

Date: 20 July 2022

Title: Surface Technology Programme 2022/23

This paper will be considered in public

1 Summary

Existing Financial Authority (2022/23 to 2023/24)	Existing Programme and Project Authority 2022/23 and future years	Additional Authority Requested	Total Authority	Prior Years (2021/22)	Forecast 2022/23 to 2027/28	Total Forecast (2021-22 – 2027/28)
£123.2m	£138.9m	£15.2m	£154.1m	£30.6m	£358.1	£388.7

Table 1 Summary of Programme and Project Authority

- 1.1 This paper updates the Committee on the progress of the Surface Technology Programme (the Programme). Table 1 shows that £15.2m additional Programme and Project Authority (P&PA) is requested.
- 1.2 The Programme consists of renewals projects required to ensure operations within Surface Transport retain the technology capabilities to operate safely and efficiently. It also contains a small number of enhancements projects which support this aim within the Managed Decline scenario. Projects are within three key focus areas: Roads Technology, Compliance, Enforcement and Safety (CES) Technology, and Public Transport (PT) Technology.
- 1.3 The focus of this paper is to:
- (a) provide an update on the Programme’s activity since the previous submission to the Committee in October 2021, proposed transfer of scope into and out of the Programme, and an overview of planned investment in 2022/23; and
 - (b) request £15.2m of additional Programme and Project Authority for the Programme, to cover delivery in 2022/23 and commitments in future years.
- 1.4 Financial Authority is currently provided through the two-year Budget for 2022/23 and 2023/24, approved by the Board in March 2022. The current funding agreement with Government expires on 13 July 2022. Any Authority granted which relates to both the current funding period and commitments that extend beyond the period of the Business Plan and Budget may need to be revised as part of future budgets to be considered by the Board.

- 1.5 If additional funding is not available, a prioritisation of the TfL Investment Programme will be required, some programmes and projects will not be taken forward and revised authority will be sought as appropriate. All approvals given will be overseen in accordance with TfL Business controls in respect of draw down.
- 1.6 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 the meeting.

2 Recommendations

- 2.1 **The Committee is asked to note the paper and exempt supplemental information in the paper on Part 2 of the agenda, and:**
- (a) **approve £15.2m Programme and Project Authority for the Surface Technology Programme, taking cumulative authority to £154.1m;**
 - (b) **approve transfer of the Innovation Fund out of the Programme into operating expenditure, which has no impact on the Programme's Programme and Project Authority;**
 - (c) **note that the matters for which Authorities are sought above include commitments that extend beyond the period of the 2022/23 Budget and provision will, therefore, need to be made for those commitments in future Budgets; and**
 - (d) **note that Procurement Authority for the various initiatives will be sought at officer level in accordance with Standing Orders.**

3 Background

- 3.1 The Mayor's Transport Strategy (MTS) sets out a vision that TfL "will work to ensure its information systems and payment platforms take account of technological advances and evolve to remain fit for purpose". (Proposal 102). TfL's response to the MTS sets six priorities, including: "to exploit technology to produce better and faster results".
- 3.2 The Programme provides a holistic overview of operational technology projects being delivered for Surface Transport. Historically, levels of investment in technology across Surface Transport were insufficient to keep pace with developments in technology, or to avoid technical debt across silo-based systems. The Programme provides a robust structure to support increased levels of investment in technology in the coming years which enable many pillars of the MTS including Healthy Streets, Vision Zero and enhancing customer experience.

Asset Strategy – Maintaining assets in a State of Good Repair

- 3.3 Figure 1 below demonstrates the improvements that investment is making to the health of technology systems within Surface Transport. The health of the Surface Technology estate depends on technology systems and their components being

supported (resource is available to fix issues as they arise to agreed service levels) and within contract where supplied externally.

3.4 Each system’s state of health is assessed yearly, and scored as follows:

- (a) **‘Green’** where all components are supported, and an agreed technology roadmap is in place. Optimum state of health, where systems should spend most of their serviceable life;
- (b) **‘Amber’** where one or more component is out of support/contract. Sub-optimal state of health, tolerable for systems approaching the end of their serviceable life; and
- (c) **‘Red’** where systems are exposed to technical risks and/or most components are out of support/contract. Intolerable at any point of system life cycle for those which are critical for safety / operations / legal compliance, tolerable only towards end of life for less critical systems.

