Green Fleet Strategy

Technical Appendices

The Green Fleet Strategy is supported by a series of appendices providing technical information.

Technical Appendices

THE ROYAL BOROUGH OF KENSINGTON AND CHELSEA

Appendix 1: Current fleet characteristics

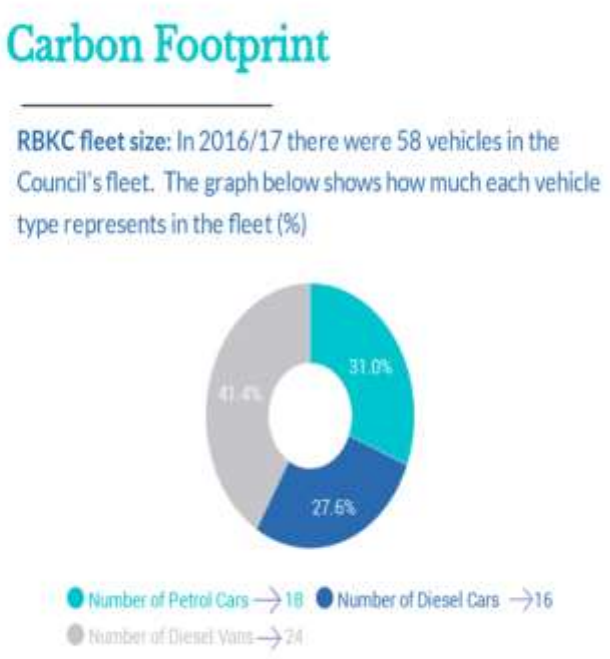
The Green Fleet Strategy will include the vehicles used directly by the Council, the grey fleet and vehicles used by the Council's contractors. Below is a summary of the different vehicle classifications.

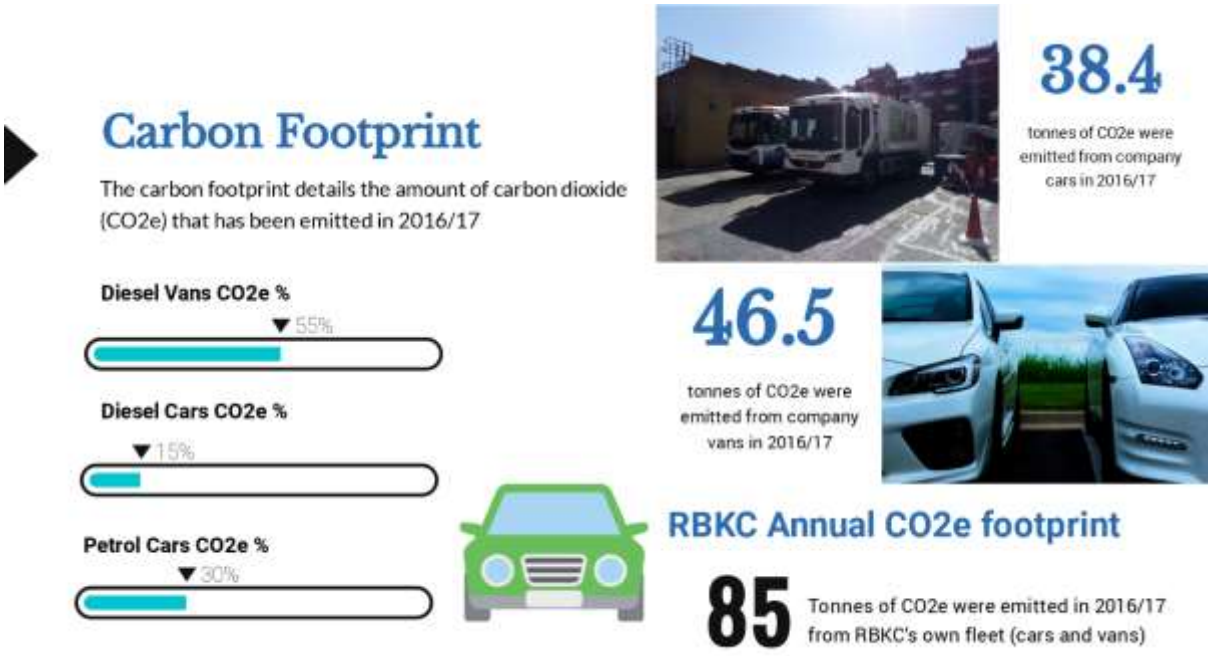
1.1 The Council's Fleet

The Council runs a mixed fleet which according to the latest data for 2016/2017 comprised of 58 vehicles, of which 34 were company cars and 24 were company vans. These vehicles are estimated to emit around 85 tonnes of carbon dioxide equivalent (CO_2e) per year, as outlined in the figures and tables below.

In 2015/2016, the Council's fleet comprised of 65 leased vehicles, of which 33 were company cars and 32 were company vans and the vehicles were estimated to emit around 95 tonnes of carbon dioxide equivalent per year.

