

- 5.1.10 ensure that the works comply with any manufacturer's recommendations, instructions and guidelines, unless otherwise directed by the Company;
- 5.1.11 operate and maintain all plant, equipment and processes in accordance with the relevant manufacturer's or supplier's specification or procedures, unless otherwise directed by the Company;
- 5.1.12 take all necessary steps to identify, recall, re-inspect and replace any equipment or parts which have been inspected using inspection, measuring or test equipment whose calibration is found to be defective or unknown;
- 5.1.13 store and protect inspection, measuring and test equipment and materials to prevent misuse, damage and deterioration;
- 5.1.14 ensure that all equipment bears an identification of its calibration or maintenance status, in a manner that clearly indicates it is within the calibration or maintenance period; and
- 5.1.15 deliver all Services, technical and non-technical, in accordance with the Specification and relevant ISO standards.

6. Quality Plan

6.1 The Supplier shall:

- 6.1.1 provide a recognised Quality Management Plan (as required pursuant to Schedule 21 (Contract Management)) and Quality Assurance and Management System applicable to the compliant delivery of the Services, certified to the BS EN ISO 9001 2015 standard, or equivalent, by a United Kingdom Accreditation Service ("UKAS") (or equivalent accredited certification body) or to a level that meets the approval of the Company;
- 6.1.2 have in place a Quality Management Policy to the standard of BS EN ISO 9001, or equivalent or to a level that meets the approval of the Company; ensure the Quality Management Plan and Quality Assurance and Management System applied to this Contract shall be annually and independently audited and verified by a UKAS accredited body. This applies equally to environmental management, health and safety, and any other which may be included in the Contract or which may be introduced at any time;
- 6.1.3 oversee all activities and tasks needed to maintain optimisation and delivery of the Services. This includes creating and implementing quality planning and assurance, as well as quality control and quality improvement. The Supplier shall ensure that the Quality Management Plan demonstrates the Supplier's process control system as required for the Contract. It shall include the practice and fundamental principles of Total Quality Management ("TQM") including: plan, do, check act;
- 6.1.4 ensure the Quality Management Plan shall be operated by the Supplier throughout the duration of the Contract and the Supplier shall maintain and periodically revise the Quality Management Plan as required (and in accordance with Schedule 21 (Contract Management)) and provide it in its amended form to the Company each time it is amended; and

6.1.5 have in place a robust audit regime to ensure optimisation of quality and standards of the delivery of the Services.

6.2 The format of the Quality Management Plan shall be determined by the Company and should be developed in accordance with BS ISO 10005:2005 (Guidance on Quality Plans) or to a level that meets the approval of the Company.

SCHEDULE 8 PART C: ENVIRONMENTAL REQUIREMENTS

Definitions

“**BREEAM**” means the Building Research Establishment Environmental Assessment Method.

“**BREEAM New Construction Infrastructure (Pilot)**” means the Building Research Establishment Environmental method and assessment pilot Scheme

“**CEEQUAL**” means the Engineering Environmental Quality Assessment and Award Scheme.

“**Congestion Charge**” means the fee charged on most motorised vehicles operating within a defined charge zone in London under a scheme managed by TfL.

“**Environmental Management System**” or “**EMS**” has the meaning given to it in paragraph 1.2 of this Schedule 8 Part C (Environmental Requirements).

“**Environmental Management Plan**” or “**EMP**” has the meaning given to it in paragraph 1.3 of this Schedule 8 Part C (Environmental Requirements).

“**Green Infrastructure**” or “**GI**” has the meaning given to it in Schedule 3 (Specification) and is set out within Appendix A (Services Matrix) of Schedule 3 (Specification).

“**LU HSE Policy**” means the policy set out in Appendix 1 to this Schedule 8 Part C (Environmental Requirements).

“**Pollution Response Plan**” or “**PRP**” has the meaning given to it in paragraph 8.5 of this Schedule 8 Part C (Environmental Requirements).

“**Site Noise and Vibration Evaluation and Control**” means the process set out in Appendix 4 to this Schedule 8 Part C (Environmental Requirements).

“**TfL Corporate Environment Framework**” means the policy set out in Appendix 2 to this Schedule 8 Part C (Environmental Requirements).

“**TfL Specialist Services HSE Policy**” means the policy set out in Appendix 1 to this Schedule 8 Part C (Environmental Requirements).

“**Waste Management Plan**” or “**WMP**” has the meaning given to it in paragraph 7.2.1 of this Schedule 8 Part C (Environmental Requirements) and as set out in Appendix 5 to this Schedule 8 Part C (Environmental Requirements).

1. Section 1

1.1. Introduction

- 1.1.1. The Mayor wants London to be recognised as a world leader in improving the environment, locally and globally. The Greater London Authority (“GLA”) has published a number of detailed strategic aims on air quality, water, waste, climate change adaptation, and climate change mitigation and energy. These build on the GLA’s “Leading to a Greener London” document¹, published in 2009, which sets out London’s aim to be one of the greenest cities in the world. There is an ambition to cut London’s carbon emissions by 60% by 2025.
- 1.1.2. More specifically, the Company has set the following targets within the TfL Corporate Environment Framework (set out in Appendix 2 to this Schedule 8 Part C (Environmental Requirements)), to help achieve the Mayoral goals:
- 1.1.2.1. the Company will contribute towards achieving the Mayor’s target of a 60 per cent reduction in CO₂ emissions by 2025 (against a 2013 baseline) by aiming for a 40 per cent cut in TfL CO₂ emissions;
 - 1.1.2.2. the Company will further reduce the amount of carbon emitted per passenger journey by cutting emissions of CO₂ per passenger kilometre by 40 per cent by 2025 (against a 2013 baseline);
 - 1.1.2.3. the Company will seek to support the Mayor’s air quality targets for London by delivering a 50 per cent reduction in NOx emissions from the bus fleet by 2020, against a 2013 baseline;
 - 1.1.2.4. the Company will reduce particulate matter (“PM”) emissions from the bus fleet by 25 per cent by 2020, against a 2013 baseline; and
 - 1.1.2.5. the Company will reuse, recover and recycle 99 per cent of non-hazardous waste by 2031. The Company will set interim targets to achieve this and will use 30 per cent of non-hazardous waste specifically for energy from recovery.
- 1.1.3. The Company expects the Supplier to play a leading role in helping the Company achieve its current and future environmental objectives and targets, to ensure the delivery of all current and future Mayoral policies and strategies relevant to the Company.

¹ <http://www.london.gov.uk/priorities/environment/vision-strategy/leading-to-a-greener-london>

1.2. Environmental Management System

- 1.2.1. The Supplier shall have in place an environmental management system ("EMS") that is bespoke to the Contract and which, as a minimum, meets the requirements set out below:
 - 1.2.1.1. the EMS shall be certified to the BS EN ISO14001 standard, or equivalent standard, by a United Kingdom Accreditation Service ("UKAS") (or equivalent) accredited certification body or to a level that meets the approval of the Company or the Supplier shall have an environmental management policy, and also an independently audited EMS to the standard of BS EN ISO14001, or equivalent;
 - 1.2.1.2. the Supplier shall carry out environmental aspect and impact assessments to identify all potential environmental aspects and impacts related to its activities, products and services it delivers and the Supplier shall provide details of any necessary environmental control measures to the Company. These are included in risk and benefit identification, control and mitigation measures outlined in designs and safe systems of work for any element of the works forming part of the Services;
 - 1.2.1.3. the Supplier shall review the environmental aspect and impact assessments as a minimum once a year, but must ensure they, and any associated control and mitigation measures, remain pertinent to the works forming part of the Services; and
 - 1.2.1.4. the EMS shall be consistent with and support the principles of the Rail and Underground HSE Policy, set out in Appendix 1 and the Company's Corporate Environment Framework set out in Appendix 2 to this Schedule 8 Part C (Environmental Requirements).