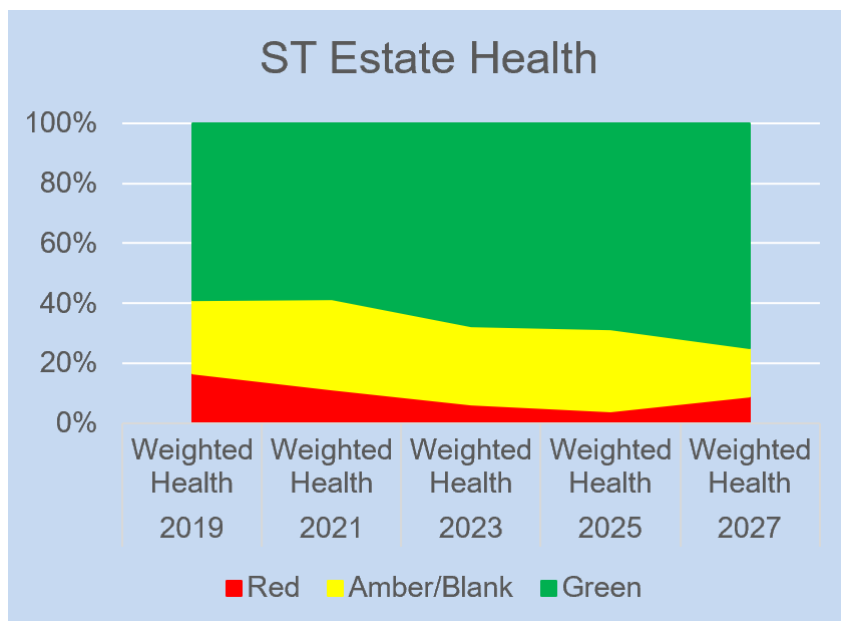


Figure 1: Indicative health of Surface Technology estate – Managed Decline scenario

3.5 The technological health of each system used in Surface is assessed and tracked over time. Because the importance of each system to TfL outcomes varies, a weighting is given based on its criticality, size and complexity. The overall technological health score is the total of the weighted scores as a percentage of what the total would be if all systems were assessed as Green. Overall technological health is expected to increase from 73 per cent in 2019 to 84 per cent by 2027, with an 18 per cent increase in those systems assessed as Green (to 61 per cent). This improvement is required to ensure TfL’s exposure to risk of system failure remains limited to systems which are not critical for safety, operations, and/or legal compliance.

3.6 If levels of investment are not sustained, systems risk remaining in a poor state of health. This has already exposed TfL to intolerable risks, some of which have already materialised in outages to critical systems. While work to include and address these in critical systems receives the highest priority for funding, there will remain operational risks until this work is delivered. For example, the system

used to maintain communication between the Network Management Control Centre and bus drivers. While these outages in this example have remained short-term and recoverable without significant impact to bus passengers, the system's poor health gives no guarantee that a longer duration outage, impacting passengers, will not occur before the system is renewed in August 2022.

- 3.7 Current levels of investment ensure systems now within the Surface Technology portfolio will be sufficient to avoid significant risks to safety, operations, and/or legal compliance, in line with the Managed Decline scenario previously described to the Committee. Lower, or slower investment than planned would increase TfL's exposure to failure of systems which are needed to secure these outcomes, within a short timescale. While it is difficult to quantify time until system failure with any certainty, risk of legal non-compliance (from e.g. failure to procure replacement contracts prior to existing contract expiry) could be expected to arise within a period of months of any reductions to available funding.
- 3.8 The Managed Decline scenario in which the Programme is currently operating funds only the very few enhancements required to secure legal compliance or future financial sustainability. Any additional funding would significantly improve outcomes from enhancements projects which are currently paused, in key areas like reducing delay for road users, particularly people who want to walk and cycle. While not required to maintain existing safety levels, additional funding would also improve Work-related Violence and Aggression (WVA) reporting and case management to better support colleagues who unfortunately do experience WVA, and ensure colleagues who are not at the highest risk of WVA have access to personal safety devices like body worn video cameras.

4 Programme Delivery 2021/2022

- 4.1 The Programme consists of over 50 renewals projects and 16 enhancements projects, of which nine have been paused due to funding constraints. Projects fall within the following categories: Roads Technology; CES Technology, and Public Transport Technology. Appendix 1 sets out scope and key activities for key deliverables in each area.

Financial Performance 2021/22

- 4.2 The coronavirus pandemic and the resulting impact upon TfL's finances had a significant impact upon programme delivery, particularly in 2021/22, with supply chain issues, material shortages and internal resource constraints all contributing to delays on several projects. For this programme, projects were actively paused in line with the Managed Decline scenario which also reduced spend. In early 2022, the Programme was re-prioritised to meet only Managed Decline outcomes in light of the current funding deal. Funding is no longer held for projects which are not essential to maintain current levels of safety, operational continuity or financial sustainability, including improvements to operational staff safety (for example, improved WVA reporting and case management), SITS Predictive and Data Analytics, Bus Station Security, the Assisted Transport Strategy Roadmap and Cycle Hire Expansion.

