

Date: 28 November 2024

Item: TfL Corporate Environment Plan - Operations

This paper will be considered in public

1 Summary

- 1.1 In September 2021, we published our first ever Corporate Environment Plan (CEP), to outline our approach to sustainability and the environment to our customers, colleagues and suppliers.
- 1.2 The quarterly Sustainability Report, elsewhere on the agenda for this meeting, is structured around the three pillars of sustainability (society, environment, and economy). Meanwhile, the CEP provides more detail on our plans and ambitions for the environment pillar with five key themes (climate emergency, air quality, sustainable resources, green infrastructure and best environmental practices).
- 1.3 This paper provides an update on how the key themes within our CEP are continuing to be embedded by the TfL Operations team.

2 Recommendation

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

3 Implementation of the Corporate Environment Plan in TfL Operations

Making It Happen

- 3.1 The TfL Operations team is playing an active role in the implementation of the CEP through mobilising delivery of investment activity to decarbonise our operations, build resilience to climate change and protect, connect and enhance our green infrastructure.
- 3.2 **Prioritising the environment:** Over the past three years, the senior leadership of TfL Operations has established environmental priorities at the heart of its decision-making. We have done this through incorporating carbon targets across our scorecards and ensuring that progress on key green milestones is monitored by the Operations Leadership team.
- 3.3 **Operations Environment Plan:** In financial year 2023/24, an initial Operations Environment Plan (OEP) was developed to ensure that the priorities of the CEP were translated into day-to-day environmental performance alongside investment in our infrastructure and assets. This first OEP has given Operations a clear set of activities for 2024/25 and beyond to begin to achieve CEP ambitions.

- 3.4 **Operations Environment Plan coordination team:** TfL Operations has set up a new OEP coordination team to drive the successful delivery of the plan across directorates. This will create a clear route for governance and reporting of environmental activity back to the central Safety, Health and Environment (SHE) Sustainability and Corporate Environment team via executive governance.
- 3.5 **Environment Leads:** Each directorate has a nominated Environment Lead, who is now working collaboratively with the OEP coordination team to ensure that delivery milestones are being progressed and colleagues at all levels are engaged in the challenge.

Engaging Our People

- 3.6 **Carbon Literacy:** Having achieved our scorecard target of 625 colleagues trained in 2023/2024, we continue to encourage and support colleagues to be trained in Carbon Literacy across Operations.
- 3.7 **Environmental Awareness training:** To engage more colleagues from across Operations, we are working with the SHE Sustainability and Corporate Environment team to develop a new in-person awareness course. This course will discuss all five themes of the CEP and can be delivered on-site over three hours to ensure the maximum engagement opportunity.

Climate Emergency - Decarbonisation

- 3.8 **Green Financing Facility (GFF):** TfL has secured £34.2m of GFF loans, providing a vital commitment to accelerate projects that achieve our goal of net zero carbon by 2030. Some of this funding will be used for maintenance delivered activity. The rest will be delivered by Capital, which will result in a reduction in operational carbon and cost. Details are outlined below of where this funding will be used in our decarbonisation strategy.
- 3.9 **Zero-emission TfL buses:** We are on track to deliver a further 500 zero-emission buses this financial year. We currently have 1,719 zero-emission buses operating on the network and are on track to deliver 1,900 in total by the end of March 2025, which equates to almost 20 per cent of our 8,700 fleet. This is helping to cut our reliance on diesel, cut harmful emissions in the capital and reduce CO₂. The Mayor has committed to deliver a zero-emission bus fleet by 2030 and we are working to develop plans that will achieve this target. We are working with the Net Zero Matrix team to look at opportunities to connect to the London Underground (LU) power network at locations where a Distribution Network Operator connection is particularly challenging, to accelerate transition to zero-emission buses.
- 3.10 **Bus shelters, street lighting and traffic signals:** 96 per cent of lights in London bus shelters now have Light Emitting Diode (LED) lighting. Our analysis shows that new lighting uses around 57 per cent less energy, while offering 10 per cent brighter lighting, making shelters more welcoming and improving safety for customers especially at night. We expect to complete the conversion of all bus shelters to LED lighting including the advertising panels in the coming months, as we replace the entire shelters that are near the end of their lifecycle. Once completed the LED lights and advertising panels will

save us at least £1.5m and reduce carbon by more than 1,000 tonnes of CO2e annually.

