



# At the heart of a greener London

Corporate Environment Plan 2021

**MAYOR OF LONDON**



**TRANSPORT FOR LONDON**  
EVERY JOURNEY MATTERS



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# Commissioner's foreword

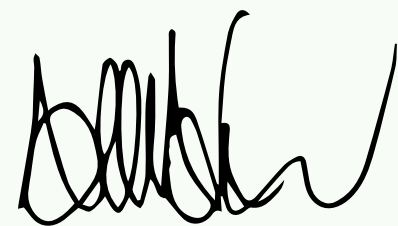
Environmental sustainability must be integral to our business and the way we work. It has to become a core part of our culture if we are to fulfil London's standing as a global city, while also addressing the great global challenges of our time. We need London's recovery from the pandemic to be green and sustainable, and such a recovery will have a substantial impact on the UK's sustainable development.

We face huge challenges, including the fact that a quarter of London's greenhouse gas emissions are from transport and that we are London's biggest user of electricity. However, there is also the opportunity to have a big influence, through our commercial development portfolio, our procurement activity and, not least, the management of the vast areas of land in London that we own.


This plan sets out our approach to supporting the Mayor's ambition of a carbon neutral London by 2030 and delivering our existing environmental commitments, as set out in the Mayor's Transport Strategy and London Environment Strategy. It also looks at how we will embed environmental sustainability into everything we do. This work is vital in managing risks to the transport network as the climate and ecological crisis continues, for attracting investment, and making sure that we attract and retain talent in our business.

Our activity is crucial to the development of the UK as we provide a multitude of jobs and services, and have significant influence. I want us all to be proud of the work we already do to deliver environmental improvements and be committed to doing more.

My vision is for Transport for London (TfL) to actively influence the regeneration of London's environment and be at the heart of delivering a sustainable city for all Londoners.



**Andy Byford**  
London's Transport  
Commissioner



**Environmental sustainability must be integral to our business and the way we work**

# Our role in London

## Realising the Mayor's Transport Strategy

As London's strategic transport authority, we lead the development and implementation of the Mayor's Transport Strategy. This has a strong focus on the environment and is aligned with the London Environment Strategy. The strategy includes policies and proposals on air quality, carbon emissions, green infrastructure, climate change adaptation and noise. We work closely with other transport authorities and providers within London, from the boroughs to Network Rail and Highways England, to ensure that the strategic environmental priorities in the Mayor's Transport Strategy are met across the city. Examples include setting and operating road transport emission schemes, such as the Ultra Low Emission Zone (ULEZ), and supporting the boroughs to deliver a wide range of environmental outcomes through their Local Implementation Plans.

### Promoting active travel

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' that is safer, fairer, greener, healthier and more prosperous. The Mayor's Transport Strategy sets a target for 80 per cent of all journeys in London to be made by walking, cycling or using public transport by 2041. To complement the Mayor's Transport Strategy, we have published a Cycling action plan, Walking action plan and Vision Zero action plan which set out how the Mayor and TfL will promote safe and active travel across the city to meet the 2041 target. Boroughs manage 95 per cent of London's road network and are key partners in delivering improvements on their streets, from School Streets and Low Traffic Neighbourhoods to bus priority, cycling routes and local town centre improvements. This Corporate Environment Plan also sets out actions that will support the shift to active travel on our own networks.

### Operating road transport emission schemes

We support urgent action to reduce harmful emissions from road transport and to meet legal limits for air pollution in London as soon as possible. We introduced tighter standards for the London-wide Low Emission Zone in March 2021 and will expand the ULEZ from central London to the North and South Circular Roads in October 2021. We are phasing out polluting diesel buses, retrofitting older buses and introducing all-electric buses so that our 9,000 strong bus fleet now meets or exceeds the cleanest Euro VI emission standards. We are also cleaning up London's taxi and private hire fleets, with zero emission capable licensing requirements. We operate the Congestion Charge in central London and are continuously reviewing the scheme to ensure it remains effective, having launched a consultation on new proposals on 28 July 2021. By ensuring the scheme remains effective at reducing traffic and congestion it will improve air quality and encourage more journeys to be made by walking, cycling and public transport.

### Delivering electric vehicle charging infrastructure

We support the transition of London's road vehicles to zero emission technologies to improve air quality and meet the zero-carbon London ambition. We support the delivery of electric vehicle charging infrastructure across London by working with boroughs and the Office for Zero Emission Vehicles. Through the Mayor's Electric Vehicle Infrastructure Taskforce we work with stakeholders to plan for the Capital's future charging infrastructure requirements. Further information can be found in our EV Infrastructure Delivery Plan online.

### Connecting Londoners to green spaces

The Mayor wants to ensure that Londoners have access to green space within 10 minutes of where they live. We have a key role in supporting this through our work to improve walking and cycling. We also work with boroughs to provide opportunities to create new green spaces as well as routes to new green spaces as part of our schemes.

### Implementing the London Recovery Programme and Green New Deal Mission

We play a crucial part in supporting London's recovery from the coronavirus pandemic. As a member of the London Recovery Board, we will help deliver its nine recovery missions, including a Green New Deal. Achieving this requires large-scale transformation by 2030, and new approaches, greater coordination and faster action. Our actions, including those described in this plan, will help London tackle the ecological emergencies, improve air quality while supporting growth of London's Green Economy and reducing inequalities exacerbated by the pandemic. Recovery plan details for the Capital are available on the Greater London Authority's (GLA's) [dedicated webpage](#).

### Responsibility and opportunity as an employer

We are a large employer in London. By setting an example in the way we undertake our activities we hope to engage our people to lead more sustainable lifestyles. These changes will impact London more widely. We are fortunate to have in-house communications specialists who are leading our internal #Greenfuture communications campaign. In addition, our passionate Sustainability Staff Network Group provides inspiration and resources to engage and support people on their professional and personal environmental journeys.



# What is our Corporate Environment Plan?

We are committed to protecting and improving the environment. As one of the world's largest and most high-profile transport operators and developers, we can lead and have a huge positive impact on people's quality of life and the environment. Our Corporate Environment Plan sets out our environmental ambition and how we will achieve this through our operations, maintenance and construction activities. It forms the environmental pillar of our approach to sustainable development, as described in our Sustainability Report.

We must demonstrate bold leadership on environmental sustainability. Through our contracts, stakeholder engagement and partnerships we will make very clear that we expect high environmental performance and ambition from everyone that we work with.

As London's strategic transport authority, we lead the realisation of the Mayor's Transport Strategy's environmental outcomes. Our wider role in London in this regard is described on the previous page. The Corporate Environment Plan, however, focuses on our own activities, procurement, products and services as a transport operator.



## We have developed our plan so that we can:

- + Drive continual improvement in our environmental performance
- + Transparently communicate our environmental ambition and priorities to our stakeholders, including our colleagues
- + Nurture an environmental culture which places environmental sustainability at the heart of our business decisions
- + Develop the baseline against which to set targets for our environmental performance. Track and measure progress both effectively and accurately
- + Help demonstrate the environmental benefits of what we do



Dedicated cycle infrastructure encourages more active travel



# Why is this important to us?

Creating an environmentally sustainable transport network to support London meeting its air quality and carbon targets is a key priority for us. We are committed to playing our part to achieve the Mayor of London's goal of making London carbon neutral by 2030 and helping create a greener, biodiverse city that is resilient and well adapted to climate change. We aim to meet our zero-carbon target by progressively investing in the green recovery and reducing the level of carbon emissions across all our operations and supply chains.

We are committed to achieving the Mayor's goal of making London carbon neutral by 2030

I'm an electric bus

MAYOR OF LONDON



TRANSPORT  
FOR LONDON

EVERY JOURNEY MATTERS

ENVIRO200 EV

SEe6



More of our London Buses are now zero emission



# How is our Corporate Environment Plan structured?

Tackling the climate emergency is our top environmental priority and is not simply about reducing carbon emissions. It's also about adapting to climate change, improving air quality, making London greener, using fewer materials and reducing waste, and following environmental best practice in everything we do. We have developed our Corporate Environment Plan around five key, complementary themes which will help us contribute to a zero-carbon London:



## Climate emergency

Reduce carbon emissions from our activities and ensure we are ready for the impacts of climate change



## Air quality

Reduce emissions of harmful air pollutants from our activities



## Green infrastructure

Protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystem services on our estate



## Sustainable resources

Support a low-carbon circular economy



## Best environmental practices

Deliver our activities responsibly and be a good neighbour

We can help London become a zero-carbon city



# Our environmental framework and ambitions



## Sustainable resources

- We use resources and materials sustainably
- We think of a material's carbon cost across its lifecycle
- We support London's goal of being a zero-waste city



## Best environmental practices

- We are a good neighbour
- We comply with our obligations and legal requirements
- We go beyond our minimum obligations to apply environmental and sustainability best practices



## Climate emergency

- **Mitigation:** We reach zero carbon in all our activities
- We support London becoming a zero-carbon city
- **Adaptation:** We are ready for the impacts of climate change



## Air quality

- We deliver and operate major air quality schemes
- We will bring vehicle fleets under our control to zero emission
- We manage emissions from our buildings and on the Tube



## Green infrastructure

- Protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystem services on our estate

## Zero-carbon London



## Making it happen

- Make it a core part of TfL culture, advocated by leaders and championed in every team
- Incorporate into standards, specifications, contracts and management systems
- Deliver through business planning, asset management and procurement





## Climate emergency

Reduce carbon emissions from our activities and ensure we are ready for the impacts of climate change







# Climate emergency

The years leading up to 2030 are crucial in the global fight to prevent devastating climate change. The UK must make significant reductions in its carbon emissions if it is to meet its legally binding goal of reaching net-zero carbon emissions by 2050. In London, the Mayor has set an ambitious goal for the Capital to become carbon neutral by 2030.

