expand their use across London. We have already identified sites for a number of cameras to be installed this financial year and have started site enablement work. This should result in delivery at around 60 more sites by April 2023 and up to an additional 200 by April 2024.

Any money recovered from the penalty charge notices will be reinvested into maintaining a safe and efficient road network for everyone travelling in the capital. The cameras are used for enforcement of civil traffic rules only and are fully compliant with data protection legislation.

Road technology

We are leading the way in delivering innovative new road management systems. These are delivered within the Surface Intelligent Transport Systems programme and will enable a multi-modal approach to managing the road network. The programme continues to deliver the two core replacement systems, including the real time optimiser to manage traffic lights more effectively and the common operating view incident management system to enable more effective management of incidents. These systems will reduce delay and improve journey times. Both projects are prioritised as operationally critical renewals.

The common operating view incident management system successfully delivered a further release of software (R5.2) on 24 November 2022. One more release is now planned for March 2023 which will see it fully replace the old incident management system. Positive feedback from users continues to be received on the new system and this increases confidence that the old system is on track to be fully decommissioned early next year.

There are two further elements of the Surface Intelligent programme currently paused but we aim to restart in the new financial year (2023/24). These are predictive, which aims to forecast the impact of an incident to improve response times and reduce delays, and video analytics which will provide improved real-time modal data on road usage across London.

Public transport technology

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. The tender process to select suppliers for the iBus2 software replacement project is progressing.

We have now concluded the competitive dialogue phase with the iBus2 bidders and responses to the invitation to submit final tenders are expected in early 2023.

Procurement has progressed for a replacement booking and scheduling system for Dial-a-Ride, which will give passengers the option to book online and enable us to deliver more trips with the same number of vehicles. Shortlisted bidders were invited to submit final tender in April 2022. Following this, we have selected a preferred bidder and the contract has now been signed. We expect to begin delivery in late early 2024.

E-scooter rental trial

The London e-scooter rental trial has been operating for more than 18 months, with 10 participating boroughs making up a continuous trial area. In the period ending 19 December 2022, 85,000 trips were made with a total fleet size of 4,755 vehicles. This brings the total to 2.1 million trips for the trial to date. In response to recently updated DfT guidance that allows e-scooter trials across the UK to run until 31 May 2024, the business launched a competitive procurement to select operators for the next phase of the London trial. The current

contracts with operators Dott, Lime and TIER were extended to continue services until this procurement is complete.

Santander Cycles

Over the last 12 months, 11.6m hires have taken place with 2022 being a record year for hires.

The NHS promotional code that was introduced to support healthcare workers during the pandemic came to an end on 9 September 2022. The code was redeemed more than 160,000 times. This offer has been replaced by a permanent 50 per cent reduction on annual membership.

Seven new docking stations opened between August and December in the London borough of Southwark, extending the reach of the cycle hire scheme to more potential customers. Almost 8,000 hires took place from the seven new stations up to the end of 2022.

Since August 2022, we have launched a new, modern back-office system and 500 e-bikes as part of our Modernise, Electrify, Expand programme. By the end of 2022, approximately 130,000 e-bike trips had taken place since the launch on 6 October 2022, making them a highly popular option for users of the scheme.

On 6 January 2023, we announced that 11,506,889 hires took place across 2022, a new record for the scheme. This is 565,625 hires more than were made in 2021, which was also a record-breaking year for the scheme.

Work has begun on planning for the future of the scheme in response to multiple operating contracts expiring from 2025.



Our new e-bikes are proving to be very popular

Professional services

This comprises Technology and data, media and the TfL Growth Fund



Technology and data

Reporting period	Gross cost to date (£m)	Gross cost to go (£m)	Forecast cost (£m)	Programme and project authority (£m)	Variance: Forecast vs authority (£m)
2020/21 to 2023/24	194	147	341	359	18
Change since last Investment programme report					
No change	23	(19)	4	No change	

Financial commentary

The programme and project authority and forecast figures shown are for financial years 2020/21 to 2023/24 and include additional authority approved by the Programmes and Investment Committee on 2 March 2022. The forecast has increased by £4m since Quarter 2 due to additional funding agreed as part of the Business Plan.

The values are for technology and data-funded projects only and exclude the emergency services network, the public cellular network, telecoms commercialisation projects and work to expand pay as you go.

The forecast to authority variance is predominantly due to the outcome of capital prioritisation and reflects savings and deferrals out of the time frame.

Performance over time commentary

Costs have remained stable this quarter.

Progress update

Payments

On 21 November we started the deployment of a new revenue inspection device. This is a hand-held unit used by revenue control inspectors on all modes and by on-train staff on the DLR to read Oyster, contactless and ITSO cards, meaning they can detect fare evasion. The new devices are a step-change from the current units, which were deployed in 2015 for the following reasons:

- The devices are based on an off-the-shelf payment terminal, making them much cheaper than the previous ones
- The operating system has been switched to Android, which provides a better user experience and makes future-proofing easier

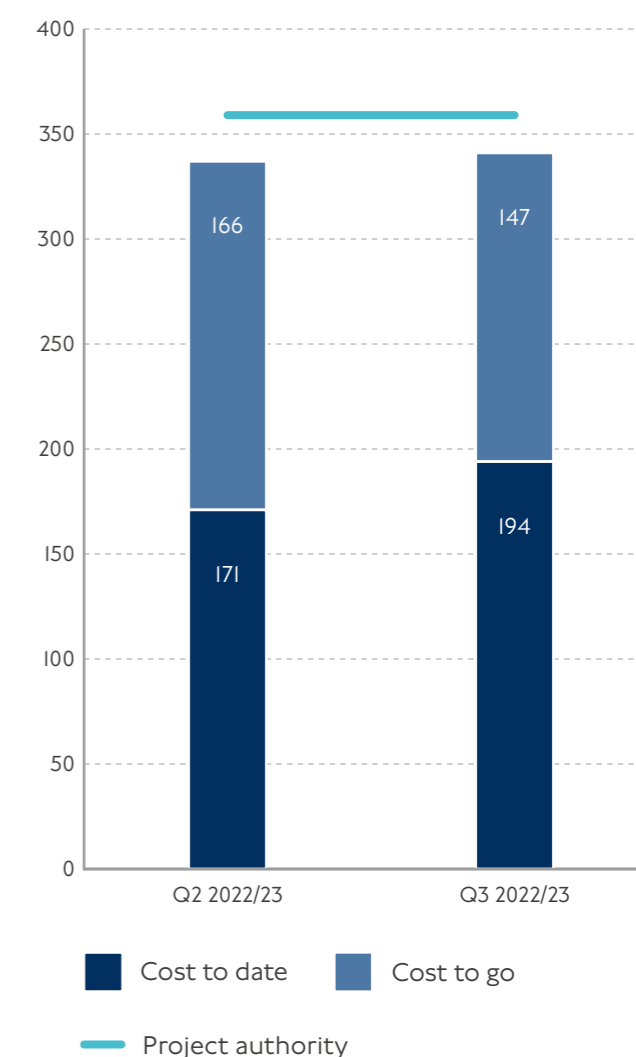
- The new devices are lighter and more ergonomic, making them easier to use
- The battery life has been improved from the previous device, meaning that it can last more than a shift length on a single charge (the current device requires staff to carry spare batteries when they are used heavily)

Following the withdrawal by the Bank of England in September, we completed the work to alter our ticket machines to remove the ability to accept paper £20 notes in November. This means that all paper note acceptance has now been withdrawn

We have completed the competition for a new series of cash-in-transit contracts across London, covering London Underground and DLR stations, the IFS Cloud Cable Car, our Head Office buildings, the Lost Property Office, London Transport Museum, Victoria Coach Station and Visitor Information Centres. The service provides for:

- The collection and counting of cash collected in stations
- Collection of foreign currency
- Processing of surrendered Oyster cards
- Delivery of change to stations

Technology and data performance over time (£m)



Digital workplace

The upgrade of our Avaya telephony system has now been completed. The upgrade ensures the system is both compliant and supportable, providing service stability across our hub buildings, operational control centres and contact centres. Further work associated with reducing the number of extensions and handsets associated with the Avaya system is in-flight, which is intended to lead to additional operating expenditure efficiencies and reduction in carbon footprint.

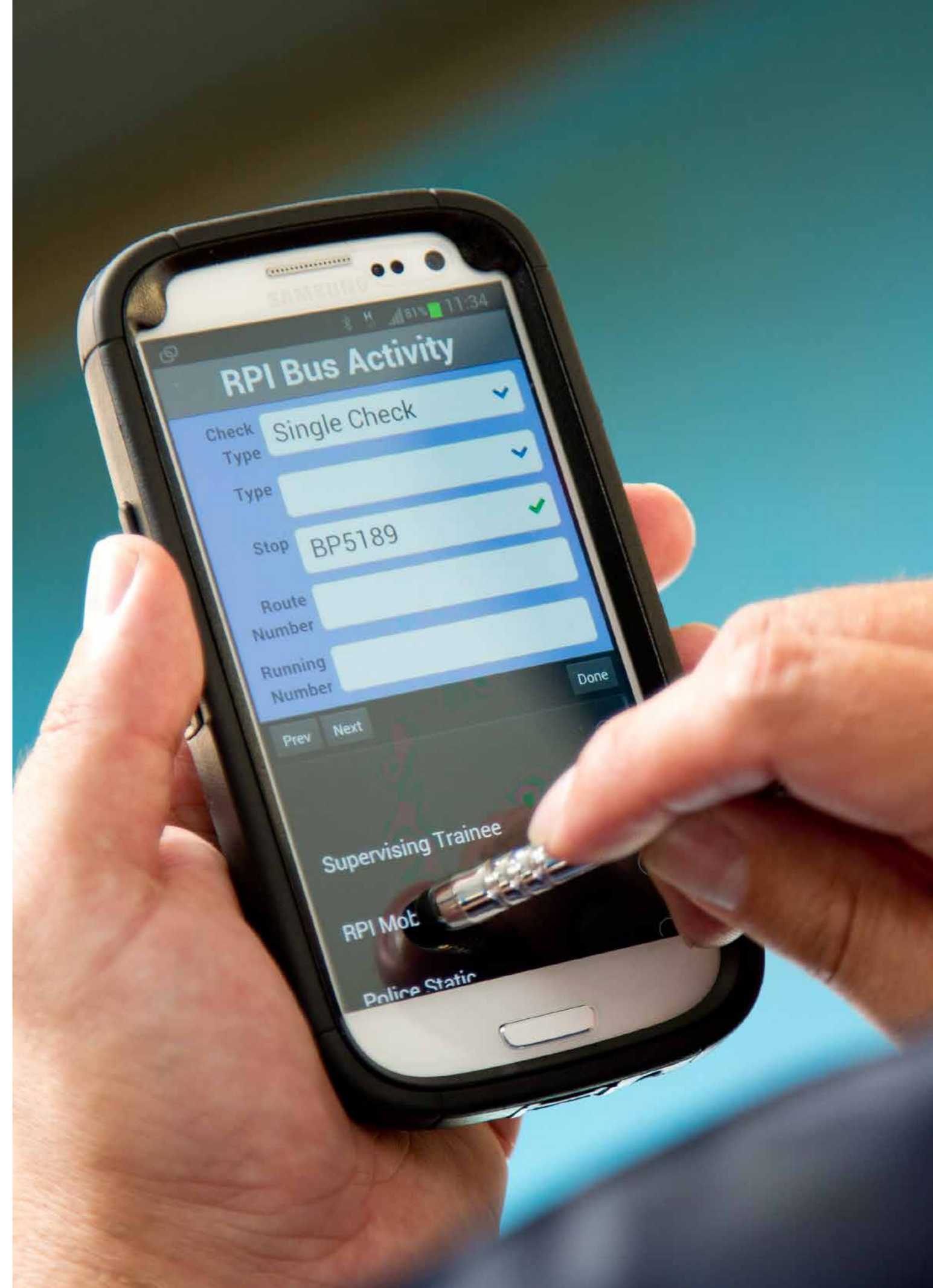
Work is almost complete on delivering Microsoft Teams Direct Routing (the ability to make/receive external calls to landlines and mobiles via Microsoft Teams), which will be offered as a low-cost alternative to a desk phone and/or mobile device to colleagues based on specific criteria relating to their role.

Technology improvements in Smart Meeting Rooms are ongoing, with approximately 60 operational locations completed and hub buildings due to complete in late February 2023. These improvements address issues with the audio, video and user experience, further supporting our hybrid ways of working.

We have now completed negotiations with Microsoft for a new Microsoft Enterprise Agreement, which is effective from December 2022. This is critical to the business as the majority of our IT services are based on Microsoft technology. The contract provides competitive price assurances and flexibility for (up to) the next five years. The terms of the contract have been endorsed by our senior leadership, and the team are now finalising the governance and technical transition activities to begin the new contract.

Progress continues on the Desktop Experience project to deliver a suite of modernised desktop offerings, optimised for hybrid working, allowing migration away from Windows 10 which becomes end of life in late 2025. Some enabling steps are complete, such as standardising all colleagues' Office365 display names and benchmarking existing assets and infrastructure for Windows 11 compatibility.

A third party have now been appointed to assist with the Retention and Compliance project. The primary objective of this initiative is to ensure that the management of our file data (for example documents residing in Office365, network drives, My Documents) and emails adhere to Information Governance and Cyber Security policies, which will be achieved through a combination of tooling and process. The scope of works, and related funding, has been agreed with the third party and the next steps are to agree phasing and priority of work.





We are extending mobile coverage to more areas of the Tube

Hosting

The programme of works to create a modern, serviceable and secure hosting platform in our data centres is almost complete, with 90 per cent of application services and associated data now rehosted (more than 5,000 computer servers and 12 million gigabytes of data). The final tranche will complete early in 2023.

A new customer marketing email platform has been implemented and replaces a previous platform which was not GDPR compliant. We have migrated 12 application services using the previous platform across to this.

Networks

Work to extend mobile coverage beyond the initial Jubilee line pilot area is progressing well, with the first new coverage area comprising three stations and connecting tunnels on the Central and Northern lines. Interoperability testing and final safety checks have been completed on these lines, and approval for go live was granted on 14 December. The first stations and tunnels in this service expansion went live on the 21 and 22 December. The mobile network operators (3UK, EE, Vodafone and O2) are working to get themselves ready to deliver to their customers and it is likely that ongoing testing by the operators will result in them going live in phases. Currently EE and Vodafone, and 3UK are live at the six new stations, and VMO2 will be going live in March 2023. Once all four operators are live, all future extensions to coverage will be with all four operators at the same time.

We continue to work closely with the Home Office in the delivery of the Emergency Services Network, and we are ahead of their schedule to deliver service.

The Connect Contract has been extended on favourable commercial terms by a further three years to November 2026. The Connect programme continues to replace London Underground's operational radio base stations. This two-year project has now replaced more than 207 of 293 (71 per cent) of our base stations, including those at major stations such as King's Cross.

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 3,511 of 4,496 (78 per cent) sites on to the new network delivered by Capita.

Technology services operations

Our projects to help maintain and protect our business-critical services are progressing well. Of note is the progress being made in modernising our IT monitoring systems, with a key workstream to upgrade monitoring of operating systems about to complete. This project continues to improve our monitoring capability through 2023, to minimise any operational impact to technology services and performance.

We have also made good progress with our software licence and service management initiatives. The optimisation of Java licence usage has been completed, with processes put in place to ensure this continues as a business-as-usual activity. Non-compliance with licence usage requirements can lead to multi-million-pound fines. For the required upgrade of our essential IT service management system the options analysis of hosting and support solutions has been completed with procurement under way for the chosen solution. Implementation will begin in the new year, alongside investigation in to how we can integrate with our Service Request Management system.

A strategic initiative for the GLA family that we are central to is the GLA IT Shared Service programme, which will see us assume responsibility for agreed IT systems and services for the GLA, the Mayor's Office for Policing And Crime and the Old Oak and Park Royal Development Corporation.

Actions have been agreed to progress several fundamental scope-related issues and are now being implemented. This will be undertaken in a phased approach with focus on the management of the business change for all affected staff.

Enterprise resource planning

Our new Procurement and Commercial system (SAP Ariba) went live for 170 users across Operations with the new Guided buying procurement functionality. This has delivered a digital and mobile based online catalogue user experience. Feedback has been very positive, and the project is on track to deploy Guided buying across our 3,000 purchasers at the end of January 2023.

We are replacing our legacy HR SAP solution (for which support ends in 2027) by implementing further modules of SAP SuccessFactors which we call myJourney. Phase 2 of myJourney is now under way. The scope of the project is in two tranches. First, we will replace our core HR system of record and payroll solution, followed by a second tranche that will cover recruitment and onboarding. The project team have selected a delivery partner, Infosys, through competitive tender and secured the necessary software licences. The milestone plan is to have the new HR and payroll system in by Quarter 4 2023/24.

The next key stage of the transformation programme is the upgrade of our core SAP system to the latest version SAP S/4 HANA. Early programme planning has started for this, with two initial projects kicked off to enable some technical pre-requisites and investigate an area of significant historic customisation (The Borough Spend Portal). The programme team have contracted a client-side partner, Resulting IT, to help us scope out the project, understand the key process, system and data differences with the new technology and help us prepare our market tender for an S/4 HANA implementation partner. Resulting IT started work in early December. This work will take until Quarter 2 2023/24 to complete.

Contact centre operations

Following the historic delivery of a successful outsourcing roadmap, reducing our cost to serve by more than £3m per annum, we are now replacing the outsourcing framework that facilitated this saving. The existing framework expired this year. A replacement is required before the existing contracts expire to continue to leverage the per annum saving, to provide service continuity to the outsourced contracts currently live and to provide a commercial vehicle to outsource any additional work. Following market engagement last year, we have now completed evaluation of bids from the market. We will now take the contract award recommendation through governance.

In addition to providing this critical continuity of service to customers, we are also replacing and improving technology. In our Lost Property Office we are replacing Sherlock, the primary system that catalogues items of lost property. This tool has been out of support for more than a decade, and functionality limitations prevents us from modernising our processes. Following last year's successful tender of the new tool, we have since worked closely with the supplier, Not Lost, to ensure the product is suitably rolled out to all the Operational areas. We have now gone live in the Lost Property Office and have successfully rolled out to Buses too. We have also completed a spend-to-save project to automate customers' contactless payment card enquiries. More than 100,000 customers per year are forecasted to benefit from the quicker automated contact handling which in turn will reduce our cost-to-serve by more than £500,000 per annum.

Data analytics

Phase one of the CLEO to the Cloud project has passed security testing and is planned for deployment early next year. Progress is on track with no issues reported, which means we will soon move away from the outdated and unsupported on-premises hardware underpinning our CLEO Data Warehouse.

This period we have also received final sign off for ODX Modernisation to go live and be our single source of truth following a significant window of data assurance. This data product was initially developed to support colleagues in our bus planning team look at the usage and impact on our bus network, however over the years this has expanded to be used across the organisation and infers end to end journeys where a journey started as a bus tap.

Following the final migration of Revenue Control reports in October, the Business Objects 5.1.7 project has now been formally closed. The project has successfully migrated and consolidated 190 business reports, mitigating GDPR risk which could have incurred significant penalties. This project also means that a newer, vendor-supported Business Intelligence tool is now being used across 13 business areas which has resulted in improved flexibility and reporting capabilities.

Digital

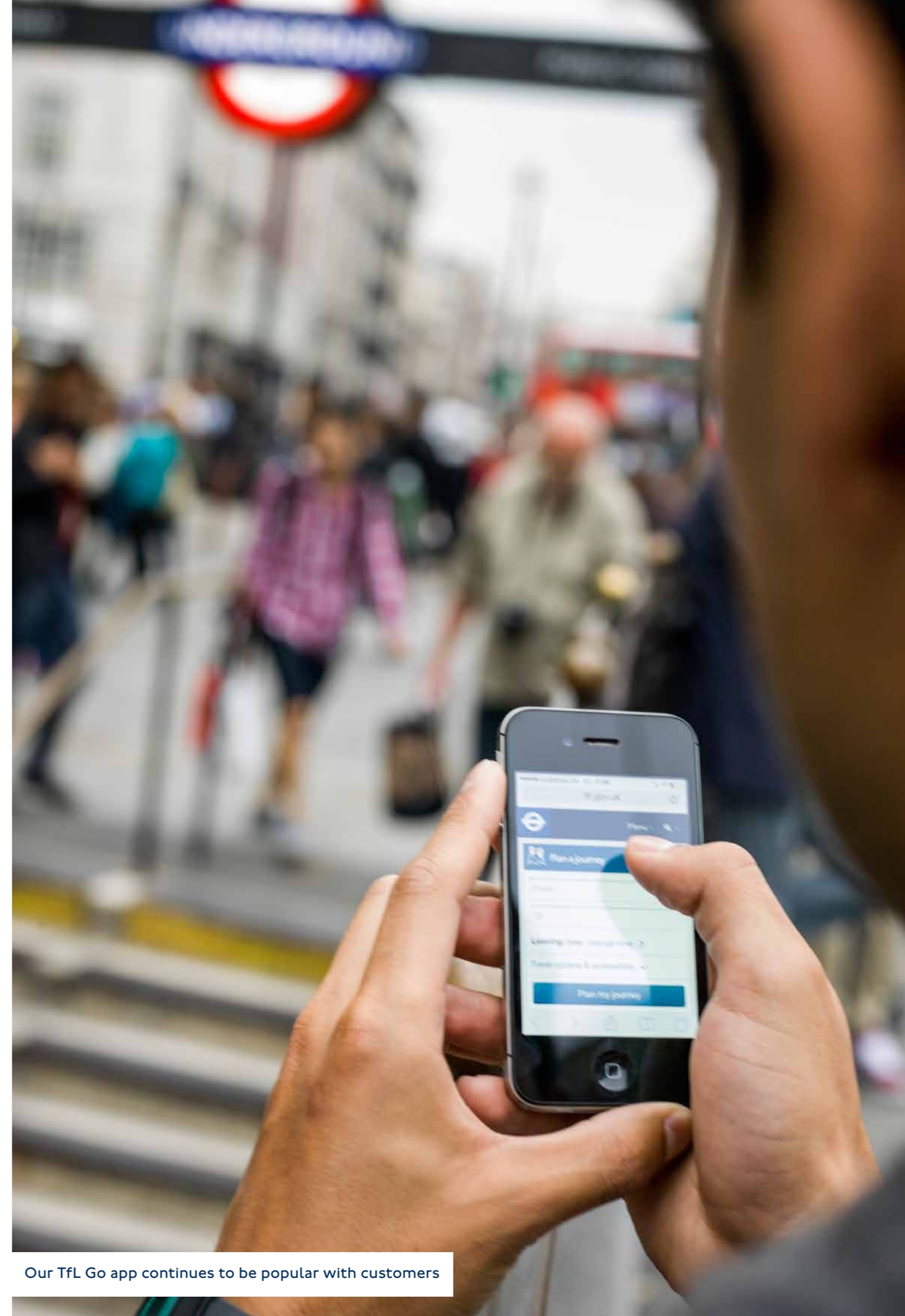
The TfL Go app has now been downloaded 2.75 million times and was used by just under 540,000 customers in November 2022.

We have continued to release regular app updates, improving the information provided during periods of severe disruption. We have also enhanced our routing information so that it links directly with live bus times, and prototyped new features showing the live location of buses. In December we published 'promoted places' content featuring festive days out in London following a successful series of content related to key Elizabeth line stations.

We continue to prepare for the launch of payments functionality which is now scheduled for early 2023 to align with the launch of the new account platform. Customers will be able to plan, pay and travel through one integrated experience. We will first test internally, then widen access to up to 10,000 customers in a beta trial before sharing with all app users.

Challenges

Global semi-conductor supply issues have distorted our delivery due to long lead times and pricing that increases at short notice. This has impacted our ability to procure and implement new IT infrastructure and increasing project costs. We have put mitigations in place for our known pipeline and live projects in the Networks Transformation programme however, we are still exposed to risk on ad-hoc, small works or emergency works.



Our TfL Go app continues to be popular with customers

Professional services Growth Fund

Reporting period	Forecast £m
2020/21 to 2029/30	37
Change since last IPR report at P3 22/23	
No change	35

Financial commentary

In Quarter 3, the forecast for the Growth Fund increased from £2m to £37m. During the Business Plan process, additional funding was identified and prioritised for the Growth Fund which has now been included in the forecast. This money is profiled between 2024/25 and 2026/27 and will be allocated to specific Growth Fund projects over the next few months.