- 3.11 Two-thirds of our traffic signals are already LED and over 67 per cent of our street lighting lamps are LED. £9.2m of GFF funding will be used to accelerate the delivery of LED street lighting. This will bring the total percentage of LED street lighting up to 80 per cent by April 2025.
- 3.12 **Building decarbonisation:** Working with teams from Engineering and SHE, we completed our buildings decarbonisation deep dive exercise in August 2022. This enabled us to generate an improved estimate of our built environment carbon emissions baseline, identify the key challenges we face in decarbonising our estate and develop a plan with key actions and recommendations for how to make progress towards our net zero operations by 2030 target. Operations are working with the Net Zero Matrix team to better understand the opportunities to accelerate our building decarbonisation programme through maintenance activity, ensuring that we replace older assets with a low emission alternative when they are life expired.
- 3.13 **Lighting and systems:** The existing small station program has installed LED lighting at over 128 stations across the network. Building on this existing progress to roll out LED lighting, we plan to use c.£18m of GFF funding to guarantee the continued delivery, reaching 100 per cent of small stations by 2032 This will save an additional 28,000 tonnes of CO2e in seven years and an additional 7,300 tonnes of CO2e annually upon completion. Additional work is being completed to scope the remaining larger stations, with King's Cross station having seen significant progress this year.
- 3.14 The ongoing midlife refurbishment of the Central and Bakerloo line fleets will enable the adoption of LED lighting in saloon cars.
- 3.15 Our Asset Performance Delivery Signals team in LU is reviewing our assets to identify and remove redundant signal assets that are still drawing power. Before removing them, we are monitoring their power consumption so that we fully understand the energy savings and emission reduction.
- 3.16 **Energy management:** We have approved through our Operations Change meeting that we will make provision for the creation of new energy manager roles within Operations. These energy managers will work to drive continual energy efficiency improvements through maintenance activities as well as identifying new projects that could be delivered through the Net Zero Matrix team. We are currently agreeing the structure to support these energy managers ahead of a recruitment campaign.
- 3.17 Our LU stations have improved our approach to energy consumption reporting through a PowerBI dashboard. This will enable a network of Sustainability Champions to monitor usage at a local level and drive local behaviour change, as well as inform the case for infrastructure improvements.
- 3.18 In addition to our station energy management plans and the PowerBI dashboard, we are launching our energy savings log. Colleagues will be encouraged to add energy saving proposals to this log through an online form.

Our energy managers will then use this data to create a prioritised pipeline of energy efficiency activities to be delivered.

- 3.19 **Baselining our carbon footprint:** As an organisation we are aiming to achieve net-zero carbon operations by 2030. To do this, we must understand the carbon emissions associated with our maintenance activities. We have worked with Engineering to carry out a trial to calculate the carbon associated with our most common LU track assets and looking to expand this across other asset groups. This will allow for better informed decisions when it comes to procuring and maintaining components essential to keep London moving.
- 3.20 **Zero-emission support fleet:** We have committed to converting all cars in our support fleet to zero-emission capable by the end of this financial year with all remaining diesel vans to be phased out by 2030. Operations is working closely with the Net Zero Matrix team to ensure that our staff are ready to use the new vehicles as they roll out, understanding the charging requirements and potentially altered scheduling that this may require. We are also helping to identify locations for increased electric vehicle charging infrastructure in our depots.
- 3.21 The Acton depot redevelopment will incorporate 52 charging points for electric vehicles, and we will convert at least 50 combustion engine vehicles to be battery powered.
- 3.22 We are also working with our supply chain to ensure that they are working to phase out non-zero-emission vehicles when delivering on our behalf.