- 4.3 The approved Programme and Project Authority in 2021/22 was £48.1m; the Programme delivered an outturn of £30.6m. Key causes of underspend were slower supplier spend, delay to securing needed resources, more time than forecast required to complete feasibility stages, and deferral of projects not in the Managed Decline scenario. Table 2 below describes the 2021/22 performance for this Programme in detail.
- 4.4 In addition, resource constraints have caused mobilisation delays and backlogs. While in some cases, re-programming of activities has sometimes ensured that critical path activities (such as replacement of life-expired systems / contracts) can proceed with no increase to overall estimated final cost (EFC), this has deferred delivery of some benefits where these are not on the critical path. Securing the necessary resources remains a key risk, as detailed in section 6.2 below. Projects will be re-prioritised in-year if shortages become more acute.
- 4.5 Programme maturity and optimism bias also contributed to underspend, with an improvement programme including enhanced first-line assurance and training on risk including profiling risk budget. A review of the drivers for underspend concluded that the majority of early-stage projects tend to over-estimate how quickly Feasibility activities could be completed, contributing to underspend. While this delays delivery, it ensures benefits are protected by allowing sufficient time to define scope to the required quality. This contributed to exceeding the 2021/22 efficiency target of 5 per cent (£2m), with £2.6m efficiency savings delivered in-year. High-quality scope definition allowed clarity of scope with suppliers and fewer unforeseen changes.
- 4.6 To better reflect maturity, a workbank management approach has been applied to this programme. A larger volume of projects are started in the early lifecycle phase to maximise delivery and programme outputs.

Table 2: Performance update across key focus areas

	21/22 Forecast Spend (£m)	21/22 Full Year Spend (£m)	Variance (£m)	Performance Update
Roads Tech	15.6	10.2	-5.4	<p>Delay to delivery of SITS Common Operational View Incident Management System (COV-IMS) (£2.2m slippage). Delivery extended from spring 2022 to spring 2023. Slower supplier spend owing to additional development time required to complete baseline scope (budgeted within requirements). Minimum viable product still on track for delivery prior to decommissioning of existing system; delay to benefits.</p> <p>More time than forecast required to complete feasibility stages for projects including Network Information Systems (£1.8m slippage). Additional time ensures scope definition is of required quality, protecting benefits.</p>
CES Tech	14.4	6.2	-8.2	<p>Delay to securing needed resources on projects including Enforcement & Compliance Operations System (ECOS) (£4.4m slippage; delivery schedule adjusted to maintain critical path for delivery by May 2023), Operational Staff Safety (£1.2m slippage; delivery of enhancements benefits delayed), and Surface Technology Video Solution (£1.4m slippage).</p>

				Deferral of projects not in Managed Decline, including Compliance, Policing, Operations and Security (CPOS) Enhanced Data (£1.5m deferral). As projects are currently paused, delivery of benefits is uncertain.
PT Tech	22.8	14.1	-8.7	<p>Slower supplier-spend than predicted on projects including Cycle Hire Modernisation (£3.3m slippage)</p> <p>More time than forecast required to complete feasibility stages for projects including Bus Station Connectivity (£1.7m slippage). Additional time ensures scope definition is of required quality, protecting benefits.</p> <p>Deferral of contract award on Emirates Air Line Passenger Communication Systems due to concern over quality of delivery proposed by supplier (£1.8m) has delayed delivery but protected benefits.</p> <p>Deferral of projects not in Managed Decline, including Cycle Hire Expansion (£1.1m) and Pan-TfL Bookings. As projects are currently paused, delivery of benefits is uncertain.</p>
Efficiencies	-2.0	-2.6	+0.6	More efficiencies delivered than expected, due to lower supplier costs and reduced risk exposure for Deployable Enforcement Cameras (DEC) (£1.2m), lower supplier costs than estimated for the London Driver Information System (LDIS) upgrade (£0.4m) and lower spend than anticipated on unforeseen changes required to the Surface Technology estate (£0.7m).

Surface Technology Programme Key Achievements

- 4.7 Following a review of the Programme by the Committee in October 2021, projects have achieved key milestones supporting our benefits including:

Table 3: Key achievements

(a) 50 Deployable Enforcement Cameras (DECs) were deployed across our road network from December 2021 to May 2022, following the successful trial in 2020. These cameras will improve driver compliance, supporting road safety by avoiding an estimated three collisions in which someone is killed or seriously injured per year, and reducing congestion. We are now commencing the next stage which will assess costs and benefits of delivering of up to 350 more cameras.