Programme update

Over the past two years we have not been able to proceed with Growth Fund schemes as they have been contingent on additional funding being made available. Following the funding deal with Government, the 2022 Business Plan has recognised the need for us to continue to leverage third-party income and to support growth and step-free access projects in London.

The Tolworth scheme remains in the Growth Fund budget as a commitment.

Challenges

The main challenges continue to centre around ongoing funding uncertainty for third-party funded projects, which are necessary to deliver the Mayor's Transport Strategy outcomes in areas of development and high need in London. Several projects with previously complete funding packages are currently at risk due to the programme being reliant on additional funding.

As a result, a number of projects have been delayed or paused in anticipation of funding certainty, while there have been attempts over the last couple of months to secure alternative funding contributions for some critically urgent projects.



Step-free access projects continue to be a top priority

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 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. The experience, reliability and accessibility of these services is fundamental to Londoners' quality of life.

We manage the city's red route strategic roads and, through collaboration with the London boroughs, we are helping to shape the character of all London's streets. These are the places where Londoners travel, work, shop and socialise. Making them places for people to walk, cycle and spend time will reduce car dependency, improve air quality, revitalise town centres, boost businesses and connect communities. As part of this, our expanded Ultra Low Emission Zone and fleets of increasingly environmentally friendly and zero-emission buses are helping to tackle London's toxic air.

During the pandemic, we took a huge range of measures to ensure people were safe while travelling. This included extensive cleaning regimes across the public transport network and working with London's boroughs to introduce the Streetspace for London programme, which provided wider pavements and cycle lanes for people to walk and cycle safely and maintain social distancing. London's recovery is vital to the UK's recovery as life returns to normal. We want to ensure London avoids a car-led recovery and we continue to reassure people the capital and our transport network is safe and ready for them.

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

Working with the Government, we opened the Elizabeth line in time for Queen Elizabeth II's Jubilee. This transformational new railway adds 10 per cent to central London's rail capacity and supports the delivery of high-density, mixed-use developments, which are planned around active and sustainable travel to ensure London's growth is good growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

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

We are constantly working to improve the city for everyone. This means 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 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 can create a better city as London's recovery from the pandemic continues.

Programmes and Investment Committee



Date: 1 March 2023

Item: Independent Investment Programme Advisory Group
Quarterly Report

This paper will be considered in public

1 Summary

- 1.1 This paper presents the Independent Investment Programme Advisory Group (IIPAG) quarterly report for March 2023. It describes the work undertaken since the last report presented to the Committee in December 2022.
- 1.2 A paper is included on Part 2 of the agenda which contains exempt supplemental information that is exempt from publication by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

2 Recommendation

- 2.1 **The Committee is asked to note the Independent Investment Programme Advisory Group's quarterly report and the exempt supplementary information on Part 2 of the agenda.**

3 IIPAG Quarterly Report

- 3.1 Under its Terms of Reference, IIPAG is required to produce quarterly reports of its advice on strategic and systemic issues, logs of progress on actions and recommendations and the effectiveness of the first and second lines of project and programme assurance. IIPAG's quarterly report for March 2023 is included as Appendix 1 to this paper.
- 3.2 TfL welcomes the work IIPAG is doing on cross cutting reviews and will provide the necessary management responses to recommendations made.
- 3.3 Project Assurance and the Project Management Office welcome the work undertaken by IIPAG in its review of First and Second Lines of Defence, as described in Appendix 1, and accept the recommendations made. The recommendations are being progressed and detailed management responses explaining how the actions will be discharged will be provided to the Audit and Assurance Committee.

List of appendices to this report:

Appendix 1: Independent Investment Programme Advisory Group – Quarterly Report
March 2023

Exempt supplementary information is included in a paper on Part 2 of the agenda.

List of Background Papers:

None

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Independent Investment Programme Advisory Group – Quarterly Report March 2023

1. Introduction

1.1. This report to the Committee describes the Independent Investment Programme Advisory Group (IIPAG) activities in December 2022 – January 2023. We have made no new strategic recommendations.

2. IIPAG Activity

2.1. We list below the Sub-Programme and project reviews we have undertaken in this period:

2.2. Sub Programmes:

- Tech and Data
- Air Quality and Environment
- Major Stations

2.3. Projects:

- Pay as You Go in the South East (Project Oval)
- London-wide Ultra Low Emission Zone (ULEZ)
- Road User Charging (RUC) Business Operations System

2.4. We also had briefings on the Healthy Streets Sub-Programme and the Old Street project. The Committee will also be considering the LU Enhancements Sub-Programme, which we reviewed in the previous period. We have continued to engage with the Four Lines Modernisation project.

2.5. The paper from Project Assurance found elsewhere on the agenda describes management progress in implementing IIPAG's recommendations.

2.6. Resources continue to be raised as a risk in many areas, though good progress has been made in securing additional technology resources through the Crown Commercial Services framework. Shortages of project management and commercial resources have been highlighted. Despite the challenges we have seen some well managed projects and programmes in this period. Through our reviews we continue to encourage teams to provide a good account in their Programmes and Investment Committee papers of how their delivery over the past year has compared to what they said they would deliver. We also continue to encourage a focus on good programme planning and sufficient attention to risks around schedule, which we find can get less attention than cost risk.

3. Progress with Cross-cutting Work

- 3.1. Our review of the First and Second Lines of Defence has been completed and will be considered by the Audit and Assurance Committee in March. We concluded that, while assurance across TfL is already adding value, there are opportunities to further improve assurance and thereby reduce the likelihood of cost and schedule overruns and under-delivery of benefits.
- 3.2. We encouraged more rigorous application of good project practice, and implementation of already agreed improvements such as project baselining and the assessment of risk. Beyond this, we advocated less governance complexity, more rigour in portfolio management, and clearer assurance accountabilities.
- 3.3. Our regular review of TfL Benchmarking and our update review of the Procurement and Commercial Improvement Programme are almost complete at the time of writing.
- 3.4. We are planning two new reviews to start in the next couple of months: first on the delivery of renewals, and second on the effectiveness of the Pathway gate process.

Alison Munro
Chair, IIPAG

January 2023

Programmes and Investment Committee

Date: 1 March 2023

Item: TfL Project Assurance Update



This paper will be considered in public

1 Summary

- 1.1 This paper provides an update on the project assurance work undertaken between 13 November 2022 and 14 January 2023. Three programme reviews were undertaken during this time, with the Independent Investment Programme Advisory Group (IIPAG) involved in all of them. In the same timeframe, seven project assurance reviews were undertaken, with IIPAG involved in three of these.
- 1.2 These reviews gave rise to a total of 33 recommendations being made, of which one was considered to be a critical issue. Critical issues are those that the TfL Project Assurance team or IIPAG believe should be addressed before projects proceed to the next stage.
- 1.3 A paper is included on Part 2 of the agenda which contains exempt supplemental information that is exempt from publication by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

2 Recommendation

- 2.1 **The Committee is asked to note the paper and the exempt supplementary information on Part 2 of the agenda.**

3 Background

- 3.1 The TfL Project Assurance update provides the Committee with a summary of the second line assurance, provided by TfL's Project Assurance team, and third line assurance, provided by IIPAG.

4 Summary of Project Assurance Activity

- 4.1 From the reviews undertaken, TfL Project Assurance made 28 general recommendations and raised one critical issue, with all of these being agreed with the project teams concerned.
- 4.2 IIPAG made five general recommendations and raised no critical issues. The recommendations were all agreed with the respective project teams.

5 Status of IIPAG and Project Assurance Recommendations

- 5.1 The following graphs show the number of open recommendations, the number that are overdue, and the number closed at the end of Period 6, Period 8 and Period 10 of 2022/23 respectively.

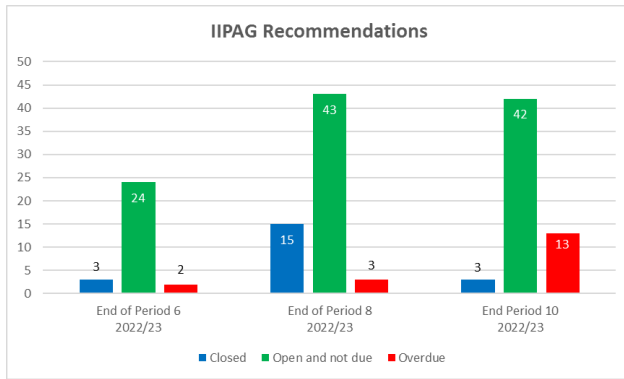


Figure 1: IIPAG Recommendations

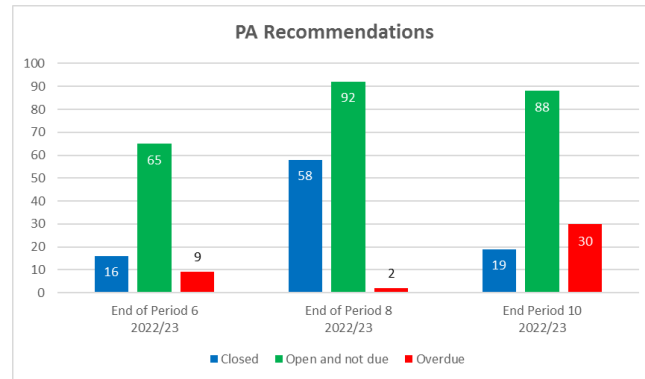


Figure 2: Project Assurance Recommendations

5.2 The following graphs show the length of time that the overdue Project Assurance and IIPAG recommendations have been overdue by as at the end of Period 10, and the Chief Officer area that the recommendations relate to. At the end of Period 10 there were three overdue critical issues, these have since been addressed and closed.

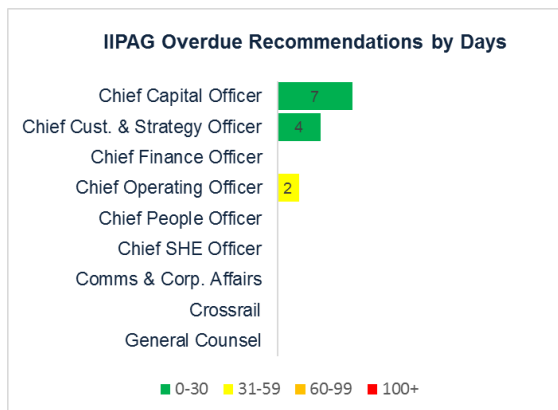


Figure 3: Overdue IIPAG Recommendations

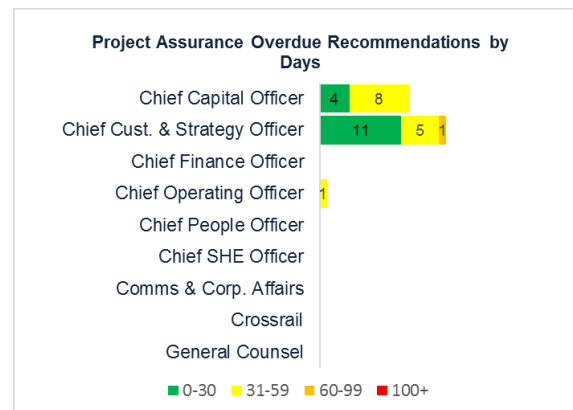


Figure 4: Overdue Project Assurance Recommendations

5.3 Since the end of Period 10 a number of recommendations have been closed. As of 30 January 2023, there is one overdue IIPAG recommendation and six overdue Project Assurance recommendations none of which are critical issues.

List of appendices to this paper:

Exempt supplementary information is included in a paper on Part 2 of the agenda.

List of background papers:

None

Contact Officer: Howard Carter, General Counsel
 Email: HowardCarter@tfl.gov.uk

Programmes and Investment Committee



Date: 1 March 2023

Title: London Underground Enhancements Programme

This paper will be considered in public

1 Summary

Table 1: Summary of LU Enhancements programme authorities				
Figures in £m outturn values for 2017/18 to 2026/27				
Latest estimated final cost (EFC)**	Previous estimated final cost (EFC)**	Authorities	Financial Authority	Programme and Project Authority
Gross cost*				
577.8	658.0	Existing	575.0	652.0
		Requested	-	(67.4)
		Total	575.0	584.6
		<i>Future Submissions</i>	2.8	(6.8)
Gross income				
310.2	312.2	Existing	307.3	275.1
		Requested	-	(50.1)
		Total	307.3	225.0
		<i>Future Submissions</i>	2.9	85.2
Net cost				
267.6	345.8	Total	267.7	359.6
		<i>Future Submissions</i>	(0.1)	(92.0)

Table 1 – Summary

* The Estimated Final Cost includes spend outside the current business plan.

Gross value is total TfL expenditure, including expenditure recovered from external parties and income from third-parties

Authority Approval: The Committee is asked to note the paper and approve a reduction in Programme and Project Authority to £584.6m in total to reflect proposed adjustments, income and transfer as described in the paper.

Outputs: The purpose of the Programme is to deliver enhancements to safety, accessibility, reliability, capacity, sustainability, and customer experience whilst reducing maintenance costs and extending the operating life of assets

- 1.1 This paper provides an update to the Committee on the achievements and progress of the London Underground (LU) Enhancements Programme. The Committee is requested to approve a reduction in Programme and Project Authority to £584.6m in total to reflect proposed adjustments, income and transfers as described in the paper.
- 1.2 The update includes information on programme items delivered by the Enhancements team within LU Asset Performance and Capital Delivery. A list of all active schemes is included in Appendix 1.

2 Recommendation

- 2.1 The Committee is asked to note the paper and approve a reduction in Programme and Project Authority to £584.6m to reflect the adjustments, income and transfer as described in the paper.**

3 Background

- 3.1 LU Enhancements is a portfolio of projects focused on improving LU assets for customers, primarily through improved accessibility and congestion relief schemes.
- 3.2 Funding for LU Enhancements has historically come from TfL capital investment in full, or part-TfL funding to leverage opportunities for third-party spend as part of developments. This has often been in the form of capacity enhancements and step-free access (SFA) as a strategic enabler for wider sustainable growth in housing and jobs. In addition, the programme includes LU funded projects to assist operations including, for example, the replacement of an Acton Works “shed” to support the depot and renewals delivery.
- 3.3 The portfolio supports mode shift away from the private car by creating a good public transport experience in stations and allows new customers to access the network by increasing the level of SFA provision throughout the network. This makes a significant contribution to Good Growth in the Mayor’s Transport Strategy. LU Enhancements align with the TfL Outcomes for ‘Safety and Reliability’, ‘Customer’, ‘People’ and ‘Affordability’.
- 3.4 The programme was created to deliver a mix of SFA and other station enhancements, including:
 - (a) the SFA plan, as set out in the May 2021 Committee programme update paper, was to deliver 15 stations of which we have successfully completed 12. The remaining three projects have been paused while the programme is re-prioritised following consideration of public consultation;
 - (b) station developments, such as the opening of two new station entrances and securing an additional £4.2m of third-party developer funding; and
 - (c) between 2016 and 2022 the programme has successfully leveraged over £100m of external investment to deliver required works, as well as funding from the Crossrail programme, thereby significantly reducing costs to TfL to deliver the required enhancements.
- 3.5 Gross programme costs to the end of FY2022/23 is £537.6m. Gross programme costs to go is £40.2m, with a total EFC of £577.8m. Project specific detail of costs to date and costs to go are provided in Appendix 1.
- 3.6 There are a number of adjustments proposed to the Programme and Project Authority since the last update to the Committee in May 2021, which reflect

efficiencies, scope changes and a transfer of authority. These are set out in Table 2 below with further detail within the paper.

Description	Adjustment	Total (£m)
Prior Programme and Project Authority approved in May 2021		652.0
Authority release from expired projects (Appendix 2)	(80.3)	
Scope and efficiency authority release (paragraph 3.8 below)	(5.4)	
Authority reallocated to Tower Hill, Hounslow, Acton Warehouse (paragraph 3.8 below)	5.4	
Authority for third party expenditure on Knightsbridge, Kings Cross, Waterloo, Hounslow (paragraph 7.4 below)	4.2	
Authority transferred in for East Ham Wall (paragraph 3.7 below)	4.3	
Total Adjustments		(67.4)
Revised reduced Programme and Project Authority		584.6

Table 2 - Adjustments of unused Project and Programme Authority

- 3.7 There are a number of adjustments proposed to the income to be received from third parties since the last update to the Committee in May 2021, reflecting additional third party funded works at King's Cross (see paragraph 4.1c below) and the release of income specifically relating to Crossrail enabling works at Whitechapel. These are set out in Table 3 below.

Description	Adjustment	Total (£m)
Prior income anticipated and approved as part of Programme and Project Authority in May 2021		275.1
Income release from expired Crossrail enabling works at Whitechapel	(53.3)	
Income expected from third parties for King's Cross	3.2	
Total Adjustments		(50.1)
Revised reduced income expected		225.0

Table 3 - Adjustments of income expected as part of the Programme and Project Authority

Programme scope

- 3.8 The programme and the improvements delivered to LU stations are focused on helping customers who would otherwise not be able to access the tube network to make independent and spontaneous journeys around the Capital. This mitigates the inequality of availability of public transport in London, enabling a mode shift out of cars and providing a viable alternative to those who are not able to make the shift to active cycle and walking options.

- 3.9 An internal transfer of scope of the East Ham wall works into the programme is proposed because LU Enhancements have the appropriate skills and resources to complete this scope. This transfer will bring pre-existing budget and Programme and Project Authority into the LU Enhancements programme with an equal reduction in the LU Infrastructure Renewals programme.
- 3.10 Cost reductions through efficiency and scope adjustment across individual budgeted schemes now completed has meant that some projects' final costs are lower than their original estimated cost and the current Programme and Project Authority. This has allowed the programme to reallocate £5.4m of Programme and Project Authority from such schemes to progress other emerging and priority schemes. Notably this includes progressing Acton Warehouse (AC02) Demolition and Hounslow West station improvement.
- 3.11 The adjustments and transfer of scope result in a reduced gross total of Programme and Project Authority of £584.6m including that already used in prior years.
- 3.12 There are current budget authorities for this programme to the end of the new Business Plan as approved by the Board on 7 December 2022.

4 Delivery progress since last submission

Station Enhancements

- 4.1 Progress on key schemes within the programme is set out below:
 - (a) **Knightsbridge Capacity Enhancement and SFA:** Project is in construction and on programme to complete in 2023. A new entrance (developer funded) has opened to customer use on Brompton Road. This replaced the closed exit at the junction with Sloane Street and delivers a safer wider footway outside the entrance. Fit out on the additional step-free ticket hall has begun and the entrance is planned to open in 2023. The works will deliver significant customer benefits in an area of the network poorly served by SFA. The current authorities will see the project to completion.

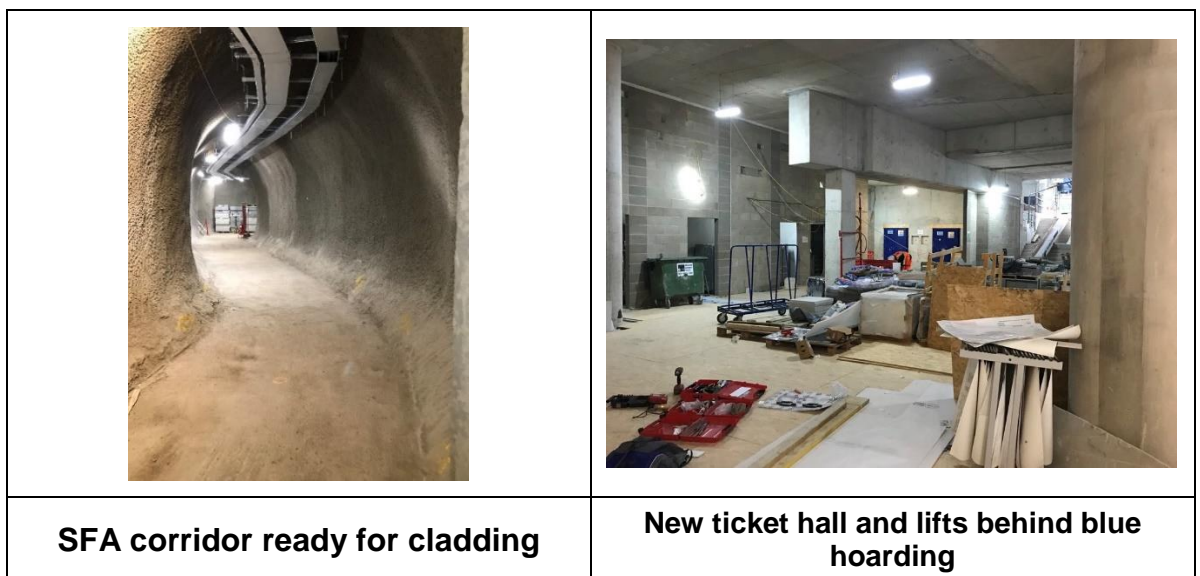
Figure 1 - Knightsbridge Capacity Enhancement and SFA





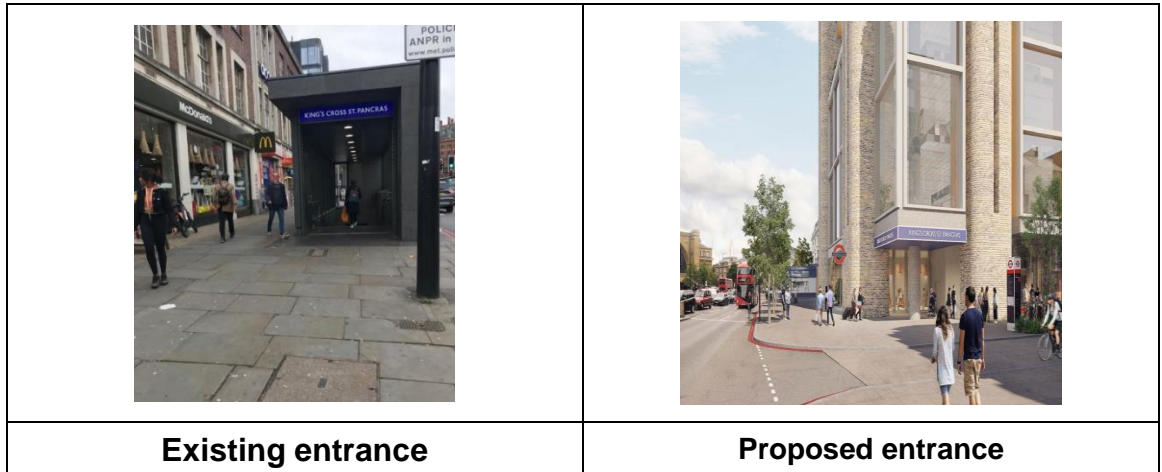
- (b) **Paddington Station Capacity Upgrade:** Construction stage of third-party majority funded and developer-built SFA to the Bakerloo line including a redeveloped ticket hall. This scheme is progressing towards ticket hall fitout and is programmed to open to customers in 2023. The current authorities will see completion of the works.

Figure 2 - Paddington Station Capacity Upgrade



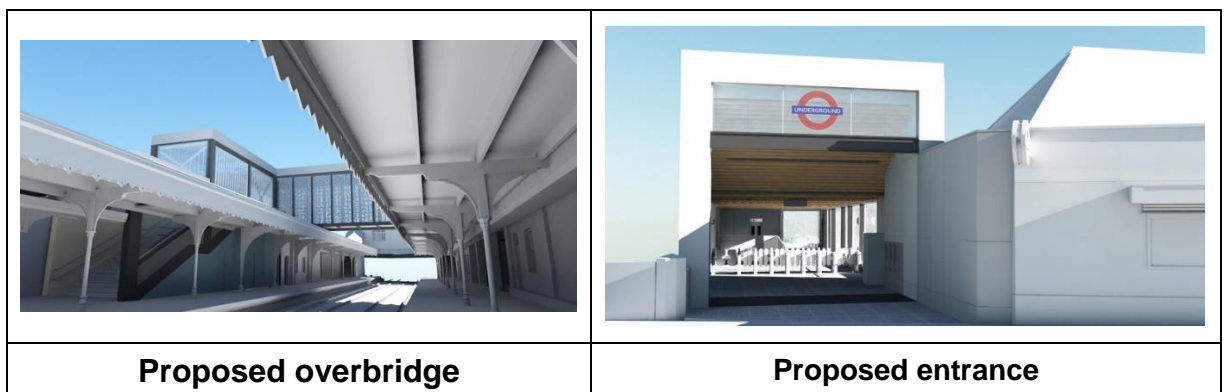
- (c) **King’s Cross Belgrove House:** Concept design received for a developer-delivered and funded new entrance and SFA on the south side of Euston Road. This entrance will reduce the journey time for step-free customers approaching from the south of King’s Cross by up to nine minutes by removing the need for multiple road crossings. We have successfully negotiated and entered into the development agreement governing the delivery, which will be at no cost to TfL. The current authorities will enable the project to progress to completion.