The Council's fleet using the data for 2016/201





The carbon footprint of the tailpipe emissions in 2016/2017 of the RBKC fleet is shown in the table below:

Fleet type	Number of Vehicles	Total Miles pa	CO_{2e} footprint (tonnes) pa	CO_{2e} %
Petrol Cars	18	92,011	25.7	30%
Diesel Cars	16	51,908	12.7	15%
Diesel Vans	24	146,476	46.5	55%
Total	**58**	**290,396**	**85**	**100%**

The RBKC Climate Change Team commissioned the Energy Saving Trust to conduct a review on the Council's fleet looking at the data for 2015/2016. This identified that for both cars and vans the current utilisation is low in terms of mileage driven. For cars, in 2015/2016 the annual average mileage was 6,350 with 21 vehicles travelling less than 5,000 miles a year. The van utilisation was also low, with only two of the 32 vans recording mileages above 5,000 per annum and an average mileage was calculated at just 3,400. The review recommended that the Council should look closely at the fleet utilisation and should try to downsize its vehicles, whilst simultaneously increasing the utilisation across fewer vehicles.

The review highlighted that the company vans are not going to be compliant with the ULEZ changes proposed for 2021 and 40 per cent of the company cars will also be non-compliant with these changes.

1.2 The Grey Fleet

"Grey fleet" refers to vehicles privately owned or leased by employees but used for business travel. Grey fleet is an area of concern as it usually includes large numbers of older, higher emission vehicles. The latest data available shows that the Council had 46 grey fleet vehicles in 2016/2017.

In 2015/2016, there were approximately 37 vehicles within the Council's grey fleet and it was estimated that around £36,400 was paid in mileage reimbursements and essential user payments in 2016/2017. The Energy Saving Trust review found the following:

- £16,502 was paid to one driver/user in 2015/2016.
- The oldest vehicle is 16.8 years and the average age for the vehicles used is 8.1 years.
- Around 54% of these vehicles are using diesel, 43% are using petrol and 3% are using petrol hybrid.

According to EST's in-depth analysis, approximately 60% of the vehicles within the grey fleet currently would not be compliant with the future ULEV changes.

The Green Fleet Strategy will aim to reduce the use of the grey fleet and encourage a shift to active transport solutions through adopting a travel hierarchy. This borough is geographically very small, and has relatively good public transport, therefore walking and cycling as active transport are encouraged if appropriate and feasible, followed by other sustainable transport alternatives to the grey fleet (e.g. electric car share and/or public transport).

For high mileage drivers, typically those driving in excess of 8,000 miles a year, there may be a compelling business case to replace their grey fleet vehicles with ultra-low emissions company cars, on the grounds of cost, reduced emissions and better risk management. Hire cars are more cost effective than grey fleet for drivers with less significant mileage but who typically make trips greater than 64 miles. These trips can be made in modern, lower emissions, safer cars by using hire vehicles.

Electric car clubs can be very cost effective for lots of short local trips. Further work is needed in this area to collect more data for analysis and to find ways for improvement. Some organisations have now imposed a complete ban on grey fleet travel; staff must use a hire car or a pool car and electric car club options are increasingly being explored as an alternative or supplement to the pool car fleet.

A car club provides its clients with quick and easy access to a car for short term hire to be used for local journeys. Staff can make use of car club vehicles as and when

they need them. Car club cars typically emit only 64% of the CO_2 per kilometre for the average grey fleet car they replace.

The Green Fleet Strategy proposed that further investigation into the grey fleet and the changes to staff's contractual agreements to be carried out in partnership with the Council's Human Resource Department.

1.3 The Contractors Fleet

Currently the Council monitors carbon emissions from five contractors which are included within the Council's carbon reduction scope. These contractors are: Amey, Hackney Community Transport, NSL, Idverde and Suez. According to the data received for 2016/2017, there were 120 vehicles used by these contractors out of which 81 are using diesel, 27 are using petrol and one is electric. The vehicles used by all these contractors have emitted 1,023 tonnes of CO2 in 2016/17.

In 2016/2017, Amey were using 10 diesel vans (seven small vans and three medium vans); NSL have 38 vehicles in their fleet out of which 27 are using petrol and 11 are using diesel. There is no information given regarding the size of NSL vehicles.

The information we have for the other contractors are below:

In 2016/2017, Idverde had 13 vehicles in their fleet and they are split as following:

- Five small diesel vans
- One small diesel car
- Two medium diesel cars
- Four medium diesel vans
- One electric van

In 2016-2017, Hackney Community Transport had 11 mini buses in their fleet which are using diesel.

In 2016-2017, Suez had 48 refuse trucks or road sweepers within its fleet and they were all running on diesel.


1.4 The management process

In developing and adopting the Green Fleet Strategy, the Council has used the sustainable fleet management process proposed by Transport for London in their Sustainable Fleet Management Guide.

- Stage 1 • Assess current performance
- Stage 2 • Define business needs
- Stage 3 • Identify opportunities for improvements
- Stage 4 • Gain business and individual buy-in
- Stage 5 • Implementation
- Stage 6 • Ongoing monitoring and review

Appendix 2: Council's priorities and regional and national commitments

2.1 Leading by Example

The Green Fleet Strategy is aligned with the **Council's Air Quality and Climate Change (AQCCAP) Policy**[1] which outlines the priorities for tackling the twin issues of climate change and poor air quality. This strategy addresses several key elements included in the AQCCAP Policy:

- Use every effective means to raise awareness of the issues;
- Take decisive action to reduce emissions of greenhouse gases and air pollutants from its own activities, buildings and road vehicles;
- Lead by example and actively encourage responsible environmental practice amongst staff, contractors, suppliers and residents, and raise awareness and empower local communities to start taking action to implement local air quality and carbon dioxide (CO2) reduction project.