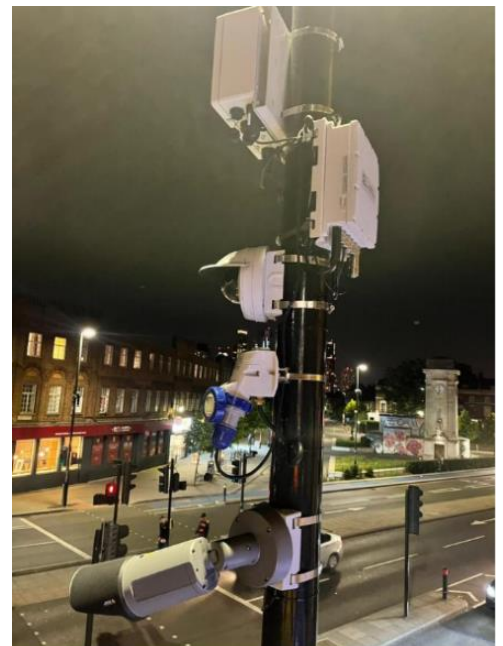


Figure 2: Deployable Enforcement Camera on the A24 at Stockwell

(b) In December 2021, the fourth release of the SITS Common Operational View – Incident Management System (COV-IMS) was deployed. This is already allowing our Network Management Control Centre to respond more quickly to unplanned incidents on London’s roads. The new system improves situational awareness and response, with this release making it easier to work with partners including highways management contractors to detect and respond to incidents. Faster incident detection and more coordinated response reduces delays and increases capacity on the road network, and in turn improves journey times. Once the system is fully delivered by the end of 2023, traffic incident detection time should improve from an average of 11 minutes to almost instantaneous, and response time should improve from an average of 15 minutes to five minutes.

The overarching Business Case for the SITS Programme was also reviewed this year. The benefit : cost ratio has improved from 3.3:1 to 4.8:1, to ensure baseline time taken to respond to incidents includes time required to take effective action. Previously, this had used time taken to, for example, view incidents on CCTV.

.1 We launched a 12-month trial of e-scooter rental services in June 2021 as part of the Department for Transport national trials, which has recently been extended until November 2022.

In collaboration with London Councils and ten participating London Boroughs, the trial is providing the opportunity to collect data on this transport mode, all while providing a sustainable and socially distanced travel option. Safety is at the heart of TfL’s e-scooter trial, with standards which go beyond the national standards, including a speed limit of 12.5mph, larger wheels and lights that are always on throughout any rental.

The UK Government has announced its intentions to legalise and regulate e-scooters in the future, and the trial findings will help to inform future legislative standards.



Figure 3: E-Scooters

Changes to the Surface Technology Programme since the last submission to the Committee (October 2021)

4.8 This request seeks approval to transfer the Innovation Fund out of the Programme, into the Innovation Directorate’s Operational Expenditure budget. This fund was established to explore innovative solutions to key strategic issues; and has already explored uses for data to understand near misses for vulnerable road users, women’s safety and energy usage in depots. This transfer reflects the pre-project, research and development-based nature of the work. As there were no commitments beyond 2021/22 included in previous authority requests, this transfer does not alter existing authority.

4.9 Table 4 below sets out the history of the forecast spend across focus areas since the previous submission.

Table 4: Forecast spend history

	This paper Forecast cost 2021/22 - 2025/26 (£m)	October 2021 Forecast cost 2021/22 - 2025/26 (£m)	Change (£m)	Rationale
Roads Technology	96.6	97.8	-1.2	Removal of projects not funded in Managed Decline (Surface COV), slippage on others (e.g., Network and Information Systems, Remote Monitoring)
Compliance, Enforcement and Safety Technology	80.8	84.7	-3.9	Scope reduction – removal of scope duplicated elsewhere or not yet instructed (e.g. Revenue Inspection Devices). Removal of enhancements not funded in Managed Decline, or where benefits are limited.
Public Transport Technology	228.5	261.1	-32.6	Removal of projects not funded in Managed Decline, including Assisted Transport Services (ATS) Roadmap and Digital Signs. Slippage of iBus2 contract award and re-profile to reflect expected spend to completion in 2026/27
Overprogramming / Efficiencies	-16.1	-26.7	10.58	Covers current financial year only. Lower Overprogramming / Efficiencies were applied last October (Q3) as this was later in the financial year.
Total	389.7	424.4	-34.7	

5 Investment Plan 2022/23 – 2023/24

5.1 As detailed in section 3, projects have been categorised based on the criticality of the asset and impact of failure as follows:

Option assessment

5.2 Several strategic options have been considered at the TfL level and are set out below. Due to funding constraints, we are working to Managed Decline:

- (a) **Managed Decline (Do Minimum – 30 per cent)** (this is the planned level of investment): The Managed Decline scenario reflects the £600m GLA budget for capital renewals in 2022/23 across TfL. While it is sufficient to renew systems required for safety or compliance and ensures renewals budgets meet TfL’s minimum legal obligations for timely contract re-let under procurement regulations, performance of less critical systems will deteriorate, compromising efficiency across operational areas. Enhancements which would significantly improve benefits and value for money of renewals expenditure are also paused.

