

BIRMINGHAM CITY COUNCIL

**REPORT OF THE ACTING DIRECTOR OF REGULATION AND ENFORCEMENT
TO THE LICENSING AND PUBLIC PROTECTION COMMITTEE**

20 APRIL 2016
ALL WARDS

**PROPOSALS FOR VEHICLE EMISSION STANDARDS
FOR HACKNEY CARRIAGE AND PRIVATE HIRE VEHICLES**

1 Summary

- 1.1 In February 2016 a report was presented to your Committee on the Government's decision to impose a Clean Air Zone (CAZ) in Birmingham as a result of the City's continued failure to meet European air quality standards. The City must demonstrate that it meets the standard for nitrogen dioxide levels as soon as possible and by 2020 at the latest.
- 1.2 The Clean Air Zone will restrict access to the city centre to buses, coaches, Heavy Goods Vehicles, Light Goods Vehicles, hackney carriages and private hire vehicles dependent upon their emissions as directed by the euro class of the vehicle. Hackney carriages and private hire vehicles will need to meet emission standards for Euro VI / 6 diesel engines or Euro 4 petrol engines.
- 1.3 Under Birmingham's licensing policy there are no limitations on emissions for hackney carriages or private hire vehicles apart from the need to meet MOT emission standards which are applicable to all road vehicles. With the introduction of a Clean Air Zone we should develop a policy for licensing vehicles based on their emission levels that coincides with the requirements of the Clean Air Zone.
- 1.4 This report outlines our understanding of the consequences of the CAZ for the drivers and vehicles that are licensed by Birmingham and invites the Committee to consider the options that are available to it to set new standards.

2 Recommendations

- 2.1 That the Committee considers the implications of a policy to set emissions standards for hackney carriages and private hire vehicles to meet the standards that will apply to a Clean Air Zone in Birmingham; namely Euro 4 for petrol engines and Euro VI / 6 for diesel engines.

- 2.2 That officers be instructed to produce a draft policy for a future meeting based on the outcome of the Committee's deliberations.
- 2.3 That officers engage with the neighbouring West Midlands licensing authorities to discuss proposals for a regional emissions standard for hackney carriages and private hire vehicles.

Contact Officer: Chris Neville, Head of Licensing
Telephone: 0121 303 6920
E-mail: chris.neville@birmingham.gov.uk

3. Background

- 3.1 On 17th February 2015, Environmental Health presented a report to your Committee outlining the Government's announcement in December 2015 that Birmingham would be one of several UK cities that were failing to meet air quality standards and that Birmingham would be required to put in place a Clean Air Zone as part of its measures to improve air quality. The following reproduces much of the February report to explain the background to the Government's decision.
- 3.2 The standard for air quality is set by the Ambient Air Quality Directive. This sets limit values for a range of pollutants at a level to protect public health. Birmingham is non-compliant with regards to the annual average value for Nitrogen Dioxide (NO₂) (the annual mean).
- 3.3 The original deadline for compliance was January 2010 which was extended by the EU through derogation to January 2015. Plans were submitted by the UK Government to the EU which were challenged by ClientEarth, an organisation of activist environmental lawyers. A hearing in the Supreme Court resulted in a ruling that confirmed that Government's plans would not comply with the Directive.
- 3.4 The Supreme Court ruling catalysed the EU to commence infraction proceedings against the UK Government and further, the Supreme Court directed the UK Government to prepare an updated action plan by the end of 2015, setting out the route to compliance in the shortest time possible.
- 3.5 To inform this process the Department for Environment, Food and Rural affairs (Defra) and the Department for Transport (DfT) undertook consultation with local authorities to build up an understanding of committed interventions which would address air quality together with an understanding of other potential interventions which were planned or might be required to reach compliance. This included a discussion around what additional support might be needed from Government to enable these changes to happen.