Climate Emergency - Adaptation and Resilience

- 3.23 Operations are contributing to strategic workstreams addressing adaptation project development, studies of climate risk, engineering standards reviews, and cross industry working. As part of the development of our OEP, we will determine the best way to incorporate the outcomes of these strategic activities into our investments, change activity and day to day operations.
- 3.24 The review of the OEP ahead of the next financial year will include consideration of environmental risks and outline adaptation strategies for each directorate to adopt in their technical approach plans.
- 3.25 **Sustainable Drainage Systems (SuDS):** SuDS, like raingardens and green roofs, are a way of reducing and/or slowing the flow of water into our overwhelmed drainage systems, and so help reduce the risk of surface water flooding. A project pipeline has been developed, and will continue to be refined, to meet the Adaptation Plan target of an additional 5,000 square meters catchment draining into SuDS per year. Operations has made a commitment to work collaboratively with colleagues in Capital to ensure that there is a consistent process and approach to the handover of SuDS assets from Capital projects into regular maintenance. This will ensure that any new SuDS that are installed remain functional and, where installed as green infrastructure, healthy and maintained to provide biodiversity, visual amenity, and wellbeing benefits.

- 3.26 **Planning for extreme weather events:** We have robust adverse weather plans and emergency procedures that help us prepare for and recover quickly from extreme weather events. We continued to apply our 54321 Weather Plan, which specifies standardised actions by operations and maintenance teams in the five days before extreme weather is anticipated. In addition to this, we undertake seasonal maintenance specifically designed to improve the resilience of our assets. This includes regular cleaning of gullies (drains), enhanced temperature monitoring of critical assets, and targeted vegetation management in preparation for leaf fall season. We work closely with our multiagency partners within London Resilience, sharing best practice and offering mutual aid when needed.
- 3.27 An internal assessment of our severe weather plans is currently underway following the contingency Exercise Tempest in July 2024. We will use the results to improve the plans to ensure consistency and accessibility across all our modes.
- 3.28 In addition to severe weather planning, we are reviewing the way we record our asset condition and failures. We are looking to embed weather factors such as temperature and rainfall into our incident reporting as standard so that we can better understand how and when weather, including extreme weather, will affect our assets and service reliability.

Air Quality

- 3.29 **London Underground:** We have a three pillar strategic approach to address Tube dust through monitoring, research and cleaning innovation.
- 3.30 **Monitoring:** We have implemented annual monitoring at 24 locations across the network. Between May 2024 and June 2024 air quality monitoring from within the train driver cabs was conducted. Station monitoring took place between July 2024 and September 2024. We expect to publish reports for 2024 in the coming months. In addition to the annual monitoring, the track cleaning team conducts bi-monthly monitoring, which informs our targeted cleaning programme.
- 3.31 **Research:** Strong progress has been made with two commissioned research projects by independent researchers at Imperial College London. These projects are examining:
- (a) sickness absence in workers exposed to tunnel dust to evaluate whether staff exposed to LU tunnel dust have higher levels of sickness absence due to respiratory and cardiovascular conditions. This study commenced in 2021 and was published in March 2024. It did not demonstrate clear evidence of sickness absence being attributed to exposure to dust; and
 - (b) a Retrospective Cohort Epidemiological study on mortality/morbidity/cancer in LU (such as train operators and station colleagues) exposed to tunnel dust. The data for this long-term study was submitted to Imperial College London in June 2023 and publication of the results is expected in late 2024/early 2025.

- 3.32 **Cleaning:** The cleaning budget has been increased from £1.5m to £2m per year. Cleaning is targeted at priority locations with at least 130km being cleaned, equating to 40 per cent of the total network of 330km of tunnels.
- 3.33 We use innovative cleaning methodologies such as industrial vacuums, specialist equipment that catches dust as it is produced during construction, and the use of more battery-operated tools to reduce fumes.
- 3.34 As part of an ongoing commitment to improve air quality we are in the process of trialling air filtration as a tool to tackle airborne dust. The first trial was completed in September 2024 and captured 55kg of fine particulate dust. However, the findings show that the units are not suitable from a material, resource and fire regulations perspective. The second air filtration trial is currently undergoing a tender process to identify a supplier and unit suitable for the LU network. The aim will be to trial in the first quarter of 2025.
- 3.35 **Communications:** We have a proactive communications strategy for our colleagues and external stakeholders. In early 2024 we published our 2023 air quality monitoring reports, which we shared with colleagues and key stakeholders. We also worked with Imperial College London on the announcement of the publication of the short-term sickness absence study. We will continue to engage with colleagues, customers and air quality stakeholders on this topic.
- 3.36 **Non-Road Mobile Machinery (NRMM):** The OEP team is coordinating with all the Operations directorates to identify the NRMM that is currently in use or expected to be in used in the future. By first understanding the equipment that we use and adding this to the Greater London Authority register, we will then be able to work with SHE, Engineering, and the wider industry to ensure that we are taking every opportunity to remove fossil fuels from our NRMM through retrofitting or ensuring the procurement of new machinery considers all technological solutions.