- (b) **Do Minimum:** Maintains a basic level of service at minimum cost to maintain safety and operability. This option represents an absolute lower bound level of investment to hold level of state of good repair. This option will likely result in significant peaks in investment as some assets become unmaintainable through operating expenditure interventions and will require significant capital investment to keep assets safe and operable.
- (c) **Moderate:** Aligns with the 2020 TfL Business Plan with amendments to account for coronavirus pandemic impacts on delivery in 2020/21. This can support the key themes of the MTS, however, at a slower rate and to a lower level of customer experience than the 'High Ambition' option.
- (d) **High Ambition:** This scenario aims to deliver the ambitions of the MTS. It prioritises walking, cycling and public transport. Areas of focus include supporting Vision Zero, and carbon reduction.

5.3 Given the high risks presented by the 'Managed Decline' scenario, TfL have implemented a prioritisation of work process consistent across Portfolios to deliver the best possible outcomes from limited funding. Projects have been categorised based on the criticality of the asset and impact of failure as follows:

- (a) "In-scope" projects aligns to the budget available and is the highest priority; and
- (b) "Additional In-scope" represents additional scope that is higher priority and provides additional flexibility in-year should additional funding become available from Government or other programmes and to reflect delivery risks. This is reflected in the P&PA requested in this paper.

5.4 Periodic reviews will be used to assess the level of delivery achieved, risks, and whether additional commitments can be made through change control. This approach gives maximum flexibility to target funds to deliverable priorities.

Key Surface Technology Programme deliverables in 2022/23

5.5 Key deliverables planned during 2022/23 include:

- (a) releasing the Invitation to Submit Final Tender (ISFT) for iBus2 procurement, in winter 2022/23. This back-office system is vital to ensure buses continue to operate effectively in London, as it is fundamental to bus scheduling, providing real time information to customers, and ensuring performance-related payments to bus operating companies (around £2bn per year) are accurate. Refreshing it gives an opportunity to improve bus passenger experience with targeted enhancements, including real-time information when a bus cannot follow its normal route and linking virtually to traffic lights at more junctions to help buses travel more quickly, prioritising sustainable transport;
- (b) launching 500 assisted peddling electric bikes (e-bikes) into the Santander Cycles fleet in summer 2022, offer more flexibility for customers and support future financial sustainability. The rollout of e-bikes and new tariff is supported by the transition to a new, modern back-office system, which will

make it easier for customers to hire bikes via the Santander Cycles app or using a QR code; and



Figure 4: The new Santander Cycles e-bike

- (c) renewal of systems which provide CPOS colleagues with the tools to deliver enforcement and compliance across London, including a mobile app which officers use to ensure taxis are operating safely, in line with TfL and national standards. This app will work with the new Taxi Operating Licence Application software that is to be introduced by December 2022.

Financial Plan 2022/23

- 5.6 The Programme will return to the Committee in March 2023 to validate a rolling two-year approval which will be for 2023/24 and 2024/25. £42.7m of the £154.1m Programme and Project Authority sought would fund activities planned for 2022/23, compared to the £44.5m budget for this year.
- 5.7 While uncertainty over longer-term funding remains, approval for £80.8m for future financial years is sought, to cover existing or planned commitments before the Programme returns to the Committee in March 2023. Of this £80.8m, £46.5m is attributable to commitments in 2023/24, and a further £34.3m to committed spend in future years, predominantly for systems in Roads Technology including the Surface Intelligent Transport System (SITS) programme. Further details on commitments are included are shown in Appendix 1.
- 5.8 This extends beyond the period of the Business Plan and Budget. Appropriate provision will, therefore, need to be made for those commitments in future Business Plans and Budgets.
- 5.9 The funding request for 2022/23 includes a five per cent efficiency target (£2.4m), to encourage savings and drive towards value for money. Opportunities to deliver savings include reduced risk exposure through careful risk management, close management of scope and requirements, and working with suppliers to deliver projects more efficiently.