- 3.6 If the UK Government does not satisfactorily demonstrate compliance, fines could be levied by the EU and, whilst the exact amount is unclear, values being considered are in the region of £300 million.
- 3.7 Under the Environment Act 1995 all UK Councils have the obligation to comply with emission limits drawn from the transposed Directive, one of which is an annual average value for NO₂ (the annual mean).
- 3.8 Birmingham, like many Councils, does not fully comply with this limit value and in response Government have reminded “of the discretionary power in Part 2 of the Localism Act under where the Government could require responsible authorities to pay all or part of an infraction fine.”
- 3.9 Once again, whilst the exact amount is unclear, assessment suggests Birmingham could be fined in the region of £40-100 million with a figure of £60 million being suggested.
- 3.10 With the internalisation of the Public Health service, Councils now have duties under the Public Health Outcomes Framework (PHOF), two of which are air quality based. Specifically there is the indicator covering the *Fraction of mortality attributable to particulate air pollution*. This specifically relates to fine particles but as the source is mostly the same as for NO₂ i.e. road transport, benefits gained under either regime will provide benefits to the other.

4 Health Effects

- 4.1 The health effects from air pollution are widely known as evidenced by a number of accredited studies in recent years. Typically the adverse health outcomes relate to diseases of the respiratory and cardiovascular systems although there is now clear evidence demonstrating effects on the neurological system. Certain groups are also at greater risk from exposure for instance children due to natural growth and development, foetuses from maternal exposure, again due to growth and development, and persons who have a regular occupational exposure which can give rise to an increased prevalence of cancer.
- 4.2 A study commissioned by the Low Emissions Towns & Cities Programme (LETCP - a regional group comprising air quality experts from the seven West Midlands metropolitan authorities) and undertaken by Ricardo AEA drew on data from various studies and suggested that in 2011 within Birmingham there were an equivalent of 371 deaths per year attributable to NO₂ and 486 deaths per year from fine particles, along with associated other adverse health outcomes to non-fatals.

5 Government's Proposal – A Clean Air Zone for Birmingham

- 5.1 The Air Quality Plans which by now will have been submitted to the EU are Government's response to the Supreme Court ruling. These Plans identify six

cities as being non-compliant beyond 2020, namely London, Birmingham, Leeds, Nottingham, Derby and Southampton.

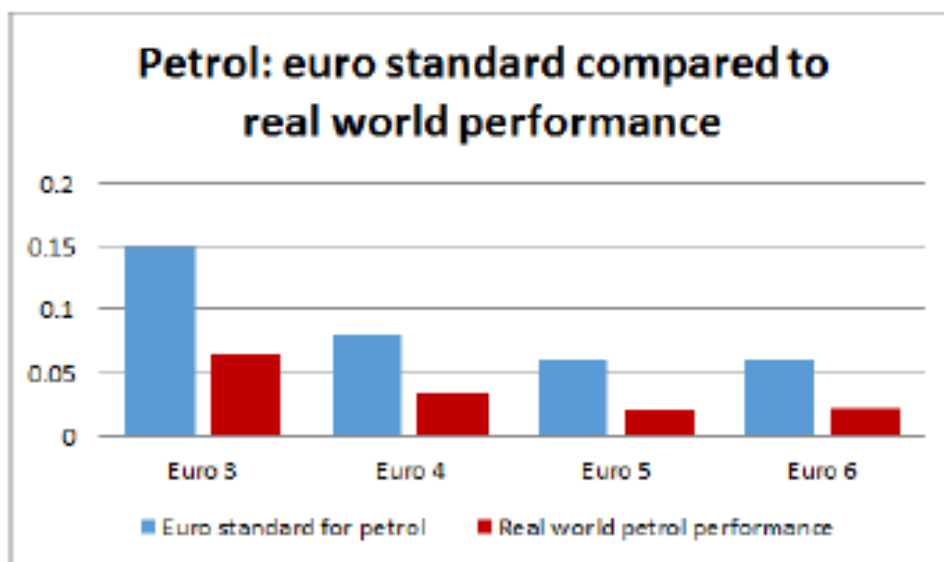
- 5.2 In order to address this non-compliance Government are mandating the introduction of Clean Air Zones (CAZ) within each city. A CAZ is an area where only the cleanest vehicles are encouraged and action is focussed to improve air quality.
- 5.3 For Birmingham the CAZ will restrict access to buses, coaches and heavy goods vehicles (HGVs) that are less than Euro VI for NO_x, and to vans, Hackney carriages and private hire vehicles that are less than Euro VI/6 (diesel) and Euro 4 (petrol) for NO_x.
- 5.4 This means that vehicles which do not meet the required standard will be precluded from accessing the zone or be subject to a penalty fine should they enter the zone.
- 5.5 Current thinking with regards to the zone is that it will likely need to encompass the middle ring road (A4540), as this is a 'natural' cordon and the problem areas lie within.
- 5.6 Furthermore, the above standards are believed to be insufficient to deliver full compliance by 2020 within Birmingham and as such additional local measures will need to be undertaken. These measures will be a combination of improved signage and rerouting, switching to different forms of transport (e.g. use of Park and Ride), road improvements and infrastructure for alternative fuels for the introduction of Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), Electric and Hydrogen Fuel Cell vehicles. Some of these items are already under consideration by the City Council.
- 5.7 Scoping studies will be undertaken, led by the Local Authority but funded by Government, to identify the most appropriate local measure(s) to take forward to fill the compliance gap including further helping understand the scale of the problem and who may be affected.
- 5.8 An existing study conducted by the LETCP is a Low Emission Zone Technical Feasibility Study which is nearing completion, and will be supported by a Low Emission Zone trial, where seven ANPR (automatic number plate recognition) cameras will be deployed around the A4540 ring road to further inform on the vehicle fleet and potential numbers affected. This is in line with the proposal in the Future Council budget consultation on the creation of a Low Emission Zone within Birmingham.
- 5.9 Where additional measures are required Government will keep the delivery of such measures under review, and will take further action if progress is deemed to be insufficient.
- 5.10 It is understood that the mandating of a CAZ classes as an additional 'burden' on the Council and as such, funding will be made available by Government. Further details will emerge as the work progresses.