To implement the AQCCAP Policy, the Council produced the **2016 -2021 Air Quality and Climate Change Action Plan (AQCCAP)** which lists the direct actions and awareness raising with aims to:

- Reduce emissions
- Reduce exposure and increase resilience
- Influence change

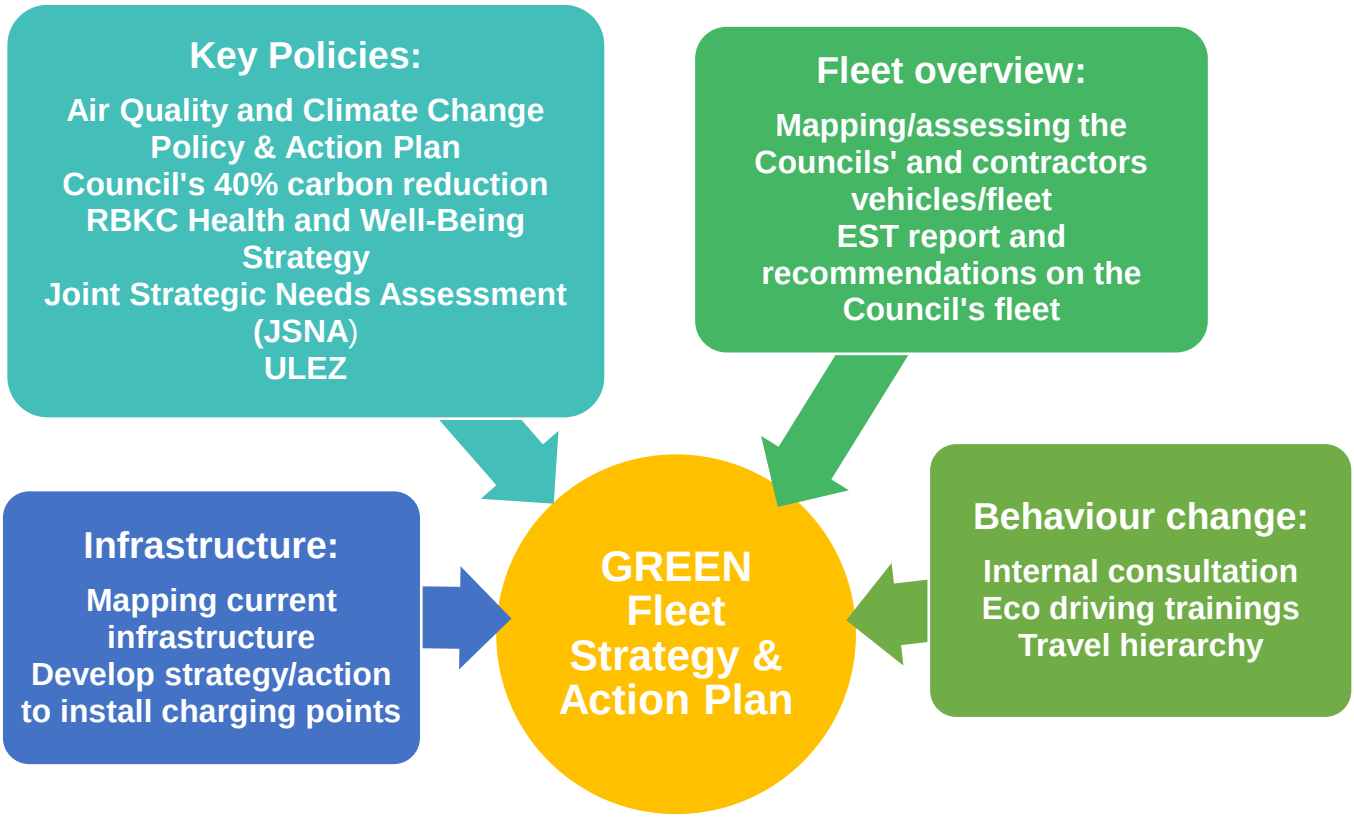
One of the main objectives included in the AQCCAP is to **"Lead by example by reducing the Council's fleet of vehicles and procuring a greener fleet"** with a driver to improve air quality, reduce RBKC's corporate CO_2 emissions through fleet management and implement Ultra Low Emission Vehicles (ULEVs) such as electric vehicles and plug-in hybrids.

The Green Fleet Strategy will help deliver the above aims and meet the objective related to the Council's fleet included in the AQCCAP and also the Public Health's priorities in promoting active travel.