Table 5: Phased and Project breakdown (all figures in £m outturn values)

Costs and Funding (£m)	21/22	Current year22/23	yr+1 23/24	yr+2 24/25	yr+3 25/26	yr+4 26/27	yr+5 27/28	Total all years
Financial Authority	34.9	44.5	78.7					158.1
Existing Authority	48.1	68.6	15.7	3.6	2.1	1.0		138.9
Previous Committee Submission - £138.9m	48.1	68.6	15.7	3.6	2.1	1.0		138.9
Current Submission - £154.1m	30.6	42.7	46.5	28.4	4.4	1.0	0.5	154.1
This Authority Request	- 17.4	- 25.9	30.9	24.8	2.3	0.0	0.5	15.2
Roads Technology	- 5.4	- 3.7	11.0	10.5	1.8	-	0.5	14.7
Compliance, Enforcement and Safety Technology	- 7.0	- 13.8	16.5	10.8	-	-	-	6.4
Public Transport Technology	- 8.6	7.7	3.4	3.6	0.5	-	-	6.5
22/23 Forecast management overlay	3.1	- 13.8	-	-	-	-	-	- 10.6
2022/23 Forecast – Efficiency	0.5	- 2.4	-	-	-	-	-	- 1.9
Total Programme and Project Authority	30.6	42.7	46.5	28.4	4.4	1.0	0.5	154.1
Future Authority Requests	-	-	29.3	45.3	48.9	52.4	58.8	234.7
Total EFC (Gross) - P3 Forecast	30.6	42.7	75.8	73.7	53.3	53.4	59.3	388.7

6 Delivery Plan

6.1 The Programme has four Scorecard milestones for 2022/23 which are shown in Table 6 below:

Table 6: Scorecard milestones

Project	Milestones	Achievement Criteria	Target Date	Forecast Date
Cycle Hire	Launch of e-bikes for hire	500 E-bikes available for hire	31-Aug-22	18-Jul-22
ECOS	Complete the development of the TPH Compliance App	ECOS system running fully integrated with new TPH Taxi and Private Hire Operational Licensing Administration system and business processes in live environments and in the field	15-Dec-22	03-Nov-22
iBus2	ISFT Released	Publication of the ISFT to bidders	27-Feb-23	16-Jan-23
DEC	86 Deployable Enforcement Cameras installed	Installation of 36 additional deployable enforcement cameras across London's road network	29-Mar-23	15-Feb-23

6.2 Securing the necessary resources remains a key risk. As referenced in the Technology and Data (T&D) submission to the Committee titled 'Technology-and-Data 22/23 and 23/24' in March 2022, all technology projects rely on key technical resources for which there are ongoing challenges in retention and recruitment. The interventions detailed in that paper to the Committee are ongoing, and the projects within the Surface Technology Programme have fed clear and detailed resource forecasts into T&D's overall delivery planning.

6.3 There are further risks to delivery and project costs owing to market volatility and inflation, with a potential for an ongoing impact to operational costs following energy price increases. Where possible, we are working with suppliers to understand items with long lead times as early as possible and are reviewing risk allocation for future spend where inflation could impact cost. Significant increases in supplier, supply chain or raw materials costs, along with uncertainty over funding availability for longer-term capital investment, could result in further deferral of projects, compromising key capabilities for Surface Transport operational areas.

7 Programme Benefits

7.1 The Programme contributes to the following strategic benefits:

Table 7: Programme Benefits

Programme Benefit	Description	MTS benefit
Safe continuation of services	Ensuring that the IT supporting the Surface element of TfL's services continues to operate safely and consistently, compliant with legislation. All renewals projects contribute significantly.	Quality Public Transport, Safe, Efficient Road Network
Reduced casualties (Vision Zero)	Contribute to the safer operation of London's Roads by supporting enhancements to signalling, traffic management, customer information and enforcement of safe vehicle behaviour. Key contributing projects include DEC, SITS, E-Scooters, Surface Transport Video Solution (STVS), Remote Monitoring	Safe: London's streets will be safe and secure
Improved bus and Assisted Transport services	Contributing to improving the efficient management of bus and Assisted Transport services and the customer experience by renewing and enhancing the IT systems supporting bus and Dial-a-Ride operations and customer information. Key contributing projects include iBus2, Dial-a-Ride and Countdown 3	Quality Public Transport
Improved compliance	Improving compliance with speed limits and regulated vehicle standards by enhanced and flexible enforcement and systems to support compliance on the part of taxis and private hire vehicles. Key contributing projects include DEC, ECOS, CPOS Data Futures	Safe: London's streets will be safe and secure
More active travel	Support mode shift to sustainable modes by delivering tools to support real-time management of the road network for people walking and cycling, and improving the Cycle Hire scheme (for example, e-bikes, app hires). Key contributing projects include SITS, Cycle Hire	Healthy Streets and Healthy People, Efficient use of road space
Value for money	Ensuring that our services continue and the programme benefits are realised as efficiently as possible and deliver best value, saving money and generating / protecting revenue wherever possible. Key contributing projects include Countdown 3, STVS, Cycle Hire, DEC	Prudent

8 Crime and Disorder Implications

- 8.1 The Programme will be delivered in accordance with the Crime and Disorder Act 1998. TfL has recently reviewed the risks we face from cyber threats across our technology systems, data, information and digital estate, and adopted a cyber security strategy and improvement programme. The Programme has commenced scoping risks and options to address vulnerabilities of operating technologies that support critical systems covered under the Network and Information Systems

Regulations 2018, as well as starting to expand our risk assessment to our wider technology estate.