Transport is responsible for more than a quarter of London's carbon emissions, and this proportion is increasing as other sectors decarbonise more quickly. We play a vital role in providing low-carbon public transport to Londoners and supporting walking and cycling. As London recovers from the coronavirus pandemic, our actions are vital to avoid a car-led recovery and the higher carbon emissions which will result from this.

However, to truly support London in becoming carbon neutral, we must lead by example and reduce emissions across everything we do. As London's largest electricity user, we need to optimise energy saving and efficiency, and lead the transition to fully renewable electricity across our network, thereby stimulating the growth of renewable energy generation in London and the UK. Our ambition is to convert our bus fleet and the vehicles used to support maintenance and operation of our transport network to zero emission and ensure the energy supplying those fleets is zero carbon. Furthermore, this ambition means putting all our buildings – from offices to stations and from maintenance depots to property developments – on a clear path to zero carbon.

Additionally, we need to work closely with our supply chain to reduce the carbon from the products and services that we buy. Our infrastructure is designed, built and operated to help our customers make the move away from private car use to more sustainable and active means of transport. It is our responsibility to account for the carbon emissions created during construction and operation, and to reduce these as much as possible. High level assessments suggest that carbon emissions from our supply chains could potentially be twice as much annually as our operational emissions. We are progressing more detailed assessment work to establish a baseline for our scope 3 emissions and identify areas where we can best focus our reduction efforts.

We are developing tools that will help us estimate and work out the carbon emissions produced across the whole life of our assets, from design, to construction, to operation and disposal. These tools will help us identify high-carbon areas and work to reduce these as much as possible.

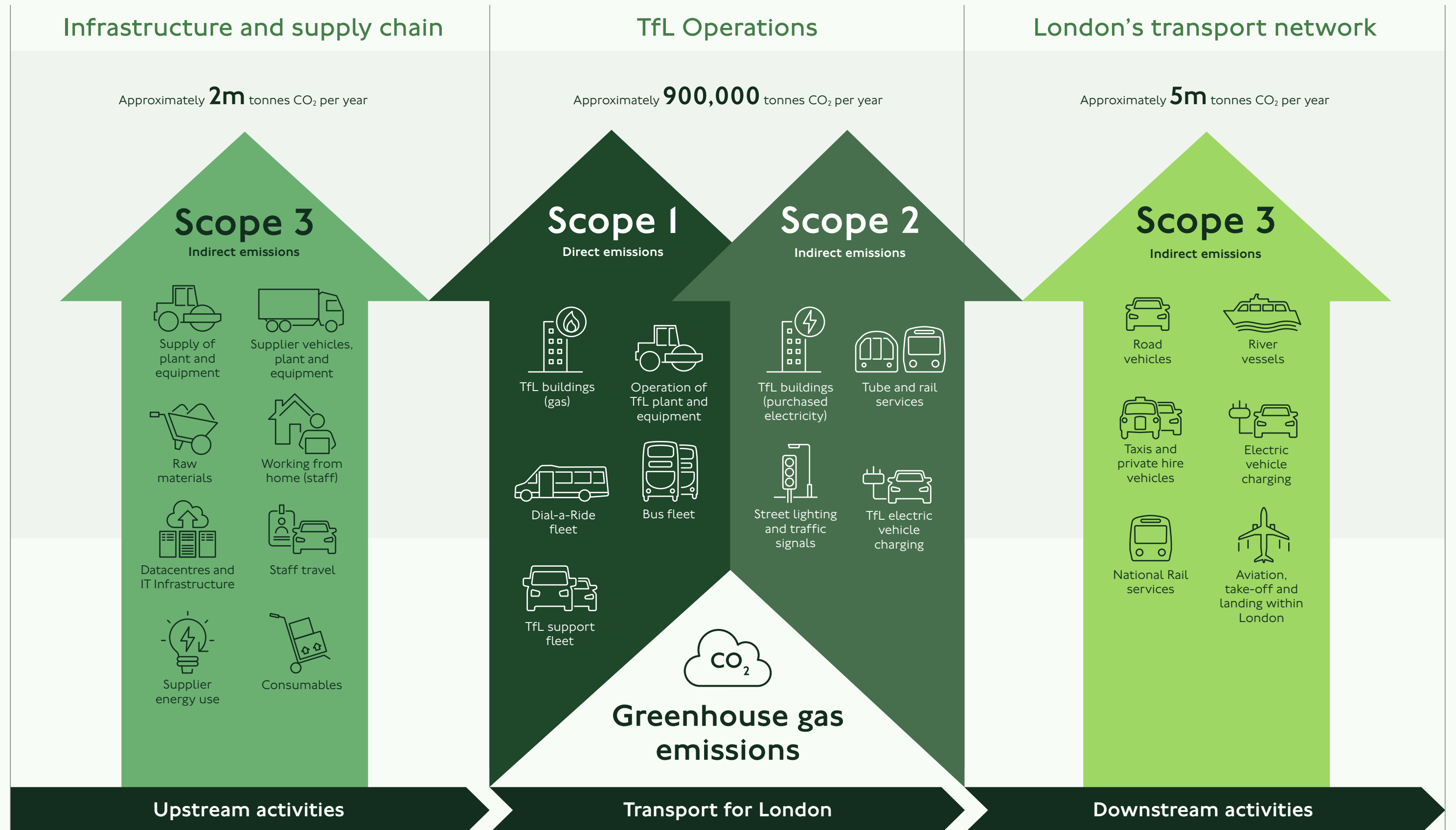
However, no matter how successful we are in reducing carbon emissions in all that we do, we are already experiencing climate change and it will continue to affect and shape how we operate. The UK is already experiencing some of the impact of climate change, such as the frequency and intensity of severe weather events, and this is expected to increase in the future. We will adapt to reduce the impacts of this and increase our resilience to any climate change impacts that do occur.

**We must lead by example and reduce emissions in everything we do**

We need to be prepared for the impacts of climate change



# Scope and reach of our carbon emissions





# Achieving zero-carbon operations

## Our ambitions

- ⊕ Achieve zero-carbon emissions across our operations and head office buildings by 2030

## How will this be reached?

### Our operations

- Ensure our public transport services support low carbon travel in London by maintaining and renewing our existing assets
- Develop a plan for removing fossil fuels from our operations
- Convert our bus fleet to zero emission by no later than 2034, with government support we can do this by 2030
- Convert our other fleet vehicles to zero emission
- Reduce energy demand and improve energy efficiency across our organisation
- Support London reaching zero-carbon emissions by reusing waste heat from within our deep tube network and supply local buildings
- Increase the amount of renewable energy supplying our assets

### Our buildings and property estate

- Create a carbon baseline of our entire property estate to understand the challenge ahead
- Adopt a zero-carbon plan for our head office buildings and develop decarbonisation plans for all our other buildings
- Encourage and empower all our employees to reduce carbon emissions at work and in their day-to-day life

## Our scope 1 and 2 targets

- Aim for zero operational carbon emissions by 2030
- Zero-emission bus fleet by 2034, with an ambition to achieve this by 2030

## How will this be monitored?

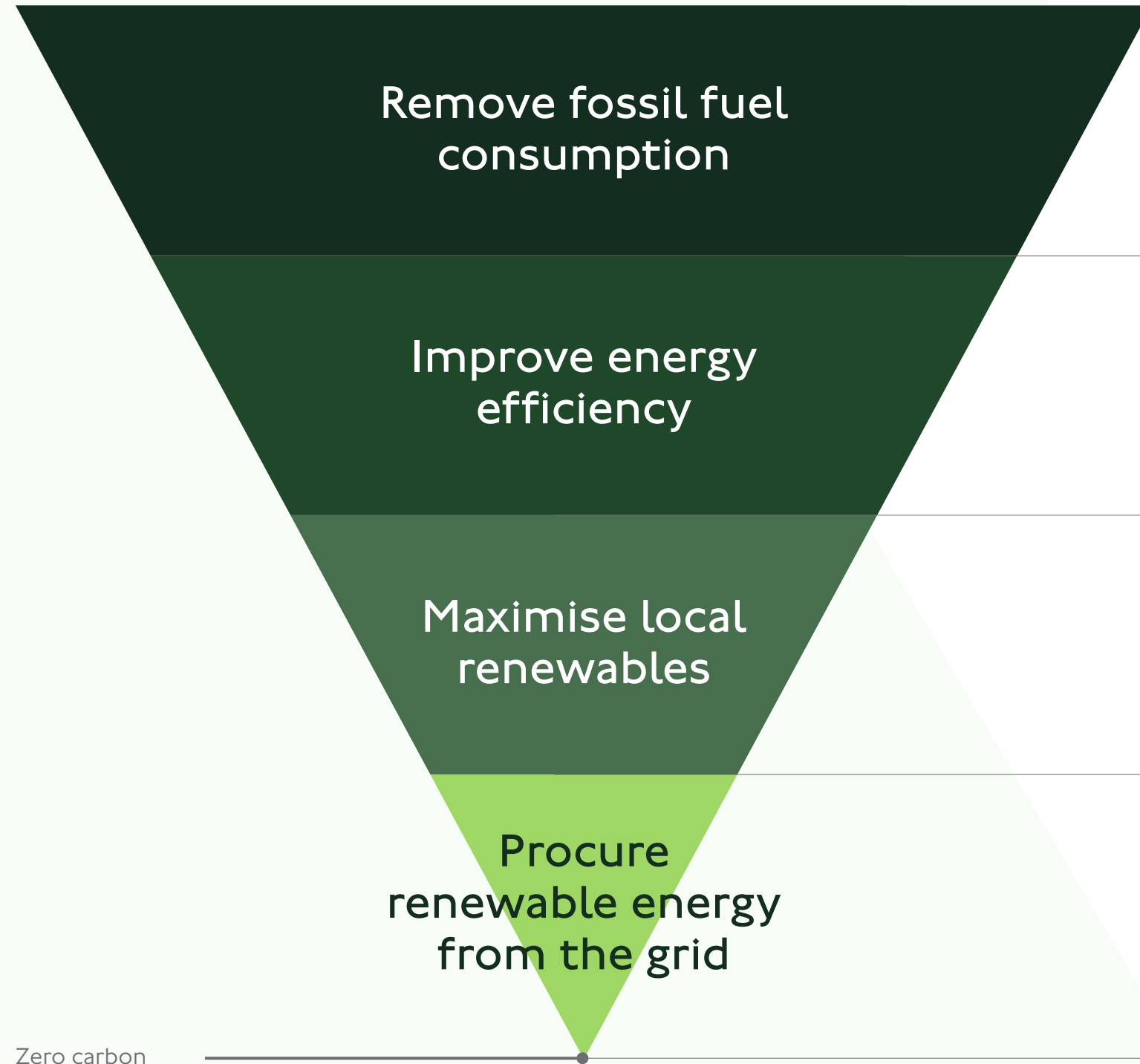
- Measure and monitor our operational carbon emissions and report through our Scorecard and Annual Report
- Track and improve on our zero-carbon buildings progress indicators
- Instil carbon performance measurement and appraisal through contracts, proposals, projects, programmes, business cases, scheme designs and Pathway processes
- Work with suppliers to monitor, reduce and continually improve performance