The Green Fleet Strategy supports the Council in reducing its carbon emissions and achieving the 40% carbon reduction target from its own operations by 2020. In 2016/2017 the Council exceeded its interim 30% carbon reduction target, achieving a 35.3 per cent carbon reduction compared to 2007/2008 baseline year. This is also aligned with the Mayor' of London's target to achieve 60% reduction in the London's

[1] https://www.rbkc.gov.uk/environment/air-quality/air-quality-and-climate-change-action-plan-2016-2021

CO_2 emissions (below 1990) by 2025 and with the new Ultra Low Emission Zone (ULEZ) requirements.



The Mayor's London Environment Strategy published in May 2018 aims for London to "be a zero carbon city by 2050" and "for London to have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities". To be able to achieve these ambitious targets, Local Authorities have the duty to start taking bold actions and reduce their environmental footprint.

The Green Fleet Strategy is also aligned with **RBKC's Health and Wellbeing Strategy**[2] by prioritising active travel and encouraging Council's employees/drivers to be physically active by replacing car journeys with cycling and walking where appropriate. This will result in reducing the health impacts of car use in the borough. The greatest health benefits come from encouraging those who have been previously inactive to participate in low to moderate levels of activity. This is aligned with Mayor's overall target to ensure that 80% of all trips in London are made by walking, cycling or public transport.

The Green Fleet Strategy fits within the health protection ambitions and health and well-being is very much considered as:

[2] https://www.rbkc.gov.uk/press-release/health-and-wellbeing-strategy-launched


Live Green Love Your Borough

i. Road transport is the main pollution source - have a duty to adopt green technologies to reduce the severity of impact on our communities and Council's employees.
ii. Air pollution is highest inside cars – this is currently having a detrimental impact on our officers' health.
iii. There are high health impacts/ benefits of active travel with potential to encourage behavioural change beyond working hours

The Green Fleet Strategy will help the Council to achieve different strategic objectives and goals such as reducing the emission of air quality pollutants which are harmful to health and GHG emissions which cause climate change, plus reducing the environmental risks to public health.

The strategy will also cut fuel costs through the reduction of fuel consumption and improving the energy efficiency of the fleet through green procurement. The financial and operational viability of introducing ULEVs and installing adequate infrastructure/charging points were considered when developing the Green Fleet Strategy.

2.2 Regional Policy Framework / ULEZ

In order to improve health by reducing air pollution across London, the Ultra-Low Emission Zone (ULEZ) will be introduced in Central London from April 2019 and will replace the existing Toxicity Charge (T-Charge), operating in the same area. It will operate 24 hours a day, seven days a week, 365 days a year. Under this scheme, all vehicles will need to meet exhaust emission standards of Euro 4 (for petrol vehicles) and Euro 6 (for diesel vehicles) or will have to pay the ULEZ charge.

There will be two ULEZ charge levels: £12.50 a day for cars, vans and motorbikes and £100 a day for lorries, buses and coaches. These charges will be in addition to the Congestion Charge (C-Charge), so the more polluting cars and vans would pay £24 per day and lorries would pay £111.50 during C-Charge hours.

From 2020, the Mayor of London is proposing to expand the ULEZ for heavy vehicles across a larger area, to cover nearly all of Greater London and includes Kensington and Chelsea. This expanded zone would apply to heavy vehicles over 3.5 tonnes such as buses, coaches and lorries. These vehicles will need to be Euro IV Petrol or Euro VI Diesel or else pay the charge stated above. All our contractors will need to comply with the ULEZ requirements.

In 2021 the proposed expanded ULEZ will apply to light vehicles, such as cars, vans, minibuses and motorcycles up to the North / South Circular roads. This will affect any vehicle that is not either Euro 4 Petrol or Euro 6 Diesel (Euro 3 for motorcycles). In short, any diesel vehicle over 6 years old or any petrol vehicle over 15 years in 2021 would not meet the ULEZ standards.

The Green Fleet Strategy will ensure that vehicles operated by the Council and its contractors comply with the new expanded ULEZ should they be introduced in 2020

for heavy vehicles and 2021 for all other vehicles, and that the Council avoids any additional costs as a result of ULEZ.

Appendix 3: Energy Saving Trust Report

A "Green Fleet and ULEV Report"/review was undertaken by the Energy Saving Trust (EST) in 2017 based on annualised fleet data for 2015/2016. Their report was considered when developing the Green Fleet Strategy.

The review assessed the efficiency of the Council's fleet in terms of energy consumption, emissions and costs and also looked at the feasibility of implementing Ultra Low Emissions Vehicles (ULEVs) into the Council's fleet. Furthermore, the review included information regarding the Council's Grey Fleet. The Grey Fleet is comprised of vehicles which are owned by staff but are used for Council business.

3.1 Energy Saving Trust Report & Recommendations

The EST has used information provided by the Council to analyse its operations and its carbon footprint. This has enabled EST to identify a range of opportunities for the Council to reduce energy usage and consequently its carbon footprint and costs.

The review also includes recommendations on how the Council can adopt a green and low pollution fleet strategy and identifies opportunities for RBKC to replace internal combustion engine (ICE) vehicles in the van and/or car fleets with Ultra Low Emission Vehicles (ULEVs) such as zero emission battery electric vehicles (BEVs), or low emission plug-in hybrid electric vehicles (PHEVs). The findings of the "Green Fleet and ULEV Report" have informed and have been included in the Green Fleet Strategy.