Figure 3 - King's Cross Belgrove House



- (d) **Waterloo Elizabeth House:** Negotiation of a third-party funded and delivered lift shaft enabling us to later deliver SFA to the Northern line. As part of a wider redevelopment at Waterloo that will see Elizabeth House demolished, we are progressing legal agreements to ensure SFA to the Northern line platforms is achieved. The development would construct lift shaft structures and connections to the platforms during the progression of the Elizabeth House works. This will allow the future fit-out of the shaft by TfL after the development, subject to affordability and availability of funding.
- (e) **Leyton:** Concept design is completed for a new ticket hall and lift. Work on Leyton was initially paused at the end of financial year 2021/22 due to a lack of funding, but in 2022 additional funding was secured from the Greater London Authority (GLA) to complete the development of a more efficient concept design and produce an updated cost and programme. In January 2023 we secured £13.7m of funding from HM Government Levelling Up Fund. This will allow us to deliver the scheme which will provide SFA and wider station improvements to support sustainable growth in the local area. The project will complete the necessary assurance processes and return to the Committee for full Programme and Project Authority as we develop the detailed funding agreement.

Figure 4 - Leyton - concept design for a new ticket hall and lift.



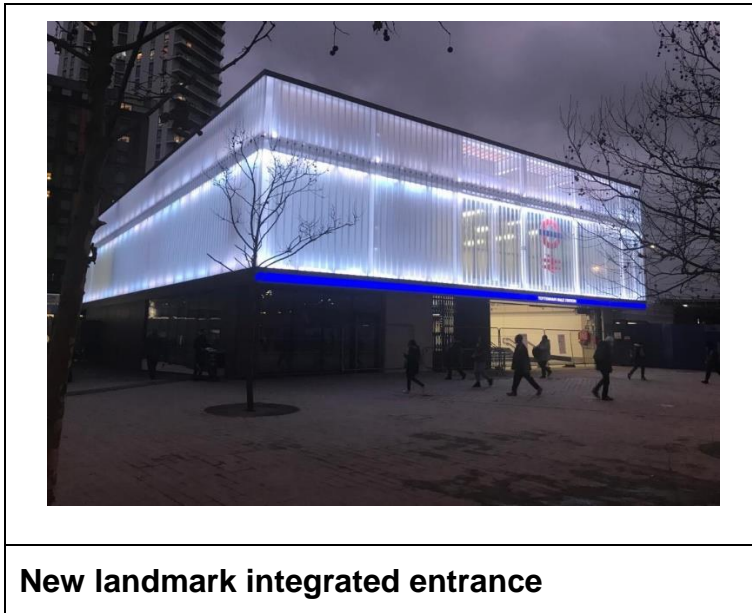
- (f) **Ladbroke Grove:** Project in feasibility stage to deliver SFA and capacity enhancement. A contribution of £0.14m from the Royal Borough of Kensington and Chelsea was secured for initial feasibility of SFA options and this work has now been completed. Following the unsuccessful bid by Royal Borough of Kensington and Chelsea for HM Government Levelling Up Funds, any progress will be subject to further availability of funding.
- (g) **Stratford Southwestern new entrance:** Detailed design of this GLA/London Legacy Development Corporation (LLDC)/London Borough of Newham funded entrance is progressing well. The current authorities will see completion of the scheme, which will transform journey times and access to Stratford station from the southwest, taking up to nine minutes off the journey time to enter Stratford station, supporting the large-scale regeneration of the area led by the LLDC.

Figure 5 - Stratford Southwestern new entrance



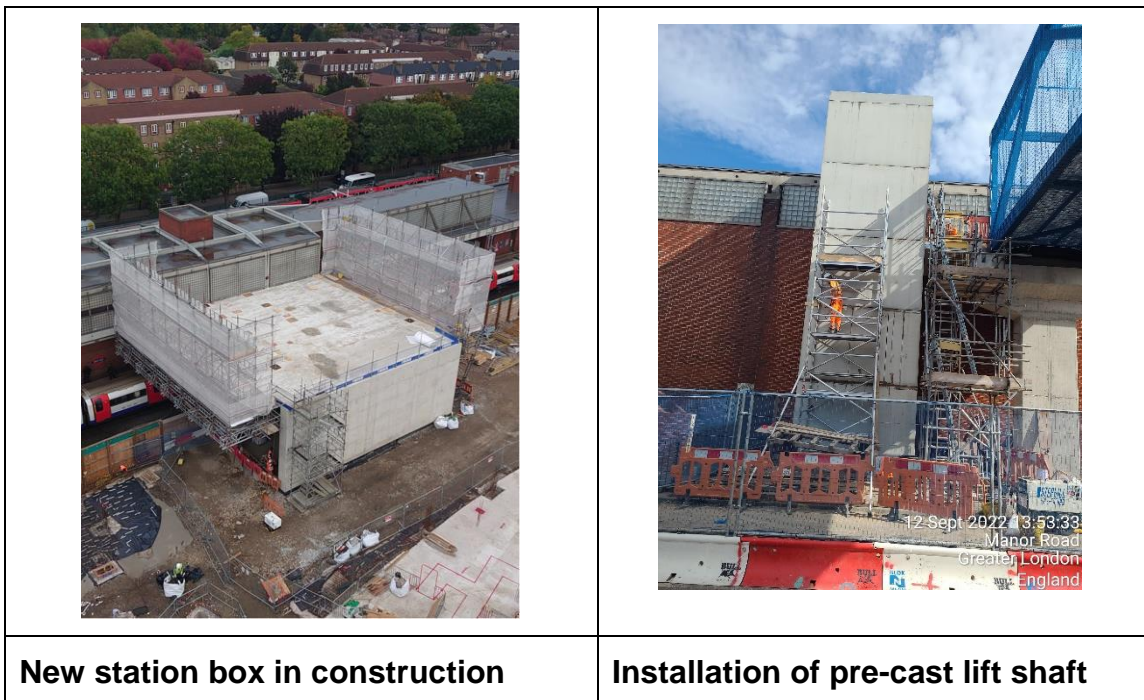
- (h) **Tottenham Hale capacity enhancement:** Construction completed, project in closing. The new TfL and GLA funded integrated ticket hall opened fully to customers in December 2021. This included TfL works on the LU station, the bus station and the streetscape to vastly improve safety and security in the area, especially at night. It has reduced interchange times by an average of five minutes and supports the widescale regeneration underway in the surrounding area.

Figure 6 - Tottenham Hale capacity enhancement



- (i) **West Ham second entrance, Stephenson Street:** Third-party funded construction has started on a new ticket hall as part of a major development adjacent to the Jubilee Line. This is delivered by a developer as part of adjoining works.

Figure 7 - West Ham second entrance, Stephenson Street



- (j) **Colindale Capacity enhancement and SFA:** Detailed design and early contractor involvement phase has been completed for this capacity enhancement and SFA scheme. Completing this work would provide much needed accessibility and decongestion of the existing ticket hall while also unlocking growth and regeneration potential around the station. The project is ready for delivery, with a cost plan and schedule ahead of a future contractual commitment to progress. Thirty per cent third-party funding has been secured

and in January 2023 we secured £29.5m of funding from HM Government Levelling Up Fund. This will allow us to progress the scheme to provide SFA to the Northern Line and wider station improvements to support sustainable growth in the local area. The project will return to the Committee for full Programme and Project Authority as we develop the detailed funding agreement.

- (k) **Whitechapel temporary ticket hall demolition:** The temporary ticket hall that was in place to support the Crossrail project was removed to be returned to public realm in Tower Hamlets. Demolition was successfully completed in June 2022, with ancillary works forecast to complete in March 2023 as planning approval was secured in December 2022.
- (l) **Acton AC02 Shed warehouse demolition:** Following the successful completion of the essential clearance works, progress continues onsite to achieve the full demolition and sterilisation of the site to address critical safety issues and facilitate potential future redevelopment of the depot. This will allow future reuse of a valuable site on the LU depot.

Step-Free Access

- 4.2 Since the last submission to the Committee in May 2021, the Programme has made significant contribution to progress towards achievement of Mayor's Transport Strategy goals for Step Free Journey Time. A further five stations have become step-free (Harrow on the Hill, Sudbury Hill, Osterley, Wimbledon Park and Ickenham). The most recent station to become step-free at Harrow-on-the-Hill was opened by the Mayor on 8 March 2022. Harrow-on-the-Hill was the twelfth and final station to be delivered under tranche one and two of the TfL funded SFA programme. A further three stations have been made fully step-free by completion of the Elizabeth Line (Moorgate, Whitechapel and Ealing Broadway) and mean we met the milestone of one third of Tube stations being step-free. Paddington (Bakerloo) will be made step-free in conjunction with the development above.

Figure 8 – Delivery of Step-Free Access in 2021/22

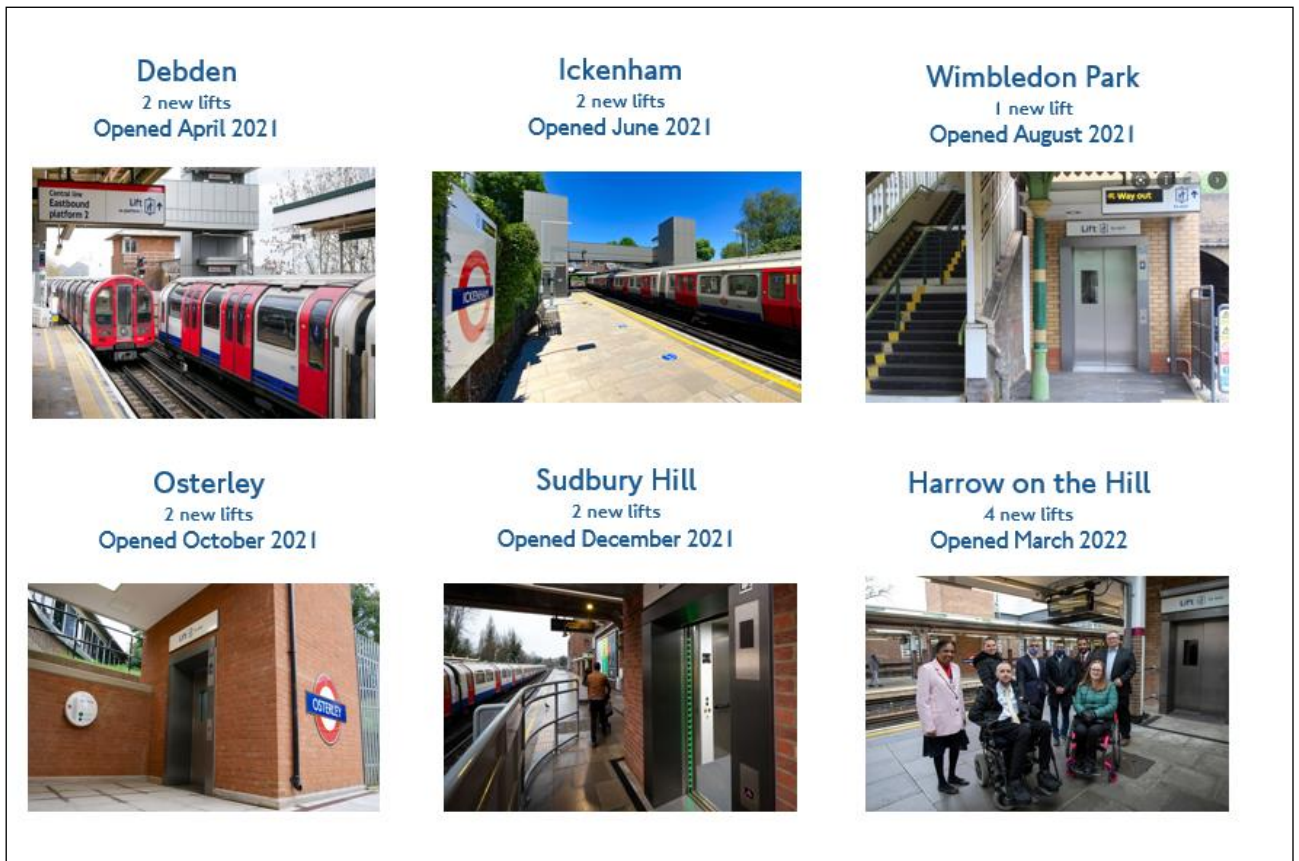
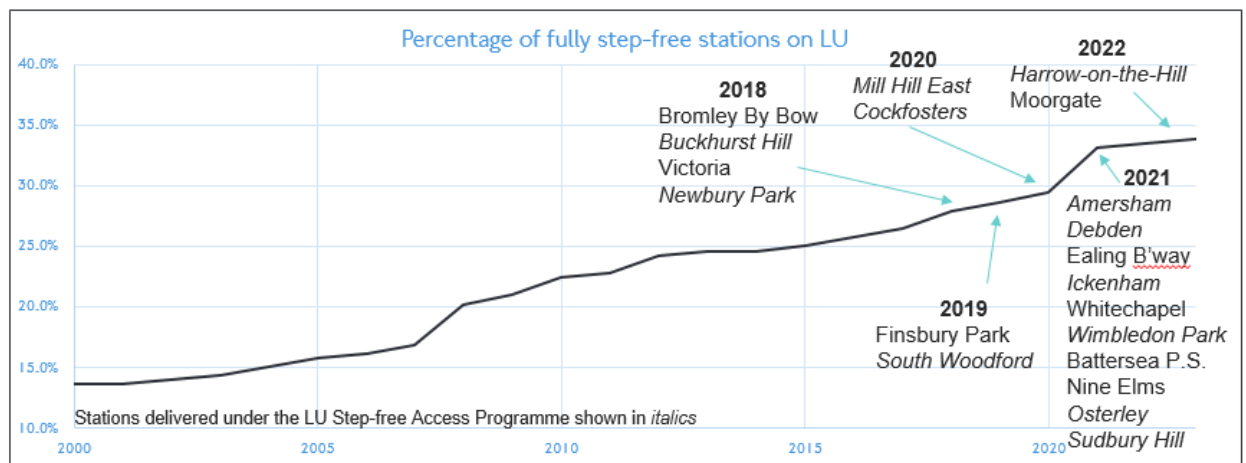


Figure 9 – SFA progress



5 Performance against milestones in 2022/23

- 5.1 Table 4 below reports progress against the Scorecard Milestones in 2022/23 showing that all target dates have been met for the programme.
- 5.2 In addition, the delivery team have also contributed to meeting a Scorecard Milestone target associated with improvements at Borough station. The works included the refurbishment of the exiting lifts undertaken by the Systems & Infrastructure Programme, and the station enhancements works undertaken through the LU Enhancements Programme. These works were delivered more efficiently and with no customer disruption by working during the existing Northern Line closure that supported the Bank station development.

Scorecard Milestone	Target Date	Progress Update
Whitechapel ticket hall dismantling completed	28/07/2022	Achieved early on 17/06/2022
Knightsbridge opening of Brompton Road entrance	25/09/2022	Achieved early on 30/08/2022

Table 4 - 2022/23 Progress against Scorecard Milestones (LU Enhancements)

6 Equalities Implications

- 6.1 TfL has an obligation under the Equality Act 2010 to:
- (a) eliminate discrimination, harassment, victimisation, and any other conduct that is prohibited by or under the Equality Act 2010;
 - (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it; and
 - (c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.
- 6.2 The LU Enhancements programme is delivered in accordance with the Equality Act 2010. Each project undertakes Equality Impact Assessments on the impact of the proposals on each of the groups with protected characteristics. Schemes may have a temporary impact during delivery, but in the long term all enhancements and SFA schemes have a very positive impact on addressing equality issues across the network.

7 Financial Implications

- 7.1 The Authorities referred to in this paper are based on the TfL Business Plan approved by the Board on 7 December 2022. This plan allows for completion of current stages of work at Paddington and Knightsbridge, and demolition of the Acton Warehouse (AC02). A TfL funded scheme to replace and enhance the trackside wall at East Ham is included in this submission, with a proposed transfer of scope from the LU Infrastructure Renewals (Built Environment & Civils) programme. This transfer will bring pre-existing budget and Programme and Project Authority into the LU Enhancements Programme with an equal reduction in the Infrastructure Renewals Programme.
- 7.2 In 2022/23 an efficiency of £1.4m against budget has been reported with savings at Knightsbridge, Moorgate and Canning Town. A further saving of £0.6m has been identified at Stratford to ensure it remains within the third-party funding available.
- 7.3 The adjusted Programme and Project Authority includes work on four projects that are funded from third-party investment (£4.2m income).
- 7.4 These projects are
- (a) Knightsbridge: income from the developer (Chelsfield), to complete the construction of the dedicated step-free entrance in summer 2023;
 - (b) King's Cross: income from the developer (Precis development) to facilitate building a new step-free entrance to the LU station;

- (c) Waterloo Elizabeth House: income from the developer (HB Reavis) to allow for completion of legal negotiations to secure construction of a lift shaft as part of the developer's build; and
- (d) Hounslow West: income from the local authority to carry out design for improvements to step-free access.

7.5 We continue to seek third-party income particularly through the planning process and contributions through the Community Infrastructure Levy.

TfL funding opportunities

7.6 The TfL Business Plan includes funding to allow TfL to progress station accessibility and enhancement schemes. However, without sufficient third-party funding we do not expect to be able to meet the current target of reduced journey time for customers with step-free needs.

7.7 A prioritisation exercise will take place before the end of the current financial year, to determine which schemes best meet our customer needs and offer value for money. Authority will be sought from the Committee to support this new strategy and further progress the priority projects to concept design in due course. Table 5 below shows the Business Plan position.

Business plan item	2023/24 (£m)	2024/25 (£m)	2025/26 (£m)	2026/27 (£m)
TfL Accessibility and Housing	0.9	6	15	15
LU Accessibility Programme	2	3	6	7
Accessibility Development (Opex)		2	5	5

Table 5 - Business Plan extract

8 Challenges, Opportunities and Lessons Learned

Opportunities

- 8.1 The extent of future step-free schemes will be dependent upon the level of third-party funding and support that can be secured. We will use the TfL funding to develop a strong pipeline of schemes that align with Mayoral objectives. Schemes will be assessed on benefit, delivery complexity and third-party funding support.
- 8.2 Where third-party developments create additional passenger demand, mitigation can be sought through the planning process with mandating of direct funding contributions or work delivered directly by third party developers.
- 8.3 With TTL Properties Limited we are developing a package of works to manage changes to both Southwark and Hounslow West stations arising from development proposed above and around the stations. A linked opportunity for improved SFA has been identified at Hounslow West using Community Infrastructure Levy funding from the London Borough of Hounslow. An initial £1m is allocated for design work by the borough and a grant funding agreement is in an advanced state of negotiation. The authority request in this paper includes approving receipt of this income.

Challenges

- 8.4 There is a risk that we are not able to meet the accessible journey time targets. In order to address this, we will be assessing the direct benefits of all future schemes and trying to leverage increased levels of third-party funding.
- 8.5 With the confirmed Business Plan funding for accessibility, we will be re-evaluating the programme and confirming the schemes which offer best value for money. However, given the previous funding constraints, it will take some time for the programme to reach previous levels of delivery and establish an effective rolling programme of works into the future.

Lessons Learned

- 8.6 A detailed learning review of legacy Enhancements projects has been undertaken, both on project specific aspects but also on broader delivery principles. The outcomes from the review demonstrated that a traditional transactional approach based on a lump-sum design-build model was not appropriate with significant volatility experienced (cost, schedule and quality). This was the catalyst for change and the adoption of the new forward looking and innovative LU Capital delivery model. This new model was implemented in Q1 2021/22 (coinciding with the last review to this Committee) and has been applied on all projects initiated and progressed since the last review.
- 8.7 The new delivery model harnesses Early Contractor Involvement to review and refine scope, validate construction methodologies, optimise access & logistics, develop a realistic schedule, identify, and better understand risk and opportunities (including mitigation/optimisation) and development a robust cost estimate to deliver this project and ultimately increase overall delivery confidence. At the same time this delivery model should reduce the risk of late-stage re-design and make use of construction knowledge in the supply chain at a much earlier stage in the project lifecycle.

9 Commercial

- 9.1 The approach builds on the new delivery model for LU Capital Delivery (Enhancements) utilising existing competitively procured pan-TfL frameworks whilst also leveraging a mature and incentive driven commercial model whereby our supply chain partners are motivated and rewarded based on genuine strong delivery performance. The output from this approach is increased delivery confidence (improved cost and schedule certainty) earlier in the project lifecycle and prior to making further investment decisions and contractual commitments.

10 Assurance

- 10.1 A TfL Assurance and Independent Investment Programme Advisory Group Integrated Assurance Review took place in November 2022.
- 10.2 The review found no critical issues. The next assurance review of the portfolio is planned to take place in advance of the next submission to the Committee currently forecast for December 2023.
- 10.3 We already have plans in place for a programme wide review of delivery, benefits and value that has been shared with assurance and included in their recommendations.