1.3. Environmental Management Plan

- 1.3.1. As part of the EMS, the Supplier shall develop, implement and maintain a contract specific environmental management plan ("EMP") (in accordance with the requirements of Schedule 21 (Contract Management)) for the delivery of the Services, to be submitted to and approved by the Company's Representative within three (3) months of the Commencement Date.
- 1.3.2. The EMP shall be updated annually and not later than on each anniversary of the Commencement Date.
- 1.3.3. The Supplier shall make the EMP available to the Company for regular review (but not less than annually) at the Quarterly Review meetings and Annual Strategic Review meetings held in accordance with Schedule 21 (Contract Management).
- 1.3.4. Within the EMP, the Supplier shall demonstrate its contribution towards delivering the Company's environmental objectives including, but not limited to, how the Supplier shall:

- 1.3.4.1. ensure environmental aspects are considered and incorporated in to its activities;
- 1.3.4.2. use partnership working on environmental matters (for example, regulators, environmental bodies, industry groups, client and supply chains);
- 1.3.4.3. identify all potential environmental aspects and impacts of the Contract, specific to its activities (from planning to delivery) demonstrating how the Supplier intends to minimise the potential risks and impacts;
- 1.3.4.4. ensure its environmental key performance indicators and targets contribute to the objectives and targets set out in the Company's Corporate Environment Framework (set out in Appendix 2 to this Schedule 8 Part C (Environmental Requirements)) in relation to:
 - **carbon, energy and climate resilience:** demonstrating that the Supplier is actively minimising use of energy derived from fossil fuels in performing its obligations under the Contract; setting and achieving a target/reduction in CO₂ emissions, in line with the Company's environmental objectives and targets;
 - **reduction of air pollutants:** setting and achieving targets for reduction in air pollutants (PM and nitrogen oxides) in line with the Company's environmental objectives and targets from sources under the control of the Supplier, and demonstrating how the Supplier is meeting the Company's vehicle emissions requirements;
 - **reduction of noise, nuisance and vibration:** setting and achieving a target/reduction in noise in line with the Company's environmental objectives and targets;
 - **materials, resources and waste management:** demonstrating a reduction in use of resources, such as water, minimising the generation of waste, avoiding the use and production of hazardous materials and the prevention of pollution, and achieving a % of waste diverted from landfill rate of 99% (or an equivalent reuse and recycling rate); and
 - maintaining and, where possible, enhancing the quality of the built and natural environment;
- 1.3.4.5. demonstrate that the Supplier is meeting the requirements of the Company's Sustainable Timber Policy; and
- 1.3.4.6. provide the Company with an environmental staffing plan, setting out the Supplier's environmental management organisation structure, identifying roles, accountabilities and responsibilities, and points of liaison with the Company. The environmental staffing plan must

demonstrate resources are appropriate to the scale and nature of the relevant Services.

1.4. Report on Progress

1.4.1. The Supplier shall provide the Company's Representative with an environmental performance report, including information on the performance of the EMS. The report shall be submitted annually and not later than on each anniversary of the Commencement Date, and shall contain, but shall not be limited to:

1.4.1.1. any updates to previous EMPs;

1.4.1.2. a summary of the environmental statistics for the previous year, including inter alia, environmental reviews;

1.4.1.3. a summary of findings and trends from audits, inspections and evaluations of compliance with legal and with other requirements;

1.4.1.4. a summary of any changing circumstances, including developments in legal and other requirements; and

1.4.1.5. proposed environmental improvement targets, together with commentary on the previous year's improvement targets, including status of corrective and preventative actions undertaken by the Supplier.

1.5. Environmental Planned General Inspections

1.5.1. As part of the EMP and within six (6) weeks of the Commencement Date, the Supplier must review and update the current Environmental Planned General Inspection ("EPGI") template (set out in Appendix 3 to this Schedule 8 Part C (Environmental Requirements)) with current legislation and other requirements, relevant to this Contract. The template must be kept up to date by the Supplier at all times.

1.5.2. Frequency of EPGIs must conform to the requirements of Schedule 12 (Performance Measurement) for Supplier audits but shall be suitable and sufficient to ensure all risks are mitigated.

1.6. General Requirements

Without prejudice to its other obligations contained in this Contract, the Supplier shall ensure that it carries out its obligations in response to any environmental incidents and their reporting in a manner approved by the Company.

2. Section 2

2.1. Sustainable Design and Operations

2.1.1. The Supplier shall address, as a minimum, the following principles to maximise the sustainable performance of its activities including, but not limited to:

2.1.1.1. using principles that consider the longer-term design life of the building and assets and that will offer solutions that will remain state of the art;

2.1.1.2. designing systems and installing and maintaining equipment that will reduce energy use and the operational cost of the buildings and assets. In particular the Supplier shall:

- ensure energy efficiency measures (including lighting, HVAC, building management systems) are utilised;
- ensure that the new systems are compatible with the energy system and load requirements at the existing Site;
- investigate the feasibility of incorporating renewable or decentralised energy;
- ensure designs provide natural ventilation, rather than mechanical, where possible; and
- ensure passive design measures remove heat from the asset, rather than using mechanical cooling;

2.1.1.3. designing systems and installing and maintaining equipment that minimises water use during installation and operation of the asset. Maintenance of water consuming equipment will include, but shall not be limited to, low volume taps/showers, dual flush toilets, waterless urinals, low volume urinal flush controls, rainwater and grey water recycling systems, green infrastructure irrigation systems and cooling towers.

2.2. CEEQUAL and BREEAM

2.2.1. Where the Company has already arranged for the activity to be part of CEEQUAL, BREAAAM New Construction Infrastructure (pilot), and/or BREEAM the Supplier shall compile and provide relevant evidence to support CEEQUAL, BREAAAM New Construction Infrastructure (pilot), and/or BREEAM submissions to the Company. The Supplier shall use the CEEQUAL or BREEAM processes to aid the consideration of environmental sustainability and to drive improvements in performance during the design development, installation and maintenance phases of the Services.

3. Section 3

3.1. Climate Resilience

- 3.1.1. The Supplier shall ensure that any design, installation and maintenance work it performs as part of the Services takes into account the climate parameters over the whole design life in which the building and asset must perform, to support resilience to extreme weather.
- 3.1.2. The Supplier shall ensure that the building and asset remains fit-for-purpose for the Company's needs during its design life period, taking into account the range of extreme weather and climate parameters that may occur during that time. This shall include, but shall not be limited to:
 - 3.1.2.1. keeping the buildings and assets within specified temperature tolerances as defined in the Company's standards relevant to the building and asset type applicable to this Contract; and
 - 3.1.2.2. all refits including measures to assist with keeping buildings and assets resilient during their design life including, but not limited to, water efficiency, natural ventilation and shading, greening, and sustainable drainage.

4. Section 4

4.1. Reducing Carbon Emissions and water usage

4.1.1. The Supplier shall:

- 4.1.1.1. ensure that when replacing assets, the Supplier selects assets with more energy efficient equipment. The Supplier shall notify the Company's Representative where this is not technically feasible, for example, in relation to a heritage feature;
- 4.1.1.2. measure and report on carbon emissions and develop plans to reduce carbon emissions and energy usage that supports the Company in delivering its programme to improve energy efficiency, helping decrease emissions and lower costs;
- 4.1.1.3. make use of the Company's automated Monitoring and Targeting ("aM&T") software to analyse site performance, control out of hours consumption and also suggest, measure and verify efficiency enhancement projects;
- 4.1.1.4. maintain and run on site generation equipment (including PV, wind, solar thermal, combined heat and power and absorption chillers) to reduce and optimise building carbon emissions; and
- 4.1.1.5. maintain the Company's assets in accordance with all ozone depleting substances and fluorinated greenhouse gas legislation compliance, including statutory air conditioning inspections, to optimise efficiency of cooling equipment, for current, pending and future legislation.

5. Section 5: Air Quality and Dust

5.1. Control of Vehicle Emissions

- 5.1.1. The Supplier shall ensure that in the procurement or leasing of vehicles for use in the delivery of the Services:
 - 5.1.1.1. consideration is given to CO₂, air quality and noise impacts; and
 - 5.1.1.2. a technology neutral approach is adopted.
- 5.1.2. All vehicles used in the delivery of the Services shall meet or exceed the following CO₂ limits and European emission standards at the Commencement Date:
 - 5.1.2.1. cars - maximum certified CO₂ emissions of 105 g/km and a minimum of Euro V emission standards;
 - 5.1.2.2. vans equal to or less than 1205 kg kerb weight – maximum certified CO₂ emissions of 115 g/km CO₂ and a minimum of Euro V emission standards;
 - 5.1.2.3. vans between 1205 and 1660 kg kerb weight – maximum certified CO₂ emissions of 155 g/km CO₂ and a minimum of Euro V emission standards;
 - 5.1.2.4. vans greater than 1660 kg kerb weight – maximum certified CO₂ emissions of 215 g/km CO₂ and a minimum of Euro V emission standards; and
 - 5.1.2.5. heavy duty vehicles greater than 3500 kg kerb weight – Euro V emission standards.
- 5.1.3. If any vehicles used in the provision of the Services are due for replacement before the Expiry Date, the Supplier shall ensure that the replacement vehicle/engine meets or exceeds the European emission standards and CO₂ limits (if applicable) for the year in which it is introduced into the fleet. Standards and the years in which they apply are set out in paragraph 5.3.3 below. If compliant vehicles/engines are not available by the specified deadline, the Company may (at its sole discretion) consider acceptance of an alternative standard proposed by the Supplier until such time as those vehicles become available.