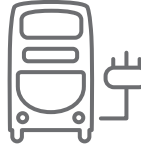









# Our energy and carbon strategy

We will adopt a hierarchy approach to reduce our operational carbon emissions to support our ambition of achieving zero carbon operations by 2030

## Operational carbon hierarchy



## How will we implement the strategy?

- |  |  |   |
|--|--|---|
|  <p>Transition our bus and vehicle fleet to electric and hydrogen</p>   |  <p>Remove gas heating systems from our operations</p>      |  <p>Transition to zero emission plant and equipment</p>  |
|  <p>Improve the fabric* and energy performance of our buildings</p>  |  <p>Develop a zero-carbon plan for our property estate</p> |  <p>Introduce measures to use less energy and use it more efficiently across our operations</p> |
|  <p>Contract direct local solar power supply</p>  |  <p>Embed renewables in new building development</p>      |  <p>Exploit waste heat from the deep tube network</p>  |
|  <p>Transition to 100 per cent renewable energy supply by 2030, supporting our ambition for zero carbon across all activities</p> |  |   |

\* A method of building design that involves maximising the efficiency of components and materials that make up a building's fabric, before considering the use of mechanical or electrical systems.



# Energy efficiency across our operations and buildings

As one of London's largest landowners, we own and operate a wide variety of buildings. These include stations, depots, river piers, head offices, approximately 3,000 rental properties and housing developments. Each type of building requires specific plans to be developed to reduce carbon emissions and we are already progressing a range of measures across our estate.

We will continue to reduce energy demand with the installation of LED lighting across all our operational estate and further decarbonise our building stock through targeted activities to improve energy efficiency. We will continue to strive for efficiency when replacing assets, such as the new Piccadilly line trains that will begin service in the mid-2020s, which are more energy efficient than their predecessors.

One of our rail operators, Arriva Rail London, achieved a range of benefits recently replacing lighting under canopies and on platforms with more efficient LEDs. This resulted in significant savings, cutting the electricity supply for lighting by fifty per cent, whilst also improving the quality and reliability of lighting in these safety critical areas.

We've signed up to the Better Buildings Partnership's climate change commitment to work with our peers in the property industry, to improve our buildings and their energy supplies while being transparent on our progress.

We are launching our Sustainable Development Framework for our development estate that will ensure our new developments meet the highest standards in construction and building performance and deliver social value in the communities they serve.

One such example is the Southwark Over Station Development, which aims to provide office and community space around Southwark station and unlock neighbouring land for the council to build new affordable housing. The project is targeting the highest BREEAM rating of 'Outstanding', achieved by less than two per cent of new buildings in the UK.

The building is able to achieve both net-zero carbon (in line with the UK Green Building Council and London Energy Transformation Initiative definitions) and a 42 per cent reduction in operational carbon emissions\* due to its overall energy strategy consisting of an energy efficient fabric and building services approach. This includes using air source heat pumps, making provisions for a connection to an external heat network (when available at a future date) and generating renewable energy on-site through a photovoltaic (PV) panel array.

\* Compared to London Plan Part L Gas Boiler baseline



**We will continue to reduce energy demand across our operational estate**

**We continue to strive for efficiency in our major development projects**





## What we are already doing

### Renewable energy procurement

We are the biggest consumer of electricity in London, using more than 1.5TWh annually, equivalent to around 400,000 homes, and have a strategy in place to procure 100 per cent renewable energy by 2030.

We are going to market for the first of our renewable power purchase agreements (PPAs) in 2021. Renewable PPAs are long-term contracts with renewable generators for the purchase of their electricity in agreed volumes and prices. These contracts provide generators with a guaranteed income, enabling them to develop new renewable energy generation projects in the UK.

We are working with our partners in the GLA to explore opportunities to jointly procure renewable electricity for the GLA Group, and thereby actively investing in new renewable generation assets. We will continue to increase the proportion of our electricity that comes from renewables through the decade to achieve our target of 100 per cent by 2030.

### Solar power

We aim to install solar PV on all new buildings as they are constructed, most recently with completion of the Train Modification Unit in Acton which included more than 173kWp\* of solar capacity. Our own land holdings, buildings and trackside areas have been assessed for their potential to host solar panels and while opportunities exist, there is a far greater potential on larger land holdings near to our network, which is the current focus.

Adopting a Solar PV Private Wire approach means connecting directly to new solar farms installed near the London Underground network. These solar arrays will be funded by the supplier and installed on local land, with us paying for electricity per unit produced. This guarantees that local, zero-carbon electricity will link directly to the London Underground network.

Initial feasibility work indicates up to 64MWp\*\* of solar capacity could be possible, the equivalent of installing more than 10,000 standard residential solar installations, providing up to 5 per cent of our annual electricity demand.

### Waste heat from the Tube

Waste heat from the London Underground network currently provides heating and hot water to more than 1,350 homes, a school and two leisure centres in Islington thanks to the pioneering project that developed into the Bunhill 2 Energy Centre.

We are exploring additional locations to make use of waste heat from the network, including London Underground ventilation shafts, with the potential to serve up to 15,000 homes.

Using the heat generated from these sources to replace gas heating in nearby buildings can save more than 1,000 tonnes of carbon at each site, every year. We are also exploring ways in which we can achieve benefits from water which is pumped from our tube network every day.

\*, \*\* Standard measures of solar output peak power generation. There are 1,000 kilowatts (kW) in a Megawatt (MW)

We are working to explore ways of procuring more renewable electricity



# Case study

## Managing lifecycle carbon emissions in our major projects

The Major Projects Directorate has developed a three-year carbon strategy that will enable carbon reduction targets to be set and carbon practices to be embedded within TfL. The actions in the strategy fall under four themes: carbon footprint baseline assessment; establishing carbon reporting and assurance; creating a carbon culture and growing capability; and carbon reduction. The strategy's execution will be supported by a new team of programme carbon management leads who will provide a crucial common link between programmes to help early sharing of learning and best practice in carbon management.

The Major Projects Directorate carbon strategy has been developed based on learning gained from the Piccadilly line upgrade. Since December 2020, the Piccadilly line upgrade delivery team has been trialling carbon modelling processes, including: updates to works information to aid procurement and contracting; the development of an in-house carbon modelling tool; and carbon modelling training for project managers and engineers.



Trialling carbon modelling will help reduce lifecycle carbon emissions



# Reducing carbon from our infrastructure and supply chain

## Our ambitions

- + Reduce carbon emissions across the lifecycle of our assets and infrastructure
- + Work with our suppliers to reduce carbon across all products and services we procure

## How will this be reached?

### Infrastructure

- Evaluate the carbon footprint of our assets across their lifecycle, including construction, operation, maintenance and disposal
- Ensure that considerations for carbon use are embedded in our decision-making process and set targets for our capital programmes
- Manage whole lifecycle carbon emissions throughout our capital projects, evaluating sources of carbon as early as possible in designs and embedding carbon reduction in business cases, procurement and supplier management
- Collaborate closely with other infrastructure owners, suppliers and cross-industry bodies to develop and share best practice in infrastructure carbon management

### Supply chain

- Measure and monitor the carbon impacts of our supply chain, focusing on the highest priority areas to reduce emissions
- Work in partnership with our suppliers to identify and further deliver emissions reductions
- Specify sustainable standards and ensure our supply contracts incentivise suppliers to reduce carbon from the products and services we procure

## Our Scope 3 target

- Agree and set a reduction target for our scope 3 emissions by the end of 2022

## How will this be monitored?

- Instil carbon performance and appraisal through contracts, proposals, projects, programmes, business cases, scheme designs and other processes
- Work with suppliers to monitor, reduce and continually improve performance





## What we are already doing

### Managing carbon in the Colindale station redevelopment

The redevelopment of Colindale Underground station in north London will deliver increased capacity and step-free access by 2024, and support new residential development on the current station site. We are integrating carbon management into all design work and decision making around the project, using the principles set out in the Publicly Available Specification for Carbon Management in Infrastructure, PAS 2080. Working closely with our suppliers Morgan Sindall, Atkins and Fourway, and using the Rail Safety and Standards Board's Rail Carbon Tool, we have continually developed the design for the new station building to reduce carbon use across the lifecycle of the new infrastructure. Improvements ranged from reducing the amount of materials we use to adapting the public lighting design to optimise energy consumption. TfL's project engineer for the scheme has been recognised as a Carbon Champion by the Institution of Civil Engineers.