List of appendices to this report:

Appendix 1: List of active schemes within LU Enhancements including other schemes being worked on by the same delivery team where Programme and Project Authority is obtained outside of this programme

Appendix 2: List of UIPs closed in this submission with fiscal value of Programme and Project Authority at close

List of Background Papers:

TfL Project Assurance Reports

Management response to TfL Project Assurance Report

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Email: davidrowe@tfl.gov.uk

Appendix

1 List of Active Schemes

Scheme	Benefits	Stage	Cost to end FY23 £m	Costs to go £m	Total £m
Colindale	SFA Congestion relief	Design	7.0	-	7.0
Crossrail LUCT	SFA Congestion relief	Delivery	196.7	0.0	196.7
Crossrail Funded Pro	SFA Congestion relief	Delivery	0.0	-	0.0
Crossrail Scope Gaps - Central Sect Stns	Customer experience improvements	Delivery	1.8	-	1.8
Knightsbridge new station entrance and SFA	SFA	Delivery	25.3	7.3	32.6
Stratford (Southwest Entrance)	Congestion relief	Delivery	3.8	4.9	8.8
Paddington CR, SCU, Station	SFA Congestion relief	Delivery	12.6	2.7	15.3
South Kensington	SFA Congestion relief	Design	5.6	0.6	6.1
Thameslink	Congestion relief	Close	37.6	-	37.6
Tottenham Hale	Growth support Congestion relief	Close	49.8	0.2	49.9
Tower Hill	SFA	Delivery	7.7	0.6	8.3
Leyton	SFA Congestion relief	Design	2.6	1.0	3.6
Moorgate OSD	Development support	Close	7.8	0.2	8.0
West Ham Stephenson Street	Growth support SFA Congestion relief	Delivery	1.1	0.8	1.8
North Greenwich Knight Dragon	Growth support	Design	0.2	-	0.2
Walthamstow Central	Growth support SFA Congestion relief	Design	1.3	0.1	1.4
Waterloo Elizabeth House	SFA	Design	0.3	0.4	0.7
Waterloo Shell	Growth support Congestion relief	Close	4.3	0.0	4.4
Waterloo International Terminal	Congestion relief	Close	0.0	-	0.0
White City St. James	Growth support	Close	2.4	-	2.4
King's Cross (Belgrove House)	SFA	Design	0.2	0.6	0.8
Ladbroke Grove (K&C paid SFA Study)	SFA Congestion relief	Design	0.1	-	0.1
London Bridge (New City Court)	Growth support	Design	0.1	0.3	0.4
Hounslow West	Growth support SFA	Design	0.3	-	0.3
Bromley-by-Bow lift access	Growth support SFA	Close	0.0	-	0.0
ACo2 Demolition	Operational improvement	Delivery	5.4	0.1	5.5
East Ham Wall rebuild	Improved asset	Design	1.8	4.6	6.4
Finsbury Park Additional Works	Compliance issues addressed	Design	0.1	0.4	0.5
Subtotal			376.0	24.7	400.6

List of Active Schemes continued

Scheme	Benefits	Stage	Cost to end FY23 £m	Costs to go £m	Total £m
SFA Amersham	SFA	Close	7.1	-	7.1
SFA Buckhurst Hill	SFA	Close	1.3	-	1.3
SFA Cockfosters	SFA	Close	4.6	-	4.6
SFA Debden	SFA	Close	5.4	-	5.4
SFA Harrow on the Hill	SFA	Close	15.9	-	15.9
SFA Ickenham	SFA	Close	6.6	-	6.6
SFA Mill Hill East	SFA	Close	4.2	-	4.2
SFA Newbury Park	SFA	Close	7.2	-	7.2
SFA Osterley	SFA	Close	7.0	-	7.0
SFA South Woodford	SFA	Close	3.8	-	3.8
SFA Sudbury Hill	SFA	Close	5.9	-	5.9
SFA Wimbledon Park	SFA	Close	5.0	-	5.0
Accessibility Programme	SFA	Close	13.4	-	13.4
R&E SFA Programme Management	SFA	Close	0.2	-	0.2
Moorgate Capacity (Lift)	SFA	Close	4.3	-	4.3
Whitechapel (Lift)	SFA	Close	3.8	-	3.8
SFA Burnt Oak	SFA	Design	3.1	-	3.1
SFA Hanger Lane	SFA	Design	3.7	-	3.7
SFA Northolt	SFA	Design	3.9	-	3.9
SFA Close out	SFA	Close	0.3	2.7	3.1
SFA Development	SFA	Design	-	1.0	1.0
Paddington (Enstar House)	SFA	Design	0.1	1.5	1.5
Borough	Customer facing benefits	Close	1.4	-	1.4
TMU Workshop	Operational improvements	Delivery	44.0	0.2	44.2
Elizabeth line residual works	Project close out	Delivery	8.3	9.8	18.1
LU Waste Heat	Carbon reduction	Design	0.2	0.4	0.6
Solar Private Wire	Carbon reduction	Design	1.0	-	1.0
Subtotal			161.6	15.6	177.2
Grand total			537.6	40.2	577.8

Other Schemes	Other schemes being worked on where P&PA is obtained outside this Portfolio but by the same delivery team
Queensway and Bayswater	4LM Four Lines Modernisation Ventilation
	Golders Green Depot Lighting
	Lille Bridge
	Liverpool Street (mess room)
	Liverpool Street (station retail)
	LU Waste Heat
	North Greenwich (station retail)
	Oxford Circus (station retail)
	Solar Private Wire
	TMU Workshop

2 List of UIPs closed in this submission with fiscal value of Programme and Project Authority (P&PA) at close with available headroom removed and re-allocated

UIP	Project	Closing P&PA £m
UIP2150	Bromley-by-Bow	12.448
UIP3472	Enhancements Programme Risk	0.000
UIP2162	Finsbury Park	50.864
UIP2152	Future Stations Capacity Programme	3.928
UIP3089	Gunnersbury	0.200
PSEA0498	Whitechapel Crossrail Enabling Works	3.754
UIP3022	Canning Town Rotunda	1.950
UIP2200	Wembley Central (SWIP)	0.000
UIPTBC	Feasibility funding	0.000
No UIP	Northwick (developer funded)	0.000
UIP2393	Notting Hill Gate Newcombe House	0.040
UIP3177	SFA Boston Manor	0.267
UIP3192	SFA North Ealing	0.270
UIP3175	SFA Park Royal	0.288
UIP3197	SFA Rickmansworth	0.255
UIP3198	SFA Ruislip	0.246
UIP3199	SFA Snaresbrook	0.262
UIP3176	Canons Park Accessibility	0.236
UIP3180	Chigwell Accessibility	0.021
UIP3182	Croxley Accessibility	0.290
UIP3184	Dollis Hill Accessibility	0.299
UIP3189	Leytonstone Accessibility	0.007
UIP3194	Northwick Park Accessibility	0.264
UIP3196	Queensbury Accessibility	0.245
UIP3202	Theydon Bois Accessibility	0.261
UIP3203	Totteridge & Whetstone Accessibility	0.000
UIP3114	Additional Mayoral Priorities	0.000
UIP3164	Waste Heat	0.259
UIP3523	RE:FIT 2 Solar PV	2.489
PSEA0613	Paddington Platforms	1.199
	Total	80.344

Programmes and Investment Committee



Date: 1 March 2023

Title: Air Quality and Environment Programme

This paper will be considered in public

1 Summary

Table 1: Summary of Air Quality and Environment (AQE) programme authorities				
Figures in outturn values (£m)				
Latest gross estimated final cost (EFC) (2017/18 to 2026/27)	*Previous gross estimated final cost (EFC) (2017/18 to 2025/26)	Authorities	**Financial Authority	Programme and Project Authority
1,230	1,007	Existing	954	877
		Requested	0	77
		Total	954	954
		<i>Future Submissions</i>	276	276
<p>*Previous EFC at the date of last Committee update in March 2022. **Financial Authority value is lower than EFC up to 2026/27 due to the Business Plan only including Future Road User Charging up to 2023/24 and a lower allocation for renewal schemes. These will be reassessed in the next Business Plan.</p>				

1.1 This paper is the sixth annual submission of the Air Quality and Environment (AQE) Programme to the Committee detailing the request for additional Programme and Project Authority and Procurement Authority for the 2023/24 financial year.

1.2 The focus of this paper is to:

- (a) provide an update on the progress of projects since the previous AQE Programme submission to the Committee in March 2022;
- (b) summarise the planned delivery from March 2023 to the next annual submission to the Committee planned for March 2024, as well as key challenges and opportunities for the year ahead; and
- (c) request additional £77m Programme and Project Authority as outlined in Table 2 of section 9 below, and additional Procurement Authority for the sum set out in the paper on Part 2 of the agenda.

1.3 A paper containing exempt information is included in Part 2 of the agenda for Members. This information is exempt by virtue of paragraph 3 of Schedule 12A of the Local Government Act 1972, in that it contains information relating to the

business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from the meeting.

2 Recommendation

2.1 The Committee is asked to note the paper and the exempt supplementary paper on Part 2 of the agenda and:

- (a) approve additional Programme and Project Authority of £77m to support the delivery of the Air Quality and Environment (AQE) Programme for 2023/24 and 2024/25, bringing the total Programme and Project Authority for the AQE Programme to £954m; and**
- (b) approve additional Procurement Authority, in the sums requested in the exempt supplementary paper on Part 2 of the agenda, to extend the contracts with Capita Business Services Limited (Capita) and Yunex (formerly Siemens Mobility) to continue activities in support of Road User Charging.**

3 Background of the Air Quality and Environment Programme

- 3.1 The Mayor is committed to accelerating action to address the triple challenges of congestion, air pollution and the climate emergency. The AQE Programme structure is shown in Figure 1 below and supports the Road User Charging (RUC) and Environment sub-programmes to secure strategic outcomes that help tackle these challenges.
- 3.2 RUC schemes aim to reduce traffic and manage congestion, improve air quality and reduce carbon emissions from road traffic. They can also support Vision Zero, Healthy Streets, active travel and improved public transport for our customers.
- 3.3 The Environment sub-programme combines the Electric Vehicles and Energy sub-programmes that were referenced in the March 2022 submission to the Committee. This re-defined Environment sub-programme will also include projects from a new 'green project pipeline' (see paragraph 4.1 below). In combination, it aims to decarbonise TfL's assets and operations to help meet carbon net zero by 2030, improve air quality, and support external innovation to achieve the similar benefits for society.

A Summary of Committee submissions in 2022/23

- 3.4 The Committee approved Programme and Project Authority of £54.5m on 2 March 2022 to support AQE Programme delivery in 2022/23, increasing the total Programme and Project Authority to £518.4m. Of the £54.5m approved, £49.7m was specifically for RUC in 2022/23.
- 3.5 Five subsequent submissions were made to the Committee within 2022/23 to enable the on-going development of RUC projects. These were:

- (a) **submission to the Committee on 20 July 2022:** the Committee noted the status of RUC projects. A request for additional Programme and Project Authority was deferred as the latest Government funding agreement was not concluded until 30 August 2022. This was later approved via Chair's Action (see (b) below);
- (b) **Chair's Action on 12 September 2022:** the Chair of the Committee, in consultation with members, approved an additional £177.2m of Programme and Project Authority to support the continued development of the following proposed RUC projects: London-wide Ultra Low Emission Zone (London-wide ULEZ), Scrappage Scheme, potential future RUC and Business Operations in-house giving a total Programme and Project Authority of £523.2m for RUC. The delivery approach for Tunnel User Charging (TUC) was also noted;
- (c) **Chair's Action on 4 October 2022 (Healthy Streets and Active Travel paper):** the Chair of the Committee, in consultation with members, approved an additional £24.8m of Financial Authority and £25m of Programme and Project Authority to support Healthy Streets and Active Travel. This included £7.5m for Direct Vision Standard phase 2 (DVS2), which is within the RUC sub-programme scope;
- (d) **submission to the Committee on 14 December 2022:** the Committee approved an additional £173.5m of Programme and Project Authority to progress the following RUC projects: London-wide ULEZ, Scrappage Scheme, TUC, and technical resource to support multiple RUC projects (including DVS2) giving a total Programme and Project Authority of £696.7m; and
- (e) **Chair's Action on 31 January 2023:** the Chair of the Committee, in consultation with members, approved additional Procurement Authority to vary the existing Business Operations (BOps) and Enforcement Operations (EOps) contracts with Capita for the London-wide ULEZ and TUC schemes. This follows the Committee's approval of related Programme and Project Authority on 14 December 2022 and the existing Financial Authority included in the Business Plan approved by the Board on 7 December 2022.

4 Changes to Air Quality and Environment Programme Since March 2022

- 4.1 TfL's Corporate Environment Plan sets out our approach for TfL to become carbon net zero by 2030. To achieve this goal TfL's assets and operations must be decarbonised in parallel with many other measures. A new green project pipeline has been developed, which will prioritise projects for investment from 2023/24 and the business plan has committed £39m up to 2026/27. This reflects what was set out in the Climate Section of the 2023/24 Greater London Authority (GLA) Budget document. The AQE Programme will include a proportion of these projects under its 'Environment' sub-programme and this paper includes a request for an initial £3m Programme and Project Authority in 2023/24 and a further £9m in 2024/25 to enable the delivery of high-quality projects quickly. In parallel, activities are underway to identify and access additional external funding

to achieve our de-carbonisation goal (e.g. £6bn was announced by His Majesty's Government for Energy Efficiency in the Autumn Statement). Further opportunities will be identified to secure extra environment-related benefits from committed asset renewal investment.

5 Air Quality and Environment Progress Update 2022/23

Road User Charging (RUC)

- 5.1 **London-wide ULEZ and Scrappage Scheme:** On 25 November 2022 the Mayor of London announced he would expand the ULEZ London-wide, enabling five million more Londoners to breathe cleaner air. The announcement included a commitment for a new and improved £110m scrappage scheme and a new package to support more disabled Londoners than ever before, including an extended grace period to October 2027. Notable progress has included: ordering long-lead time items with our supply chain, commencing engagement with Local Authorities and County Councils with a view to securing consents, designing a camera and signage network that will drive compliance, completing the system build to give operational capacity for managing higher volumes, and marketing to generate awareness of the scheme. In combination, this progress represents advanced mitigation against issues arising from challenging delivery timescales. In parallel, the Scrappage scheme went live on 30 January 2023.
- 5.2 **Blackwall and Silvertown TUC:** The Blackwall and Silvertown TUC system must be in place for the opening of the Silvertown Tunnel, currently planned for early 2025, as required by the Silvertown Tunnel Development Consent Order granted by the Secretary of State for Transport in May 2018. In September 2022 the Committee endorsed the recommended procurement route to deliver the scheme via a contract variation with Capita, which was agreed in December 2022 under the target price following Committee approval of the associated Authorities in December 2022.
- 5.3 **Business Operations System In-house (BOps):** Endorsement was given by the Committee on 2 March 2022 for delivery of the BOps system in-house. The original proposal had been to align delivery with TUC in 2024, although this was time sensitive and dependent upon securing approval to on-board sufficient technical resource. The submission to the Committee via Chair's Action in September 2022 noted that delays in securing the required resource meant that the delivery of BOps in-house was no longer viable for 2024. Timescales have since been reviewed to target the RUC Re-Let project for September 2026. Securing external technical resource via the framework approach outlined in the Chair's Action paper to the Committee in September 2022 has enabled the onboarding of resources as necessary.
- 5.4 **Potential Future RUC:** As part of the public consultation for London-wide ULEZ in summer 2022, questions were included to seek the public's views on the challenges that a new simple and fair scheme could help to address and the elements that should be considered for inclusion in scheme design, such as vehicle type, distance travelled and time of day. The feedback received, published as part of the ULEZ report to the Mayor in November 2022, has provided valuable

insight to what is important to the public, what they feel should be considered as part of a potential future scheme and concerns they have.

5.5 **RUC Re-Let:** The current operating model for RUC comprises three service contracts that will expire in 2026:

- (a) Detection and Enforcement Infrastructure (D&EI – by Yunex);
- (b) Business Operations Systems and Services (BOps – by Capita); and
- (c) Enforcement Operations Services and Systems (EOps – by Capita).

Work has commenced on the procurement strategy to assess options to determine the best approach for continuing the operation, which will include assessment of value, risk-profile, operations, requirements and viability.

5.6 **Direct Vision Standard Phase 2 (DVS2):** Consultation commenced in February 2023 seeking views on the proposed Progressive Safe System (PSS) design that non-compliant Heavy Goods Vehicles (HGVs) over 12 tonnes would need to fit from October 2024 to secure a safety permit and operate in London. The PSS would enhance the current safe system that vehicles with low driver visibility (rated below 1*) are required to fit to obtain a safety permit, introduced as part of Direct Vision Standard (DVS) and enforced since March 2021.

5.7 The scheme is safety focused and contributes to the Mayor's Vision Zero strategy by improving HGV drivers' visibility thereby reducing the risks that HGVs present to vulnerable road users. As part of the original introduction of DVS, a public commitment was made to raise the minimum star rating to 3* from October 2024, with all 0*- 2* vehicles required to fit the PSS to obtain a safety permit. These changes will build on the safety improvements from the current DVS scheme, including the following outcomes and benefits published in the 'One Year On' report (June 2022):

- (a) number of fatal collisions involving an HGV where vision was cited as a contributory factor has halved (from 12 in 2018, the year before the scheme was introduced, to six in 2021). The number of serious injuries fell from 48 in 2017 to 17 in 2021; and
- (b) average daily compliance rates are very high, with more than 94 per cent of HGVs in London now operating with a Safety Permit and hauliers reporting that they are building DVS requirements into future purchasing decisions.

5.8 **External Technical Resource:** Substantial progress has been made to successfully mitigate the significant risk of availability of specialist technical resource noted in previous submissions to the Committee. Implementation of the framework approach outlined in the September 2022 submission has commenced, with use of the Crown Commercial Services (CSS) frameworks to procure technical resources to support a number of RUC schemes, most notably BOps system in-house. These frameworks have made a wide range of quality resources available and created opportunities to better utilise resources within the delivery teams. The process for procuring and onboarding resources has been streamlined to secure suitable resource quickly and provide flexibility to align with project needs, including the ability to onboard multiple teams in a coordinated

manner. Lessons learnt from the success of this approach are being shared more widely within the business.

Wider Air Quality and Environment Progress

- 5.9 **Electric Vehicle Infrastructure Delivery (EVID):** Progress remains on track to deliver a first tranche of 100 rapid charging bays on TfL's roads. A procurement strategy has been selected following extensive market engagement with key industry suppliers. An invitation to tender for the first batch of sites went to the market on 30 November 2022 as planned. The evaluation of prospective sites is continuing for delivery across multiple tranches and consideration is being given to how EVID's approach could be adopted by boroughs to accelerate the delivery of Electric Vehicle (EV) charge points on their highway and freehold land. EVID, a key commitment of the London EV Infrastructure Strategy, addresses the key barrier of accessing land for EV charge point operators while also generating revenue. London needs 40,000 to 60,000 EV charging points by 2030, which includes 4,000 rapid charging points. This would enable a reduction in carbon dioxide of between 1.5 million to 2.6 million tonnes by 2030.
- 5.10 **Bus Opportunity Charging:** This project will fully electrify the 15-mile bus route 358 between Crystal Palace and Orpington, using innovative pantograph charging technology. This will demonstrate how the technology responds to the demands of daily operations and inform plans to achieve a zero-emission bus fleet. While charging equipment has been successfully installed at Crystal Palace, delays have been experienced, pushing the original forecast route launch date from January 2023 to May 2023. This is primarily due to delays in agreeing legal terms with a third-party landowner at Orpington. Other contributory factors have been broader supply chain issues, including the provision of components for both the bespoke electric vehicle charging infrastructure and the delivery of the new buses. We continue to work with the operator to ensure any operational cost implications of late project delivery are minimised.
- 5.11 **Ash Grove:** This project initially planned to provide a power upgrade at Ash Grove bus garage by March 2023, to support zero emission buses. However, a change in operator has delayed progress by 12 months. We continue to explore how we can use GLA Grant funding of £2.7m to electrify the garage as soon as possible and are engaging with bus operators at the shared site to understand costs, feasibility and timescales. Ash Grove has capacity to accommodate approximately 200 buses.
- 5.12 **Zero-Emission TfL Support Fleet:** TfL operates approximately 1,000 fleet vehicles, with less than five per cent being Zero Emission. In line with the Mayor's Transport Strategy ambitions, the scope of the project will be to convert the entire TfL fleet to become zero emission, with the leasing of new vehicles as well as the implementation of supporting infrastructure in the depots, such as EV charging points. The project re-started in 2022/23 following a long pause due to previous funding uncertainties, with £100k of Programme and Project Authority secured to accelerate remobilisation activities until the end of March 2023. This submission includes a request for new Programme and Project Authority, to maintain progress through 2023/24.

- 5.13 **Waste Heat:** The project aims to capture and re-use thermal energy from the London Underground (LU) network for external suppliers of local heat networks and buildings. The LU network produces 500GWh of waste heat per year, with 10 per cent removed through ventilation and released into the atmosphere. Feasibility studies have identified six sites, which if developed, could provide heating for up to 15,000 households. The infrastructure will be financed and delivered by a third party and their activity will be assured by TfL Infrastructure Protection to manage risk to assets and operations.
- 5.14 **Solar Private Wire:** This project will enable TfL to receive zero-carbon electricity directly into LU, reducing carbon emissions and creating up to 64 megawatts of renewable generation, which is five per cent of TfL's annual energy load. As well as the environmental benefits, there are potential financial savings through avoiding costs associated with the delivery of power via the grid. Our risk exposure is being managed, as we plan to seek a partner in the market to assess sites and deliver the required facilities.

6 Key Air Quality and Environment Programme Deliverables 2023/24

- 6.1 **London Wide ULEZ and Scrappage Scheme:** Installation of infrastructure to support the London-wide ULEZ launch on 29 August 2023 is continuing, with signs and cameras being prioritised on our own assets or at locations where TfL is the Highway Authority such as traffic signals and on the TfL Road Network. Consents agreements are being progressed with Local Authorities for installation of infrastructure off the TfL Road Network and engagement with stakeholders is continuing. In January 2023 a London wide marketing campaign was launched to raise awareness of the ULEZ expansion in August, including television and radio adverts. Enhancements to the current system and testing activities are on-going to ensure a successful scheme expansion.
- 6.2 Following the successful launch of the Scrappage Scheme on 30 January 2023, grants are continuing to be processed for eligible applications.
- 6.3 **Silvertown and Blackwall TUC:** Following confirmation of the contract variation with Capita in December 2022, mobilisation is planned to commence by June 2023. Design and development work will be informed by updated assumptions relating to Silvertown Tunnel traffic volumes and charges.
- 6.4 **BOps system in-house:** Specialist technical resources are continuing to be onboarded using the CCS frameworks, supporting key activities focused on BOps system design, build and integration. Further onboarding of technical resource is planned throughout 2023/24 to continue to continue support of these activities. The project remains closely aligned to the Re-Let and potential Future RUC projects to ensure coordination of developing assumptions and requirements.

- 6.5 **Potential Future RUC:** Building on feedback received from the summer 2022 consultation, work continues to understand the range of issues which would need to be considered in any potential future RUC scheme. This includes considering how such a scheme could address some of the essential challenges raised by the public as part of the consultation: making the roads safer for everyone and improving bus journey times and reliability. Exploration of available technology will also commence to develop an improved understanding of the potential functionality that could be used to support such a scheme.
- 6.6 **RUC Re-Let:** Procurement Strategy for the Re-Let of the three existing RUC contracts (D&EI, BOps services, EOps system and services) will be finalised and enacted, including commencement of market engagement activities. The Procurement Strategy will reflect current requirement assumptions for both the potential Future RUC scheme and existing legacy schemes, and these assumptions will continue to be developed as more information becomes available.
- 6.7 **Direct Vision Standard Phase 2 (DVS2):** Following completion of consultation in April 2023, results will be considered and applied to the design of the Progressive Safe System (PSS). Results of the consultation and the final recommended PSS design will be included in the submission to London Councils Transport and Environment Committee in June 2023. Subject to approval, this will confirm the permit requirements HGVs must meet when the minimum DVS star rating threshold is raised from 1 star to 3 star from October 2024.
- 6.8 **Electric Vehicle Infrastructure Delivery (EVID):** Key deliverables in 2023/24 will include; the first contracts being signed with EV charge point operators by spring 2023, which will determine the delivery timescales for 100 rapid charger bays within 2023/24 by operators providing turnkey delivery solutions, and establishing the framework to deliver future tranches of rapid EV charge points across the GLA estate as well as borough highways by July 2023.
- 6.9 **Bus Opportunity Charging:** Within Quarter 1 of 2023/24, Route 358 between Crystal Palace and Orpington will become fully electric, with a new fleet of zero emission buses utilising rapid charging technology. Performance of the route will be monitored, with data informing day-to-day operations, as well as longer term plans to decarbonise some of London's longest bus routes.
- 6.10 **Waste Heat and Solar Private Wire:** Since the projects were remobilised in autumn 2022, the new programme management team has prioritised the development of detailed schedules that will set out the key deliverables for 2023/24. These include launching the Invitation to Tender by autumn 2023 for Solar Private Wire, and for Waste Heat, determining the most efficient route to market for a prioritised Waste Heat site in Southwark.

7 Challenges and Opportunities

- 7.1 The AQE Programme plays an important part in helping TfL address the triple challenges of congestion, air pollution and the climate emergency. The reduction of traffic and congestion resulting from any potential future RUC scheme could not only improve air quality and reduce carbon emissions but also help realise

other goals within the Mayor's Transport Strategy including Vision Zero, Healthy Streets, active travel and improved public transport. The Environment sub-programme will need to significantly expand, which represents a challenge, but also a major opportunity to play a leading role in helping TfL become carbon net zero by 2030 and deliver wider society benefits including better health for Londoners.

- 7.2 Previous submissions to the Committee have highlighted availability of resource as a critical challenge for the successful delivery of several projects in the AQE Programme. Positively, the onboarding of specialist technical resources for RUC schemes via the framework approach has successfully mitigated this risk. However, availability of key resource in other areas of the project teams remains an issue and will continue to require careful ongoing management. Activities are underway to recruit or procure necessary resource; but lead times and ongoing retention issues result in resources remaining a key risk.
- 7.3 The complex inter-dependencies between RUC schemes have increased since the introduction of additional projects in early 2022. Most notably the full impact that potential Future RUC will have on the BOps in-house and Re-Let projects is still being assessed. Project teams are working closely together to identify and manage overlaps, particularly for requirements and timescales, with opportunities for efficiencies being explored along with minimising of delivery risks.
- 7.4 An application for judicial review has been made by the London Boroughs of Hillingdon, Harrow, Bexley, Bromley and Surrey challenging the Mayor's decision, made on 24 November 2022, to confirm the expansion of the ULEZ London-wide and to approve £110m in funding for the associated scrappage scheme. TfL is named as an interested party. We will be defending the claim on behalf of TfL and the Mayor and depending on available court time, it could take several months for a final hearing of the claim.

8 Financial Implications

8.1 The sums for which Programme and Project Authority is being sought are set out in Table 2 below.

Activity Areas	Current Financial Authority to 26/27	Current P&PA Authority	Additional Proposed P&PA	Authority Request (£m)								
	£m	£m	£m	17/18 to 19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	17/18 to 26/27
Road User Charging	733	704	67	109	104	63	166	188	101	36	5	771
AQE Environment	232	173	14	91	50	12	12	11	12	0	0	187
Value Engineering (*23/24 target saving)	-11	0	-4	0	0	0	0	-4*	0	0	0	-4
TOTAL	954	877	77	199	153	74	178	195	113	36	5	954

Table 2 - Constituent activity areas and Programme and Project Authority requested from the Committee

8.2 Following agreement of a financing facility with the GLA in September 2022, the London-wide ULEZ and Scrappage Scheme were included in the 2022/23 revised budget and full project forecasts are included in the draft 2023/24 budget. Forecast project costs for Future RUC had been included in the draft 2023/24 budget and published Business Plan for 2022/23 and 2023/24 only. However, future year forecasts have since been included in the 2023/24 budget and are intended to form part of the next Business Plan.