5.2. European Emission Standards for Road Vehicles

- 5.2.1. In line with Mayoral environmental strategy and the Company's commitments to reduce CO₂ emissions, the Supplier is encouraged to include zero or ultra low carbon vehicles such as electric or plug-in hybrid or bio methane vehicles in its fleet, wherever possible.
- 5.2.2. Any necessary recharging/refuelling infrastructure required for low carbon vehicles to be supplied by the Supplier on the Company's Sites will only be permitted subject to the Company's written acceptance and by separate agreement on maintenance, installation and running costs. Where the Supplier operates such vehicles, operating experience and data will be shared with the Company on request.
- 5.2.3. The Supplier shall select vehicles for the performance of the Services which meet the highest environmental criteria and will be eligible for a 100% discount from the Congestion Charge. The Supplier shall be solely responsible for payment of any

Congestion Charge and the Company does not accept any claims for reimbursement of Congestion Charges.

5.2.4. The Supplier shall ensure that all vehicles used in the performance of the Services are operated in such a way to ensure that environmental impacts are reduced as far as reasonably practicable. Operating data for all vehicles will be shared with the Company when requested.

5.2.5. The Supplier shall:

5.2.5.1. ensure vehicles used in connection with the Services are regularly serviced in line with the Manufacturers recommendations;

5.2.5.2. ensure all faults or problems on such vehicles are repaired/addressed as soon as practicable; and

5.2.5.3. monitor and record all vehicle fuel and mileage in connection with the performance of the Services.

5.2.6. The Supplier shall report the following information to the Company on a Quarterly basis in advance of each Quarterly Review as set out in Schedule 21 (Contract Management):

5.2.6.1. vehicle make and model;

5.2.6.2. vehicle servicing frequency;

5.2.6.3. vehicle fuel (fuel type and litres used);

5.2.6.4. vehicle mileage (excluding hire vehicles); and

5.2.6.5. percentage of the fleet on hire.

The Company reserves the right to include additional monitoring requirements if required.

5.2.7. The Supplier shall ensure that all driving staff undertake a fuel efficient and safe driver training course within three (3) months of commencing performance of the Services. The Supplier shall ensure that the training course consists of theoretical training and practical implementation skills and is a minimum duration of one (1) hour.

5.2.8. The Supplier shall provide the driver training records to the Company as instructed by the Company's Representative.

5.3. Equipment and Non-Road Mobile Machinery

5.3.1. The Supplier shall ensure that the adverse impacts of emissions from equipment used in the performance of the Services are minimised. Measures to be considered for limiting emissions and avoiding nuisance will include any one or more of the following as appropriate (and as far as reasonably practicable):

5.3.1.1. ensuring that the engines of all vehicles and equipment used in connection with the Services are not left running unnecessarily;

- 5.3.1.2. using low emission vehicles and equipment fitted with catalysts, diesel particulate filters or similar devices;
 - 5.3.1.3. using ultra low sulphur fuels in plant and vehicles;
 - 5.3.1.4. requiring equipment and vehicles to be well maintained, with routine servicing to be completed in accordance with the manufacturers' recommendations and records maintained for the work undertaken;
 - 5.3.1.5. requiring all vehicles, including off-road vehicles, to hold current MOT certificates, where required by Applicable Laws (or tested to an equivalent standard) and requiring them to comply with exhaust emission regulations for their class;
 - 5.3.1.6. using routes and operating equipment away from potential receptors such as houses, schools and hospitals;
 - 5.3.1.7. avoiding the use of diesel or petrol powered generators and instead using mains electricity or battery powered equipment;
 - 5.3.1.8. maximising energy efficiency (this may include using alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing); and
 - 5.3.1.9. providing all operating data which complies with the schedules, deadlines and timelines as required to the Company as part of the Supplier's Quarterly reporting obligations (as set out in Schedule 21 (Contract Management)).
- 5.3.2. All of the Supplier's non-road mobile machinery ("NRMM") must meet or exceed the emission standards relevant at the Commencement Date, which are as follows:
- 5.3.2.1. NRMM of net power between 19 and 36 kW –Stage IIIA of EU Directive 97/68/EC (as amended) emission standards;
 - 5.3.2.2. NRMM of net power between 37 and 55 kW –Stage IIIA of EU Directive 97/68/EC (as amended) emission standards;
 - 5.3.2.3. NRMM of net power between 56 and 560 kW –Stage IIIB of EU Directive 97/68/EC (as amended) emission standards; and
 - 5.3.2.4. from 1 September 2020: NRMM of net power between 37kW and 560kW used on any site within Greater London – Stage IIIB of EU Directive 97/68/EC (as amended) emission standards.
- 5.3.3. In addition, where the requirements of "The control of dust and emissions during construction and demolition - Supplementary Planning Guidance (SPG) Greater London Authority (2014)" are applicable, all of the Supplier's NRMM must comply with the following additional requirements for the NRMM Low Emission Zone detailed in the SPG:
- 5.3.3.1. NRMM used on any site within the Central Activity Zone or Canary Wharf will be required to meet Stage IIIB of EU Directive 97/68/EC (as amended) emission standards as a minimum; and

5.3.3.2. from 1 September 2020: NRMM used on any site within the Central Activity Zone or Canary Wharf must meet Stage IV of EU Directive 97/68/EC (as amended) emission standards as a minimum.

5.3.4. All NRMM must meet the applicable standards unless it can be demonstrated that the machinery is not available or that a comprehensive retrofit to meet PM10 and NOx emission standards is not feasible. In this situation, every effort must be made by the Supplier to use the least polluting equipment available, including retrofitting technologies to reduce particulate emissions.

5.3.5. The Supplier must comply with the GLA's NRMM exemption policy (which can be found at nrmm.london) for any NRMM which cannot meet the emissions requirements, The Supplier shall seek exemption from the Company's Representative for any NRMM of net power between 19 and 36 kW that cannot comply with the emissions standards.

5.3.6. The Supplier shall also:

5.3.6.1. maintain an inventory of all on-site NRMM using the GLA's nrmm.london database; and

5.3.6.2. regularly service all machinery and keep records on Site.

5.4. Dust

5.4.1. The Supplier shall use the best practicable means to reduce dust and other emissions at all times during performance of the Services and shall not to create a dust nuisance.

5.4.2. If the Company's Representative decides that the Supplier is not dealing adequately with the control of dust or other emissions, the Company's Representative may instruct the Supplier to carry out such additional measures as the Company's Representative considers necessary. Such measures are not subject to the Contract variation procedure set out in Schedule 6 Part A (Contract Variation Procedure) of the Contract.

6. Section 6: Noise and Vibration

6.1. General

6.1.1. The Supplier shall:

- 6.1.1.1. use the best practicable means to control and limit noise and/or vibration levels so that affected properties, and other sensitive receptors, are protected from excessive or prolonged noise and vibration associated with all activities;
- 6.1.1.2. develop and maintain a Noise and Vibration Management Plan, as part of the EMP, for activities with the potential to generate noise and/or vibration. The Noise and Vibration Management Plan shall set out how noise and vibration requirements shall be managed and the Supplier shall undertake the Services in strict adherence to this plan;
- 6.1.1.3. apply the best practicable means to reduce noise and vibration at all times having regard to the provisions of the latest edition of BS5228 (Code of Practice for Noise and Vibration Control) or other relevant Good Industry Practice;
- 6.1.1.4. stipulate and ensure adherence to behavioural conditions for workers in relation to minimising impacts to neighbours, such as conduct when arriving and leaving the Company's Sites during any night works; and
- 6.1.1.5. employ a trained and competent person to undertake noise and/or vibration monitoring if required and comply with any additional measures required including relocation or modification of equipment to reduce noise and vibration. The monitoring scope shall be agreed with in advance with the Company's Representative and monitoring results shall be provided to the Company on request.

6.1.2. In its performance of the Services, the Supplier shall comply with the requirements of the Company's Pathway Site Noise and Vibration Evaluation and Control (set out in Appendix 4 to this Schedule 8 Part C (Environmental Requirements)).

6.2. Prior Consent

6.2.1. If activity with the potential to generate noise and vibration is to be carried out outside of normal working hours, and/or the noise and vibration generated is likely to cause significant disruption or harm, the Supplier shall:

- 6.2.1.1. liaise with the Company to determine whether a Section 61 consent (under the Control of Pollution Act 1974), or other form of noise agreement, will need to be in place prior to commencing the relevant works;
- 6.2.1.2. provide the Company with the following information to enable a decision to be made on whether a Section 61 Consent, or other form of noise agreement, is required:

- the nature of the activity being undertaken;
- the time of day the activity will be undertaken;
- the duration of the activity;
- the proximity of neighbours; and
- the sensitivity of neighbours (for example, residents, schools, hospitals and places of worship) that would likely be considered more sensitive to noise than industrial areas); and

6.2.1.3. be responsible for obtaining the consent prior to commencing the relevant works, and for complying with all aspects of the consent.

6.3. Notifications

6.3.1. The Supplier shall take a proactive approach to notifying neighbours and other relevant stakeholders in advance of the commencement of any construction or maintenance works being performed by the Supplier as part of the Services that will affect them in any way, including noise and vibration impacts, impacts from staff noise, access and welfare or staff parking and travel.