The EST estimated that the potential annual savings from improving the energy efficiency of the fleet alone to be in excess of £5,560.

The three main recommendations made by the EST which are estimated to have the highest savings are outlined in the table below:

Recommendation	CO_2e reduction	CO_2e saving (tonnes per year)	Annual cost savings
Driver Training	7.0%	6.5	£2,750
Improve Data Collection and Implement Fuel Management	6.0%	5.5	£2,200
Vehicle Choice	1.5%	1.5	£700
Total savings	**14.0%**	**13.5**	**£5,650**

A number of other recommendations were made by the EST for the Council to adopt in order to improve its energy efficiency within its fleet such as:

- Investigating the current fleet utilisation in order to downsize the number of vehicles, whilst simultaneously increasing the utilisation across fewer vehicles.
- It was recommended that a senior management champion is appointed to lead and to support the implementation of the recommendations which will be taken forward.
- Introducing a robust travel hierarchy system for claiming mileage. This will take staff members through the decision-making process around whether and how to travel before they make their journey. The system will allow them to enter their start and end destination and it will provide them with the most efficient for of transport option available. The EST highlighted that this will help advise staff of the best way to travel before this has taken place, which means that if travel is done in a different way, the manager is in a position to query the choices made.

It also begins a process of culture change as it coaches staff to make the right choice by giving them the best alternative.

- The EST recommended that Whole Life Cost (WLC) modelling should be at the basis of all vehicle procurement decisions. Adopting such a measure would ensure that the environmental and financial control can be maintained or even enhanced. A CO2 cap can also be applied. Financial control will be exercised by the use of a WLC model which can find the lowest total cost, whereas environmental control could be enhanced by including CO2 caps.

3.2 The case for Ultra Low Emissions Vehicles

The report produced by the EST shows opportunities where the Council can replace the internal combustion engine (ICE) vehicles from the fleet with Ultra Low Emissions Vehicles (ULEVs) such as zero emission battery electric vehicles, or low emission plug-in hybrid electric vehicles. Furthermore, this analyses the financial and operational viability of ULEVs and takes in consideration what infrastructure is needed for these.

The EST recommends that identifying vehicles which can be replaced by ULEVs should be done on a case by case basis and it should take in consideration the vehicle's operational suitability, and its role. Range issues should be considered to ensure that the vehicle are able to achieve the required daily mileage.

Site surveys at sites where most vehicles are based will be necessary in order to identify where charge points should be installed. The report highlights that some infrastructure suppliers will be able to do this at zero cost and that EST might be able to assist with finding the right supplier.

When looking to adopt electric vehicles within the fleet, EST recommends that there are certain factors which should be taken in consideration such as the volatility of

diesel pricing which changes the financial business case. This is because diesel and petrol vehicles are more at risk of cost increases, and although electricity prices may also increase, these are estimated to be much lower per kWh of energy compared to liquid fuels. The EST estimates that by adopting ULEV cars and vans the Council will make significant savings in carbon emissions compared to conventional diesel / petrol cars equivalents. Furthermore, adopting ULEVs can also improve air quality, therefore delivering local health benefits.

Appendix 4: The impacts of vehicles and the benefits of active travel

4.1 The environmental and health impact of vehicles

The transport sector is responsible for over one quarter of the UK's greenhouse gas emissions, and is a major contributor to air pollution.

Poor air quality is linked to the equivalent of around 9,400 premature deaths per year in London, and 40,000 nationally[3]. Air pollution causes more than twice as many deaths as road traffic collisions. Two pollutants of particular concern are nitrogen dioxide (NO_2) and fine particulate matter ($PM_{2.5}$). Nitrogen dioxide (NO_2) aggravates symptoms in asthmatics, causes inflammation of the airways and reduces lung development and function. $PM_{2.5}$ contributes to the risk of cardiovascular and respiratory diseases such as lung cancer. Across London, areas with higher levels of deprivation tend to be disproportionately affected by air pollution.

The *Understanding the Health Impacts of Air Pollution in London* report (King's College, 2015) estimates that in 2010, 8.3% of early deaths in the Royal Borough were attributable to fine particulate air pollution ($PM_{2.5}$) along with a further 16.6% of early deaths attributable to NO_2. This figure is the highest in London (a position shared with Westminster). The impact on children is of particular concern; 80 of the Royal Borough's 90 schools (89%) are in locations that exceed the legal limit of 40 micrograms of NO_2 per cubic metre of air.

The Council is exceeding EU limits for NO_2 in parts of the borough. The main areas of concern continue to be Knightsbridge, the Earls Court one-way system, High Street Kensington and Notting Hill Gate and other areas with high road traffic levels where public exposure (residents and visitors) is considerable[4]. A whole borough air quality management area was declared in 2000 for both emissions of NO_2 and particulate matter (PM_{10}). Air pollutant levels (particularly NO_2) are projected to remain in exceedance of the UK's legal targets beyond 2020. Greater London is the only UK region that did not meet the EU Air Quality Directive hourly mean NO_2 limits in 2013.