9 Assurance of the AQE Programme in 2022/23

9.1 The annual Integrated Assurance Review of the AQE Programme was carried out in January 2023 by the TfL Assurance Team and the Independent Investment Advisory Group. No critical issues were raised with the consensus being the AQE Programme is being well managed.

9.2 The Integrated Assurance Plan was updated in January 2023 and sets out the proposed reviews for projects within the wider AQE Programme for the next 12 months.

List of appendices to this report

None

Exempt supplementary information is included in a paper on Part 2 of the agenda.

List of Background Papers:

Programmes and Investment Committee papers 2 March (AQE), 20 July (RUC), 12 September (RUC) and 14 December 2022 (RUC)

AQE Programme Assurance Report (January 2023)

Contact Officer: David Rowe, Interim Director, Investment Delivery Planning

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Programmes and Investment Committee



Date: 1 March 2023

Title: Healthy Streets Programme

This paper will be considered in public

1 Summary

Table 1: Summary of Healthy Streets programme authorities				
Figures in £m outturn values				
Latest gross estimated final cost (EFC) (5 year total)*	*Previous gross estimated final cost (EFC) (5 year total)	Authorities	**Financial Authority	Programme and Project Authority
738	567	Existing	733.0	531.8
		***Requested	4.9	206.0
		Total	737.8	737.8
		<i>Future Submissions</i>	0	0

*The estimated final cost (gross EFC) covers financial years 2020/21 to 2024/25 only.
 ** Financial and Programme and Project Authority covers financial years 2020/21 to 2024/25.
 ***Approval is sought for additional unbudgeted Financial Authority of £4.9m and Programme and Project Authority of £206m which covers delivery to the end of 2024/25.

- 1.1 The purpose of this paper is to request additional authorities for continuation of the Healthy Streets programme (the Programme), following confirmation of funding for Active Travel and Local Implementation Plans (LIPs) in the August 2022 Government funding agreement – and a subsequent £150m allocation in the TfL Business Plan for 2024/25.
- 1.2 The paper on Part 2 of the agenda contains exempt supplementary information. The information is exempt from publication by paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from the meeting.

2 Recommendations

2.1 The Committee is asked to note the paper and the exempt supplementary information on Part 2 of the agenda and:

- (a) **approve additional unbudgeted Financial Authority of £4.9m and Programme and Project Authority of £206m to support delivery of the Healthy Streets Programme, bringing the total Healthy Streets Programme and Project Authority to £737.8m over financial years 2020/21 to 2024/25; and**
- (b) **note that the Programme and Project Authority request above includes an element to enable the completion of the Old Street Roundabout project, for the amount set out in the paper on Part 2 of the agenda.**

3 Background

- 3.1 On 6 October 2022, the Chair of the Committee, in consultation with the Committee Members, approved by Chair's Action the award of £215m of Programme and Project Authority for the continued delivery of the Programme, following the 30 August 2022 funding agreement with Government. This agreement included, in paragraph 20, a requirement for the Programme to continue delivery of TfL's active travel programme. The requirement is defined as: "On average, £80m each year of [the overall capital envelope] will be ringfenced over the period of this settlement for active travel".
- 3.2 In paragraph 12, the letter also states: "we expect, as a minimum, that Local Implementation Plan (LIP) funding each year is aligned with funding provided in 2021/22". In 2021/22 this was £69m – therefore, £69m per year was set aside for London boroughs in 2022/23 and 2023/24 (£138m total). Lastly, the letter requires TfL to deliver 25km of new bus lanes by 2024/2025 (as well as at least five bus-focused corridor studies by July 2023) – a greater level of ambition than set out in TfL's Bus Action Plan.
- 3.3 The October 2022 Chair's Action paper set out how these allocations are prioritised for spend to March 2024 and beyond. The programme includes previously committed projects (within the financial allocations to date), as well as new commitments that align with the Programme's strategic objectives and new area-based planning approach. Where these commitments continue into 2024/25, these will be funded from the £150m per annum TfL has set aside in the Business Plan for 2024/25. The Programme will continue delivery of the Mayor's Transport Strategy (MTS), aligning with the objectives and outcomes set out in the Vision Zero Action Plan Progress Report, the new Bus Action Plan and the Walking and Cycling Action Plans.

4 Healthy Streets: Looking to the future

- 4.1 Reducing car use and increasing travel by sustainable modes helps address many of the challenges we face in London – the climate crisis, air pollution, health and

inactivity, road danger, congested roads, and fairer access to amenities, jobs and services. Investing in active travel and bus priority will enable independent travel for children, create more pleasant streets for living and working, and strengthen the economic recovery of our town centres and high streets. As we emerge from the pandemic, walking and wheeling, cycling and public transport will help us achieve the goals that are critical to London's future success.

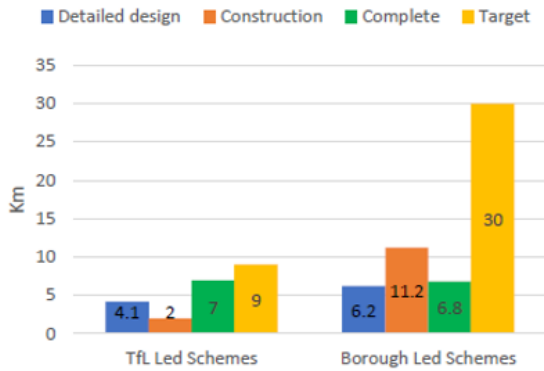
- 4.2 On an average day, 1.2 million journeys are cycled, more than the daily journeys made on the District and Piccadilly lines combined. In many cases these cyclists – as well as people thinking about taking up cycling – are still woefully under-served on London's roads. The potential contribution of cycling and walking to decarbonisation and public health remains considerable with nearly half of car journeys currently made by Londoners cyclable in around ten minutes, rising to two-thirds under 20 minutes. If all Londoners achieved 20 minutes of physical activity a day, it could save the NHS £1.7bn in treatment costs over 25 years.
- 4.3 Our customer research shows that concerns over road danger and fear of collisions remain the primary barrier to taking up cycling with 82 per cent of non-cyclists citing it as a deterrent. This is despite cycling becoming safer with a nearly 50 per cent drop in the risk of being killed or seriously injured while cycling in the last 20 years. It is therefore imperative that we continue to deliver a safe protected cycle network at pace, expanding the 350 kilometres of high-quality cycle routes delivered to date.
- 4.4 Our planning and investment approach for active travel takes into account our plans for increasing the use of other sustainable modes (particularly buses) and the varying land uses and street functions across London. This will ensure our schemes can provide complementary improvements for cycling, walking, wheeling and buses by taking an integrated approach to planning and by designing schemes that prioritise active travel and buses over general traffic.
- 4.5 Bus travel is a core part of the sustainable transport network as well as being affordable, inclusive and accessible. More than one-third of bus journeys are made by Londoners with an annual household income of less than £20,000 and of all disabled Londoners, 52 per cent do not have access to a car and depend more on sustainable modes. Buses carry more people than any other mode (aside from walking) on central London's streets – and more than six million bus journeys are made on a typical day, representing around one in five of all journeys made in the Capital.
- 4.6 London's streets account for more than 80 per cent of its public space. Buses use our streets more efficiently than cars, accounting for 16 per cent of the road space used but 67 per cent of the movement of people on the carriageway. The efficiency of buses which reduces congestion and pollution creates streets that are more attractive for walking and cycling, further reducing pollution and congestion, and making it easier and more attractive for people to build activities into their daily lives that provide health benefits. Bus use also drives walking demand, with one fifth of all walking in London taking place as part of a bus trip. The Mayor's aim is for all Londoners to do at least the recommended 20 minutes of activity each day by 2041. As an average bus trip involves around seven minutes of walking to and from the stop, bus customers can achieve much of the minimum physical activity needed to stay healthy in one return trip.

- 4.7 The modal target of 80 per cent of trips to be made by walking, cycling and public transport by 2041 requires up to nine million daily journeys to be made by bus by 2041. In the early 2000s, as part of an integrated transport strategy to tackle London's chronic congestion and insufficient public transport capacity, we improved the reliability of bus journeys and the network was expanded. As a result, bus journeys increased by 69 per cent between 2000 and 2010. Further investment in the bus network will be necessary to achieve the 2041 modal target.
- 4.8 Our aim is to work with boroughs to deliver net-positive transport benefits for sustainable modes, making them safer and more attractive. For example, the experimental bus-and-cycle-only corridor along Bishopsgate in the City of London – which is an important road for both buses and cycling – has seen up to 9,000 people cycling on Bishopsgate on some days, while bus journey times are faster and more consistent.
- 4.9 For further details of the Healthy Streets approach, strategic alignment and prioritisation methodology are set out in the October 2022 paper to the Committee. Further briefings have also taken place with Independent Investment Programme Advisory Group (IIPAG) on the new pan-TfL Strategic Outcomes tool that enables decision makers to balance priorities across different types of programme – for example, between renewals and enhancements; rail and highways and so forth.

5 Summary of Healthy Streets investment since October 2022 against plan

- 5.1 Delivery has taken place across the Programme in line with the commitments made in the paper submitted to the Committee in October 2022. The Transport for London Road Network-led (TLRN) programme has experienced some slippage to lowering speed limits, Healthy Streets schemes under £5m and small safety schemes as a result of resource constraints in both TfL and the supply chain – which has led to prioritisation of projects planned to start construction within the Department for Transport (DfT) funding period over projects in the earlier stages of design development. However, the TLRN-led programme is on target to spend against budget for 2022/23 due to the successful application of a work bank management approach and other mitigations – discussed further in section 7 below.
- 5.2 Following approval by the DfT in December 2022, London boroughs will carry forward around £4m of their funding allocation from 2022/23 into 2023/24 to enable them to restart paused projects and undertake recruitment - in line with the flexibility granted to TfL. However, despite this slippage, they are projected to spend their full allocation by March 2024 following a remobilisation period.
- 5.3 A summary of key highlights achieved against our original plan and budget are included below, alongside our strategic targets:

Images 1 and 2 – Commitment – 39km of new or upgraded cycling infrastructure delivered or in construction by March 2024, and Cycleway 9 opened at Waterman's Park (note that mobilisation commenced in October 2022 and will ramp up over the coming year).



*Schemes in earlier design stages are not included in this graph, but will assist us in meeting this target

Images 3 and 4 – Commitment – 140km of speed limits lowered by 10mph on the TLRN by March 2024:

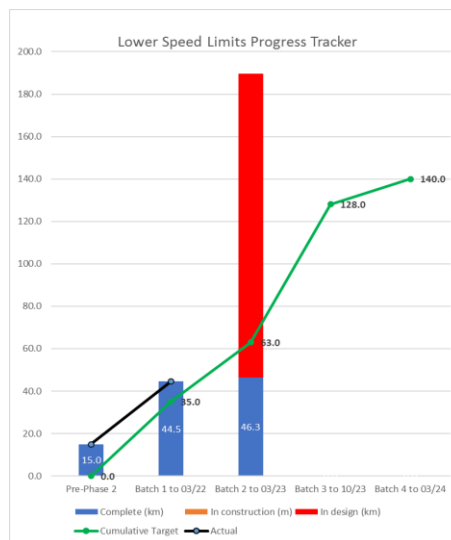
← Tweet

20's Plenty for Us
@20splentyforus

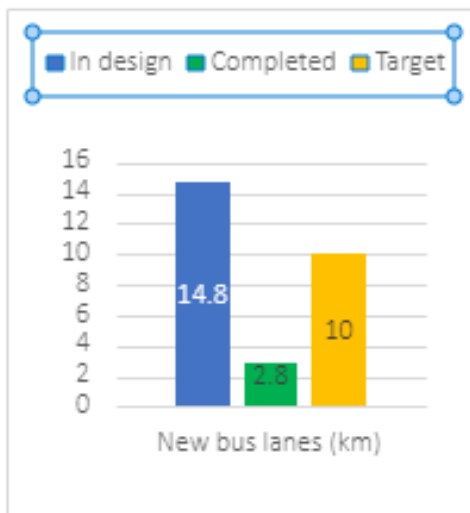
Host of @TfL controlled roads in Westminster going #20mph. Great to see TfL supporting the speed limit change with measures to increase compliance inc. 20mph signage, speed cameras (set for 20mph) and planned raised pedestrian crossings in places.



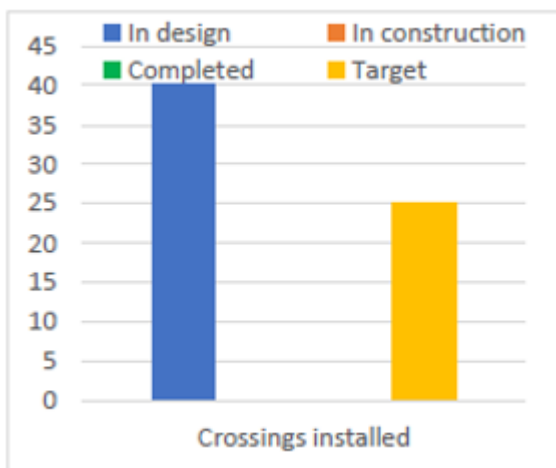
7:23 am · 4 Apr 2022 · Sprout Social



Images 5 and 6 – Commitment - 25km of new bus lane by March 2025 (with 10km by March 2024), and new bus gate at Crystal Palace Parade/ College Road



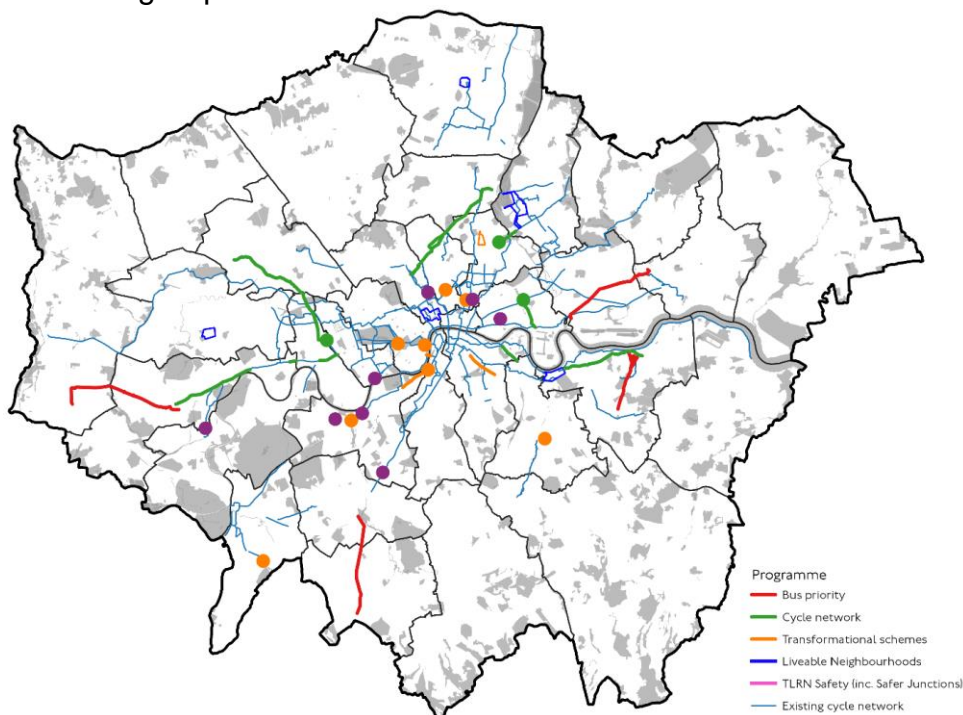
Images 7 and 8 – Commitment – 25 new pedestrian crossings by March 2024, and Battersea Bridge/Cheyne Walk Consultation started in November 2022 (three new crossings)



6 Planned Healthy Streets investment as part of this submission

6.1 If the authorities sought in this paper are granted, we will continue progress against the strategic targets set out in section 4 above. A more detailed breakdown of planned scope and deliverables is included in Appendix 1 (noting that the milestone information for 2024/25 is less accurate at this stage than for 2023/24 – and is therefore presented at a higher level).

Image 9 - Map showing some of the key TLRN projects we will be developing within the scope of this funding request



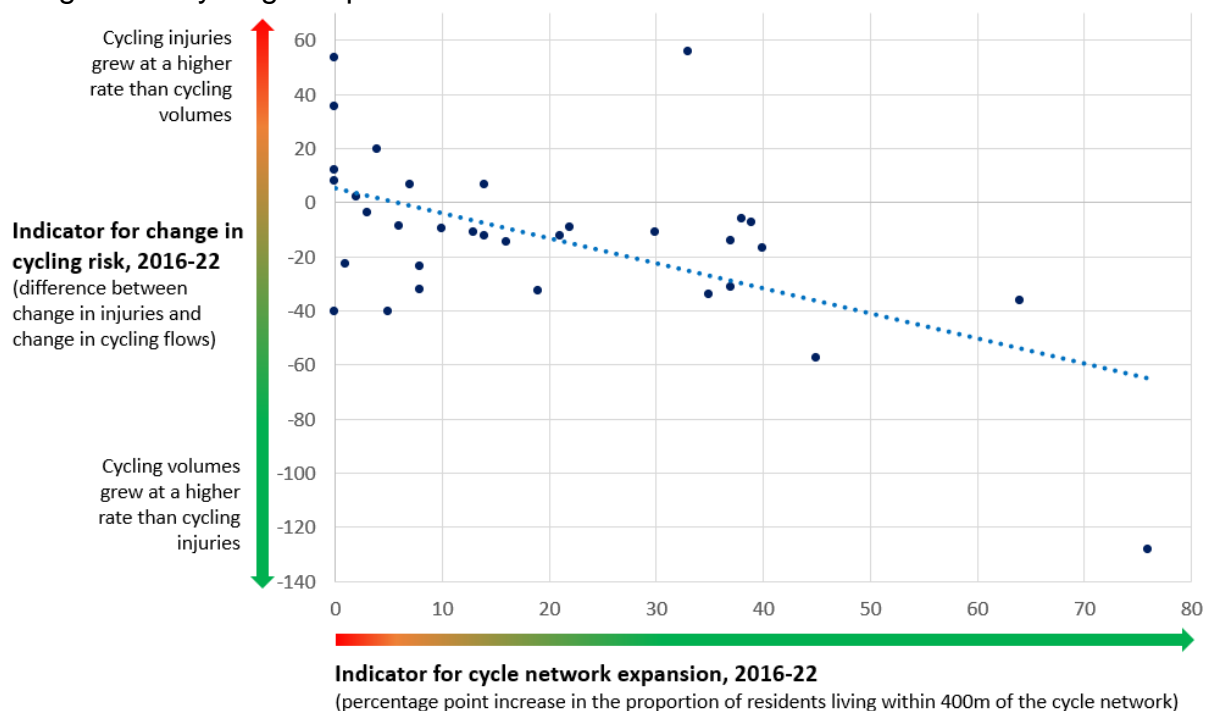
7 Key challenges, opportunities and lessons learnt

7.1 Recent benefits realisation work has demonstrated the ongoing value of the programme to the strategic outcomes set out in section 4 above. Examples include:

- (a) twenty-six months of data from the Lowering Speed Limits programme shows that post-implementation collision reductions have exceeded expectations, including a reduction in people killed or seriously injured (KSIs) of 24.9 per cent against a Greater London Authority-wide reduction in KSIs of around 16.5 per cent;
- (b) up to December 2021, Safer Junction projects delivered a 26 per cent reduction in collisions at key locations (including a 42 per cent reduction in cycling collisions and 19 per cent reduction in pedestrian collisions);
- (c) two hundred and seventy-five signal timing reviews across the bus priority programmes since April 2022 have led to savings of 6,973 cumulative passenger hours;
- (d) independent academic research has shown that there was a median 32.7 per cent reduction in motor traffic within 46 London Low Traffic Neighbourhoods following implementation with only a 1.3 per cent increase in traffic flow at the boundaries;

- (e) working with boroughs we have delivered 372 School Streets, reducing traffic on the school run: 18 per cent of parents told us they drive to school less as a result; and
- (f) comparing the indicative change in cycling risk between 2016 and 2022 to the expansion of the cycleway network, it is clear that where boroughs and TfL have invested in expanding the cycleway network, the risk of injuries for people cycling tends to reduce. Conversely, the risk increased most in boroughs with no or limited investment in the cycleway network.

Image 10 – Cycling risk profile



- 7.2 The key challenges set out in the paper to the Committee in October 2022 remain to some extent – albeit greater clarity on future funding in TfL’s Business Plan has enabled both TfL and the boroughs to plan-ahead more effectively and rebuild momentum across the Programme.
- 7.3 With longer-term funding, we have reinstated a work bank management approach to ensure we are able to spend our full budget for 2023/24. Within this Programme, external factors such as unresolvable stakeholder objections, supply-chain constraints or delays in granting work permits due to operational considerations can impede delivery of Healthy Streets outcomes – the work bank approach helps mitigate this and ensure that a range of outcomes, commensurate with the annual budget, are still achieved.
- 7.4 The supply chain is experiencing two key issues relating to project construction phases: long lead-in times for materials and inflationary pressures. For materials, early orders are being placed where possible, for items such as kerbs and lighting columns. On inflation, the schedule of rates is adjusted yearly in each framework in accordance with the contractual requirements. Each series within the contract has a different uplift using industry standard metrics and based on November 2022 data, the average of all the rates in the main framework for 2023/24 would be some

12.8 per cent. However, the cost of some materials is up to 27 per cent higher than last year leading to continuing cost pressures across the supply chain. The rates for 2023/24 will be confirmed imminently but are likely to be around 13 per cent.

- 7.5 Construction of the transformational changes at Old Street roundabout continues, with funding allocated in the Healthy Streets budget for 2023/24 to progress towards completion. A comprehensive paper covering the background and challenges at Old Street was submitted to the Committee in December 2022. The related paper on Part 2 of the agenda details the additional Programme and Project Authority required for Old Street.

8 Equality Implications

- 8.1 Section 149 of the Equality Act 2010 (the Public Sector Equality Duty) provides that, in the exercise of their functions, public authorities must have due regard to the need to:
- (a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Equality Act 2010;
 - (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it; and
 - (c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.
- 8.2 In delivering schemes, TfL will comply with the Public Sector Equality Duty and Equality Impact Assessments will be undertaken and taken meaningfully into account for Healthy Streets-delivered schemes as appropriate. In addition, TfL will comply with Section 17 of the Crime and Disorder Act 1998 and will consider how to reduce the risk of crime, including acts of terrorism, in their plans, projects and activities – for example, by exploring how to make the Canning Town interchange a safer and more welcoming environment for women and girls.
- 8.3 Where funding is allocated to boroughs for delivery, published guidance sets out requirements for projects, including highlighting boroughs' own duty to comply with the Equality Act 2010 and Section 17 of the Crime and Disorder Act 1998. These statutory responsibilities rest with the boroughs on their projects, but TfL continues to work with boroughs to share updated best practice and guidance where applicable.

9 Financial Implications

- 9.1 The latest Active Travel forecast meets the conditions of the 30 August 2022 funding agreement with government and aligns to the medium-term TfL Business plan.
- 9.2 Table 2 below provides an update for the Committee against the funding settlement period to March 2024, as well as a breakdown of forecast spend for financial year 2024/25.