6.3.2. The Supplier shall submit to the Company's Community Relations representative (via communityrelations@tfl.gov.uk) the draft notification letters for approval no less than 14 days prior to the works commencing.

6.3.3. Notification letters shall include details of the:

6.3.3.1. location of works;

6.3.3.2. reason for the works;

6.3.3.3. information about potential impacts: noise and vibration, parking, staff access and welfare locations;

6.3.3.4. duration of the works;

6.3.3.5. working hours; and

6.3.3.6. TfL customer services details.

6.3.4. Letters shall be produced on TfL letterhead and the Company shall provide a template when required.

6.3.5. Once the details of the notification letters have been accepted by the Company's Community Relations representative, the letters shall be distributed to all properties potentially affected by the proposed works no less than 10 days prior to works commencing. In most instances, distribution will be arranged by the Company. For smaller areas of impact, the Supplier will be directed to undertake the distribution directly. In ascertaining the distribution area, the Supplier shall carefully consider potential noise and vibration, areas affected by staff parking, access or welfare requirements, delivery and loading of equipment.

6.3.6. A briefing note about work activities that could potentially affect the community shall be provided by the Supplier to the Company's Community Relations representative in advance of the commencement of the works. This briefing note will be used to brief key stakeholders to address any complaints or enquiries. The briefing note shall contain a copy of the notification letter, the recommended distribution area of the letter, a location map of the works, best practicable means used to mitigate potential adverse impacts and the name and contact details (for internal use only) of the Supplier's Representative, who is required to provide further information where requested in accordance with the Supplier's complaints handling process.

6.4. Noise Complaints Handling

6.4.1. The Supplier shall develop a complaints handling process agreed with the Company's Representative. As a minimum, the complaints handling process shall include the following:

- 6.4.1.1. TfL's customer services details on all public facing communication;
- 6.4.1.2. information on how complaints and enquiries will be responded to when passed on by TfL customer services;
- 6.4.1.3. details of the emergency response system that will be employed for dealing with emergency issues; and
- 6.4.1.4. reporting all complaints/enquiries and their responses within 24 hours of receipt to the Company using TfL customer services and to the Company's Community Relations representative.

7. Section 7: Waste and Resources Management

7.1. Waste Electronic and Electrical Equipment

With regard to the latest version of the Waste Electrical and Electronic Equipment Regulations 2006 ("WEEE 2006"), the Supplier shall indemnify and keep indemnified the Company as a result of any losses which it incurs as a result of any failure on the part of the Company or the relevant producer to comply with the requirements of WEEE 2006.

7.2. Waste Other

7.2.1. The Company requires the Supplier to promote recycling, minimise its waste and play a leading role in helping the Company achieve its environmental targets. The Supplier shall develop, implement and maintain a Waste Management Plan ("WMP"), as part of the EMP, to cover the waste arisings it is responsible for, support the Company's objective to use materials more efficiently and reduce waste to landfill in order to achieve the following target:

"the Company will reuse, recover and recycle 99 per cent of non-hazardous waste, with interim targets by 2031 and 30 per cent for specifically for energy from recovery".

7.2.2. The Supplier's WMP shall document how the Supplier will:

7.2.2.1. implement the waste hierarchy;

7.2.2.2. comply with current legislation in relation to the storage, handling, treatment, transfer and disposal of all waste materials produced in the performance of the Services. As a carrier of waste, the Supplier shall be registered as a Waste Carrier with the Environment Agency and shall provide evidence of registration within the WMP and on renewal of the registration;

7.2.2.3. set waste reuse, recovery and recycling targets that meet or exceed the Company's targets;

7.2.2.4. monitor and report waste arising in line with the Supplier's reporting requirements under Schedule 21 (Contract Management) each Period in advance of the Period Progress Meeting;

7.2.2.5. ensure all Supplier Personnel are trained in waste minimisation and management techniques;

7.2.2.6. increase recycled content of materials used in construction and any other materials purchased; and

7.2.2.7. document all decisions taken during any design work to reduce waste, and ensure this information is passed to Company.

7.2.3. The Supplier shall implement and update the Waste Management Plan, maintain records throughout the duration of this Contract and make available these records for review by the Company on request.

7.2.4. The Supplier is responsible for the management and removal of all waste arisings as

soon as practicably possible in accordance with Good Industry Practice.

7.2.5. The Supplier shall make available to the Company, within 3 Working Days of request, any waste records (such as Consignment notes and transfer notes).

7.2.6. Where involved in project work, the Supplier shall comply with the requirements of the TfL Pathway Waste Management Plan (set out in Appendix 5 to this Schedule 8 Part C (Environmental Requirements)).

7.2.7. All works being carried out at Company office buildings must use this template TfL Facilities: Small Projects Waste Proforma to record and submit waste data.

7.3. Recycled Content of Materials

The Supplier shall ensure a minimum of 20% of the total material value of products and materials selected for the works being performed as part of the Services derives from reused and recycled content. The Supplier shall submit proposals to the Company's Representative in relation to the areas of opportunity to exceed this target figure. The Supplier shall provide a detailed explanation and justification in the WMP to the Company's Representative for any failure to achieve the 20% target figure. Performance shall be reported, as part of the EMP, in the annual environmental performance report referred to in paragraph 1.4 (Report on Progress) of this Schedule 8 Part C (Environmental Requirements).

8. Section 8: Pollution Prevention

- 8.1. The Supplier shall comply with all Applicable Laws and Good Industry Practice to prevent pollution and environmental nuisance.
- 8.2. The Supplier shall ensure that the EMP and aspect and impact assessments for specific tasks and activities adequately identify all potential pollution sources, pathways and sensitive receptors.
- 8.3. The Supplier shall ensure that the EMP will detail how pollution risks will be managed including specific controls to be put in place, which must be strictly complied with.
- 8.4. The Supplier shall ensure that all controls identified will be included in safe systems of work and briefed to all Supplier Personnel.
- 8.5. The Supplier shall ensure that a Pollution Response Plan (“PRP”) and all necessary pollution response equipment required to reduce risks to as low as reasonably practicable are in place within one (1) month of the Commencement Date. The PRP shall set out actions to be taken in the event of an environmental incident. The Supplier shall ensure all Supplier Personnel are familiar with the plan and trained in actions to take if an incident occurs.

8.6. Deliveries and Storage

8.6.1. Where the Supplier manages bulk fluid deliveries (over 25 litre drums) it shall:

8.6.1.1. ensure that a spill kit of appropriate size and content, commensurate with the risk, is located in an open access location immediately adjacent to the risk; and

8.6.1.2. seek written assurance from the supplier that the third party delivery operatives are trained, competent and familiar with making deliveries to the Sites and if not, they shall be accompanied by the Supplier’s Representative until such time they become so.

8.6.2. Where bulk storage tanks (above 55 gallon/250 litres) are provided and maintained by the Supplier, the Supplier shall ensure they are fitted with serviceable engineering controls, appropriate to site risk, to prevent environmental harm, such as fitting and maintaining alarms and other notification systems.

8.6.3. The Supplier shall manage the testing, licensing and other regulatory regimes related to the tanks on the Sites as required by the Company from time to time.

8.7. Site set-up

8.7.1. The Supplier shall ensure that, where reasonably practicable and appropriate, its activity will be designed to prevent pollution arising including, but not limited to:

8.7.1.1. Sites secured and screened using existing features where appropriate;

- 8.7.1.2. storage sites, any plant and machinery equipment and temporary staff facilities located to limit environmental impacts, as far as reasonably practicable, having due regard to neighboring accommodation, as far as allowed by the constraints of each Site;
- 8.7.1.3. security cameras (if required) sited and directed so that they do not intrude into occupied residential properties;
- 8.7.1.4. site plant and facilities powered from mains electrical sources wherever practicable;
- 8.7.1.5. the Supplier shall display a contact name, telephone number and address, and the helpline number at appropriate locations on the boundaries of the Sites;
- 8.7.1.6. the extent and height of hoarding or fencing at a particular location will be selected to maintain effective security and achieve appropriate noise attenuation and visual screening;
- 8.7.1.7. all vehicle access and egress points with gates positioned such that no gate will be permitted to open out onto the highway. As far as reasonably practicable, gates will be located to allow vehicles to drive clear of any public highway. Where provided for noise control, gates will be of a similar material and construction to the boundary in which they are situated and will be closed except when being used for access; and
- 8.7.1.8. disturbance of environmental features such as vegetation and watercourses will be minimised.

8.8. Monitoring and reporting

- 8.8.1. The Supplier shall employ a trained and competent person(s) to undertake environmental monitoring. The Supplier shall comply with any additional measures required by the Company's Representative including relocation or modification of equipment to reduce noise, vibration, nuisance, light, dust, pollution and other disturbances.
- 8.8.2. The Supplier shall report all complaints/enquiries and their responses within 24 hours of receipt to the Company using TfL customer services, the Company's Representative and the Company's Community Relations representative.