[3] https://www.london.gov.uk/sites/default/files/HIAinLondon_KingsReport_14072015_final_0.pdf
[4] https://www.rbkc.gov.uk/environment/air-quality/air-quality-reports-and-documents

Transport emissions can harm street environments, affecting human health and contributing to climate change and air pollution. Emissions from road transport accounts for the largest source of air quality pollutants in the borough and account for 56%, 54% and 59% of the total emissions for NO_2 PM_{10} and $PM_{2.5}$. respectively and 14.9% of the borough-wide CO_2 emissions. Therefore, as both Air Quality and Climate Change topics are Council priorities and are closely connected, it is important the vehicles used by the Council and its contractors minimise harmful emissions, with an ambition to produce zero emissions.

In addition to saving the Council money, ULEVs have environmental benefits. When driving on electric power they emit zero 'tailpipe' carbon dioxide emissions. According to EST, even when considering the emissions associated with manufacture, electric cars and vans are less environmentally damaging than internal combustion models[5].

Air Quality Impact Reduction

Switching from internal combustion engines (ICE) to ultra-low emission vehicles (ULEV's) reduces the tailpipe emission of NO_2 and PM_{10} and has an air quality benefit. Vehicles type within the current fleet include Dacia Duster petrol, Volkswagen Caddy diesel vans and Citroen Nemo diesel vans. In total for 2016 the company vans covered 108,568 miles per year and the company cars covered 214,395 miles per year. For Council fleet vehicles, and
assuming a complete switch to ULEV, there will be a potential net saving of 167.2kg of NO_x+PM_{10} release per year[6].

4.2 The benefits of active travel

The Green Fleet Strategy encourages active travel amongst Council staff/fleet users and its contractors when short car journeys can be replaced with walking and cycling.

The benefits of encouraging people to be physically active

- Reduces congestion especially during peak times
- In London the level of air pollution and public perception surrounding it is a strong element that reduces active travel
- The transport sector is also responsible for over one-quarter of the UK's greenhouse gas emissions, and is a major contributor to air pollution
- In 2016, the Royal College of Physicians (RCP) and the Royal College of Paediatrics and Child Health (RCPCH) estimated that ambient air pollution causes approximately 40,000 premature deaths[7], over six million sick days and an estimated total social cost of £22.6 billion per year

[5] Energy Saving Trust, *A Guide TO Ultra Low Emissions Vehicles for Fleet Managers*
[6] This figure is based on an average mileage of 3400 miles per year for company vans and 6350 miles per year for company cars and assuming only two vehicle types VW Caddy Maxi Kombi 2.0 TDI 102PS DSG and DACIA Duster 1.6 16v Access 105hp, and under normal driving conditions. (Mileage and vehicle type data taken from the RBKC draft Green Fleet Strategy.)
[7] https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution

- If England's Cycling and Walking Investment Strategy (CWIS) target to double cycling is achieved this would result in £288 million in air pollution benefits per year

The health and well-being impacts of cycling and walking as opposed to taking the car for a short journey for work purposes to strengthen Green Fleet Strategy's targets/objectives

- The greatest health benefits come from encouraging those who have been previously inactive to participate in low to moderate levels of activity
- Active travel has been seen to provide benefits such as enabling people to both prevent and manage over 20 chronic conditions such as obesity and depression
- Active travel to school can increase concentration by up to 4 hours
- In London 43% of adults do not achieve the recommended minimum level of 150 minutes of physical activity each week
- 25% of adults in London achieve the recommended 150 minutes of activity through active travel (London.gov.uk)
- Each additional kilometre walked per day is walked per day is associated with a 4.8% reduction in the likelihood of becoming obese (London.gov.uk)
- Each additional hour spent travelling in a car per day is associated with a 6% increase in the likelihood of becoming obese (London.gov.uk)
- Switching from private motor transport to active travel or public transport is associated with a significant reduction in BMI (London.gov.uk)
- Active school travel has been shown to provide benefits such as reduction in children's BMI which leads to a reduction in long term obesity related diseases, improvement in academic performance at school and in reduction in car use, benefitting the environment.

Synergetic benefits of increasing active travel, physical activity, reducing emissions and exposure to pollution?

- Cost effective – Increasing investment in measures to facilitate cycling show high benefit to cost ratios (often 5/10-1)
- Reduces demand on the NHS – In everyday life participating in walking and cycling for weight reduction may be as effective as exercise and fitness problems
- Reduction in financial demand on NHS as lack of physical activity costs the NHS approx. £1 billion per year (rising to £7.4 billion/year when including costs to wider society)
- Reduces the environmental risks to public health – Reduces carbon emissions in a local area. Air pollution is the second largest cause of premature mortality so this improves the health of those who travel actively and those who don't
- Road traffic noise is a major cause of noise pollution in London which is linked to impaired intellectual development in children, increased blood pressure, sleep disturbance and reduced wellbeing
- Road traffic noise can also discourage people from walking, cycling and other activities such as shopping and socialising. This has a negative impact on their health by reducing physical activity and social interaction

- Benefits of active commuting from physical activity are larger than the risk from an increased inhaled dose of fine particles. In 71% of cases in a recent study car commuters had higher exposure to pollutants than did active commuters
- Car drivers are exposed to higher levels of air pollution that cyclists: fine particular matter and elemental carbon or soot
- Using public transport can help people build physical activity into their daily lives
- Traffic safety and distance are the most significant barriers affecting active travel to schools
- Evidence from other European countries suggests that providing cycling facilities along routes with heavy traffic and traffic calming increases levels of cycling. Additionally, provision of bike parking, traffic education combined with social marketing to promote cycling further boosts levels of active travel.