### Net Zero Infrastructure Industry Coalition

In 2019 we joined a coalition of prominent public and private infrastructure businesses and academic institutions that are committed to achieving net-zero carbon emissions. Our goal is to support the ambition of the UK to transform the way in which the infrastructure that forms the backbone of our economy contributes to good net-zero carbon, and makes the UK an international leader in net-zero carbon across the global infrastructure industry. The Net-Zero Infrastructure Industry Coalition will provide and demonstrate clear leadership as well as innovative thinking and know-how across the infrastructure industry to achieve our goal.

We are working to manage the carbon when redeveloping our stations



# Adapting to the changing climate

## Our ambitions

- ⊕ Understand, prepare and adapt for climate change, now and in the future on our services, infrastructure, staff, contractors and customers

## How will this be reached?

- Understand TfL's exposure to the impact of climate change through a dedicated research programme, developing case studies of weather-related impacts, and improving how we collect data on performance and incidents
- Embed climate change adaptation into our processes, long-term planning and decision making
- Work with teams across TfL to raise awareness of climate change impacts and improve the way we reduce those risks
- Work with other infrastructure owners and transport organisations to share knowledge, understanding of interdependencies and risks, develop best practice and work together to help reduce risks

## Our targets

- Conduct a climate risk assessment of our assets by the end of 2021
- Develop a baseline understanding of severe weather impacts on our assets and performance by the end of 2022
- Use this baseline and the Met Office's climate projections to predict the likely impact of future climate change on our network by 2023
- Apply climate projections consistently across the business by 2023, including in TfL's standards

## How will this be monitored?

- Through project and programme business cases, scheme designs and other project management tools
- Data on performance, costs and incidents
- Benchmarking TfL's progress on adaptation against other organisations in the transport sector and beyond
- Reporting through the Adaptation Reporting Power created as part of the Climate Change Act (2008)





## What we are already doing

### Collaboration to improve climate change adaptation and resilience

We established and continue to chair the quarterly Transport Adaptation Steering Group, which brings together stakeholders (such as Network Rail, Highways England and Thames Water) and experts (such as the London Climate Change Partnership and Environment Agency) to understand how we can proactively address the issue of climate change adaptation in the transport sector.

### London Underground Comprehensive Review of Flood Risk

The London Underground Comprehensive Review of Flood Risk project systematically reviewed any significant sources of flood risk, both natural and non-natural, to all of London Underground's vulnerable assets. The aim was to quantify the safety and business residual risks, and identify those assets most at risk of flooding, so that operational mitigation measures can be implemented and financial resources allocated more effectively.

After burst water mains, the most significant flooding threats are surface water flooding and river or tidal flooding. The latest results suggest a total residual risk value of £4.2m per year.

Better managing flooding risk is key to adapting to climate change



# Case study

## Embedding climate change adaptation measures at West Ham Bus Garage

At seven acres, the award-winning West Ham bus garage is one of the largest bus garages in Europe. It is also one of the most environmentally sustainable bus garages in the UK.

The garage has approximately 7,400sqm of barrel-vaulted roof-covered space. The two outer arches of the laminated timber roof (more than half of the total roof area) have been planted with a mat of sedum species. This acts like a sponge for rainwater, releasing it more slowly into the drainage system and so helping to reduce the risk of surface water flooding. Rainwater collected from the rest of the roof is stored in underground tanks and used to flush on-site toilets, helping to reduce pressure on water supplies.

The garage minimises energy use through its design. Only some of the rooms such as computer server rooms and training rooms are air conditioned. Other rooms have a ventilation system that is designed to draw in colder air overnight ready for their day-time occupation. The building's exposed concrete absorbs heat during the day, while the biomass boiler and micro Combined Heat and Power (CHP) units help reduce reliance on fossil fuels. The completed facility achieved an 'A' rated Energy Performance Certificate.

It is not just the garage that integrates climate change adaptation into its design. To help reduce the impacts of summer heat, all double deck buses in the fleet (with the exception of classic Routemasters) have air cooling. In addition, all single and double decks have white roofs, roof and engine insulation, tinted windows and opening windows.

Bus parking areas either side of the central engineering facility are designed to absorb noise from the depot which is located next to residential areas.

Energy use can be minimised through sustainable design







## Air quality

Reduce emissions of harmful air pollutants from our activities



ENVIRO 200 EV

Electric bus

TRANSPORT FOR LONDON  
EVERY JOURNEY MATTERS

This bus pulls in frequently



# Air quality

Toxic air pollution remains a huge risk to the health of all Londoners. Progress has been made in reducing air pollution from road traffic in London through the introduction of the ULEZ in 2019 and strengthening of the Low Emission Zone standards in March 2021. However, there is still much to do for London to comply with legal limits for nitrogen dioxide (NO<sub>2</sub>) and to meet the London Environment Strategy's ambition of reaching the World Health Organisation's recommended limits on particulate matter (PM<sub>2.5</sub>)

We will continue to play our part in delivering the Mayor's air quality programme, starting with the expansion of the ULEZ in October 2021. We will also continue to work with London's boroughs to deliver local improvements in air quality, and with taxi and private hire operators to reduce emissions from their fleets.

Reducing emissions from our own operations is a vital part of improving London's air quality. All 9,000 buses in our fleet now meet or exceed the cleanest Euro VI emissions standards, the same strict standards as the Mayor's ULEZ. The buses which we have retrofitted to meet the Euro VI standard emit up to 95 per cent less nitrogen oxide (NO<sub>x</sub>) emissions and 80 per cent less particulate matter than before.

We want to move to a zero-emission support fleet and are working with our suppliers to convert their vehicles. As we transition our buildings towards zero carbon, we aim to reduce emissions of air pollutants as well. We are working hard to reduce emissions from the plant and equipment that we and our suppliers use in construction and maintenance of the network.

Our responsibility to improve air quality extends to our staff and customers on London Underground. While the concentration of particulate matter in the Tube network is below legal limits, there are still some areas of the network with high levels of dust. We have committed to working with academic partners to research the potential health impacts of the particulates found in the Tube network and publish the results. In the meantime, we are continuing to ensure the Tube is cleaned where it is most needed and explore innovative solutions to managing dust.

We continue to work with London's boroughs to deliver local improvements in air quality



ALL

**9,000**

buses in our fleet now meet or exceed the cleanest Euro VI emissions standards



Increasing active travel and reducing motor vehicles improves air quality



# Improving air quality

## Our ambitions

- + Help deliver London's air quality programme
- + Transition the fleets under our control to zero-emission
- + Reduce emissions of harmful air pollutants from our buildings and on the Tube network
- + Lead the way in the use of low- and zero-emission plant and equipment

## How will this be reached?

- We will no longer procure new diesel or hybrid buses and will only procure new zero-emission buses
- Continue to work with taxi and private hire operators to support their conversion to zero emission capable vehicles
- Use performance management measures in our contracts to incentivise our suppliers to convert their vehicle fleets to zero emission
- Undertake detailed analysis of the health impacts of particulate matter on the Tube
- Trial innovative techniques to reduce particulate levels on the Tube
- Work with our suppliers to move towards zero emission Non-Road Mobile Machinery (NRMM) across the network

## Our targets

- Zero emission bus fleet by 2034 or earlier, with an ambition to achieve this by 2030
- All cars in our support fleet to be zero emission by 2025, and vans by 2030
- From 2025, new contracts will require freight and servicing vehicles under 3.5 tonnes travelling to TfL buildings to be zero emission
- Comply with the progressively tightening NRMM Low Emission Zone standards for TfL developments and business as usual activities. This will lead to all NRMM procured by us, or used by suppliers and subcontractors on our behalf, to be zero emission by 2040

## How will this be monitored?

- Track and report the makeup of our vehicle fleets and their emissions and that of our subcontracted services and suppliers
- Regular monitoring of particulate matter concentrations on the Tube
- NRMM compliance is monitored by the GLA NRMM register and will also be monitored by a specialist app, currently in development



## What we are already doing

### **Reducing emissions from our buses**

We already operate the largest zero emission bus fleet in western Europe, with more than 500 electric buses currently in operation, increasing to 800 by the end of March 2022, and 22 hydrogen fuel cell buses. We are committed to converting our 9,000-strong bus fleet to zero emission, and aim to have transitioned 10 per cent of the fleet by 2023. We have recently brought forward our target for a fully zero-emission fleet to 2034, with an ambition to achieve this by 2030.