9 Equalities Implications

9.1 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.

9.2 The Programme will be delivered in accordance with the Equality Act 2010 and all aspects of the Public Sector Equality Duty. Consideration is given to the need for an Equality Impact Assessment for each project. For the Surface Technology Programme, particular areas of focus include protection of data, customer information, ensuring our systems are user friendly and are kept in a good state of repair, and improving safety and security for all our customers.

10 Assurance

10.1 TfL Project Assurance conducted an Integrated Assurance Review on the proposed Surface Technology Programme in June 2022.

10.2 First-line assurance continues to be carried out on the Programme and its constituent projects. The next Programme level assurance review will be carried out in advance of the annual submission to the Committee in March 2023.

List of appendices to this report:

Appendix 1: Surface Technology Programme 2022/23 – 2023/24 Overview

List of Background Papers:

Independent Assurance Review

Surface Technology Programme 2022/23 – 2023/24 paper (in Part 2 of the agenda)

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Appendix 1: Surface Technology Programme 2022/23 – 2023/24 Performance Overview

Focus area: Roads Technology, key activities

Project / Programme	Scope & Key Activities
Surface Intelligent Transport Systems (SITS) Programme	Delivering innovative traffic management systems to make walking, cycling and bus journeys, plus essential emergency services and freight trips, more efficient. SITS delivers these outcomes through four strands: Real Time Optimiser (RTO) to manage the traffic signals, COV-IMS to improve incident detection and response times; both in delivery. Data and Analytics will improve our view of people walking, cycling and travelling by bus, and Predictive will model an optimal response in real time.
Tunnels Incident Management Re-Let	Re-Let of the safety-critical HORUS system used to manage TfL’s 13 road tunnels, including Blackwall and Rotherhithe, prior to existing system contract expiry. Will also incorporate Silvertown Tunnel.
SAFE Re-Let	Re-Let of the SAFE system used to manage incidents in Network Management Control Centre. Project will mobilise in summer 2022.
Remote Monitoring of Traffic Lights	881 of our traffic signals are monitored through a telephone network, which will be obsolete in Winter 2025. We need to migrate onto a new monitoring network to meet legal requirements and ensure the safety of our customers, prior to the current one being switched off. We will complete feasibility and confirm the solution by September 2022.

Project / Programme	Lifecycle stage	Original completion date	Current completion date	Original BCR / NFE	Current BCR / NFE	Commitments for 2023/24 onwards and Comments
SITS RTO	Stage 5	2021	Summer 2023	SITS Programme 3.3:1	SITS Programme 4.8:1	Commitment of £12.3m in future years supplier cost for contract signed in 2017. Prolongation due to additional time for supplier to deliver. Programme BCR improved following review of response times to incidents, updated to show impact on first <i>active</i> response (e.g. adjusting traffic signal timings), rather than any first response (e.g. viewing incident on CCTV).
SITS COV-IMS	Stage 5	Spring 2022	Spring 2023			Prolongation due to additional time for supplier to deliver. No further commitments.
SITS Data & Analytics	Stage 2	May 2025	Autumn 2025			£4.4m for anticipated delivery commitments. Prolongation due to increased time to review.
SITS Predictive	Stage 2	2026	2026			£5.9m for anticipated delivery commitments.
Tunnels Incident Management Re-Let	Stage 0	Summer 2026	Summer 2026	Business case in development		£7.7m for anticipated delivery commitments.
Incident Management Re-procurement	Stage 0	Summer 2026	Summer 2026	Business case in development		£2.9m for anticipated delivery commitments.
Remote Monitoring of Traffic Lights	Stage 2	Spring 2026	Spring 2026	Business case in development		Commitment of £4m in future years for anticipated delivery commitments.