8.9. Effluent discharge consents

- 8.9.1. When providing maintenance of drains and interceptors, the Supplier shall ensure that it maintains effluent discharge within the legal effluent discharge consent limits.
- 8.9.2. When required by the Company, the Supplier shall also support the maintenance of effluent discharge consent within legal limits, by providing ad-hoc maintenance of drains and interceptors.

8.10. Contaminated land

8.10.1. The Supplier shall comply with all relevant statutory requirements and Good Industry Practice in relation to contaminated land.

8.10.2. The Supplier shall notify the Company if any contaminated land or water has been discovered.

9. Section 9: Natural Environment

9.1. Green Infrastructure

9.1.1. Within the EMP, the Supplier shall demonstrate that it meets the most current version of the following industry standards, when delivering maintenance services (as part of the Services) on the Green Infrastructure (“GI”):

9.1.1.1. Construction Industry Research And Information Association (CIRIA) Sustainable Urban Drainage System (SUDS) Manual C753;

9.1.1.2. CIRIA Building Greener: Guidance on the use of green roofs, green walls and complimentary features on buildings C644;

9.1.1.3. CIRIA Retrofitting to manage surface water C713;

9.1.1.4. CIRIA Biodiversity Benefits of Green Infrastructure C711; and

9.1.1.5. Gro Green Roof Code 2014.

9.1.2. The Supplier shall check all storage areas on roofs to ensure they meet the structure’s loading capacity prior to commencement of the Works.

9.1.3. For any roof works that have an interface with members of public, Supplier Personnel or assets, a debris net must be installed to separate the area and prevent any debris coming into contact with members of public, Supplier Personnel or assets.

9.2. Pest Control

Within one (1) month of the Commencement Date, the Supplier shall demonstrate how the principles of Integrated Pest Management, as defined by the British Pest Control Association or the Royal Society of Public Health, will be implemented.

9.3. Biodiversity Management

9.3.1. The Company has a legal duty to have due regard to biodiversity, as well as duties from the Mayor of London to improve biodiversity. Therefore, when providing services to the Company, the Supplier shall:

9.3.1.1. take into account relevant Company and London Borough biodiversity plans;

9.3.1.2. preference the use of native plant species appropriate to the location and maintenance requirements of the site as a minimum; and

9.3.1.3. when selecting control methods, ensure they prevent harmful effects to any other species other than those intended for treatment.

10. Section 10: Reducing the environmental impact of materials

10.1. VOCs and chemicals with adverse environmental impacts

The Supplier shall develop a plan within the first year of the Commencement Date to identify all products used in the performance of the Services and then risk assess and propose the phased replacement of high VOC products or similar e.g. paints, aerosols, degreasers, adhesives, sealants etc. herbicides, drain cleaners pesticides, biocides and other similar products with a “lower” environmental impact. The intention of the plan is to remove over time all high impact or high risk products over the first three years of the period of the Contract.

Appendix 1: Health Safety and Environment Policies

TfL Health, Safety and Environment Policy

April 2018

Our commitment

Our customers, users, employees and suppliers have an expectation that when using or delivering our services or assets they will remain harm free. Our vision is "Everyone home safe and healthy every day". We are committed to meeting our vision and these expectations.

We want to ensure that:

- every journey is a safe journey for our customers and users
- the security of our customers and employees is assured
- our employees, agency staff and contractors go home safe and healthy every day
- we maintain our assets and deliver projects safely
- we fulfil our commitments to prevent pollution and nuisance; protect biodiversity; improve air quality; and reduce waste and carbon emissions
- we are inclusive and accessible to all customers and users, including those with disabilities.

How we go about this

We have put in place health, safety and environment rules and procedures, including emergency procedures that are regularly updated. These are for you to use. If you do not know where to find them ask your line manager or your Health, Safety and Environment (HSE) manager.

We assess risks and introduce HSE measures to ensure risks remain as low as reasonably practicable. We tell you the risks and the measures we have taken to control risks. We will comply with legislation. There is regular review of safety, health and environment statistics to identify positive and adverse trends and their root causes, so necessary action can be taken. We also assure ourselves that our suppliers maintain a good health, safety and environment record.

Each year we develop detailed HSE improvement plans to enhance what we do. These plans are regularly reviewed by the Directors in your part of the business.

When working for TfL or one of its companies you will receive the necessary training and equipment to ensure that you can

undertake your job safely, ensure the safety of customers and protection of the environment.

As an employee, your physical and mental health and wellbeing is also important and we provide occupational health services to help you stay healthy and in work and provide suitable welfare facilities at your work place.

We want to maintain a fair culture and employees or their representatives are consulted on health and safety matters as they arise, in a meaningful way through scheduled health and safety meetings or more regularly where needed.

What we can all do

We all need to look out for each other and speak up if anything is unsafe or damaging to health or the environment.

We all have a duty to follow our HSE rules and procedures. Do not take shortcuts. If you think rules or procedures are unhelpful let your manager know. Where necessary rules and procedures can be changed.

We can learn from the past, so always report and investigate accidents, incidents and near misses/close calls.

Demonstrate the TfL behaviours in everything we do.

In this way we can work together so that our vision for a safe and healthy environment is achieved.

Mike Brown MVO
Commissioner



Gareth Powell
Managing Director
Surface Transport



Mark Wild
Managing Director
London Underground
and TfL Rail



Graeme Craig
Director of Commercial
Development



Stuart Harvey
Director of Major
Projects



Appendix 2



TfL Corporate Environment Framework

MAYOR OF LONDON



**TRANSPORT
FOR LONDON**
EVERY JOURNEY MATTERS

Contents

- 1 Introduction - setting the context
- 2 Linking the framework to our goals
- 3 Managing environmental impacts, current and future performance
 - Carbon, energy and climate resilience
 - Air quality
 - Noise
 - Materials and resources management
 - Pollution prevention
 - The built environment
 - The natural environment

Introduction

Setting the context

At Transport for London (TfL) we play an important role in supporting the Capital's economy and quality of life. We run a large operation; our services accommodate 30 million journey stages every day. We provide vital transport services and promote sustainable options that keep our city moving. In doing this, we have a responsibility to manage the environmental impacts of our activities.

London's population is increasing, and our services are growing to meet this need – we're delivering new services, greater frequency, more capacity and improved reliability.

There are challenges to be met in terms of rising costs, legal pressures and also opportunities to use good practice, innovation and smart technology.

However, we start from a good position – our environmental performance has some world class examples of good practice and we have already met some of our previous targets.

Environmental issues present us with both opportunities and challenges. Some enable us to manage costs more effectively through, for instance, reducing energy and water use. We are also improving the potential of habitats that are around our networks, so contributing to London's quality of life. Some of the challenges relate to changes in legislation, public health issues, provision of stable energy supply and planning for the impacts of extreme weather on service delivery.

This framework describes our vision and ambition for environmental performance over the longer term. It clarifies our priorities and explains how they will be delivered in a way that meets stakeholders' needs. The important environmental areas for us are set out along with objectives and targets. They illustrate why these issues are important, what we want to achieve, how they will be achieved and how we will measure progress.

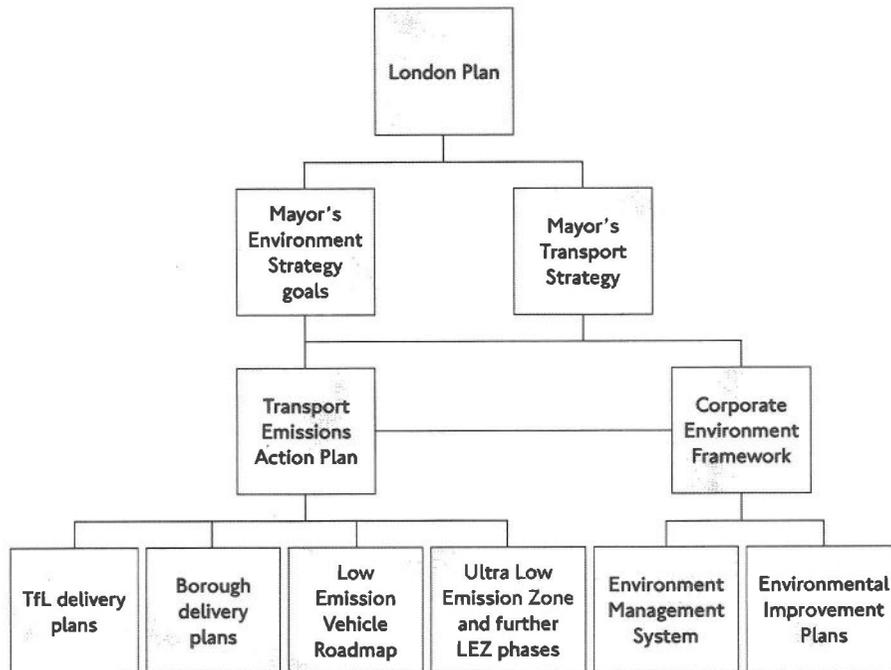
The framework covers the environmental impacts of our directly managed activities and operations, for example, delivery and operation of transport services, projects, maintenance and office functions. It also describes measures that will help us to deliver, and where possible improve, environmental legal compliance and meet other needs, for example, national requirements.