### **Working with the GLA to develop the non-road mobile machinery compliance monitoring app**

Exhaust fumes from non-road mobile machinery such as excavators and generators are a significant contributor to London's air pollution. Progressively stricter emission standards have been set. The current GLA NRMM Register monitors compliance with NRMM standards for development sites which can be identified by specific postcode. We are working with the GLA to develop an online portal to monitor compliance with NRMM standards across the GLA group and pilot this on TfL's highways maintenance contracts.

We are committed to converting our 9,000 strong bus fleet to zero emission





## **Green infrastructure**

Protect, connect and enhance our green infrastructure including the biodiversity, habitats and ecosystem services on our estate

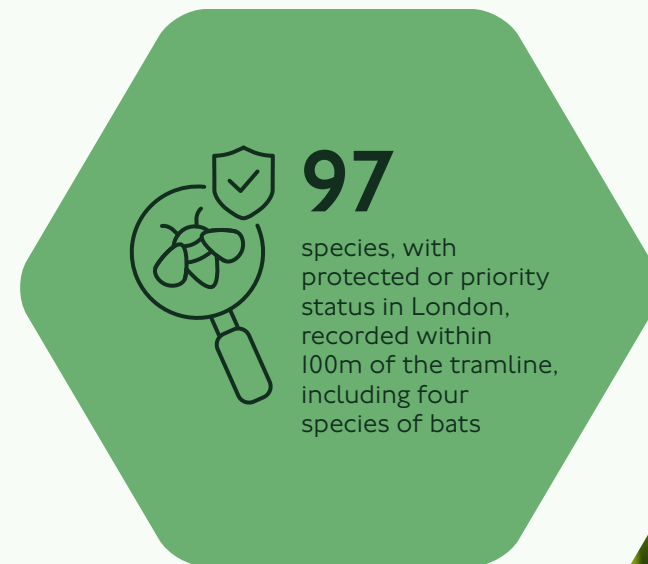


# Green infrastructure

Our climate is in crisis and so is nature. The pressures on our natural environment continue to increase with more competition for space caused by increased demand for consumer goods, agriculture and accelerated urbanisation. Globally, more than a million species are on the verge of extinction, with an average of 60 per cent decline in animal populations since 1970. The latest (2019) State of Nature Report from a coalition of environmental organisations estimated that 15 per cent of the species assessed in the UK are at risk of extinction. London's wildlife is in decline, in line with the trends across the country.

Our network is home to several notable and protected species such as bats, water voles, stag beetles, great crested newts and badgers to name a few. It also includes designated sites such as Epping Forest, which is nationally and internationally recognised for its biodiversity. Our networks also provide valuable green corridors for wildlife. We have 23,500 trees in our inventory with plane (Platanus) being the most dominant. These remove nearly 6.3 tonnes of airborne pollutants each year and store more than 6,700 tonnes of carbon. Beyond this, they divert an estimated 8,700 cubic metres of storm water run off away from the local sewer systems each year. Urban trees are vital to our city since they can help to improve air quality by reducing air temperature and by directly filtering pollutants. With 22.17 square kilometres of landholdings, including 1.65 square kilometres of roadside verges and 124 Sites of Importance for Nature Conservation (SINCs), covering 4.8 square kilometres (or 24 per cent) of our land\*, we have a significant opportunity to protect and enhance the flora and fauna in the Capital.

We are committed to protecting our natural environment, connecting and enhancing green spaces across our estate. In the event of biodiversity loss, we provide new green infrastructure to deliver biodiversity net gain. We have a crucial role to play in ensuring that London's natural environment, habitats and species are protected. Improving green infrastructure on our networks makes these more attractive and has health benefits for our customers, particularly those walking, cycling and using public transport. It also increases resilience to extreme weather and climate change. Our investments, projects, and operations will protect, connect and enhance the biodiversity, habitats and ecosystem services in our estate. Our maintenance activities will balance the need to run safe services to the travelling public and delivering biodiversity benefits where possible.



\* November 2018 data

Wildflowers are an important food source for pollinators like bees





Our green infrastructure includes networks of green spaces, embankments, railway cuttings, grassland, woodland and sustainable drainage systems, and features street trees and green roofs.

Our work on green infrastructure contributes to a wide range of environmental and social benefits. By valuing our natural environment and prioritising green infrastructure as an asset and a solution, there are a number of opportunities for us as an organisation and London as a whole, including:

**Climate resilience**

Reducing the risk of flooding by slowing the rate and reducing the amount of rainwater entering the drainage system. Green infrastructure also provides shade and helps to cool the city as it radiates less heat back into the air compared to hard infrastructure, such as concrete and asphalt

**Improving health and wellbeing**

By helping to cool the city, reduce the risk of flooding, provide shade, and improve air quality we are making London more attractive to live in and visit. Green infrastructure can also help make walking and cycling a more attractive method of travel

**Reducing exposure to poor air quality**

In some locations, green infrastructure can act as an effective barrier to air pollutants, helping to reduce pedestrians' exposure to poor air quality

**Providing social benefits**

Help connect and improve communities, and enhance natural environments for people living locally and visitors to enjoy

**Growing our economy**

By making London a more liveable and climate-adapted city, green infrastructure can make London a more attractive place to live, work in and visit

**Cultural heritage and built environment**

From Victorian London plane trees to public parks, green infrastructure is an important part of London's cultural heritage and built environment. Our transport networks connect and provide access to this heritage

**Connecting and enhancing habitats and biodiversity**

As well as providing a range of benefits, green infrastructure provides valuable networks of habitats for wildlife and so can increase biodiversity, even in a changing climate



**4,463**

trees have been planted on our roads since 2016, including replacing those that had to be removed due to disease or for safety reasons

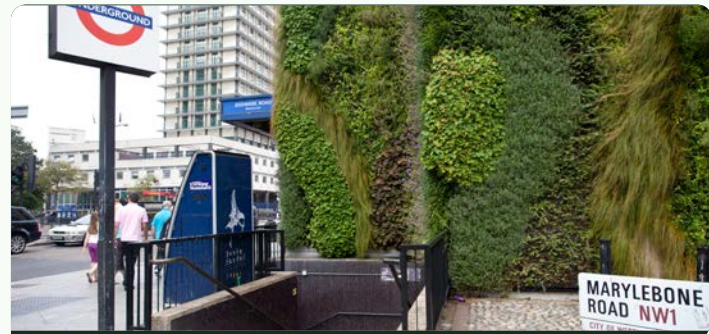
**Green infrastructure can make walking and cycling a more attractive way to travel**

Trees provide welcome shade for people walking on hot days



# Benefits of green infrastructure

Implementation of robust green infrastructure and biodiversity policy will lead to:



## Customers

- + More attractive, safe, reliable and comfortable transport networks
- + Increased level of health and wellbeing, leading to improved quality of life



## Boroughs

- + Collaborative working
- + Cleaner air, water and land
- + Enhanced local character



## All Londoners

- + Cleaner air, water and land
- + Increased biodiversity
- + Provide access to green spaces
- + Making London a more attractive place to live, work and visit



## Benefits to TfL

- + Improved relationship with all stakeholders
- + Cost savings (for example, through energy efficiency, reduced maintenance, etc.)
- + Energy efficiency
- + Risk reduction
- + Adaptation to climate change
- + Staff engagement
- + Enhanced reputation
- + Improved reliability
- + Increased customer footfall
- + Meeting mayoral objectives and legal requirements



## Neighbours

- + Neighbours understand our need to maintain safety while working to improve biodiversity
- + Enhanced local character, and improved views and surroundings



## Contractors

- + Improved understanding between contractors, leading to more efficient and innovative ways of working



## Developers

- + Increased certainty for developers, leading to improved relationships
- + More marketable property developments



# Making the most of green infrastructure

## Our ambitions

- ⊕ Protect, connect and enhance our green infrastructure, including the biodiversity, habitats and ecosystem services on our estate

## How will this be reached?

- Use a natural capital approach\* to maximise the benefits of green infrastructure in our investments, projects, maintenance activities and strategic decision-making
- Deliver a net gain in biodiversity across our estate through our maintenance activities, project delivery and commercial development
- Contribute to the London Environment Strategy goals of a 10 per cent increase in tree canopy cover and London being more than 50 per cent green
- We aim to avoid, or where this is not achievable, minimise our impacts on SINCs, and actively manage these to improve biodiversity and ecosystem services
- Reduce the incidence of existing, and risk of new, invasive non-native species, such as Japanese knotweed and oak processionary moth, on our networks
- Improve the way we monitor and report on green infrastructure and biodiversity
- Work with teams across TfL to raise awareness of the benefits and importance of green infrastructure and biodiversity, and improve the way we consider these topics, for example, in our Management System

\* An approach to policy and decision making that considers and quantifies the value of the natural environment for people and the economy

\*\* Schemes subject to the Town and Country Planning Act and Nationally Significant Infrastructure Projects

## Our targets

- Develop a natural capital account for our estate by mid-2022 and regularly update it
- Meet, and where possible exceed, the London Plan's Urban Greening Factor requirements for relevant developments
- Develop a TfL Biodiversity Net Gain strategy to set out our approach towards biodiversity offsetting by end-2022 and aim to achieve 10 per cent biodiversity net gain on applicable schemes\*\*
- Increase the number of trees on our roads by one per cent per year between 2016 and 2025
- Evaluate and expand (where possible) the use of alternative, herbicide-free methods of invasive species management
- Aim for a 10 per cent increase in TfL-wide tree canopy cover by 2050
- Identify and contribute to the Mayor's Transport Strategy target of 50,000 square metres draining through Sustainable Drainage System (SuDS) every year on London's roads
- Publish a green infrastructure technical strategy
- Expand and evaluate our wildflower verges trial by the end of 2022
- Evaluate the success of our green bus shelter roofs by the end-of 2021, to better understand their potential to support enhanced greening across London where it is most needed

## How will this be monitored?

- By regularly updating our natural capital account and biodiversity baseline
- Reporting on the Mayor's Transport Strategy target progress to the Board
- Report on estate-wide biodiversity losses and gains every five years, through the biodiversity baseline





## What we are already doing

### Wildflower verge trials on our roads

We are trialling a reduced mowing regime on our roadside verges to encourage a more diverse habitat and increase wildlife. In 2019, we changed the maintenance regime in trial areas from up to eight annual cuts with clippings left behind, to annual cuts with the removal of all clippings. The regular removal of grass clippings reduces soil nutrients and results in a lower height and amount of grass, increasing the number and diversity of other wildflowers and plants. Left uncut, many of the verges produced flowers in the first year of the trial. We are continuing to cut and collect on all the sites we have been trialling so far, including in Redbridge and Hillingdon. Further new sites have been identified for an expanded trial. This new management method has the potential to save money for maintenance in the long run.