Sustainable Resources

- 3.37 **Material and equipment circularity:** We are working to improve our own circular economy by looking at the way we procure, use, and dispose of our assets and maintenance materials. Across Operations directorates, we are working to identify opportunities to recover and reuse as much material as possible and ensuring that this is embedded into our asset lifecycle decisions. This work includes the creation of a new circularity manager role in the Operational Inventory team to ensure that any reusable materials, along with any surplus, is captured in our central inventory management system and can be reused elsewhere in the business. We will also work with other organisations to understand where our waste materials may be repurposed, minimising our environmental impact, and creating a financial opportunity.
- 3.38 **Customer waste recycling:** We are working to understand how we can offer more consistent waste collection for our customers across our modes and to address any barriers to recycling. This includes consideration of how we manage our own waste at mixed use sites as well as the waste generated by

our tenants with the aim of achieving the Mayor's vision of a zero waste London.

Green Infrastructure and Biodiversity (GI&B)

- 3.39 **Embedding GI&B into our operations:** We will be reviewing and updating the OEP to include the recommendations from the new GI&B Plan published this year. We will have a critical role in helping meet our legal requirements on Biodiversity Net Gain (BNG), and therefore reducing our associated financial risk. We are actively contributing to the procurement strategy for the LU vegetation survey contract and a review of the LU vegetation standard (S1165) to ensure that GI&B is a key consideration in how we manage our lineside estate moving forward.
- 3.40 **Increasing biodiversity on our estate:** We are working with colleagues in SHE and our Estates Planning team to improve the quality of spatial data about our estate. This data review will assist in highlighting any areas of the estate that could be used for BNG habitat banks ensuring that we enhance and connect our existing green estate at the same time as meeting our legal obligations.
- 3.41 **Wildflower verges on the road network:** After the successful delivery of 130,000 square meters in 2022/23, equivalent to 18 football pitches, we have doubled this to 260,000 square meters this financial year. Wildflowers verges encourage biodiversity, for example, by supporting pollinators such as bees and butterflies.
- 3.42 **Tree planting:** We have delivered the Mayor's Transport Strategy target of a one per cent year-on-year increase in street tree numbers from 2016 to present. To date, our planting has exceeded the TfL Road Network tree planting target, although we continue to give consideration to ensuring that planting locations are appropriate and maintainable. Now that we are more mature as a business in this area, we are working with colleagues in SHE and Engineering to develop more meaningful and deliverable metrics for green infrastructure that maximise ecosystem services such as biodiversity, surface water reduction and cooling as well as increase "green equity", investing in places that need GI&B the most. Operations is working with SHE to ensure that we use this data to drive decisions moving forward.

Best Environmental Practice

- 3.43 **Noise on the London Underground:** Reducing noise on the Tube remains a priority for us. We continue to monitor and manage noise levels on the network closely.
- 3.44 **Rail grinding:** Rail grinding is currently our principal means of addressing Tube noise. We also continue to carry out other targeted interventions to reduce noise including removing redundant rail joints, maintaining points and crossings and re-ballasting track, where appropriate to the location. In addition, we undertake detailed investigations to understand and address the root cause of noise issues such as rail corrugation.