Table 2 – Programme breakdown from April 2022 to March 2025

£m	Forecast				Funding Settlement
	A	B	C		A + B
	2022-23	2023-24	2024-25	Total	April 2022 to end of March 2024
Cycling infrastructure	13.1	38.2	60.8	112.1	51.3
Vision Zero projects	7.1	20.0	20.5	47.6	27.1
Walking/multi-modal projects	10.6	27.0	10.7	48.3	37.6
Transformational schemes incl. Old Street	38.4	43.4	16.9	98.6	81.8
E- Bikes	2.0	0.0	0.0	2.0	2.0
E- Scooters	1.0	1.0	0.0	2.0	2.0
CCT	1.4	2.2	0.0	3.6	3.6
Direct Vision Standard	0.5	7.1	0.0	7.6	7.6
Other Active Travel	0.1	0.6	1.5	2.2	0.7
Workbank Management	(3.0)	(28.2)	(30.5)	(61.7)	(31.2)
Gross Active Travel expenditure	71.1	111.2	79.9	262.3	182.4
Third Party Contributions	(4.7)	(17.7)	(12.5)	(34.8)	(22.3)
Active Travel expenditure	66.4	93.6	67.5	227.5	160.0
Borough funding incl. Bus Priority	65.0	73.0	75.4	213.4	138.0
Bus Priority TfL led	3.5	6.9	7.1	17.5	10.4
Green Fund	2.8	1.2	0.0	4.0	4.0
Memorial	0.7	0.0	0.0	0.7	0.7
Other	1.1	2.9	2.4	6.4	4.0
Efficiencies	0.0	(2.9)	(2.4)	(5.3)	(2.9)
	139.5	174.7	150.0	464.2	314.2
Cycle Routes GLA Grant	0.0	3.0	0.0	3.0	3.0
Cycle Parking GLA Grant	0.0	1.6	0.0	1.6	1.6
Total Net expenditure	139.5	179.3	150.0	468.8	318.8

*2024/25 includes Healthy Streets only. Other Active Travel will be submitted under separate papers post March 2024

9.3 As shown in Table 3 below, £439.5m is delivered under the Healthy Streets Programme and a further £29.3m is included under 'Other Active travel' (£468.8m in total).

Table 3 - breakdown by portfolio (Healthy Streets and Other Active Travel)

£m	Forecast				Funding Settlement
	A	B	C		A + B
	2022-23	2023-24	2024-25	Total	April 2022 to end of March 2024
Healthy Streets	127.8	161.7	150.0	439.5	289.5
Other Active Travel	11.7	17.6	0.0	29.3	29.3
Net Expenditure	139.5	179.3	150.0	468.8	318.8

- 9.4 This paper seeks authority for Healthy Streets only, as beyond the government funding period. Other Active travel is captured in papers to the Committee relevant to those programmes (for example, within the Technology and Data Programme).
- 9.5 Table 4 below provides a breakdown of expenditure for Healthy Streets. Gross expenditure (i.e. including third party contribution projects). This paper seeks the authority to continue to deliver projects with third party contributions.

Table 4 - breakdown of expenditure

	Forecast				Funding Settlement
	A	B	C		A + B
£m	2022-23	2023-24	2024-25	Total	April 2022 to end of March 2024
Gross expenditure	132.5	179.3	162.5	474.3	311.8
Third party income	(4.7)	(17.7)	(12.5)	(34.8)	(22.3)
Healthy Streets net expenditure	127.8	161.7	150.0	439.5	289.5

- 9.6 This paper seeks additional unbudgeted Financial Authority of £4.9m and Programme and Project Authority of £206m to deliver the Healthy Streets Programme (Table 5 below). The additional Financial Authority of £4.9m relates to a new contribution to Healthy Streets from the Mayor's draft budget for the increased delivery of cycle hangers (£1.6m), cycle routes (£3m), and other Healthy Streets delivery (£0.2m). Commitments for this funding will be entered into on publication of the Mayor's final budget.
- 9.7 The £206m additional Programme and Project Authority requested reflects the latest delivery plans including third party funded projects, Old Street roundabout, additional GLA funding and forecast spend in 2024/25 in line with the TfL Business Plan.

Table 5 – Gross authority requested for the Healthy Streets portfolio

Description	20/21	21/22	22/23	23/24	24/25	Total
£m						
Current Authority	155.0	108.6	125.8	181.3	162.3	733.0
This request			6.7	(2.0)	0.2	4.9
Financial Authority	155.0	108.6	132.5	179.3	162.5	737.8
Current Authority	155.0	108.6	124.8	143.4	0.0	531.8
This request			7.7	35.9	162.5	206.0
Programme and Project Authority	155.0	108.6	132.5	179.3	162.5	737.8
Increase/decrease since last meeting of the Committee	0.0	0.0	7.7	35.9	162.5	206.0

- 9.8 Procurement Authority for contracts to deliver the Programme will be sought at officer level in line with Standing Orders.

10 Assurance

- 10.1 A full assurance review is planned for late 2023, and the outcomes of this will be reported back to the Committee. A briefing was given by the Healthy Streets Programme leadership team to IIPAG and the TfL Project Assurance team on this paper. This included a discussion on recent delivery performance, impact of inflation, risks to the projects and the need to fully consider project deliverability when deciding work bank prioritisation.
- 10.2 The Project Assurance team will additionally undertake targeted assurance reviews of the key projects within the subprogramme over the next 12 months, including closely monitoring the Old Street cost pressure.

List of appendices to this report:

Appendix 1: Progress and Planned Milestones

Exempt supplementary information is included in a paper on Part 2 of the agenda.

List of background papers:

Active Travel and Bus Priority Programmes, 4 October 2022, Chair's Action Paper.

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Appendix 1 – Progress and Planned Milestones (2023/24 and 2024/25)

Table 1: summary of proposals as part of this funding submission (2023/24)		
Delivery scope:	Target	Progress
<p>Safer Streets:</p> <ul style="list-style-type: none"> Complete design and introduce a new 20mph speed limit on 140km of Transport for London Road Network (TLRN) by March 2024 Start detailed design for three-six schemes, to improve vulnerable road user safety Start construction of the Holloway Road/Drayton Park Safer Junction Commence construction of Safer Junction at York Road roundabout Construct improvements at five locations to improve the safety of vulnerable road users Complete consultation for further improvements to Battersea Bridge/Cheyne Walk Safer Junction Complete engagement for safety improvements at King's Cross gyratory and start construction in 2024 on one section Complete detailed design at Lambeth Bridge and concept design of Angel Safer Junction 	<p>March 2024</p> <p>March 2023</p> <p>December 2023</p> <p>March 2023</p> <p>March 2024</p> <p>March 2023</p> <p>April 2024</p> <p>March 2024</p>	<p>40.4km of 20mph speed limit introduced as well as 6km of TLRN with other lower speed limits. Next 28km of 20mph is in late stages of detailed design.</p> <p>Detailed design started for A4 Bath Road by Compass Centre, A205 / Lancaster Avenue and Battersea Bridge / Cheyne Walk Phase 2</p> <p>Construction slipped to March due to longer than forecast timeframes for utilities relocation</p> <p>On track to commence construction February 2023</p> <p>On track</p> <p>Public consultation closed 24 January 2023</p> <p>On track.</p> <p>On track. We expect to bring a separate paper forward on Lambeth Bridge to seek full P&PA to support the issue of the works construction order, once the final EFC is confirmed later in 2023.</p>

Table 1: summary of proposals as part of this funding submission (2023/24)		
Delivery scope:	Target	Progress
<ul style="list-style-type: none"> Start construction of pedestrian and cycling improvements at Streatham High Road and Manor Circus 	March 2024	On track
<p>Safer Cycling:</p> <ul style="list-style-type: none"> Complete construction of 0.4km of cycleways currently on site Continue design and commence construction of up to 14km of cycleways, including sections of C9 East, C23, C34, C37 and C50 Continue design of 16km of cycleways, including sections of C9 West, C4 Extension, C50 and CFR23 Implement signage on 15 remaining wayfinding-led Cycleway routes, these include C48 between Herne Hill and Brixton and C16 between Wanstead Flats and Victoria Park. Provide a further £9.8m in 2022/23 and £11m in 2023/24 to the boroughs as part of the Cycle Network Development programme to support them to continue and initiate design and build schemes. Design includes, but not limited to; Westminster Bridge Road, C51 Marylebone to Kilburn and Strawberry Vale to Twickenham Construction includes, but not limited to; C1 missing link in Enfield, Kew Road to Lion Gate and upgrades to C1 in Hackney. 	<p>October 2022</p> <p>March 2024</p> <p>March 2024</p> <p>March 2023</p> <p>March 2023 and March 2024</p>	<p>Complete, Cycleway 9 Waterman's Park has been opened</p> <p>In progress, on track to meet target. Design has continued on all of these schemes and construction is starting on four of them before the end of March 2023.</p> <p>In progress, on track to meet target. Design has continued on all of these schemes.</p> <p>In progress, on track to meet target, four have currently been delivered.</p> <p>In progress, on track to meet target. 2022/23 funding has been allocated to the Boroughs and the 2023/24 allocations will be made shortly.</p>

Table 1: summary of proposals as part of this funding submission (2023/24)		
Delivery scope:	Target	Progress
<p>Bus speeds:</p> <ul style="list-style-type: none"> • Construction complete on 10km of new bus lanes across London • Completion of 150 Bus Kit Moves, relocating Bus Priority signal infrastructure to sites where it can be used more effectively • 700 traffic signal timing reviews to enable faster bus progression at junctions • Provide £12.8m to the London boroughs as part of the LIP Bus Priority Programme to deliver bus journey time improvements and 5km of new bus lane, contributing to the 25km of new bus lane by March 2025 target. 	<p>March 2024</p> <p>March 2024</p> <p>March 2024</p> <p>March 2024</p>	<ul style="list-style-type: none"> • 2.84km of new bus lane has been delivered thus far. Delivery of 10km by March 2024 is on track, with the recent internal assessment identifying significant bus lane potential across both the borough and TfL road networks • 28 kit moves and 385 timing reviews completed, saving c.7000 bus passenger hours. • Approximately £3.4m of borough funding has been provided to boroughs to deliver bus priority schemes in 22/23, as well as providing design resource. Submissions for the 2023/24 funding are currently being discussed with boroughs, with schemes delivering new bus lane to be prioritised for funding in support of the 5km target.
<p>Future of temporary London Streetspace Programme (LSP) schemes:</p> <ul style="list-style-type: none"> • Five TfL schemes remain in place under Temporary Traffic Orders. We will conclude decision making and either implement changes and progress them under an experimental or permanent traffic order or remove the schemes. This includes decision making on the Park Lane scheme. • Six schemes are on street under an Experimental Traffic Order; monitoring and engagement activity will continue. We will consider the future of these schemes, in terms of retaining them permanently or removing them, at the appropriate point in the experimental period. 	<p>Continues to Sept 2023</p> <p>Continues to March 2024</p>	<ul style="list-style-type: none"> • Four TfL schemes remain in place under Temporary Traffic Orders, with C4 Extension – Greenwich to Charlton, having transitioned to an Experimental Traffic Order in January 2023 • Decisions are due imminently for Park Lane, CS7 Clapham to Oval, CS7 Colliers Wood to Balham, and Hampstead Road • Monitoring continues for the seven current ETO schemes, with decision making on permanence to be taken in the coming months

Table 1: summary of proposals as part of this funding submission (2023/24)		
Delivery scope:	Target	Progress
<p>Continue supporting London's long-term growth and progress design work at:</p> <ul style="list-style-type: none"> • Nine Elms sustainable transport corridor (third party funded) Complete detailed design for Nine Elms East • Tolworth roundabout – construction start • Vauxhall gyratory, Catford Town Centre and Wandsworth Town Centre major schemes – progress to next stage gate • Parliament Square Streetscape Project (TfL to contribute to the concept design stage, led by Westminster City Council). 	<p>March 2023</p> <p>March 2023</p> <p>March 2024</p> <p>Ongoing</p>	<ul style="list-style-type: none"> • Construction on track to start at Tolworth in March 2023 • Work continues to progress the schemes at Catford, Wandsworth and Vauxhall, with business cases being submitted to secure Major Road Network funding from the DfT during this delivery period.
<p>Borough funding:</p> <ul style="list-style-type: none"> • Continue to provide LIP funding for boroughs to convert temporary LSP schemes to permanent (subject to consultation where appropriate, and borough decision making), securing the benefits for active travel and health. Complete the rollout of new Low Traffic Neighbourhoods (LTN) and School Streets schemes funded via the Active Travel Fund. • Formula-led LIP funding for boroughs, to enable them to continue scheme design and delivery across circa 500 Healthy Streets schemes on borough roads. • Support Camden to continue the design of both interim works at Holborn gyratory, and the development of a Feasibility report (Gate 2) for the wider Holborn Liveable Neighbourhood project. • Restart Liveable Neighbourhood schemes in Ealing, Enfield, Greenwich and Waltham Forest. All are at differing stages of development; however the expectation is to make significant progress towards completion: 	<p>All new LTNs and School Streets schemes funded by ATF to be complete by December 2022</p> <p>Approve schemes and release funding by Dec 2022</p> <p>Holborn Feasibility report: May</p>	<p>All borough LIP funding has been released with the exception of LB Tower Hamlets, whilst we work to build understanding of their active travel proposals. A carry forward of up to £10m has been agreed with the DfT for any unspent funds, with a current forecast of £4m to be carried forward.</p> <p>LB Camden is in the process of appointing design consultants to take forward the next stage of this ambitious scheme.</p> <p>Liveable Neighbourhoods have been remobilised, and a sponsor resource recruited to oversee the forrad programme.</p>

Table 1: summary of proposals as part of this funding submission (2023/24)		
Delivery scope:	Target	Progress
<ul style="list-style-type: none"> ○ Coppermill Village (Walthamstow) – complete scheme and commence benefit monitoring ○ Holborn Gyratory (Camden) and Enfield Town Centre (Enfield) – complete Detailed Design ○ West Ealing (Ealing) – complete consultation and Concept Design ○ Greenwich Town Centre (Greenwich) – complete consultation ● Complete the delivery of Crossrail Complementary Measures (CCM) at West Drayton, Ealing Broadway, West Ealing, Southall and Acton Mainline. ● Funding for greater levels of cycle safety training. ● Restarting the cycle parking programme on borough roads. 	<p>2023. Construction of the interim project will complete in summer 2023.</p>	<p>CCM on track to complete by March 2023</p> <p>The borough cycle parking programme has been restarted, with £1m of funding provided to boroughs in 2022/23. Over 2500 cycle parking spaces are expected to be delivered this financial year.</p>
<p>High Speed 2:</p> <ul style="list-style-type: none"> ● Support the delivery of HS2 while managing the impacts and risk posed by HS2 (as a third-party programme) to ensure our interests are protected. 	<p>Ongoing support</p>	
<p>GLA Green Infrastructure Fund</p> <ul style="list-style-type: none"> ● This programme forms part of a wider Green, Healthy and Resilient Infrastructure programme led by the Greater London Authority, which will support the delivery of the Green New Deal Mission to <i>“tackle the climate and ecological emergencies and improve air quality by doubling the size of London’s green economy by 2030 to accelerate job creation for all”</i>. ● On 15 July 2022 £3m was awarded to 11 boroughs covering 18 projects. It is anticipated that the majority of funds will be allocated by end of March 2023. 	<p>The majority of TLRN delivery is planned for the first half of 2023/24.</p>	<p>Delivery is underway on both TfL and Borough-led schemes.</p>

Table 1: summary of proposals as part of this funding submission (2023/24)		
Delivery scope:	Target	Progress
<ul style="list-style-type: none"> The remaining £1m funding will be used to promote measures on the TLRN including water gardens at the Joe Strummer underpass on Edgware Road, and green infrastructure at Manor Circus in Richmond. 		

Table 2 below includes indicative scope for 2024/25 (subject to further prioritisation):

Project	Indicative milestone delivered in 2024/25
Cycling	
Cycleway 4: London Bridge to Greenwich	Design permanent upgrades on the Lower Road section which is currently being delivered in temporary materials.
Cycleway 4 Extension: Greenwich to Woolwich	Start construction of section 2 (Anchor and Hope Lane to Woolwich Ferry Roundabout). Complete consultation on section three (Woolwich Ferry Roundabout to Burrage Road). Work with the Borough to provide cycling connections through Greenwich Town Centre (linked to Liveable Neighbourhood improvements).
Cycleway 9 East: Kensington Olympia to Brentford	Continue construction of the Brentford section and start construction on the Olympia section. Deliver amendments required by the live Experimental Traffic Order consultations.
Cycleway 9 West: Brentford Town Centre to Hounslow	Complete detailed design work of this route following the second public consultation
Cycleway 23: Lea Bridge to Dalston	Continue construction of this route in phases, including completion of Lea Bridge Roundabout and start of Lea Bridge Road.
Cycleway 34: Wood Lane to Notting Hill Gate	Complete construction of section 2 (Wood Lane to Shepherds Bush) and design of section 3 (Holland Park Roundabout).
Cycleway 37: Mile End to Westferry Lane	Continue construction and design of this route in phases along Burdett Road.
Cycleway 50: Camden to Tottenham Hale	Continue design of the fourth and fifth phases of this route (between Finsbury Park and Tottenham Hale respectively)
CFR23*: Wembley to Fulham	Continue design of the route in phases
Cycle Parking	Continue delivery of new cycle parking spaces including hangers
Vision Zero	
Lambeth Bridge safety scheme – including Safer Junction	Start construction in spring 2024. Advance works for iconic palm tree removal planned winter 23/24
Lower Speeds	Introduce further mitigations on lower speed roads following initial monitoring
King's Cross Gyratory	Progress Phase 1 Safety improvements to construction; continue design and engagement on future phases
Safer Junctions	Engage and progress design on ten further projects by the end of 2024, including Knightsbridge, Tooting Town Centre and Shoreditch Triangle. Complete concept design of Angel Safer Junction.

Project	Indicative milestone delivered in 2024/25
	Complete construction of Battersea Bridge Phase 2 Safer Junction. Develop designs for Hyde Park Corner.
Bus Priority	
Complete 15km of new bus lanes, working towards March 2025 target of 25km total	Complete programme by March 2025
Sutton to Morden Corridor	Complete consultation and design of this ambitious bus priority corridor scheme by March 2025
Heathrow to Hounslow, Canning Town to Barking and Woolwich to Well Hall bus priority corridors	Commence concept design of these schemes which have the potential to deliver significant improvements for end to end bus journey times on these strategically important corridors, which will also include measures to expand the safe cycle network in these areas
Operational Hours	In support of a key Bus Action Plan commitment, continue to work with London Boroughs to increase the operational hours of existing bus lanes, including over 3.5km of bus lane in Newham
Signal timing reviews	Annualised - continue traffic signal timing reviews, delivering significant improvements at junctions for relatively low investment
Pinch point removal	Annualised - continue targeted schemes across the network that remove bus pinch points at key congestion locations
Multi-modal/pedestrian-focused	
Vauxhall Cross	Complete detailed design subject to confirmation of third party funding contributions
Nine Elms Healthy Streets corridor	Continue construction and design on different sections to align with the developers' construction phasing. This scheme is fully third party funded.
Pedestrian and road safety improvements outside a local school in East Sheen	Construction start
Pedestrian improvements along Camden High Street	Construction start
Commercial Road pedestrian and safety improvements near Watney Market, including north-south cycle route connection	Complete design and consultation
Continue green person priority programme, with progression of new sites	Target number of sites to be confirmed
London Road roundabout – new signalised pedestrian crossings on all arms of the roundabout	Complete construction

Project	Indicative milestone delivered in 2024/25
Wandsworth Town Centre	Progress project through detailed design stage and into construction, subject to securing funding from the DfT's Major Road Network (MRN) fund
Catford Town Centre	Progress project through detailed design stage and into construction, subject to securing funding from the DfT's Major Road Network (MRN) fund
A2 Old Kent Road	Progress feasibility and concept design work in order to undertake public consultation
Stoke Newington	Progress development of options for a lower cost scheme, rather than a full gyratory removal
Borough funding – through the Business Plan, we have committed a minimum of £75m for boroughs to invest in their roads	
Holborn gyratory Liveable Neighbourhood	Complete public consultation by March 2025
Enfield Town Centre Liveable Neighbourhood	Support LB Enfield to progress scheme to construction
Borough Safe Cycling	Investment for boroughs to take forward safe cycle route connections on local roads, contributing to strategic network targets
Borough Bus Priority	Borough led bus lane schemes that contribute to the 25km total by March 2025
LIP Safer Corridor and Neighbourhoods funding	To enable boroughs to continue projects set out in their 2-year LIP proposals, approved in February 2022
Healthy Streets Activation	
Cycle training	Further funding for London Boroughs to continue cycle training
Behaviour Change	Further marketing communications to bring about behaviour change, focused on road safety and active travel mode shift

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Programmes and Investment Committee



Date: 1 March 2023

Title: Technology and Data 2023/24 and 2024/25

This paper will be considered in public

1 Summary

Table 1: Summary of Technology and Data programme authorities Figures in £m outturn values for 2021/22 to 2026/27				
Latest estimated final cost (EFC)**	Previous estimated final cost (EFC)**	Authorities	Financial Authority	Programme and Project Authority
Gross cost*				
627	593	Existing	437.0	294.2
		Requested	44.9	168.7
		Total	481.9	462.9
		<i>Future Submissions</i>	145.5	164.5
Gross income				
29.4	8.3	Existing	5.3	4.0
		Requested	24.1	25.4
		Total	29.4	29.4
		<i>Future Submissions</i>	-	-
Net cost				
598.0	585.1	Total	452.5	433.5
		<i>Future Submissions</i>	145.5	164.5
*Gross cost is total TfL expenditure, including expenditure recovered from external parties and income from third-parties				
**The Estimated Final Cost includes spend outside the current business plan period				

- 1.1 We are seeking authority for the Technology and Data (T&D) Programme (the Programme) activities that are directly funded within the T&D budget. We have excluded activities where T&D is accountable for the technical strategies and delivery but where authorities are secured separately, for example in TfL Operations.
- 1.2 Our programme of works to expand pay as you go across the south east, which is funded by the Department for Transport (DfT), will be seeking authorities elsewhere on the agenda for this meeting.
- 1.3 A paper is included on Part 2 of the agenda which contains exempt supplementary information. The information is exempt by paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL and. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

2 Recommendations

2.1 The Committee is asked to note the paper and exempt supplementary information on Part 2 of the agenda and:

- (a) approve in respect of the Technology and Data Programme an increase in Programme and Project Authority of £0.4m in financial year 2023/24 (increasing the total to £103.3m) and additional Programme and Project Authority of £100.7m in financial year 2024/25 resulting in total Programme and Project Authority increase of £101m (excluding the sums requested in paragraphs (b) and (c) below;**
- (b) in addition to the sums requested in paragraph (a) above, approve an extension to the Programme and Project Authority for Project Hina, as described in this paper, providing an additional £47.7m on top of the existing £53.76m Programme and Project Authority to cover the full five years available up until financial year 2026/27 plus approve £24.9m of unbudgeted Financial Authority for FY 2026/27 which is outside of the current Business Plan period;**
- (c) in addition to the sums requested in paragraph (a) above, approve £20m unbudgeted Financial Authority and Programme and Project Authority for the Barcodes Acceptance project, as described in this paper, for financial years 2023/24 and 2024/25. This project has not been budgeted because the project is new and funds will be provided by the Department for Transport;**
- (d) in addition to the sums requested in paragraph (a) above, approve Programme and Project Authority income of £25.4m and unbudgeted Financial Authority income of £24.1m for Barcodes Acceptance project (£20m) and other project income.**
- (e) note that the matters for which Programme and Project Authority is sought above include commitments that extend beyond the period of the Business Plan and Budget noted by the Board on 7 December 2022 and provision will, therefore, need to be made for those commitments in future Business Plans and Budgets; and**
- (f) note that Procurement Authority for the various projects in the Programme described in this paper will be sought at officer level in accordance with Standing Orders.**

3 Background

3.1 This section describes what the Programme has delivered over the last 12 months, how we have addressed the ongoing challenges to delivery and how we have supported our colleagues across the business and TfL customers.

Technology and data underpin everything we do – they drive all aspects of our business.

- 3.2 The T&D team is charged with providing core IT services, operational systems, payments, contact centre and digital online services, under a single function. A significant proportion of our investment is committed to renewals, refreshing assets and infrastructure to maintain the availability, security, and quality of our services.
- 3.3 As part of our accountability, we provide the ability for customers to pay easily to travel across the city on all our services, while the underpinning technology allows us to collect the revenue from customer journeys. We provide the communication devices and network infrastructure - without which our transport network would halt - as well as providing the ability for service controllers to track their bus or train. For our staff, we provide the hardware, such as PCs, and software such as Windows 10 and SAP, which are the bare minimum for their roles. An overview of our programme structure can be found in our Technology Roadmap (T&D Technology Roadmap) which has been provided as evidence to TfL Assurance.

We have used last year's authority to deliver value to TfL and its customers.

- 3.4 Our strong track record of delivering significant benefits for TfL and its customers has been maintained throughout this year. Over the last year, we have delivered several high-value projects within our investment portfolio; these include improvements to our award-winning TfL Go App which now has over 3.1 million downloads, introducing new robust security measures to protect online payments and launching the Proteus procurement (re-tender of the Revenue Collection Contract). A detailed list of the projects delivered from within our investment portfolio has been provided as evidence.