### Natural capital accounting

We are aiming to incorporate natural capital into asset strategy and project life cycle decision-making. The aim is to improve business performance, reduce business risk and deliver better environmental outcomes on schemes, for the benefit of Londoners and the UK as a whole. This aligns with existing commitments under the Mayor's Transport Strategy, London Environment Strategy. It will build on and support the work already under way to identify and reduce greenhouse gas emissions and tackle air pollution. We have identified that information on natural capital is relevant across our project development, maintenance activities and day-to-day operations, with some specific processes being identified as key entry points. We are one of only a few transport authorities globally to consider how to adopt a natural capital approach for its own operations at corporate level, not just in relation to site-based projects.

The regular removal of grass clippings reduces soil nutrients and increases wildflower diversity

We are trialling a reduced mowing regime to encourage more diverse habitats



### **Biodiversity baseline**

Working with nature and delivering ecological enhancements through relevant schemes has always been important to us. In 2017 we launched the TfL biodiversity baseline, a tool for tracking losses and gains in biodiversity delivered through the schemes we undertake. The biodiversity baseline is an innovative and effective GIS map of our operational networks that combines the Department for Environment, Food and Rural Affairs' (Defra's) biodiversity net gain metric with a variety of data sources to calculate the biodiversity value (units) of our land. These additional data sources include:

- Up-to-date ecology surveys
- Data from London's environmental records centre, Greenspace Information for Greater London (GiGL)
- Free Government data
- Aerial imagery

In 2019 we expanded the baseline to cover our entire estate, using high-resolution commercial imagery provided by the GLA. We have now used the baseline to identify opportunity areas for future biodiversity enhancements, for example, through offsetting our biodiversity impacts. Sitting alongside the baseline, we launched our biodiversity toolkit, a user-friendly tool to assess how different designs will affect biodiversity, supporting project leaders to make interventions earlier in the design process to benefit biodiversity at the end of the scheme. The data from the toolkit will be submitted to GiGL and used to help update the baseline every five years, enabling us to robustly report against progress towards our goal to deliver biodiversity net gain by 10 per cent on applicable schemes.

**In 2017, we launched the TfL biodiversity baseline to track changes in biodiversity delivered through our schemes**

By establishing a biodiversity baseline, we can track changes more easily





# Case study

## Improved drainage systems on our network

Working closely with the Environment Agency, we have installed a SuDS on a case study site at Upminster Bridge, to assess how effective green infrastructure-based SuDS interventions could be in buffering the effects of extreme rainfall events on London Underground infrastructure.

In addition to this innovative approach, multifunctionality incorporated into the design of the system ensured that a range of additional ecosystem service benefits were supported through the initiative. These included protecting Environment Agency waterways, low-carbon construction through the use of recycled construction waste materials and supporting biodiversity through habitat features incorporated into the SuDS design.

The brownfield area has been transformed using the power substation demolition material and spare attenuation crates from works that were part of the 2012 London Summer Olympic and Paralympic Games.



SuDS can help London cope with future extreme rainfall events





## Sustainable resources

Support a low-carbon  
circular economy



# Sustainable resources

The Mayor has set an ambition for London to become a zero-waste city. We are committed to supporting this, developing and embedding circular economy principles in how we operate, maintain and improve our network. This means we will:

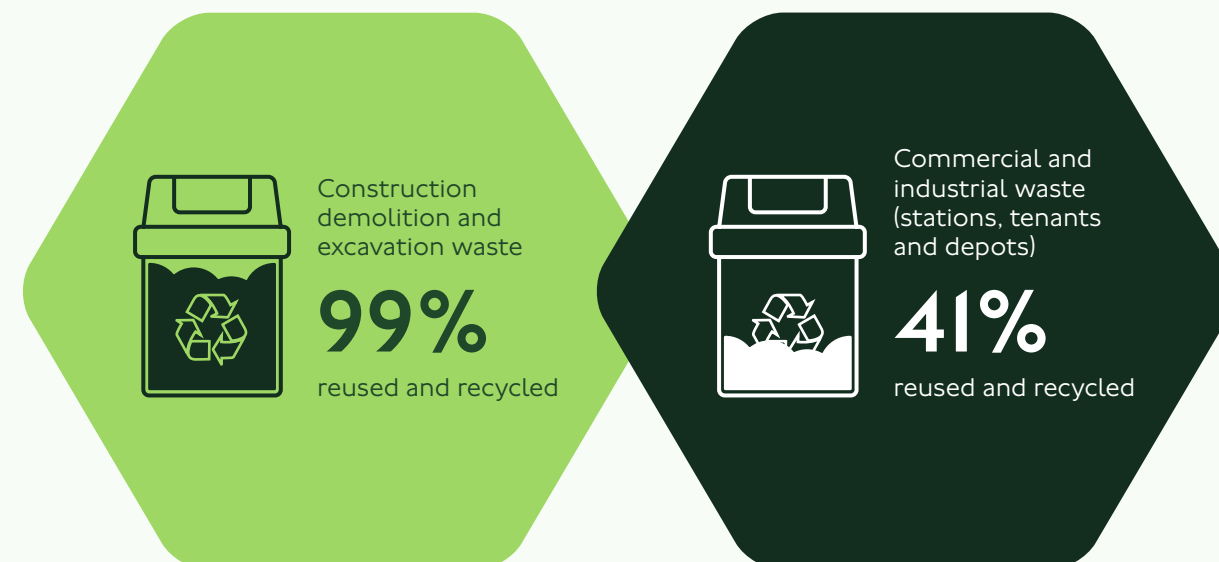
- Reduce waste at source, minimising the waste produced in the first place
- Extract value from materials by reuse and recycling
- Increase the purchase of products made from recycled materials

We aim to divert all waste from landfill and, where we are cannot reuse or recycle, it will be sent to modern incinerators which generate electricity from burning waste, capturing and reducing harmful pollutants during the process.

To reduce waste, action needs to be taken early on. We embed principles to reduce waste in projects' early planning and design stages. The largest generator of waste by weight and volume are our major construction projects, by far. We require all our major projects above a certain threshold to achieve sustainability awards levels such as CEEQUAL (Civil Engineering Environmental Quality Assessment and Awards Scheme) and BREEAM (Building Research Establishment Environmental Assessment Method) that require reducing waste through the design process and highly responsible waste management.

Excavated soil from major tunnelling projects can be put to beneficial use more easily than other waste, and we achieve very high reuse and recycling for these waste streams. Capturing the value in some other areas of wastes can be much more challenging.

## TfL waste in 2020/21



Recycling helps London to become a zero waste city faster



# Increased and more efficient use of sustainable resources

## Our ambitions

- + Use resources and materials sustainably
- + Consider materials' carbon cost throughout its life cycle
- + Support London's goal of being a zero-waste city

## How will this be reached?

- Deliver our ambitions within the GLA Group Responsible Procurement Implementation Plan 2021-24
- Collaborate with the ReLondon partnership to broker innovative solutions through engagement with Tier I suppliers and contractors, and SMEs including the development and delivery of trials
- Continue to deliver and build on initiatives such as our Safe & Sustainable by Design projects and engineering programme
- Embed circular economy guidance in procurement
- Identify opportunities in our standards and specifications to incorporate more recycled content of materials and recyclable materials
- Continue to implement customer waste recycling trials in stations
- Work with station tenants to reduce waste and implement food recycling trials
- Continue roll-out of food waste recycling from our staff canteens and establish a food waste baseline. Work with catering contractors to reduce food waste in line with the Mayor's targets to halve food waste by 2050
- Support reduction in plastic waste programmes, including continuing the roll-out of water refill points across the TfL network and reducing the use of single use plastics throughout our operations
- Develop new circular economy benchmarks and targets

## Our targets

- Divert from landfill 100 per cent of non-hazardous construction, demolition and excavation waste by 2030
- Recycle 65 per cent of our commercial and industrial waste by 2030
- Ensure 100 per cent of our commercial staff complete the Circular Procurement eLearning Module by April 2023, 50 per cent by April 2022

## How will this be monitored?

- Continue to collate and report on our waste and recycling performance
- Use the Management System to monitor the completion of the Responsible Procurement Checklist
- Monitor the implementation of circular procurement through the Responsible Procurement Implementation Plan progress reporting



## What we are already doing

### Recycled plastic railway sleepers

For the circular economy to be successful it is not enough to simply recycle waste, products must also be purchased that are made from recycled material. A practical example of us contributing to the circular economy is the use of plastic railway sleepers which are made from 99 per cent recycled materials. The sleepers replace timber sleepers in above-ground sections of the London Underground, and have been used successfully since 2019. The recycled plastic sleepers also have reliability and maintenance advantages, as well as being lighter and therefore easier to handle with the associated health and safety benefits for those installing them. In addition, the manufacturer will take back the sleepers at the end of their life for further onward recycling. The same material is also being used for depot and siding walkways.