- 3.45 We will be trialling a new 'acoustic' grinding train to help reduce noise on the network in early 2025. The trial will run for 28 days and will be carried out on the Northern and Victoria lines. If successful, the train will be introduced as part of our grinding train fleet. In addition to reducing noise, the new system will also have some air quality benefits. As it is a hybrid train it produces less fumes, and the process does not produce swarf – a key contributor to Tube dust - as it cleans this up as it goes for safe disposal afterwards.
- 3.46 **Engineering solutions:** We are also investigating alternative engineering solutions to manage Tube noise. For example, trials for the replacement of Pandrol Vanguard track fastenings, which impact in-carriage noise, with alternative engineering solutions. These trials consisted of the installation of a Delkor variant, which is a resilient base plate that reduces the impact of in-carriage noise. As a result of the success, Delkor fastenings are now fitted as standard as part of TfL's ongoing Deep Tube track renewal programme.
- 3.47 In addition to these trials, we are exploring methods to proactively manage rail corrugation. This is currently being trialled through an introduction of variable speeds on the Northern line and coasting profiles on the Victoria line through till the end of this financial year. The aim is to understand how the corrugation reacts to the change in speeds and determine if this either slows down or reverses the corrugation.
- 3.48 **Ensuring compliance and best environmental practice:** The OEP coordinators will work with Environment Leads from across Operations to ensure that we are aware of our existing environmental impact, ensuring that we are complying with legal and policy requirements. Through this engagement with operational colleagues and our SHE business partners we will ensure that we have a strong foundation of best environmental practice before we look to review, update, and deliver a more ambitious environmental plan.

List of appendices to this report:

Appendix 1: Green milestones and Operations Environment Plan (OEP) one pager.

List of Background Papers:

None

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Appendix 1: Green milestones and Operations Environment Plan (OEP) one pager

Our Operations Green Milestones for this year remain on track. Those that were due to be completed have been achieved on time and the remaining are on track to be achieved on time.

The template for consistent severe weather plans has been moved to February 2025, with approval from the Operations Leadership team, following Exercise Tempest in July 2024.

There is a small risk to the milestone surrounding the development of an inventory 'green tag' system due to lack of recruitment of suitable resource although we still have time to ensure that this is completed on time.

OEP delivery plan

October 2024

- Customer waste workshop held
- Support Operations Environment Awareness training

November 2024

- Develop OEP SharePoint

December 2024

- Recruitment of OEP team
- Recruitment of Circularity Manager
- Customer waste workshop assessment and feedback
- Rollout of energy log within Customer Operations
- Launch OEP SharePoint

January 2025

- Recruitment of Energy Managers
- Complete prioritisation of the Corporate Environment Plan with Safety, Health and Environment (SHE)
- Complete review of standards and processes for inventory

February 2025

- Identify skills gaps
- First draft of new OEP for review
- Development of 'green tag' in inventory system

March 2025

- Publish new OEP
- Publish findings of barriers to customer waste recycling
- Launch of 'green tag' system

Activity beyond the OEP

Green Infrastructure (GI) and Biodiversity

- Sustainable Drainage Systems (SuDS) handover improvement plan from Capital in first draft.
- Build on the SuDS handover for general GI by 31 December (green milestone).
- Feasibility study into alternative proactive land management on London Underground estate.
 - Working with SHE and Asset Performance Delivery to develop this study and prepare a paper for March 2025.

Community and third party engagement

- Working with SHE, Engineering and Local Communities & Partnerships (LCP) to understand if there are opportunities to invite communities to maintain our GI.
 - Collaboration with Network Rail where similar schemes exist.
- Working with SHE, LCP and Operations Readiness to understand the requirements and develop a process for assessing and providing feedback to Business Investment District proposals for GI in the public realm.

Waste management

- Working towards creating a strategy that goes beyond our customer waste, providing the framework for holistic waste management for the whole business to ensure compliance with new legislation from April 2025.

Environment culture and maturity

- Working to identify green leads and champions across Operations to understand their role and responsibility.
- Working with colleagues to ensure environment is clearly visible in the SHE improvement plan.
- Work with line managers to provide guaranteed FTE equivalent time dedicated to the green lead role with specific objectives to deliver against the OEP.

Environmental compliance

- Embedding in environment meetings and working with SHE to highlight relevant environmental incidents.
- Complete environmental audits within different operational areas to highlight any compliance issues.