We have delivered our projects against the backdrop of significant challenges and uncertainty.

- 3.5 Throughout the year, we have maintained our support of the business in its response and recovery following the coronavirus pandemic, despite the financial and planning uncertainty this has continued to cause:
- (a) we have prioritised revenue generation activities, including changes to the rules for Oyster card charges and changes to our concessionary scheme, supporting the business as it moves towards financial sustainability;
 - (b) we assessed and reprioritised all delivery, considering the financial constraints the business was under, to ensure that the most critical projects could still be delivered. This unfortunately meant that some deliverables were paused or deferred and as a result, there is now a level of technical debt. Essential investment is required across many systems we provide; and
 - (c) we carried out multiple deliverability reviews for our 2023/24 investment plan to assess the delivery and forecasts of various portfolios. This provided an opportunity to challenge the spend, understand where potential delays could occur and drive consistency.

3.6 To ensure that T&D is organised optimally to address future challenges and is well-aligned to the new pan-TfL organisational structure, we progressed with our operating model review, internally led and supported by Deloitte. A series of workshops have been completed, reviewing our current pain points and high-level aspirations. Alongside this, a second T&D director's position has been established. Our new Director of Information Technology is now in post.

We have also delivered value to the areas of the business outside of T&D and customers outside of TfL.

3.7 It is recommended that technology investment across TfL is consolidated and managed by T&D to ensure the highest VfM technology projects are prioritised, by using the same assessment framework to rank all pipeline activity. This approach will allow us to boost output by better employing economies of scale, whilst avoiding duplication of effort.

3.8 Although technology investment is not centralised, T&D operates as an integrated technology team because this approach has proven advantageous for effective programme delivery. Over the last 12 months, we have delivered several projects from within combined and hybrid delivery teams. For example, in partnership with BAI communications, we have increased access to high-speed 4G and 5G-ready connectivity on the underground. We also began preparatory work to deliver the expansion of contactless Pay As You Go beyond London, through the DfT's funded Project Oval. A detailed list of the projects we have delivered while operating within combined and hybrid delivery teams has been provided as evidence to TfL Assurance.

3.9 In addition to our committed deliverables, T&D supported TfL through a range of ad hoc initiatives. For example, our Payments and Data and Analytics teams have worked with the Compliance, Policing, Operations and Security (CPOS) directorate to reduce the impact of fare evasion, ensuring we are able to maximise the revenue we collect. During Operation London Bridge, T&D provided significant support to the wider business, and London, playing a key role in implementing response plans. This included changing our payments systems due to the additional Bank Holiday, providing specialist customer information through the TfL Go app and creating tailored dashboards to provide insights on travel patterns to assist operational decisions and Press Office enquires.

3.10 T&D continues to support other areas of the business with technical solutions for politically significant pieces of work. This includes leading discussions on Road User Charging (RUC)_schemes, delivering the rollout of the Surface Asset Management Information Systems (SAMIS), consolidating all London Underground (LU) asset operations onto our LU Asset management system, Metro Maximo, funded by T&D LU, investing in our Enterprise Resource Planning state, delivering benefit to TfL and the Greater London Authority (GLA) and integrating the entire Elizabeth line onto our Trackernet system.

- 3.11 We are supporting TfL's move to hybrid working, enabling many of our colleagues to work more effectively, both in our offices and at home, using the full set of technology services they need. Throughout the year, our Digital Workplace team has delivered key initiatives, including the upgrade of meeting rooms across our hub offices to improve the hybrid experience, and equipping 70 operational meeting rooms with Microsoft Teams enabled audio visual equipment. From a software perspective, the team rolled out several new tools and features, including migrating 1,400 SharePoint sites to the more collaborative and secure SharePoint Online platform. A series of training sessions on hybrid and mobile working, and accessibility, were also delivered to upskill our colleagues.
- 3.12 For the first time in several years, we ran a two-day T&D Roadshow event, offering colleagues the chance to meet in person to share developments, highlight successes, watch presentations, and attend senior leader panel discussions. Further knowledge sharing activities have taken place, including October's Cyber Security Awareness month. This saw a significant increase in completion of the Cyber Security internal training course, helping to protect colleagues, both at work and in their personal lives, from increasing cyber threats.

4 Review of Delivery During 2022/23

- 4.1 This section highlights the Programme's delivery performance over the last 12 months, provides further detail on the challenges we have faced and how we have addressed them, as well as provide an overview of the progress made against last year's management recommendations.

We have conducted detailed analysis to evaluate our delivery performance.

- 4.2 In March 2022, the Committee granted Programme and Project Authority for the current programme. For the 2022/23 financial year, the authority was £107.2m. Overall, we expect to complete the year with a gross spend of £101.7m (£96m net of income). The difference of £5.5m is due to deferrals out of the time period.
- 4.3 We have delivered at pace across all our portfolios and are currently estimated to finish the year at £96m (net of income) against a Business Plan of £98.6m.
- 4.4 Against the committed deliverables in last year's submission to the Committee, a detailed analysis of our financial and forecasting performance has been conducted. This revealed a variance of £2.3m across 200+ projects with total forecast value of £106.4m. This was achieved by employing a prudent work bank management approach across our investment portfolio. The review has been provided to TfL Assurance as evidence. Additionally, we reviewed all project-level spend and reasons for any variances to last year's expected submission values, these are detailed in the related paper on Part 2 of the agenda.
- 4.5 Through this analysis, it has been identified that much of the slippage in projects has been due to resourcing challenges. Resourcing and retention have been a key challenge for the business, leading to significant pressures on our colleagues and constraining our ability to deliver. In response, we have launched several initiatives to address this issue (Further details can be found in Section 8.1 – 8.4).

We have performed well against our strategic milestones.

- 4.6 TfL judges its performance against milestones, some of which are published externally (known as Strategic Tier 1s). These Strategic Tier 1 milestones are selected from a broader pool of 'delivery Tier 1 milestones' which are nominated by each sub programme. These are supported by precursor milestones known as Tier 2s, which indicate our progress toward the Tier 1s. We submitted eight Tier 1 and 2 strategic milestones for the TfL Scorecard this year. Despite these milestones not formally featuring on the Scorecard, we treated them as though they did and provided the same level of rigor around change control.
- 4.7 Of our Tier 1 strategic milestones, one was delivered early, and one was delivered late due to a critical defect which emerged during late-stage testing. Of our Tier 2 strategic milestones, three were delivered early and four were delivered on time (albeit two used their float). A detailed assessment of our performance against milestones [T&D Milestones setting Tech Programmes Financial Year (FY) 2022/23] has been provided as evidence.

We have responded proactively to last year's management recommendations.

- 4.8 Following last year's submission, we closed out six of the eight management recommendations. The outstanding recommendations, from TfL Assurance and the Independent Investment Programme Advisory Group (IIPAG), are both focused on improving the consistent use of our project management tool, known as the T&D Project Management (TPM) tool, and its integration with Power BI to provide better, more timely management information.
- 4.9 To close these linked actions, we planned to invest in the system to improve its usability, however the investment prioritisation process resulted in the proposed project being stopped. In lieu of a capital project, the Project Controls Team (PCT) and volunteers have continued to improve the system. Based on these improvements we have tasked our senior managers with having their teams populate TPM and then use the data. To achieve this, we have built an objective into the team's Performance and Development objectives to more consistently use TPM.
- 4.10 The benefits are now being seen through the data provided on the dashboards being of higher quality and more complete, better highlighting areas of project performance which require management attention. We will continue to drive usage and update the Assurance team on progress against the recommendations.

5 Delivering value for money (VfM)

- 5.1 This section provides examples of some of the initiatives we have undertaken to ensure our investment portfolio delivers VfM.
- 5.2 We have continued to simplify and consolidate our services and core infrastructure. Operating cost has dropped from £362m in 2015/16 to £234m in 2020/21 to £232m in 2021/22, an overall reduction of 36 per cent. We continue to

drive savings in other areas of the organisation through targeted investment, better processes and use of technology.

- 5.3 We are in the process of developing Power BI tools to help streamline our annual business planning activity by automating periodic project and programme tracking as well as supporting programme level reporting. This will allow for effective performance tracking and give decision makers access to management information that will support tactical resource prioritisation for the projects that will deliver the most value to TfL.
- 5.4 We have conducted benchmarking analysis across various parts of the directorate to ensure that our spending is similar or more efficient than comparable organisations. For example, we conducted early market and Gartner engagement to determine the best approach for the upgrade of the Enforcement Compliance and Operating System used by CPOS Operational Officers to reduce risks from crime, protect revenue and improve behaviours on the network. After in-depth 'Make vs Buy' analysis, it was determined that it would be quicker, lower risk and more cost effective for an internal project team led by the Technology Development team to build the new solution.
- 5.5 T&D also employs benchmarking analysis to achieve savings with existing suppliers. For example, In December 2022, our hosting portfolio achieved a saving of around £100k by negotiating a more efficient Professional Services day rate from the winning bidder in a contract to replace our End-of-Life Data Centre Management tool. We have also conducted early analysis using benchmarking data from Gartner to negotiate favourable terms for our data centre leases.
- 5.6 Our business cases state why a particular initiative is worth delivering, outlining VfM by comparing benefits and disbenefits with the project cost. This year, T&D kicked off a workstream to improve the number of T&D projects that have a business case. We worked with the Investment Appraisal team to trial the launch of two 'lighter touch' business cases for lower value/risk projects. Alongside this, we provided a range of virtual training and drop-in sessions for employees across T&D, in addition to T&D-specific written guidance on business case development.
- 5.7 All T&D funded projects within our sub programme are required to have a business case baselined at a Gate 2 Review, where projects have defined their delivery approach. Through local business case assurance and working with the Investment Appraisal team, since our last submission we have progressed from having 31 per cent of projects with a business case, to 66 per cent. This improvement should be considered in the context of our programme's rapid growth, where we have had 61 new projects initiated since April 2022. A sharper increase would have been seen had our sub programme remained static. There remains a drive to improve our overall figure and we measure our progress on our local scorecard with the Senior Management team each period.
- 5.8 In addition, to the business case production and monitoring, we provide robust assurance on all our projects. This starts with a three phased initiation process where a wide range of stakeholders check that each initiative is feasible, sensible and aligns to our roadmaps and technologies. Where VfM is not evidenced sufficiently, submitters are asked to only return when they are able to provide a level of assurance that satisfy the panel of stakeholders. Once initiated, each

project is subject to periodic health checks and formalised change control for decision-making to ensure VfM is being achieved on all our projects.

- 5.9 In November 2022, T&D successfully accelerated the initiation of the LU Station Wi-Fi infrastructure refresh project to assist TfL budget underspend, bringing forward a £4.64m spend to exploit an opportunity for TfL to secure priority purchase and delivery of 2,500 of Cisco's latest Wireless Access Point devices. Installed in 2012 to support wireless connectivity for our customers during the Olympics, our LU Station Wi-Fi infrastructure has grown in its use and application, becoming critical in providing access to operational staff, enabling connectivity for our train condition monitoring, and generating revenue for TfL through the commercialisation of its generated data. The acceleration of this initiative will mitigate the extended delivery times and probable cost increases resulting from the global semi-conductor shortage.
- 5.10 Since the last submission to the Committee, we completed three Project Assurance Reviews (PARs), one PAR is currently underway and two further PARs are planned to be completed by the end of March 2023. Across the projects that have completed PARs, there are 24 open recommendations, which are not overdue, and 33 recommendations have been completed since the last sub-programme review.

6 Strategic case for new authority

- 6.1 Our Technology Roadmap outlines our contribution to the goals set out in the Mayors Transport Strategy (MTS) and TfL's strategic priorities; it outlines the delivery of technology that will ensure safe and reliable journeys whilst making our transport network more attractive to customers.
- 6.2 The Technology Roadmap provides a summary of the projects underway within T&D and demonstrates how both our customers and colleagues will benefit from the products and services we provide. We have developed personas to demonstrate how our technologies can improve customer journeys for a wide range of customer experiences, as well as personas to distinguish between the unique roles and needs of our colleagues.
- 6.3 Our Technology Roadmap includes T&D's five strategic objectives:
- (a) **future-proof TfL's customer experience** – Promoting the adoption of TfL's digital services, ensuring that our customers have an excellent experience when they plan, pay and travel through our transport network;
 - (b) **maximise revenue and reduce operating costs** – maximising the value from IT investment and minimising the cost of collecting revenue to support TfL to meet its financial targets, by making savings and generating income where appropriate;
 - (c) **enable a mobile digital workforce** – with the rise of hybrid working, we will ensure that TfL staff have the technology, training and support required to do their jobs at the front line, in head offices and from home. We will also focus on improving the digital maturity of our entire workforce;

- (d) **strengthen our cyber defences** – we are driving significant improvements in cyber defence across TfL to meet known threats, regulatory requirements, and public sector cyber security strategy. We will also be refreshing, and delivering, the cyber security improvement roadmap; and
- (e) **use sustainable technology to reduce harmful emissions** – we are reducing the environmental impact of TfL’s technologies, in response to the Mayor’s ambition for London to be carbon neutral by 2030. Our Technology roadmap will also support the MTS goal to ensure 80 per cent of trips in the capital are made using sustainable transport.

6.4 Beneath the Technology Roadmap sit our portfolio strategies which are refreshed annually. These documents describe how we invest in technology, set out the day-to-day provision of technology, and guide our ways of working.

How we contribute to TfL’s Vision and Values

6.5 TfL’s Vision and Values together with our five roadmaps effectively form TfL’s internal business strategy, focused on how we set ourselves up and act as an organisation. The T&D Technology Roadmap demonstrates how, between 2022/23 and 2024/25, T&D will be delivering against our TfL roadmap, and in turn, supporting the Mayor of London’s plans to create a fairer, greener, healthier, and more prosperous city as set out in the MTS.

7 What we will deliver with the requested authority

7.1 With the authority sought for financial years 2023/24 and 2024/25, if approved, T&D will continue to deliver high-value outcomes that will benefit both our colleagues and our customers, including:

- (a) we will continue to make updates to the SAP estate across TfL. For example, SAP Ariba, our new supplier, and contract management system will be deployed, providing c.5,000 users with one common platform and dataset for Procurement and Commercial and improving the way purchases are executed. As well as the technology, this will introduce a clear management framework with improved ways of working, policies and procedures;
- (b) we will transform our people processes and technology to deliver a great experience for all our colleagues by replacing our Core HR system with MyJourney (SuccessFactors Phase 2). This will involve updating multiple aging IT applications (many of which are heavily customised and have no / limited support arrangements in place);
- (c) we will be updating Our Desktop Experience, providing a simplified, consistent, people-focused experience – optimised for hybrid working. This new platform will support continuous, iterative and rapid change, minimising business disruption and reducing the support/administration resource requirements for delivery and maintenance;
- (d) we will deliver a range of upgrades to our TfL Go app. These will include the integration of live bus updates and routes, Oyster and contactless payments

and National Rail departures. This will make it even easier for members of the public to plan, make and pay for their journeys; and

- (e) we will achieve a significant reduction in operational revenue collection costs by delivering a smooth transition to the future Revenue Collection Contract.
- 7.2 The Hina Project will re-develop our Card Reader hardware and software and replace the existing assets across our transport network. The Hina Reader (developed by Cubic) will be deployed on the Rail estate once transition to the next contract is completed. It will also be designed and installed on Buses, in readiness for the upgrades planned in the iBus2 project. Extension of Programme and Project Authority will enable us to place the contract with Cubic.
- 7.3 The Barcode Acceptance project will enable customers with barcode tickets (based on an established industry specification) to enter, exit and interchange at approximately 40 TfL stations in the future where National Rail services call. This would be achieved by presenting their barcode ticket to clearly identifiable barcode enabled infrastructure. The project is currently in the early stages, but funds (£20m) are being provided by the DfT via an agreement with Railway Delivery Group.
- 7.4 T&D will also support the delivery of externally funded projects, operating as part of an integrated technology delivery team:
- (a) we will upgrade to the T&D surface-funded Surface Intelligent Transport System (SITS), introducing an integrated suite of new systems and tools to transform TfL's ability to understand and manage operations on the network. Harnessing new sources of data to prioritise sustainable travel and reduce network disruptions. This will enable TfL to respond quicker to unplanned incidents, reduce delays, but also allow customers and stakeholders to make informed and timely travel decisions. Above all, this will help TfL to ensure all those that work and travel on the network are safe;
 - (b) as part of TCP, we will deliver full LU 4G and 5G-ready coverage for customers of all four major mobile network operators, delivering significant ongoing revenues for TfL. The mobile network will also host the new Emergency Services Network – this will give first responders immediate access to life-saving data, images and information in live situations and emergencies on the frontline;
 - (c) we will refresh Wi-Fi Connectivity at LU Stations and Depots, future-proofing against potential 5G data constraints, which is split funded between T&D and LU. This will improve the productivity of our operational staff by providing more reliable connectivity while enabling the ability to dynamically control assets. In addition to the continuing replacement of legacy assets, this will facilitate more machine-to-machine communication, potentially resulting in more efficient asset usage; and
 - (d) we will complete the T&D Surface-funded SAMIS rollout to support new surface technology contracts and complete the consolidation of LU asset management systems into Metro Maximo (funded by T&D LU). This activity

will realise significant cost savings by eliminating the need to maintain and upgrade multiple asset management systems.

8 Risks

8.1 This section outlines the key risks T&D continues to face while delivering against our investment portfolio, and the steps we have taken to mitigate those risks.

We have launched several initiatives to improve attraction and retention of key resources

8.2 During our deliverability reviews, resourcing (for TfL and for our supply chain) was the biggest risk to delivery and accurate forecasting for the remainder of the year. It has been difficult to recruit and retain professionals with sufficient skills across the technology sector. We also faced a loss of knowledge through the retirement of subject matter experts and churn of employees. As a result of the additional pressures on remaining colleagues, morale has been negatively impacted and we are at risk of exhausting goodwill.

8.3 In June, we launched a Key Roles Allowance to help us attract and retain professionals with critical skills such as Solution Architects, Technical Leads and Cloud Infrastructure Engineers. Since the allowance was introduced, we have seen an increase in 82 additional headcounts, this can be partially attributed to the allowance with some notable success in attracting and retaining Senior Developers, although 59 per cent of this increase was Non-Permanent Labour (NPL). We have also stemmed the flow of leavers in this space, we expect this trend to continue and that we start to see more attraction success across other roles.

8.4 In October, T&D funded a media plan to advertise and promote some of our roles key to investment portfolio delivery, this involved posting our vacancies on specialist jobsites, use of LinkedIn and Social Media channels. We saw an increase in applications from candidates and although it may be too soon to understand where this approach has resulted in successful hires, we would expect to see some increases as a result of this media plan. Going forward we will continue to explore using funded media plans and a more targeted headhunting style approach for roles we continue to struggle to fill.

8.5 For RUC and Project Oval vacancies, we now have the additional option of using the Crown Commercial Services (CCS) framework. For RUC, we have already recruited one team and two individuals.

All T&D projects are prioritised to ensure we can respond quickly to unforeseen financial or delivery challenges.

8.6 Over the last few years, TfL has been in a challenging financial position. As a result, T&D has deferred non-essential spend in order to help the business meet its financial targets. Much of the spend in T&D is focussed on supporting essential business functions, including collecting revenue and keeping our systems running, as well as upgrading systems and processes to be compliant with legislation (e.g. General Data Protection Regulation). Due to historical deferral of

planned investment, T&D is now in a position where all Programme spend is considered essential.

- 8.7 Last year we asked all our portfolios to prioritise their projects from most to least critical. This provided a forced ranking which was then used to develop a narrative explaining the profile of risk that would occur should reductions to the T&D budget be made. This year we will continue to request that all T&D projects are prioritised using our scoring rubric to ensure we can respond quickly should there be any unforeseen challenges to the delivery of our critical programmes. A copy of the scoring rubric can be found in Appendix 2.

We have conducted analysis to assess our technical debt

- 8.8 Due to the funding uncertainty in recent years, T&D reduced costs by sweating assets beyond expected End of Life. As a result, asset refresh has become critical to avoiding ongoing degradation and failure. To address this, we have completed a 'Technology State of Health' assessment (provided as evidence to TfL Assurance) to help us prioritise the replacement of assets. We will continue to develop this analysis to provide robust justification for our asset renewal strategy.

We continue to look for acceleration opportunities to mitigate against supply chain shortages

- 8.9 The global shortage in semi-conductors is having a significant impact on the electronics industry's ability to service demand. We continue to see supply chain challenges and long lead times for core infrastructure. Where possible we will accelerate hardware procurement activity to mitigate against these lead times and the impact of inflation.

9 Authorities sought

- 9.1 A summary of the T&D Business Plan and Investment Programme from FY 2021/22 to FY 2026/27 is shown in Figure 1, and summary of breakdown of total Programme and Project Authority by portfolio in Figure 2.
- 9.2 Authority granted by the Committee which relates to both the current funding period to 2023/24 and commitments outside of this period, may need to be revised as part of future budgets to be considered by the Board. Provision will also need to be made in future Budgets and Business Plans in respect of commitments made which extend beyond the period of the current Business Plan and Budget. If additional funding is not available, a prioritisation of the TfL Investment Programme will be required, and some programmes and projects will not be taken forward and revised authority will be sought as appropriate. All financial commitments related to this request will be overseen in accordance with TfL Business controls in respect of draw down.
- 9.3 Ongoing investment prioritisation exercises taking place across TfL, mean the figures and projects included in the Programme are subject to change.
- 9.4 This submission presents the case for the overall T&D Investment Programme. This authority table covers project spend of £239.4m and an estimated income of £22.8m totalling £262.2m of authority requested for financial years 2023/24 and

2024/25. The Programme will return annually to the Committee to renew and validate a rolling two-year approval. This ensures that approvals are aligned to financial years to complement the nature of this Programme.

10 Assurance

- 10.1 TfL Project Assurance conducted a Programme Assurance Review on the Programme on 9 and 10 January 2023.
- 10.2 Through the Programme Assurance Review, and IIPAG's report, 11 issues and recommendations were made. We responded to these on 27 January 2023, and we have started working on the actions outlined in our Management Response.