We embed principles to reduce waste in projects' early planning and design stages



Recycled plastic railway sleepers can improve reliability on the network



# Case study

## Reuse of materials in major projects

The Northern Line Extension (NLE) is a major project that involved the construction of two new Underground stations, two ventilation shafts and two 3.2km-long tunnels extending the existing Northern Line to Battersea. In total, more than 845,000 tonnes of excavated material was transported from Battersea by barge. This material was taken down the River Thames to Goshems Farm, near Tilbury in Essex, where it was used to restore a Victorian landfill to useful arable land. With 701 barge movements in total, and one barge equivalent to 66 wagons, that equates to taking 46,965 wagons off the streets. As a result, the NLE has achieved CO<sub>2</sub> savings of 2,009 tonnes by using River Transport as opposed to road.

The CEEQUAL framework was used to drive sustainable design and construction. The CEEQUAL tool helped establish sustainability as a key objective to: deliver the civil engineering elements of the project; encourage local community engagement; improve relations with affected stakeholders; select energy-efficient machinery; set up a waste transfer station to ensure efficient material reuse; consider other transport users; and educate staff about sustainable construction methods.

The project being assessed through the CEEQUAL criteria led to innovative workshops that promoted sustainable design. This led the exploration of opportunities such as energy harvesting and PV technologies. The project also investigated what measures could be employed to reduce the energy consumption of the tunnel boring machine.

A carbon assessment was undertaken which identified decisions that were incorporated into the design of the project. These resulted in fewer or no carbon emissions, overall.

These design changes have led to significant savings through measures, including reducing the thickness of tunnel linings, reducing the length of launch tunnels and removing waste by barge rather than road. The project sought to maximise off-site manufacturing of components where possible, which helped minimise excess waste. The concrete platforms, columns, beams, ceiling slabs, stairs and tunnel segments were all manufactured off site, significantly reducing the concrete waste associated with in-situ concreting. The supply chain was challenged to reduce packaging where possible, with reusable stillages used and only high-quality pallets permitted, which were then collected for reuse.

Much of the temporary infrastructure required to construct the NLE was sold on to other construction projects, such as the nearby Thames Tideway project, or for other uses. Surplus materials were offered to local charities or returned to the supplier, where possible.

These measures enabled the NLE to achieve extremely high rates of reuse and recycling, with remaining waste going to incineration, enabling energy recovery, and less than one per cent going to landfill.

The project also sought to use local and recycled materials, where possible. Another construction project, less than one kilometre away from the Battersea site, needed to dispose of clean excavated material and the NLE site took advantage of this to use the material as backfill. Nearly 1,000 tonnes of this material were used to fill voids around the new Battersea Power Station structure, saving costs and avoiding the material being sent further afield as waste.



Sustainability assessment can drive sustainable design and construction





## Best environmental practices

Deliver our activities responsibly and be a good neighbour





# Best environmental practices

Managing our impact on the environment goes beyond specific projects, programmes and actions. It extends to every aspect of how we operate, maintain and upgrade London's transport network. It's about following best practice, being a good neighbour and doing the right things by Londoners, nature and the planet.

We are committed to:

- Ensuring legal compliance
- Adopting and implementing sustainable development best practice across our programmes
- Being transparent about our performance
- Being a good neighbour to all Londoners

Our activities have the potential to create nuisance and pollution if not managed appropriately, and we will continue to follow best practice in how we manage environmental challenges and ensure legal compliance.

We will report on our performance and disclose any information, for example reporting on energy use and carbon emissions in the Director's Report.

## Noise and vibration

We consider our neighbours by continuing to work to reduce the number of Londoners exposed to excessive noise and vibration levels from road and rail sources. We use quieter noise surfaces where we can and our work to electrify our bus and support fleets all contribute to reducing noise across London's roads.

We monitor noise and vibration levels across our network and will carry out any practical action to alleviate known residents' concerns when it is possible to do so. We continue to invest significantly in track renewal and maintenance across the rail and Underground network, including a continuous programme of rail grinding to make tracks smoother and track modernisation.

## Our projects

We assess our projects for sustainability outcomes and to identify environmental risks and opportunities.

Where appropriate, we recognise and apply sustainable development rating systems such as BREEAM and CEEQUAL to assess project sustainability issues leading to improved sustainable design principles. Our major construction projects follow the Considerate Constructors Scheme and their activities develop and align to a published Code of Construction Practice, where appropriate.

Our major projects will often be required to undertake an environmental impact assessment at planning stage, which involves the detailed consideration of potential environmental impacts and development of robust mitigation.

We will continue to go beyond our obligations and legal requirements by adopting and implementing sustainable development best practice across our programmes, including our Build to Rent portfolio, one of London's most significant programmes of urban development and housing delivery.

We aim to go beyond our minimum obligations and legal requirements

We aim to reduce noise and vibration from road and rail





# Managing our impact

## Our ambitions

- + Be a good neighbour
- + Comply with our obligations and legal requirements
- + Go beyond our minimum obligations to apply environmental and sustainability best practice
- + Benchmark our environmental performance with similar organisations, encourage innovation and share our learnings with others
- + Be transparent about our performance

## How will this be reached?

- Our projects and programmes self-assess their sustainability issues and environmental risks, and are independently verified, where appropriate, to improve their sustainable design principles
- Continually improve our management system, provide guidance and training to colleagues and suppliers, and undertake assurance activity to improve compliance.
- Ensure compliance with our carbon and energy disclosure requirements and regularly report on our performance
- We test and use improved technology and materials, including targeted trials for solutions relevant to reducing noise impact
- Apply Best Practicable Means to try to reduce the number of noise-related complaints from our operations and projects and ensure any complaints are promptly and fully addressed

## Our targets

- Aim to meet 'no net increase in noise' in Defra 'noise important areas' for our schemes
- Projects where the estimated total cost exceeds £5m or the contractor's costs exceed £25m must achieve CEEQUAL certification award level of at least 'Very Good', ideally 'Excellent', and BREEAM rating level of at least 'Very Good' and ideally 'Excellent'. Ensure no significant environmental incidents attributable to our activities across the network

## How will this be monitored?

- We already monitor our performance through incidents and complaints, and will continue to do so.
- Where sustainability rating systems are applied, these will be externally verified, and performance ratings made available to the public





## What we are already doing

### **Our Sustainability Staff Network Group and Sustainability Champions**

The TfL Sustainability Staff Network Group celebrated its first year of operation in June 2021. It is open to all colleagues who would like to help make TfL a more sustainable organisation and personally help combat the climate crisis and progress the UN Sustainable Development Goals more broadly. With a positive and constructive focus, the group aims to raise awareness of issues and opportunities, foster exploration of solutions and support to overcome challenges and grow from successes along the way.

The group has grown rapidly and continues to build membership, knowledge and capacity through its intranet activity, regular events and online discussion sessions. It also connects through quarterly and annual reporting activity. As this network matures and grows it will continue to positively impact on our environmental performance across the organisation.

Meanwhile, we also aim to have a sustainability champion in each team across the business. The sustainability champions encourage discussions of sustainability issues in day-to-day life at TfL and help empower staff to make improvements where they can.

The champions engage their teams in the best ways to suit their specific circumstances. The first tranche of 50 sustainability champions link with environmental champions in the Surface and Major Projects directorates as well as energy champions at London Underground stations.

### **Collaboration with suppliers on innovative materials**

We are working with suppliers to pursue and implement circular economy solutions. Annually, 40 million waste tyres are generated in the UK. Tarmac has developed the technology to allow granulated rubber use in asphalt and has recently received approval for use on the strategic road network. As a result, Tarmac, Kier, Metis Consultants and TfL have been assessing the viability of using such mixes on strategic roads in London.

The UltiPave R mix which incorporates one per cent rubber has recently been laid on a section of the TfL Road Network in south-east London – the A205 Stanstead Road between Stanstead Grove and St Dunstan's College access road, near Catford. Early assessments show this new asphalt mix is viable and could be considered as a default surfacing treatment across the TfL Road Network in the future. Approximately 750 waste tyres would be recycled for every kilometre of road surfaced.

**We aim to have a sustainability champion in each team across the business**







# Delivering our Corporate Environment Plan

We will ensure environmental sustainability is a core part of our culture. It is already a central theme of our new internal Vision and Values plan. The plan outlines the kind of organisation we want to be and was developed with extensive input from colleagues across the business, who told us that sustainability matters a great deal to them.

Our ambition and targets will be embedded in our plans for all business areas. We will use these to help drive and track improvements in environmental performance and outcomes.

We will go beyond our own activity and set high expectations on environmental performance and ambition from anyone that we work with.





# How we will monitor and report on progress

We are committed to being transparent about our performance. While we already have extensive systems for monitoring our environmental performance, we recognise that improving our environmental data reporting capability is key to delivering a successful Corporate Environment Plan. We have developed an improvement programme to achieve this.

Progress against the roadmap milestones will be tracked and reported in both the Safety, Health and Environment annual reports and future Sustainability Reports. As our delivery plans develop, we will add to and update the roadmap as part of this regular reporting.