One of the principal aims of this framework is to show the contribution that our directly managed activities can make towards achieving the Mayor's environmental goals. Other elements of the Mayor's environmental aims that affect private transport across the city, are covered by other work we do, such as encouraging a reduction in emissions from vehicles in London.

It is designed to support our Business Plan and the Mayor's transport and environmental strategies. It is not intended to change existing priorities, but is focused on maximising the benefit of current and future plans.

About us

The figure below shows how this framework fits into a programme of work that we are doing to help achieve Mayoral environmental strategies and policy.



We are the integrated transport authority for the Capital and part of the Greater London Authority (GLA). We deliver the Mayor's Transport Strategy in partnership with London's boroughs and other transport providers, such as Network Rail and the train operating companies.

We comprise the following business areas:

- London Underground (LU) – operates London's Tube network, which sees more than 3.5 million passenger journeys a day. LU has 11 lines covering 402km and serving 270 stations. During peak hours, more than 500 trains operate

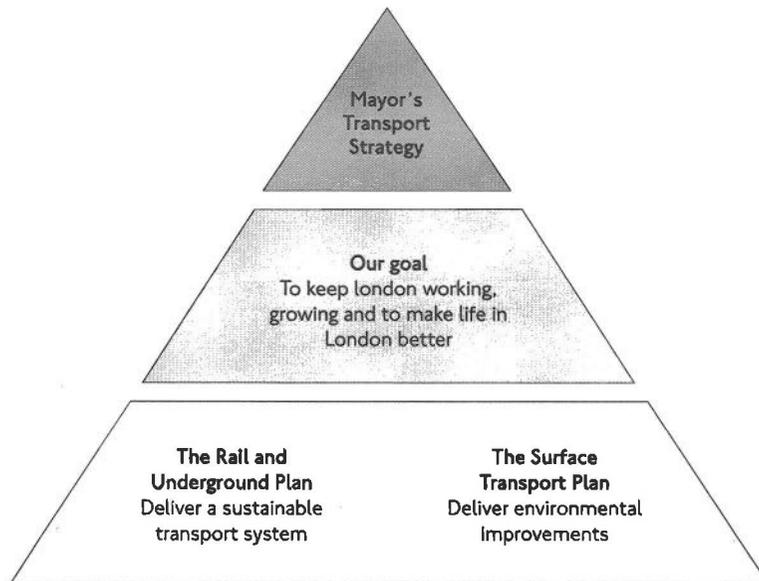
- Surface Transport – provides and manages a broad range of sustainable transport services and choices, including buses, cycling and walking. Bus passenger kilometres reached 8.2 billion in 2012/13. There were also 500,000 cycling journeys and six million walking trips taking place each day. We also carry 30 per cent of the Capital's road traffic on the Transport for London Road Network (TLRN)

- London Rail – responsible for Tramlink, the Docklands Light Railway (DLR), London Overground, Emirates Air Line and the development of Crossrail

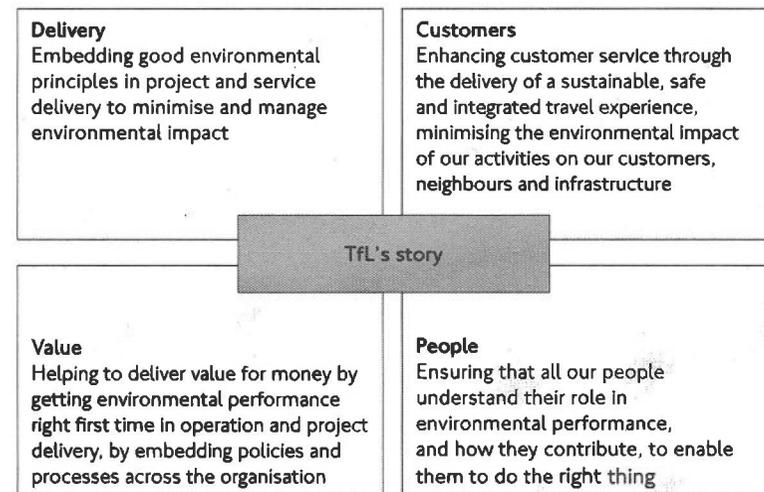


Linking the framework to our goals

This framework shows how delivery of a sound environmental performance within our directly managed operations can help to achieve our Mayoral goals and our business goals.



Our goal is to keep London working and growing and make life in London better. When decisions are taken within our organisation we consider our customers and users, our people, our delivery and value for money. This framework helps to deliver in each of these four areas, as shown below:



External influences that provide the context for this framework

We have set this framework in the context of potential influences or drivers that are likely to continue, increase or begin over the longer term:

- There will be more than 10 million people in London by the 2030s and we are committed to delivering a sustainable, effective system, both now and in the future
- We will continue our investment to provide a growing transport system to meet the predicted population rise in London. This will include new infrastructure and services, increased frequency, improved systems and new technologies
- We will continue to develop and deliver world-class services and policies that encourage people to choose more sustainable modes of transport
- We will continue to use world-leading technologies, including customer information systems
- There will be an increased emphasis on the importance of living and working in healthy environments. We will continually focus on improving London's air quality and reducing transport-related air pollution emissions
- Energy costs are likely to rise owing to the increasing uncertainty of fuel sources, volatility of world markets and the Government's energy market

reform. There will be a growing focus on the need to achieve energy efficiency and security of energy supply

- There will be a need to reduce transport-related carbon emissions to help tackle climate change and to meet the targets set out in national plans and the Mayor of London's statutory strategies
- We must prepare for future extreme weather and the changing climate, for example warmer, wetter winters; hotter, drier summers; and more frequent storm events and the associated likelihood of an increase in pests and diseases
- There will be an increased focus on delivering resilience to water shortages, reducing the overall use of water and water-related costs, and using more non-potable water where this is more suitable
- The cost of waste management will rise while the availability of landfill is decreasing. There will be a corresponding move from 'generating waste' to reusing and recycling materials because they a valuable resource
- There is likely to be an increased value placed on the provision of natural environments in urban settings, including using green walls and roofs
- There will also be a higher value placed on having a well-structured, cohesive urban realm

Essential principles

Underlying and supporting the strategic areas, objectives and targets set out in this framework are a set of common good practice environmental management principles. These are, and will continue to be, vital to ensuring their delivery:

- We consider the environment an issue that is integral to our business delivery, from inception to completion and operation of our capital projects and programmes
- We prevent and design out potential causes of negative environmental impacts in the early stages of our work
- We set and regularly review environmental targets and report publicly on how we are doing
- We deliver good environmental performance, both in-house and through our suppliers
- We identify and use good practice and innovation when designing, procuring, operating and maintaining transport infrastructure, vehicles and rolling stock
- We exceed, where possible, relevant environmental legislation to ensure that all our operations comply with legislation and encourage good practice
- We apply responsible environmental management techniques

- We will continue to implement and develop our environmental staff engagement programme

How we deliver environmental performance

We operate a well developed Health, Safety and Environmental Management System (HSEMS) to ensure that our environmental impacts and performance are well managed. The HSEMS is regularly reviewed to take into account changes in business activities, responsibilities and legislation.

At the heart of the HSEMS are the health, safety and environment (HSE) policies, supported by a number of standards and procedures, that set requirements for our activities. The HSE policies call for us to comply both with the spirit and the letter of environmental legislation and to improve our environmental management and performance.

We also manage the environmental performance of our projects and programmes through procurement and project management processes.

Our businesses and many of our contractors produce annual Environmental Improvement Programmes, which set objectives, priorities and targets for the year ahead. We will continue to deliver some of our environmental performance in partnership with our supply chain, setting specifications, franchise and contract requirements that are closely aligned to our goals and targets.



■ London Tramlink

We monitor and report on our environmental performance regularly – periodically to internal business units, quarterly to our Safety and Sustainability Panel and annually to the public, through our Health, Safety and Environment Report. This includes information on our environmental performance and that of our main suppliers.

Why have we developed this framework?

It is important for us to set out how we will deliver our plans while maintaining the

best environmental performance possible. While our Business Plan and funding is set out for the next decade, having this vision for environmental performance helps us to identify where further effort and support will be needed.

Our environmental performance is good. However, using the underlying principles set out previously, we are committed to improving it further, especially as we are delivering more infrastructure and services.