Appendix 5: Financial benefits and implications

This section outlines how the Council could cut costs and achieve potential savings by greening its fleet and implementing the actions listed in the Green Fleet Strategy through the following:

- Running and maintaining a green fleet
- Reducing fuel consumption by procuring ULEVs
- Downsizing vehicles and reducing mileage and unnecessary journeys
- Implementing eco driving - improving driver performance could achieve 15% to 20% improvement in fuel economy
- Implement robust data capture and fuel management
- Increase active travel amongst Council's drivers (such as cycling and walking) and minimise fuel consumption
- Use pool cars and car clubs to share for work journeys and reduce number of journeys
- Reducing grey fleet

5.1 Financial implications of going electric

According to Energy Saving Trust who conducted a fleet review for the Council in 2017, Whole Life Cost modelling should be the basis of all vehicle procurement decisions so that all costs of running a vehicle through its lifetime are included/considered. Monthly lease rates used to be excellent proxies for the total or Whole Life cost incurred by companies for their cars. Increasingly this is not the case as tax regimes have changed and other costs, beyond the lease rate, have increased disproportionately. This reflects the full cost of vehicles more accurately than standard methods and can identify where adopting low carbon vehicles is cost neutral or even cost-saving.

Whole Life Cost (WLC) is an expression that does no more than define all the costs incurred to run a car and can be expressed on both a pre and post corporation tax basis. For most businesses the more relevant measure is after-tax WLC. It includes the following elements:

Lease rates (or purchase and funding costs of the car if bought not leased)

- Service, maintenance and repair costs (if not included in lease rate)
- Insurance
- VAT - some of the VAT charged is not recoverable by the business
- Fuel costs for business mileage (and personal mileage if paid)
- National insurance payable on the employee scale benefit liability
- Corporation tax relief on all the above as appropriate.

5.2 Savings and benefits of going electric

The first factor to consider in the decision to operate EVs is the volatility of diesel pricing which changes the financial business case. This is because diesel (and petrol) vehicles are more at risk of cost increases as fuel cost is a greater proportion of whole life costs. Although it is possible that electricity costs may also increase, they are much lower per kWh of energy compared to liquid fuels. The operation of electric vehicles holds less risk of absolute cost increases than diesel or petrol therefore, and has the positive benefit of insulating the company from some degree of risk.

Electric and plug-in cars come in all shapes and sizes with a large number of models now available. Electric vehicle technology is fast maturing and as range increases and prices come down, running one is becoming an attractive option for many drivers

According to EST, while the initial upfront purchase price of an electric or plug-in hybrid vehicle can be higher, this is offset by lower running costs over the lifetime of the vehicle. Plug-in cars offer a number of potential savings compared to conventional vehicles including:

A full charge in a pure electric vehicle will give a typical range of 100 miles and will cost £2 to £4. Driving 100 miles in a petrol or diesel car will cost around £13 to £16 in fuel, which is around four times the cost of the electric car. The cost savings will be greatest when owners have access to an off-peak overnight electricity tariff.

There are fewer mechanical components in an electric vehicle when compared with conventional vehicles, which often results in lower servicing and maintenance costs.

Plug-in cars emitting 75g/km CO_2 or less are eligible for a 100% discount from the London Congestion Charge. A regular user of this zone could be saving over £2,000 a year.

The lower or zero emissions of plug-in vehicles means that they will attract lower charges from Clean Air Zones being implemented around the UK and the Ultra-Low Emission Zone in London.

Free parking may also be available to further encourage the uptake of electric cars in some urban areas.

5.3 Costs to implement the strategy

The table below includes a comparison of running a diesel/petrol fleet compared to an electric fleet and the financial savings achieved if the strategy implemented. It uses the assumption that all the 34 cars that we have in our fleet can change to KIA Souls model and that all the 24 company vans can change to ENV 200. Costs incurred through the Council's fleet are: lease, fuel, maintenance, tax, etc.

The capital cost to install charging points is through LIP. Cost for the role for the Fleet Manager climate change team. Starting from 2019, £5,000 will be allocated yearly to cover the Green Fleet Manager's role and the Climate Change Team will be allocating the required costs for the first two years until 2020.