Focus area: Compliance, Enforcement and Safety Technology, key activities

Project / Programme	Scope & Key Activities
Enforcement & Compliance Operations System (ECOS)	Procurement of core IT systems to replace and improve existing CPOS digital capability. Development commenced August 2021 using internal team and working with dependent projects to ensure that needs are met. Delivery of new capabilities will commence mid 22/23 onwards, with incremental software releases until 23/24.
Deployable Enforcement Cameras	Improve road safety and reduce congestion by targeted camera enforcement. Phase 1 – Contract for delivery signed July 2021. Fifty cameras operational by 24 May 2022. Phase 2 - Project has been initiated and being stood up for expansion with up to 100 additional cameras to be deployed per year afterwards.
Surface Technology Video Solution	Our ability to view and manage surveillance cameras is crucial to ensure the safe operation of our network and services. This project implements a new video management system (VMS), allowing us to continue to view, control and record using surveillance cameras. The current contract that provides the VMS is expiring, so the project will go to market following a competitive procurement process.
Surface Workforce Management (SWFM)	Procurement and implementation of a new solution to replace existing Surface Workforce planning tools that are due to expire in May 2023. Working with LU workforce Planning project and reporting to ERP Programme to ensure synergy and pan TfL benefits, opportunities and saving between the projects. Options development and procurement within 22/23 with design and implementation to commence directly after and finishing in 23/24.

Project / Programme	Lifecycle stage	Original completion date	Latest completion date	Original BCR / NFE	Latest BCR / NFE	Commitments for 2023/24 onwards and Comments
ECOS	Stage 3	Summer 2023	Summer 2023	N/a: compliance case		£1.8m commitment for future years, covering supplier license costs required for delivery.
DEC Phase 1	Stage 5	31 March 2022	May 2022	£19.1m	£19.1m	Prolongation for Phase 1 due to additional time required to complete systems integration.
DEC Phase 2	Stage 1	July 2023	July 2023	Business case in development		£12.8m commitment in future years, for anticipated delivery commitments in longer-term supplier agreement.
Surface Technology Video Solution	Stage 1	May 2025	May 2025	Business case in development		£6.6m commitment in future years, for anticipated delivery commitments.
Surface Workforce Management (SWFM)	Stage 2	Spring 2025	Spring 2025	Business case in development		£5.6m commitment in future years, for anticipated delivery commitments.

Focus area: Public Transport Technology, key activities

Project / Programme	Scope & Key Activities
iBus2	iBus is the Automatic Vehicle Location system for the London bus network, which is crucial to operating these services and is approaching end-of-life. Procurement for iBus2 is progressing well, with Competitive Dialogue commencing shortly and contract award scheduled for Autumn 2023.
Countdown 3	Countdown signs provide real time arrival information at over 2,700 bus stops and stations. The Countdown 3 project will re-procure contracts to support and maintain these signs and give TfL a mechanism to purchase new signs in future. Procurement to start in Autumn 2022.
Cycle Hire Modernise and Electrify	Major modernisation of the back-office operating system for Santander Cycles; introducing 500 e-bikes, a new tariff and App enhancements. The 500 e-bikes and the new tariff are planned for launch in summer 2022, with further customer and back-office functionality to follow throughout 2022/23.
Cycle Hire Re-Let	The procurement of new operating contracts and a major refresh of obsolete, poor performing assets at the end of the current operating contracts, expiring from 2025. Funding for 2022/23 includes optioneering, business case development and procurement planning activities.
Bus Ops – Network Upgrade	This project aims to improve current network performance and resilience at 36 bus stations and Victoria Coach Station to enable staff to perform their role effectively. Key activities for 22/23 is completion of site surveys at all bus and coach stations within scope, delivery of improvements at 5 stations (pilot scheme). Delivery of improvements at other stations within scope expected to take place in FY 23/24.

Project / Programme	Lifecycle stage	Original completion date	Latest completion date	Original BCR / NFE	Latest BCR / NFE	Commitments for 2023/24 onwards and Comments
iBus2	Stage 2	2025	Spring 2027	NFE: £75m	NFE: £75m	£0.08m commitment in 23/24 for costs associated with prolongation, due to increased time to confirm requirements and undertake procurement to the required quality; corresponding EFC increase has impacted BCR.
Countdown 3	Stage 2	Autumn 2024	Spring 2025	NFE: £199m	NFE: £199m	Prolongation due to increased time to confirm data transfer requirements. No additional commitments anticipated.
Cycle Hire Modernise and Electrify	Stage 4	Autumn 2022	Spring 2023	Included in the paper in Part 2 of the agenda		Prolongation due to additional time to design and develop an integrated solution across multiple suppliers and systems. No additional commitments anticipated.
Cycle Hire Re-Let	Stage 1	Summer 2025	Summer 2025	Business case in development		No additional commitments anticipated.
Bus Ops – Network Upgrade	Stage 2	Spring 2025	Spring 2025	Business case in development		£5m commitment in future years for equipment purchase and roll-out.