Internally, we will be reporting on our carbon emissions through the TfL Scorecard which is reported to our Board, and other environmental metrics are embedded in the relevant scorecards from 2021/22 onwards.

We want to improve our environmental data reporting and capability

We will report on our progress against this plan





# Glossary

<b>Biodiversity</b>	Term used to describe the enormous variety of life on Earth, including plants, bacteria, animals, and humans. It can be used more specifically to refer to all the species in one region or ecosystem
<b>Biodiversity net gain</b>	An approach to development that leaves biodiversity in a better state than before
<b>Biosecurity</b>	Procedures or measures designed to protect the population against harmful biological or biochemical substances
<b>Building Research Establishment Environmental Assessment Method (BREEAM)</b>	The world's longest-established method of assessing, rating, and certifying the sustainability of buildings
<b>Carbon</b>	A shorthand term used to mean Carbon Dioxide (CO <sub>2</sub> ) and other greenhouse gases that contribute to climate change. These are increased by human activities
<b>Carbon dioxide (CO<sub>2</sub>)</b>	Principal greenhouse gas related to climate change
<b>Carbon footprint</b>	The total greenhouse gas emissions caused by an individual, event, organisation, service, or product, expressed as carbon dioxide equivalent
<b>Carbon offsetting</b>	The reduction in, or extraction from the atmosphere of, emissions of carbon dioxide or other greenhouse gasses made in one place in order to compensate for emissions made elsewhere
<b>Circular economy</b>	System based on the principles of designing out waste and pollution, keeping products and materials in use and regenerating natural systems
<b>Civil Engineering Environmental Quality Assessment and Awards Scheme (CEEQUAL)</b>	Evidence-based sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and works in public spaces
<b>Climate change adaptation</b>	Improvements to the built environment, assets or processes that lead to a reduction in harm or risk of harm, or realisation of benefits associated with climate variability and climate change. Adaptation policies can lead to greater resilience of communities and ecosystems to climate change
<b>Commercial and industrial waste (C&amp;I waste)</b>	Consists of a wide variety of office product packaging, including cardboard, wood, metal, glass, textiles, containers and aggregates. For TfL, this includes waste from stations, tenanted properties, depots and head offices

<b>Construction, demolition and excavation waste (CDE waste)</b>	The largest waste stream generated in London. It can contain bricks, slabs, concrete, plaster (gypsum), plasterboard, insulation, and excavation materials such as soil, sand and wood
<b>Decarbonise</b>	To remove or reduce the potential carbon dioxide emissions to the atmosphere from a process or structure
<b>Department of Environment, Food and Rural Affairs (Defra)</b>	Government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities in the UK
<b>Downstream activities</b>	The final processes in the production and sale of goods, where finished products are created, sold and used
<b>Ecosystem services</b>	The benefits provided by ecosystems that contribute to making human life both possible and worth living
<b>Embodied carbon</b>	The carbon footprint of a material. It considers how much carbon is released throughout the supply chain and is often measured from cradle to (factory) gate, or cradle to site (of use). In construction projects, this is also referred to as Capital Carbon or Infrastructure Carbon
<b>Geographic Information System (GIS)</b>	A system that creates, manages, analyses and maps data.
<b>Greenhouse gas</b>	Any gas that induces the greenhouse effect, trapping heat within the atmosphere that would normally be lost to space, resulting in an increase in average atmospheric temperatures, contributing to climate change. Examples include carbon dioxide, methane and nitrous oxides
<b>Green infrastructure</b>	The network of parks, green spaces, gardens, woodlands, rivers, green roofs, street planting, rail and road verges and wetlands that is planned, designed and managed to: promote healthier living; lessen the impacts of climate change; improve air quality and water quality; encourage walking and cycling; store carbon; and improve biodiversity and ecological resilience
<b>Greenspace Information for Greater London (GiGL)</b>	London's environmental records centre. GiGL provides a hub for collating and sharing data about London's wildlife, habitats, green space and related data
<b>Low Emission Zone (LEZ)</b>	Encourages the most polluting heavy diesel vehicles driving in London to become cleaner. The LEZ covers most of Greater London and is in operation 24 hours a day, every day of the year



<b>Natural capital account</b>	The set of environmental resources – including green space, air, water, wildlife – that provides services, such as flood protection or cleaner air, that benefit the wellbeing of Londoners and the city’s economy. Like other forms of capital, such as human capital and goods and services, natural capital is a valuable asset that must be managed sustainably to maintain and improve these benefits
<b>Net-zero carbon</b>	Making the amount of carbon emitted into the atmosphere equal to the amount taken out of atmosphere. Reaching zero carbon on a net basis, where any residual greenhouse gas emissions are offset
<b>Non-Road Mobile Machinery (NRMM)</b>	A significant contributor to London’s air pollution, especially in the construction sector, including generators, diggers, pumps, powerful hand tools and lighting rigs
<b>Oxides of Nitrogen (NO<sub>x</sub>) consisting of nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>)</b>	Two gases whose molecules are made of nitrogen and oxygen atoms. These nitrogen oxides contribute to the problem of air pollution, impacting on human health and life expectancy and playing a role in the formation of both smog and acid rain
<b>Particulate matter</b>	Sum of all solid and liquid particles suspended in the air, many of which are hazardous. This complex mixture includes both organic and inorganic particles such as dust, pollen, soot, smoke and liquid droplets. These particles vary greatly in size, composition and origin. Sources include burning fuels in internal combustion engines and heating boilers, tyre and brake wear, chemical reactions in the atmosphere and dust blown in from outside areas
<b>PM10</b>	Inhalable Particulate Matter, with diameters that are generally 10 micrometres and smaller. PM10 does not penetrate as deeply into the body as PM2.5 but still has serious health implications, including compromised lung function and disease
<b>PM2.5</b>	Particles that have diameter less than 2.5 micrometres (more than 100 times thinner than a human hair). These particles can penetrate deep in the lungs and other organs, causing a wide range of health problems
<b>Resilience</b>	The ability of a system to recover from the effect of an extreme load that may have caused harm
<b>Scope 1 emissions</b>	All direct greenhouse gas emissions from owned or controlled sources such as company vehicles and gas boilers

<b>Scope 2 emissions</b>	Indirect greenhouse gas emissions from the consumption of purchased electricity, heat or steam
<b>Scope 3 emissions</b>	Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in scope 2
<b>Sites of Importance for Nature Conservation (SINCs)</b>	Areas of land chosen to represent the best wildlife habitats in London and areas of land where people can experience nature close to where they live and work
<b>Solar photovoltaics (PV)</b>	Technology for generating electricity using energy from the sun
<b>Supply chain</b>	The entire process of making and selling commercial goods, including every stage from the supply of materials and the manufacture of the goods, products and services through to their distribution and sale
<b>Sustainable drainage systems (SuDS)</b>	Systems designed to efficiently manage the drainage of surface water in the urban environment. The use of SuDS in London helps reduce the impact on, and cost of upgrading, London’s largely Victorian, insufficient drainage infrastructure
<b>Ultra Low Emission Vehicles (ULEV)</b>	Vehicles that emit extremely low levels of motor vehicle emissions compared to other vehicles
<b>Ultra Low Emission Zone (ULEZ)</b>	To improve air quality, the Ultra Low Emission Zone operates 24/7 in central London. Vehicles need to meet ULEZ emission standards or drivers have to pay a daily fee to drive into the zone
<b>Upstream activities</b>	Points in production that originate early in the processes
<b>Urban Greening Factor</b>	A tool that evaluates and quantifies the amount and quality of urban greening that a scheme provides, to inform decisions about appropriate levels of greening in new developments
<b>Zero carbon</b>	The state in which no greenhouse gases are released through an activity



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## About TfL

Part of the Greater London Authority family led by Mayor of London Sadiq Khan, we are the integrated transport authority responsible for delivering the Mayor's aims for transport.

We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for All Londoners' 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, TfL Rail, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the Emirates Air Line. The quality and accessibility of these services is fundamental to Londoners' quality of life. By improving and expanding public transport and making more stations step

free, we can make people's lives easier and increase the appeal of sustainable travel over private car use.

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, the Ultra Low Emission Zone scheme and more environmentally friendly bus fleets are helping to tackle London's toxic air.

During the coronavirus pandemic we have taken a huge range of measures to ensure the safety of the public. This includes enhanced cleaning using hospital-grade cleaning substances that kill viruses and bacteria on contact, alongside regular cleaning of touch points, such as poles and doors, and introducing more than 1,000 hand sanitiser points across the public transport network.

Working with London's boroughs we have also introduced Streetspace for London, a temporary infrastructure programme providing wider pavements and cycle lanes so people can walk and cycle safely and maintain social distancing.

At the same time, we are constructing many of London's most significant infrastructure projects, using transport to unlock much needed economic growth. We are working with partners on major projects like the extension of the Northern line to Battersea, Barking Riverside and the Bank station upgrade.

Working with Government, we are in the final phases of completing the Elizabeth line which, when open, will add 10 per cent to central London's rail capacity. Supporting the delivery of high-density, mixed-use developments that are planned around active and sustainable travel will ensure that London's growth is good growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

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

We are constantly working to improve the city for everyone. This means using data and technology to make services intuitive and easy to use and doing all we can to make streets and transport services accessible to all. We reinvest every penny of our income to continually improve transport networks for the people who use them every day. None of this would be possible without the support of boroughs, communities and other partners who we work with to improve our services.

By working together, we can create a better city as London recovers from the pandemic and moves forward.