There are strategic environmental areas that are important to us and our stakeholders. For each one, this framework sets out updated objectives and targets to illustrate why these issues are important, what we want to achieve, how they will be achieved and how we will measure progress.

Our key strategic areas are:

Air quality

Reducing polluting emissions and exposure to air pollution in London

Carbon, energy and climate resilience

Reducing carbon emissions and preparing for the potential impacts of climate change and extreme weather

Resource management

Using resources (including water) wisely and minimising waste

Noise

Managing and controlling transport-related noise and vibration

Natural environment

Respecting, protecting and enhancing the natural environment and its contribution to the quality of life

Pollution prevention

Proactively managing our activities to minimise and control pollution

Built environment

Respecting, protecting and improving the built

environment and enhancing the quality of the travel experience

We have developed five-year delivery plans that support each of the strategic goals. Highlights are summarised in the following sections.

Managing environmental impacts, current and future performance



■ Crossrail is reusing excavated materials at Wallasea Island for the Royal Society for the Protection of Birds

Carbon, energy and climate resilience

Reducing carbon emissions and preparing for the potential impacts of climate change and extreme weather

We are currently the single biggest consumer of electricity in London and one of the top 10 in the UK. Electricity consumption is a significant contributor to climate change and we have a responsibility to use energy efficiently.

As we continue to invest in transport infrastructure and service capacity, one of our major challenges is how to reduce total carbon emissions. Progressively improving the efficiency of our operations is essential if this is to be achieved.

Approximately half of our carbon dioxide (CO₂) emissions come from electricity used for powering the Tube; the other half is associated with hydrocarbon fuel use in buses, support fleet vehicles and emissions from the taxis and private hire vehicles that we license.

Achievements

We set a target to reduce the normalised CO₂ emissions (measured in grams of CO₂ per passenger kilometre) from our main public transport services by 20 per cent in 2017/18, against a 2005/06 baseline (equivalent to 1990 emissions). In 2013, we reported a fall in normalised emissions to 61 grams equivalent CO₂ (CO₂e) per passenger kilometre, slightly more than 20 per cent below the baseline (77 grams CO₂ per passenger kilometre). As a result, we achieved the 2017/18 target in 2013. We are now setting a more ambitious goal to support the Mayor's aim of a 60 per cent CO₂ reduction in London by 2025.

We have looked at how we purchase electricity, including considering lower carbon and diversified sources, and have introduced

procurement processes to develop this further. We have also put in place a range of measures to help monitor and manage our electricity use. These include installing automatic meters at more than half of our Tube stations and in many surface transport operational premises and demonstrate carbon assessment into project decision-making and management.

In addition, we have implemented energy efficiency initiatives across our head offices, Underground and Surface Transport business areas. Those that ensure efficient use of electricity to power Tube trains are best delivered as lines and trains are upgraded. Measures implemented during recent improvement work, for instance on the Victoria line, include using regenerative braking – where energy otherwise lost when trains slow down is captured and made available for use by following trains.

A number of innovative measures have been tested at Vauxhall bus station, Walworth bus garage, head office buildings and at Leicester Square and Sloane Square Tube stations. These include renewable energy, lighting, centralised cooling and heat recovery systems, plus automation and control technology. The most successful measures will be introduced elsewhere across our organisation.

We have significantly reduced CO₂ emissions from our bus fleet by introducing hybrid engines. Also, in our support fleet, the specification for grams per kilometre of engine emissions has consistently improved. There is also the successful ongoing Destination Green staff engagement campaign and awards,

Head Office Environment Champions and LU's Energy Saving Challenge.

We have assessed and evaluated the impacts of extreme weather and future climate change on our assets and services, referencing the 2009 United Kingdom Climate Projections (UKCP 09). We have focused on the predictions for Greater London rainfall and temperature in the 2020s, 2050s and 2080s. With today's extreme weather, we have a proactive planning approach in response to forecasts. We aim to run as many services as possible and provide accurate real-time information as a situation develops, and this has received positive feedback following the winter storms and rain of 2013/14.

Objectives

- We will minimise our energy use and therefore the carbon emissions of assets, buildings and vehicles
- We will use energy-efficient and low-carbon principles are embedded across all levels of the organisation
- Our energy will come from verifiable low-carbon or renewable energy sources
- We will minimise the risks to people, operations and assets from extreme weather and climate change

Targets

We will contribute towards achieving the Mayor's target of a 60 per cent reduction in CO₂ emissions by 2025 (against a 2013

baseline) by aiming for a 40 per cent cut in TfL CO₂ emissions.

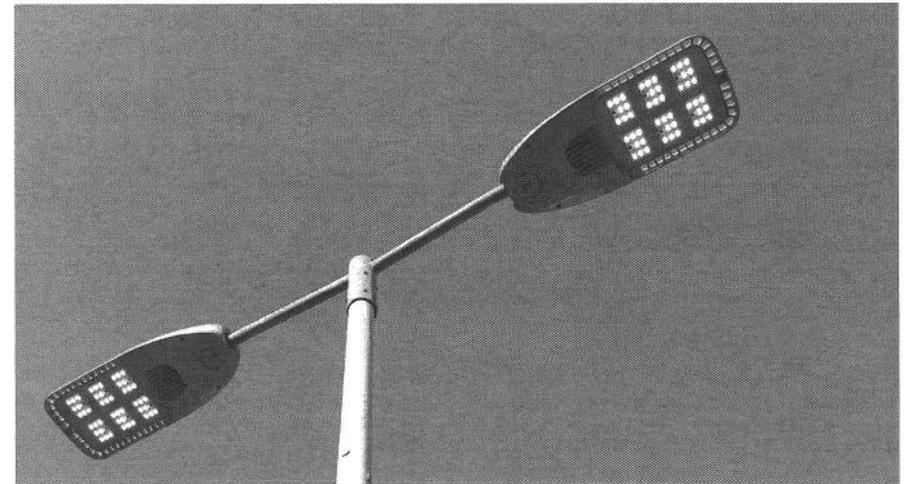
We will further reduce the amount of carbon per passenger journey by cutting emissions of CO₂ per passenger kilometre by 40 per cent by 2025 (against a 2013 baseline).*

A 40 per cent reduction in overall CO₂ emissions is a stretching target as our planned increase in services and infrastructure will result in a further rise in energy use. To fully meet our targets requires the reduction in the carbon intensity of grid electricity as projected by the Government's Committee on Climate Change.

We will achieve these targets by:

- Diversifying energy supply to increase the amount of decentralised energy from local generators in London. Our aspiration is to achieve 20 per cent of annual demand from these sources by 2016 and 40 per cent by 2020
- Embedding energy efficiency and resilience in business processes, for example business cases, design and procurement
- Introducing a programme of energy efficiency improvements for our assets and buildings, using the GLA's RE:FIT methodology where appropriate
- Developing a culture of energy efficiency and low-carbon behaviour across the organisation through, for example, staff engagement initiatives and performance management

* Under review following new information



■ TfL is delivering energy efficient lighting at many tramstops, stations, tunnels and buildings

- Using low-carbon fuels and vehicles in our fleet, including the hybrid bus roll-out; biodiesel bus pilot; trialling and promoting electric vehicle and hydrogen fuel cell technology for buses, Dial-a-Ride vehicles and our support fleet; and working with Government agencies to achieve our goals
- Taking a risk-based approach to identifying and managing key weather and climate vulnerabilities. We will keep our identified risks as low as is reasonably practical and will review them on a regular basis

Measuring progress

We will measure and publicly report on our carbon emissions against an annual forecast. This will cover the emissions that we have control over, for instance arising from buses, Underground and Overground trains, DLR, Tramlink and head office buildings.

We will also report on weather and climate change resilience reviews and plans.

Air quality

Reducing polluting emissions and exposure to air pollution in London

We are a key partner in delivering the Mayor's Air Quality Strategy, through policy measures such as the Low Emission Zone, delivering sustainable transport options and promoting low-emission vehicles, walking, cycling and smarter travel choices.

We aim to reduce emissions to air from our bus fleet, the taxis and private hire vehicles we license and our support fleet. We also aim to lead by example, demonstrating good practice in the type of vehicles we use and how they are operated. Combustion of fuel results in emissions of pollutants into the air as particulate matter (PM) and oxides of nitrogen (NO_x).

The Transport Emissions Action Plan sets out our continuing work to achieve air quality improvements from wider, private transport in the Capital. This includes plans to develop an Ultra Low Emission Zone in central London by 2020. The environmental performance related to this is outside the scope of this framework.

Achievements

We are proud to have the cleanest bus fleet in the UK as a result of fitting diesel particulate filters (DPFs) to Euro II and III vehicles and introducing diesel-electric hybrid buses, including the New Routemaster. NO_x emissions will be reduced further with the early replacement of approximately 900 Euro III vehicles with Euro VI models and retrofitting the remaining Euro III buses in the fleet with selective catalytic reduction equipment.