Figure 1: Summary of the T&D Investment Programme Costs and Funding

Portfolio		Business Plan Year							Total
Rounded to £m		21/22	22/23	23/24	24/25	25/26	26/27		
Cost	Base Gross Draft Forecast values	(E)	74.1	101.7	148.6	137.0	110.3	133.7	705.4
	Management adjustment to account for schedule optimism		0.0	0.0	(19.9)	(26.3)	(16.5)	(15.3)	(77.9)
	Investment Programme Total Gross	(A)	74.1	101.7	128.7	110.7	93.8	118.4	627.4
Funding	Financial Authority	(B)	74.1	106.7	121.9	112.1	116.3	-	531.1
Authority	Existing Project Authority	(C)	85.1	107.2	102.9	-	-	-	295.2
	Transfers	(D)	(1.0)	-	-	-	-	-	(1.0)
	Project Authority less Transfers	= C + D	84.1	107.2	102.9	-	-	-	294.2
	This Project Authority request	= A - C (G)	(10.0)	(5.4)	25.8	110.7	22.7	24.9	168.7
	Future Project Authority request	= A - C					71.1	93.5	164.5
Income	Investment Programme Income	(E)	1.4	5.3	11.8	11.0	-	-	29.4
Income	Financial Authority Income	(F)	1.4	4.2	0.2	0.2	(0.7)	-	5.3

- (A) Gross Costs net of the management adjustment for overprogramming
- (B) Financial Authority is based on the Business Plan up until FY25/26
- (C) Based on the last PIC Paper that was approved in March 2022
- (D) iBus2 project transferred to Surface in FY21/22
- (E) Income value which requires Programme & Project Authority plus Financial Authority
- (F) Financial Authority Income is based on the Business Plan up until FY25/26
- (G) This project authority request for FY25/26 and FY26/27 is for the Hina project only

Figure 2: Summary of breakdown of Total Programme and Project Authority by T&D funded portfolios

Portfolio / Product Family	Estimated Final Cost (£k) (Note 1)			Valid Existing Authority (£k) (Note 2)			Additional Proposed Authority (£k) (Note 3)		
	2023/24	2024/25	2025/26 to 2026/27	2023/24 (incl prior year carryover)	2024/25	2025/26 to 2026/27	2023/24	2024/25	2025/26 to 2026/27
Payments	41,001	38,269	47,683	57,512	-	-	(16,511)	38,269	47,683
Payments - CUBIC Performance Assurance Fund	10,883	8,255		3,358	-	-	7,525	8,255	-
Networks	12,805	9,102		(1,384)	-	-	14,189	9,102	-
Hosting	10,733	14,816		10,921	-	-	(188)	14,816	-
Cyber Security (CSIRT)	6,797	10,144		17,359	-	-	10,562	10,144	-
Enterprise Resource Programme (ERP)	17,269	15,797		4,894	-	-	12,376	15,797	-
Digital Workplace	7,642	6,206		13,652	-	-	(6,011)	6,206	-
T&D LU	3,702	3,728		14,779	-	-	(11,077)	3,728	-
Digital	4,521	5,220		5,957	-	-	(1,437)	5,220	-
Data & Analytics	3,566	3,612		6,561	-	-	(2,995)	3,612	-
T&D Surface	2,334	6,503		3,715	-	-	(1,381)	6,503	-
Technical Service Operation (TSO)	3,341	1,308		1,026	-	-	2,315	1,308	-
Contact Centre Operations (CCO)	1,011	1,435		949	-	-	61	1,435	-
Telecoms	-	0		(69)	-	-	69	0	-
Telecoms Commercialisation	6,061	0		(1,855)	-	-	7,916	0	-
Barcodes Acceptance	10,000	10,000		-	-	-	10,000	10,000	-
Other Tech & Data (inc Tech Dev & Indexation)	3,675	2,578		18,820	-	-	(15,145)	2,578	-
Management adjustment	(14,495)	(26,320)		(35,695)	-	-	21,201	(26,320)	0
Total Authority Required	130,846	110,653	47,683	120,500	-	-	10,346	110,653	47,683

Note 1 - Estimated Final Cost for FY23/24 & FY24/25 are based on the Period 10 financials. Financial Years 25/26 to 27/28 just include values for Project Hina

Note 2 - Includes

- £102.9m authority for FY23/24 approved by the Committee in March 2022
- £17.6m of additional authority required from prior years carried over into FY23/24

Note 3 - Additional Proposed Authority requested for FY23/24 to FY27/28, Additional Authority for FY25/26 to FY27/28 is just for Project Hina

Note 4 – the fund is a mechanism in the Revenue Collection Contract which allows Cubic to draw-down on funds for refreshing life expired or obsolete components of the Revenue Collection system

List of appendices to this report:

Appendix 1: Technology and Data (T&D) Programme Summaries Financial Year 2022/23

Appendix 2: T&D Project Prioritisation Scoring Rubric

A paper containing exempt supplemental information is included on Part 2 of the agenda.

List of Background Papers:

Independent Investment Programme Advisory Group Report (TBC)

TfL Project Assurance Report (TBC)

Management Response to IIPAG and TfL Project Assurance Reports (TBC)

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Appendix 1: Technology and Data Programme summaries Financial Year 2022/23

Programme	Summary
Programme 1 – Technology Service Operations	Technology Service Operations (TSO) is responsible for the day-to-day provision of IT systems and services that enable TfL to deliver its required business services cost effectively: Service Performance, Customer Experience, People, Compliance, Efficiencies and Lifecycle Management. The TSO Programme exists to enable these responsibilities to continue to be met, with projects to maintain our IT services, develop our IT service management systems, manage changes in IT service-sourcing solutions, and implement licence compliance solutions and tactical IT infrastructure changes.
Programme – Surface	The programme covers the delivery of technology projects aligned to TfL’s Operations business area (previously ‘Surface’) business plan. This programme predominantly contains management of some £65m funded projects under the ‘Surface Technology’ portfolio sponsorship, including Compliance and Enforcement, Network Management and Bus Systems. It delivers renewals and changes to the technology applications, systems, platforms, and services that are utilised to manage the road network, public and private transport systems, safety, enforcement, compliance and licensing.
Programme 3 – Networks	The Networks programme delivers projects to reduce the total cost of ownership of data network and telecommunications services which underpin our technology infrastructure. Projects include the refresh of the core network infrastructure in our Data Centres, the consolidation of multiple Surface Data Networks into the Access Network and Wide Area Network contract and upgrading the Wi-Fi across the London Underground (LU) estate. Working in partnership with the Telecoms Commercialisation concessionaire, we are rolling out 4G mobile connectivity across LU.
Programme 4 – Enterprise Resource Planning	Enterprise Resource Planning incorporates the processes we use to conduct our ‘back office’ activities. We will invest to retain and re-platform the existing system (mostly SAP) to support the ongoing improvement of our HR, Finance and Supply Chain business processes by delivering a more efficient supply chain capability to Commercial; standardise how Finance plan, budget, forecast and report financial information across the business; provide greater access to user friendly HR technology for our people. We will exploit Cloud technology to enable this.
Programme 5 – London Underground and Rail	The LU and Rail programme of technology projects is aligned to the LU business plan and current Rail for London Infrastructure plan. Examples are the Asset Management Information Systems, Station Security Technology Integration Programme, Safe Track Access and TrackerNet projects. The majority of the

	initiatives are LU and Safety, Health and Environment (SHE) funded, despite being delivered by T&D.
Programme 6 – Major Rail Extensions and Installations	The programme delivers projects to install and/or change Fares and Ticketing devices and associated equipment across TfL and Train Operating Companies sites e.g. Gate lines, Ticket Vending Machines and Oyster readers. This is in support of new builds, modifications and expansions of Oyster and Contactless ticketing. The programme is also responsible for the delivery of Voice and Data projects across TfL.
Programme 7 – End User Computing and Content and Collaboration (Digital Workplace)	End User Computing and Content and Collaboration delivers projects to ensure that all TfL workers and contractors have access to Digital Workplace products and services that are a good fit for their roles, easy to use, affordable for TfL, and drive effective performance. The programme ensures TfL staff are upskilled in adopting digital technologies, enabling them to be mobile and more productive, leading to an increase in the use of virtual meetings and hybrid working, driving more efficient building utilisation.
Programme 8 – Payments and Ticketing	Payments and Ticketing deliver a secure and compliant ticketing system, a better customer proposition and reduced revenue collection costs. The programme maintains and upgrades revenue collection assets to assure their service performance to minimise revenue loss for TfL. This helps to maintain a high system availability necessary for reliable collection of revenue.
Programme 9 – Road User Charging	Road User Charging (RUC) supports the delivery of initiatives which involve the RUC systems and schemes in London. These initiatives range from schemes to improve air quality, improve safety standards on heavy goods vehicles and encouraging cleaner modes of transport. Our products include maintaining and building the relevant TfL websites, building back-office systems and seeking new and more efficient ways to improve services to our customers while delivering on the Mayor’s Transport Strategy. Most of the initiatives in this programme are business funded but delivered by T&D.
Programme 10 – Hosting	Hosting is how we organise, process, store and disseminate large amounts of data and the platforms that underpin them (data storage and compute). We aim to provide a flexible, scalable, and agile hosting model that allows us to adapt to changing business needs to deliver a cost efficient, adaptable and secure hosting environment that keeps your data protected and TfL applications available with on-demand scalability.
Programme 11 – Data and Analytics	The Data and Analytics Team collect, manage, and deploy data to drive evidence-based decision making to drive operational performance, support future planning, and provide our customers with data services and information while complying with data regulations. The programme delivers projects that maintain, renew and modernise data platforms across TfL funded by T&D, Surface, LU, SHE and Commercial Media.

<p>Programme 12 – Contact Centre Operations</p>	<p>Contact Centre Operations (CCO) provides services for TfL Customers via their Lost Property Office, Visitor Centres, in-house contact centre teams and out-sourced service providers. This involves managing customer contacts and complaints relating to ticketing and travel on TfL’s network via telephony, correspondence, and social media platforms. The CCO programme aims to reduce the ongoing cost of operation including by the utilisation of technology, while maintaining the current service level.</p>
<p>Programme 13 – Digital</p>	<p>The Digital programme leads on product strategy, experience design and delivery across TfL’s websites, applications and digital screens, collaborating directly with the customer to deliver digital services for the travelling public and businesses. The programme supports this delivery, focusing on the TfL external website and mobile app, TfL Go, and projects to maintain/renew contracts required for TfL's digital customer services.</p>
<p>Programme 14 – Cyber Security</p>	<p>Cyber Security delivers or enhance controls, including technical solutions and services, to directly support cyber risk management within T&D. The programme also delivers or enhances elements of our pan-TfL cyber security programme, including our policy framework and assurance and reporting capability, to coordinate and support the management of cyber security risk pan-TfL.</p>
<p>Programme 15 – Accommodation</p>	<p>The Accommodation programme ensures that all employee and third party movement around the TfL estate has IT provisioned (client hardware and telephony) for our staff to work in TfL office buildings. This includes supporting decommissioning of buildings, departmental moves, and new buildings.</p>

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Impact Scales								
Score	Frequency/ probability	Generic impact scale	Safety & Security	Service	Customer & Staff	Environment	Finance	Legal Compliance
		Aligned to terminology in TfL Enterprise Risk Management Framework: A project will be categorised based on it's HIGHEST scoring criteria	We will manage our assets so that they are safe to use and maintain. Customer and staff safety, security and managing safety defects	Assets that directly support the movement of customers are able to perform their function to the required level of reliability.	Assets contribute positively to the customer and staff experience and encourage the use of public transport and healthy forms of travel.	We will minimise the impact of our assets on the environment and adapt our assets to cope with the impacts of climate change	Assets are managed cost effectively, they support income generation and revenue collection (incl. com dev), and help reduce whole life costs.	
0		No Impact	No impact	No impact	No impact	No impact	No impact	No impact
1	Less than once in 20 year probability	Very Low	Insignificant health issues and/or injuries OR Insignificant security breaches and exposures OR Safety effecting defects well controlled and managed	Excellent service/network performance and very high reliability with insignificant delays caused by asset condition/performance AND/OR Maintenance and renewal activities are carried out under pro-actively planned closures that minimise network impacts	Insignificant asset failure, e.g. not very noticeable and impacting a small number of customers/staff. There is a risk of an adverse local media report. OR Asset Base at or above the required State of Good Repair (e.g. health, condition, performance, age etc.)	Insignificant localised environmental impact	<£1m annual impact on revenue OR <£1m annual impact on additional OpEx cost OR <£1m annual impact on additional maintenance costs.	Low-level non-compliance against legal requirement or duty.
2	Less than once in 5 year probability	Low	Minor health issues and/or injuries OR Minor security breaches and exposures OR Majority of safety effecting defects are well controlled and managed	Good service/network performance and high reliability with minor delays caused by asset condition/performance AND/OR Most maintenance and renewal activities are carried out under pro-actively planned closures; minor disruption due to reactive closures	Minor asset failure, e.g. noticeable and impacting a small number of customers/staff. There is a risk of localised public and/or stakeholder concern. OR Asset Base meets the required State of Good Repair (e.g. health, condition, performance, age etc.)	Minor localised / short term environmental impact with potential for regulatory intervention	£1m - £5m impact on revenue OR £1m - £5m impact on additional OpEx costs OR £1m - £5m impact on additional maintenance costs	Although no improvement to our firewall management only Minor non-compliance risk against legal requirement or duty.
3	Between once in 2 and 5 year probability	Medium	Moderate health issues and/or major injuries OR Moderate security breaches and exposures OR Some safety effecting defects are not fully controlled and managed	Fair service/network performance and acceptable reliability with moderate delays caused by asset condition/performance AND/OR Maintenance and renewal activities are a mix of pro-actively and re-actively planned closures leading to moderate disruption	Moderate asset failure, e.g. noticeable, causing annoyance, impacting a large number of customers/staff. There is a risk of significant local media campaign. National media interest creating public concern. Negative national statements. OR Asset Base slightly below the required State of Good Repair (e.g. health, condition, performance, age etc.)	Moderate environmental impact leading to potential regulatory action	£5m - £10m impact on revenue OR £5m - £10m impact on additional OpEx costs OR £5m - £10m impact on additional maintenance costs	Major non compliance against legal requirement or duty and subject to comment from regulator.
4	1 to 2 events per year	High	Significant health issues and/or single fatality OR Significant security breach or exposure OR Significant number of safety effecting defects not fully controlled and managed	Poor service/network performance and low reliability with significant delays caused by asset condition/performance AND/OR Higher proportion of maintenance and renewal are reactively planned compared to pro-actively planned; leading to higher levels of disruption	Significant asset failure, e.g. unavoidable, negative transport experience and impacting a large number of customers/staff. There is a risk of extensive prolonged adverse reactions from media, public and/or key stakeholders. OR Asset Base significantly below the required State of Good Repair (e.g. health, condition, performance, age etc.)	Significant long-term/ large scale environmental impact leading to adverse regulatory outcome	£10m - £50m impact on revenue OR £10m - £50m impact on additional OpEx costs OR £10m - £50m impact on additional maintenance costs	Significant breach of legal requirement or duty resulting in enforcement action or prohibition notices.
5	Multiple events per year	Very High	Life changing/multiple health issues and/or multiple fatalities OR Major and/or significant multiple security breaches or exposures OR High numbers of safety effecting defects that are not fully controlled or managed	Very poor asset performance and a very low reliability with major delays caused by asset failure. OR Maintenance and renewal activities are primarily reactively planned leading to high levels of network disruption	Major asset failure, e.g. very negative travel experience and impacting a large number of customers/staff. There is risk of extensive widespread negative reporting or public disputes with key customers or stakeholders. OR Asset Base severely below the required State of Good Repair (e.g. health, condition, performance, age etc.)	Major long-term/ large scale environmental impact	>£50m impact on revenue OR >£50m impact on additional OpEx costs OR >£50m impact on additional maintenance costs	Substantial breach of legal requirement or duty resulting in prosecution.

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Programmes and Investment Committee



Date Issued: 1 March 2023

Item: Expanding Pay As You Go on Rail in the South East

This paper will be considered in public

1 Summary

- 1.1 This paper sets out the request for unbudgeted Financial Authority and Programme and Project Authority required to expand Pay As You Go (PAYG) on Rail in the South East. All content reflects the latest known information at this stage of the project. Funding is currently agreed for the current scope but as the project evolves there may be a requirement to seek approval for currently unfunded scope changes.
- 1.2 The project was previously presented to the Committee by Chair's Action in February 2022.
- 1.3 This project is an initiative of the Department for Transport (DfT) to expand the acceptance of contactless PAYG to suburban rail services across south east England,
- 1.4 A paper is included on Part 2 of the agenda which contains exempt supplementary information. The information is exempt by paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL and contractors. Any discussion of that exempt information must take place after the press and public have been excluded from this meeting.

2 Recommendations

- 2.1 **The Committee is asked to note the paper and exempt supplementary information on Part 2 of the agenda and:**
 - (a) **approve unbudgeted Financial Authority for the receipt and expenditure of grant funding from the Department for Transport of up to £68.67m for the remainder of financial year 2022/2023 and financial years 2023/24 to 2024/25;**
 - (b) **approve Programme and Project Authority of £68.67m for remainder of financial year 2022/23 and financial years 2023/24 and 2024/25; and**
 - (c) **note that Procurement Authority will be sought at officer level in accordance with Standing Orders.**

3 Background

- 3.1 In February 2019, the DfT undertook a public consultation on expanding PAYG on rail outside London. Upon request from the DfT, Transport for London (TfL) submitted Rough Order of Magnitude costs and an outline customer proposition for the project, covering the acceptance of PAYG using contactless payment cards as well as enabling concessions and discounts to be supported. These deliverables were submitted to DfT in August 2019.
- 3.2 Following publication of the Williams-Shapps Plan for Rail in May 2021, the DfT settled on an expanded geography that will see around 233 stations upgraded to accept contactless payments. The contactless payment system will need to seamlessly integrate with the existing TfL/Train Operating Companies' (TOCs') Contactless area to allow customers to travel to and from London using a single tap in and tap out with their payment card. The project requires a technical solution that can be deployed and integrated successfully within the existing operating environment to achieve the DfT's required objectives.
- 3.3 The DfT has selected TfL as its preferred partner to implement the project. TfL will deliver the required PAYG solution, subcontracting the provision of on-station validation equipment to Cubic Transportation Systems Limited (Cubic), a provider of PAYG services to TfL under the existing Revenue Collection Contract. TfL has named this project, Project Oval.
- 3.4 Funding for the project was granted by HM Treasury as part of the Comprehensive Spending Review (CSR) in October 2021. DfT subsequently published a Voluntary Transparency Notice (VTN) informing the market of its intention to grant funding to TfL for the delivery of the project. The VTN was published on 10 December 2021 and expired at midnight on 10 January 2022.
- 3.5 Following the allocation of funding in the CSR and the completion of the VTN process, DfT has requested that TfL commence the project. The initial 52 stations are to be completed by December 2023 and a date is still to be agreed for the remaining 181 stations.
- 3.6 As the project is externally funded, it sits outside the Technology and Data budget. It was excluded from the 2022 Business Plan and therefore was excluded from the Budget approved by the Board in December 2022 due to ongoing uncertainty about the DfT's commitment to proceeding. This has now been resolved.
- 3.7 Approval was granted to recruit the additional roles required to deliver the project in January 2022.

4 Scope

- 4.1 TfL's delivery of the project is split into two distinct deliverables. The funding granted in the CSR in October 2021 covers Phase 1 of Deliverable 1.

- 4.2 Deliverable 1 (D1) is the geographical expansion of full-fare, adult PAYG travel using “open loop” (issued by financial institutions) contactless payment cards and mobile devices across the South East, fully integrated with TfL’s existing scheme.
- 4.3 Deliverable 2 (D2) is further development of the D1 functionality to provide discounted PAYG travel for National Rail concessionary customers.
- 4.4 As a result of the Chancellor’s Autumn Statement, the DfT is currently reviewing the funding commitments for Phase 2 of Deliverable 1 and Deliverable 2. Both of these are expected to proceed and the DfT will aim to provide clarification of funding over the coming months.
- 4.5 Any expansion or development of TfL’s existing Oyster system is out of scope, however, acceptance of ITSO smartcards that are otherwise mandated by the DfT is required at those stations with the expanded PAYG area.

5 Risks

- 5.1 The key risks for the project, which will be closely managed and mitigated, are set out in the related paper on Part 2 of the agenda.

6 TfL and DfT Agreements

- 6.1 Expansion of PAYG across the South East will be entirely funded by DfT.
- 6.2 A Memorandum of Understanding (MOU) and two Initial Grant Funding Agreements (GFA) were put in place to cover the initial £12m provided to TfL to mobilise on the project.
- 6.3 A Main Works Agreement (MWA) is currently being finalised between TfL and the DfT. The MWA sets out the funding model, milestones, and key principles of delivery for the remainder of the project.
- 6.4 Further GFA(s) will be agreed to cover the remainder of the project. This is expected to be finalised in the first quarter of 2023. Further additional funding will then be paid to TfL at agreed intervals in advance of spend throughout the remainder of the project. The sums to be paid will be in line with TfL latest forecast.
- 6.5 Further agreements with DfT and relevant train operators, similar to the PAYG and Contactless Pay As You Go agreement arrangements, will also need to be put in place prior to the go live planned for the end of 2023. DfT has instructed the TOCs via the Rail Delivery Group to lead on this.

7 Delivery Programme

- 7.1 The current programme splits delivery of the 233 stations into two phases:
- (a) initial phase – 52 stations; and
 - (b) main phase – 181 stations.
- 7.2 Following the Chancellor's Autumn Statement, both DfT and TfL are aiming to complete all of the initial 52 stations by December 2023.
- 7.3 The 52 stations have been selected as an early deliverable due to validation equipment already being installed at the stations and the existing fares structure. While both will require some enhancement for PAYG services to commence, the work required to expand contactless acceptance is similar in scope and complexity to a number of previous PAYG extensions that TfL has successfully completed at locations including Epsom, Luton Airport Parkway, and as part of the Elizabeth line readiness, at Reading.
- 7.4 A delivery date for the main phase stations will be agreed with DfT once funding is confirmed. Prior to confirmation of full funding by the DfT, any preparatory work for this phase will only proceed if agreed with and underwritten by the DfT.
- 7.5 The rollout schedule for the stations included in the main phase of the project will be discussed and agreed between the DfT, TfL, Cubic and the TOCs as the project progresses.
- 7.6 TfL's Pathway methodology is being followed for the project.
- 7.7 It is anticipated TfL will sign the MWA which sets out the grant funding for the remainder of the project by April 2023.
- 7.8 Under the terms of the MWA, the DfT will make several grant payments to TfL. The grant payments will be made to TfL in advance of spend so that, at no time throughout the remainder of the project, will TfL be required to utilise any of its own funds for the project.
- 7.9 TfL will be cost neutral in the delivery of Project Oval. This applies to both capital expenditure and operating costs. All operating costs will be recovered through service charges paid to the TOCs. The DfT has agreed to this key principle, which is clearly stated in the MWA.

8 Assurance

- 8.1 Project Assurance conducted an interim Project Assurance Review in November and December 2022.
- 8.2 Through the Project Assurance Review, and IIPAG's report, seven issues and recommendations were made.
- 8.3 We responded to these on 22 December 2022, and we have started

working on the actions outlined in our Management Response.

List of appendices to this report:

Exempt supplemental information is included in a paper on Part 2 of the agenda.

List of Background Papers

Chair's Action paper, issued 28 February 2022, Expanding Pay As You Go on Rail in the South East

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Programmes and Investment Committee



Date: 1 March 2023

Item: Members' Suggestions for Future Discussion Items

This paper will be considered in public

1 Summary

- 1.1 This paper presents the current forward plan for the Committee and explains how this is put together. Members are invited to suggest additional future discussion items for the forward plan. Members are also invited to suggest items for future informal briefings.

2 Recommendation

- 2.1 **The Committee is asked to note the forward plan and is invited to raise any suggestions for future discussion items for the forward plan and for informal briefings.**

3 Forward Plan Development

- 3.1 The Board and its Committees and Panels have forward plans. The content of the plan arises from a number of sources:
- (a) Standing items for each meeting: Minutes; Matters Arising and Actions List; and any regular quarterly or periodic reports. For this Committee, this is the quarterly Investment Programme Report.
 - (b) Programmes and Projects at a level requiring Committee approval. These include the annual review of the sub-programmes in the Investment Programme and other approvals sought following advice from the operating businesses.
 - (c) Items requested by Members: The Deputy Chair of TfL and the Chair of this Committee will regularly review the forward plan and may suggest items. Other items will arise out of actions from previous meetings (including meetings of the Board or other Committees and Panels) and any issues suggested under this agenda item.

4 Current Plan

- 4.1 The current plan is attached as Appendix 1. Like all plans, it is a snapshot in time and items may be added, removed or deferred to a later date.

List of appendices to this report:

Appendix 1: Programmes and Investment Committee Forward Plan 2022/23

List of Background Papers:

None

Contact Officer: Howard Carter, General Counsel

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Programmes and Investment Committee Forward Plan 2022/23

Membership: Ben Story (Chair), Dr Nelson Ogunshakin OBE (Vice Chair), Seb Dance, Dr Lynn Sloman MBE, Peter Strachan and Cllr Kieron Williams

Government Special Representative: Becky Wood

Abbreviations: CCO (Chief Capital Officer), CCSO (Chief Customer and Strategy Officer), CFO (Chief Finance Officer), COO (Chief Operating Officer), D IDP (Director Investment Delivery Planning)

Standing Items		
Use of Delegated Authority	General Counsel	Standing item
Quarterly Investment Programme Report	CCO and D IDP	To note high-level progress updates of the Investment Programme and Major Project items and any specific approvals required in relation to programmes not on the deep-dive list for that meeting.
Independent Investment Programme Advisory Group Quarterly Report	General Counsel	Standing item
TfL Project Assurance	General Counsel	Standing item
Regular programme annual reviews		

17 May 2023		
Silvertown Tunnel Annual review	CCO	Annual review
Major Project Lessons Learnt	CCO	Addressing an action request
Surface Assets Portfolio Annual Update	CCO and D IDP	Annual Update
Briefing on the Step Free Access Programme	D IDP	Briefing

19 July 2023

LU Technology and Surface Technology
Programmes

CCO and D IDP

Items to be scheduled/regular items:

- London Overground future planning
- Rotherhithe Tunnel
- Fiveways Corner in Croydon
- Lessons Learnt from Complex Projects with Commercial Issues (CCO)
- Silvertown Tunnel Update (CCO)
- Enterprise Risk Update - Delivery of key projects and programmes (ER8) (CCO)
- London Underground Technology and Service Technology Programme (Summer 2023)
- Draft Replacement tram strategy for CR4000
- London Underground Train Systems /London Underground Major Stations

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