Pure indicative to show trends:

Criteria	Petrol / Diesel Vehicles (company cars 34 and company vans 24 in 2016-2017)	**Electric fleet estimations costs Replacing/switching all 34 cars with KIA Soul and 24 vans with ENV 200** **2These figures are estimations and the costs are spread across different budgets.*	Year 1 savings if entire fleet goes electric
Number of vehicles in the Council fleet in 2016/2017	58	58	n/a
Total miles per annum in 2016-2017	290,396 *Total miles per year for the Council's 58 fleet in 2016/2017.	290,396	n/a
Total leasing costs per year in 2016-2017	£280,502.34 *The figure above represents the lease costs in 2016/2017 for the Council's fleet.	£139,304.24 *The lease costs are provided by Lex Autolease for the Kia Soul and ENV 200 models. Please note that other electric vehicles can have higher leasing costs and the two electric models might not be suitable for all departments/operations.	£141,198.10↓
Annual Fuel Cost per year in 2016-2017	£45,264.53 *This figure represents the fuel costs for 290,396 miles.	£11,151.56 *This is an estimation for charging the electric vehicles for 290,396 miles provided by the Energy Saving Trust for the 34 KIA Soul electric cars and 24 ENV 200 electric vans.	£34,112.97
Total Cost per year (fuel and leasing)	**£325,766.87**	£150,455.80 *This figure has been calculated assuming that all 34 company cars are replaced with KIA Soul and 24 company vans are replaced with ENV 200.	£175,311.07↓ *These savings are based on the assumption that all 34 company cars are replaced with KIA Souls and 24 company vans are replaced with ENV 200.

Technical Appendices

Best case scenario: Financial savings attached for going electric by using a like for like comparison/best value for money
The table below is a comparison between a model of standard car which exists in the Council fleet (Toyota Prius) and a proposed EV replacement option (Kia Soul). Please note that this is a like for like comparison which takes into consideration the vehicle size and was recommended by the Fleet Manager for this comparison.

Vehicle Type	**Toyota Prius (existing company car in the Council fleet)**	**Kia Soul (proposed EV replacement option for company car)**
Miles per year	2,675 *This figure is the total mileage for an existing Toyota Prius Car for 2016/2017.	2,675
Leasing cost per year	£2,756.00 *Lease costs provided by the Fleet Manager reflecting the price paid currently by the Council.	£2,214.12 *Lease costs provided by Lex Autolease.
Estimated Fuel cost per year	£336.68 *This figure is an average and was calculated using the www.fuel-economy.co.uk online tool.	£150.84 *This figure has been provided by the Energy Saving Trust using their own methodology for the KIA Soul.
Estimated Annual cost	£3,092.68	£2,364.96
Estimation of savings from switching the Toyota Prius to the Kia Soul per year	**£727.72↓**	

The table below is a comparison between a model of standard van which exists in our fleet (Ford Transit) to a proposed electric van version (ENV200) of similar size.

Vehicle Type	Ford Transit Van (existing company van in our fleet)	ENV200 (proposed EV replacement option for company van)
Miles per year	7,433.80 *This figure is the total mileage for an existing Ford Transit Van for 2016/2017.	7,433.80
Leasing cost per year	£2,762.64 *Lease costs provided by the Fleet Manager reflecting the price paid currently by the Council.	£2,667.84 *Lease costs provided by Lex Autolease.
Estimated Fuel cost per year	£935.63 *This figure is an average and was calculated using the www.fuel-economy.co.uk online tool.	£250.95 *This figure has been provided by the Energy Saving Trust using their own methodology for the KIA Soul.
Estimated Annual cost	£3,698.27	£2,918.79
Estimation of savings from switching the Ford Transit to ENV200	**£779.48↓**	

Technical Appendices

Worst case scenario: Potential costs associated for going electric
The table below is a comparison between a model of standard car which exists in the Council fleet (Toyota Prius) and a proposed EV replacement option (BMWi3). Please note that this is just a comparison between two cars.

Vehicle Type	Toyota Prius (existing company car in the Council fleet)	BMWi3 (proposed EV replacement option for company car)
Miles per year	2,675 *This figure is the total mileage for an existing Toyota Prius for 2016/2017.	2,675
Leasing cost per year	£2,756.00 *Lease costs provided by the Fleet Manager reflecting the price paid currently by the Council.	£4,276.80 *Lease costs provided by Lex Autolease.
Estimated Fuel cost per year	£336.68 *This figure is an average and was calculated using the www.fuel-economy.co.uk online tool.	£96.19 *This figure was calculated using the assumption that electric vehicles consume 3-4 times less than standard vehicles. In this case the fuel consumption was divided by 3.5.
Estimated Annual cost	£3,092.68	£4,372.99
Estimation of potential cost increase if the existing Toyota Prius was to be exchanged with this type of EV model.	**£1,280.31↑**	

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The table below is a comparison between a model of standard car from our current fleet – Dacia Duster and a proposed electric car version (Renault Zoe).

Vehicle Type	**Dacia Duster (existing company car in the Council fleet)**	**Renault Zoe (proposed EV replacement option for company car)**
Miles per year	22,240	22,240
Leasing cost per year	£2,712 *Lease costs provided by the Fleet Manager reflecting the price paid currently by the Council	£5,591.76 *Lease costs provided by Lex Autolease.
Estimated Fuel cost per year	£2,799.17 *This figure is an average and was calculated using the www.fuel-economy.co.uk online tool.	£799.76 *This figure was calculated using the assumption that electric vehicles consume 3-4 times less than standard vehicles. In this case the fuel consumption was divided by 3.5.
Estimated Annual cost	£5,511.17	£6,391.52
Estimation of potential cost increase if the existing Toyota Prius was to be exchanged with this type of EV model.	**£880.35↑**	