Similar efforts are being made to reduce emissions from other parts of our fleet. Trials

of ultra low-emission vehicles will continue in the support fleet and DPFs are being fitted to Woolwich Ferry vessels. We are also working with the taxi and private hire industry to encourage the introduction of ultra low-emission vehicles.

The Mayor has called on local authorities to introduce innovative measures to improve air quality through the Mayor's Air Quality Fund. This builds on lessons learnt from the Government-funded Clean Air Fund, which:

- Trialled dust suppressants
- Fitted DPFs on buses on routes through air quality priority areas
- Encouraged behaviour change through public campaigns and advice for drivers of taxis and private hire vehicles
- Researched the air quality benefits of green walls

We have reduced dust from our construction activities, for example, at the Tottenham Court Road and Victoria station upgrade projects, and cut vehicle air emissions associated with freight transport by developing detailed delivery and equipment removal plans.

Objectives

- We will work towards zero pollutant emissions from our fleet vehicles
- We will include air quality requirements in policies, projects and contracts



■ Our electric bus on trial from Victoria to Waterloo

Targets

We will seek to support the Mayor's air quality targets for London by delivering a 50 per cent reduction in NO_x emissions from the bus fleet by 2020, against a 2013 baseline.

We will reduce PM emissions from the bus fleet by 25 per cent by 2020, against a 2013 baseline.

These targets are ambitious but will be achievable through a range of measures including:

- Delivering selective catalytic reduction to reduce NO_x emissions from Euro III buses
- Introducing 1,700 hybrid buses by 2016
- Implementing a technology and fuel demonstration programme to reduce emissions from buses, including trialling hydrogen and electric buses

- Continuing to implement our support fleet environmental policy, working with the Office for Low Emission Vehicles to achieve air quality and carbon reduction goals

- Working in partnership with Government, the EU and other transport organisations and technical experts to continue trialling new technologies and fuels. Hydrogen buses are a small but important part of the fleet and the first electric buses began running in London 2014. Infrastructure development will continue to support these emerging technologies and trials of wireless induction charging is the next important step

- Specifying, through procurement and contracts, that our suppliers must meet emission requirements for their vehicle fleets

Measuring progress

We will measure and report publicly on the 50 per cent reduction target for NO_x and 25 per cent reduction target for PM emissions by 2020, against an annual forecast.

Noise

Effectively managing and controlling transport-related noise and vibration

Noise is an important part of determining quality of life in the Capital. Sound levels or vibration from transport, such as train and vehicle movements, construction works or public announcements, can affect those who work or live close to the transport system.

We want to ensure that noise disturbance is minimised wherever possible. As a result we make every effort to specify noise limits and good practice on construction sites, trains and vehicles that are at least as good as statutory standards. We also make sure public announcements at stations are limited to the minimum required.

We have to balance the need to deliver improvement projects quickly with an obligation to reduce noise nuisance, especially at night, to residential and business neighbours, in partnership with local planning authorities.

Achievements

Construction activities are monitored carefully to ensure that agreed noise limits and operating hours are adhered to. We communicate plans for out-of-hours working to neighbours in advance.

We have recently seen a significant increase in construction works as part of our improvements, including for Crossrail and on major LU projects. This is in addition to our regular maintenance. While associated noise complaints often mirror the amount of construction work taking place, there has been a gradual decline in the number of noise complaints that we receive.

Much has been done to reduce noise from buses, trains, support fleet vehicles, rail and road surfaces, and we will continue to trial and use improved technology and materials. Measures have been implemented that help us minimise noise, especially during night-time engineering hours.

Objectives

- We will reduce noise and vibration from our vehicles and rolling stock
- We will reduce noise and vibration from our transport infrastructure and operations
- We will reduce noise and vibration from our maintenance and improvement programmes
- We will develop a target for surfacing the TLRN with lower-noise materials

Targets

- Reduce the number of noise-related complaints
- Respond to 100 per cent of noise and vibration complaints regarding rail services within 10 working days, and deal with 90 per cent of these within the target date
- Review the Section 61 (construction noise consenting) process and deliver improvements applicable to large, medium and small projects
- Ensure 90 per cent of buses in our fleet are at least two decibels quieter than the required legal limit by 2015

We will achieve these targets by:

- Continuing to test and use improved technology and materials, including targeted trials for solutions relevant to specific locations, with the aim of reducing noise impacts
- Ensuring effective communication with local residents and businesses potentially affected by noise or vibration from construction and maintenance activities

- Producing a regular summary of rail complaints by, for instance, service area
- Developing a tool showing areas with jointed track and a programme for replacement
- Completing the roll-out of quieter trains on all LU sub-surface lines by 2016

Measuring progress

We will measure and report annually on progress in achieving our noise targets and the associated delivery plans.



■ Our new trains are quieter for customers and neighbours

Materials and resources management

Using resources (including water) wisely and minimising waste

We aim to ensure that we use resources responsibly, by minimising our consumption of natural resources and encouraging the reuse and recycling of materials. The amount of waste produced increases or decreases in direct relation to the volume of maintenance or construction activities carried out as we expand our transport services. We intend to minimise waste as much as possible and reach a position where 'unwanted' materials are no longer referred to as 'waste', but are considered a potential resource.

Some of our businesses have a good track record in recycling up to 99 per cent of waste materials, but we can do more by sharing good practice across the entire organisation. While the amount of unwanted materials produced depends on the nature of the work being carried out, opportunities for designing-out waste and reusing and recycling apply to all construction projects.

Achievements

Our head offices achieve the Department for Environment, Food and Rural Affairs (Defra) good practice water consumption target of 6m³ per full time equivalent (FTE) person per year. They also achieve recycling rates of 62 per cent (working towards a target of 75 per cent).

We have standards promoting the use of sustainable drainage. There are also growing numbers of water recycling systems for train, bus and coach depots and stations. Green roofs have been installed at key head offices, depots and stations to help capture rainfall.

We have worked to achieve excellent local reuse of waste on construction or maintenance projects. For example, some of the work on the Metropolitan line embankments achieved 100 per cent reuse of waste materials.

Objectives

- We will continue to minimise generation of waste as far as possible
- For any waste still generated, we will develop a normalised target for reduction, for example, per project spend or passenger kilometre
- We will develop a target for reducing hazardous waste
- We will prioritise reuse of resources and maximise opportunities for recycling unavoidable waste, using innovation and new systems where practical
- We will optimise opportunities to recover energy from remaining waste
- We will continue to purchase reused materials or those with a high recycled content

Targets

- We will reuse, recover and recycle 99 per cent of non-hazardous waste, with interim targets of 30 per cent for recovery by 2031, in line with The London Plan

- Our head offices will aim to achieve a shift from current Defra good practice performance of 6m³ water consumption per FTE to Defra best practice of 4m³ per FTE

We will achieve these targets by:

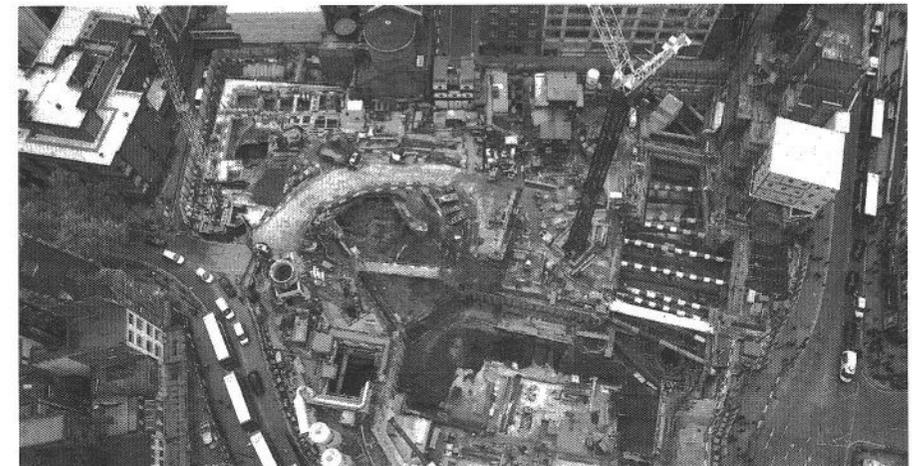
- Designing-out waste in construction and design
- Delivering a reduction programme for hazardous waste
- Continuing to invest in low-use and recycled water technologies
- Developing a system to quantify how much

we spend on having our waste treated, recycled and disposed of to help us target priorities for where to reduce waste

- Creating a waste exchange process for our organisation and contractors
- Requiring larger capital projects and programmes to achieve external sustainable building or infrastructure certification, equivalent to 'very good' or 'excellent' where possible

Measuring progress

We will measure and report annually on progress made towards achieving our targets and key programme delivery.



■ Our construction site at Tottenham Court Road is recycling and reusing all of its waste