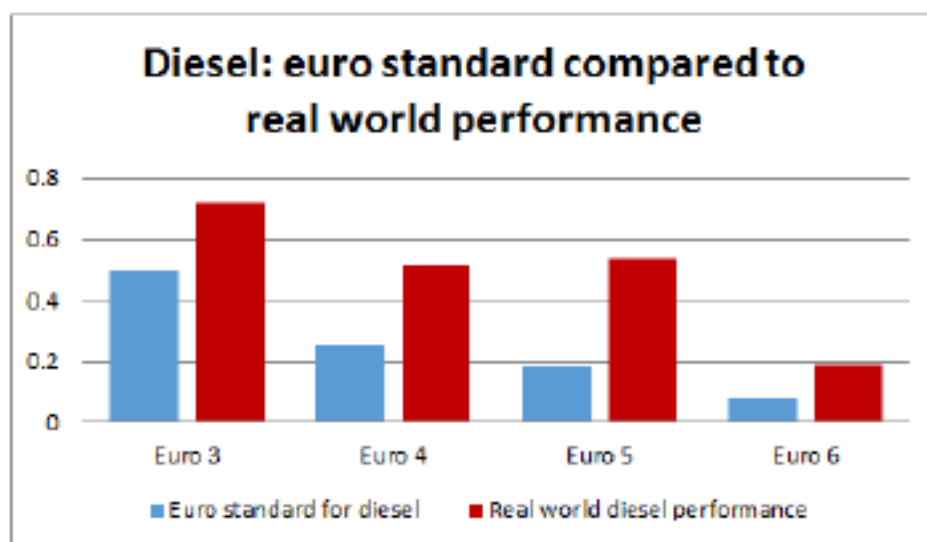
6 Emissions in Birmingham

- 6.1 For over a decade now Environmental Health have monitored air quality at points across the city and provided advice on the air quality merits of various schemes, both relating to transportation and fixed development (planning).
- 6.2 The monitoring demonstrates that the Council area is impacted by air pollution in a number of ways:
- Large scale area based impacts e.g. the city centre.
 - Heavily trafficked arterial routes.
 - Lower trafficked routes which are adversely affected due to a large percentage of heavy duty vehicles, and / or poor dispersion e.g. Moor Street Queensway and the area around Masshouse.
 - Trunk road network e.g. congestion on the M6 often leads to tailbacks on Birmingham's arterial roads, especially the A38(M) and A38 leading out of the city.
- 6.3 Over the years the issues around the arterial routes has mostly declined, possibly due to overall improvements to the fleet e.g. there have been noticeable declines on Stratford Road and Tyburn Road. These types of routes typically benefit from being quite open with any residential properties set back from the road and as such there is no recognised exposure.
- 6.4 The known problem areas that remain are mainly in the city centre, within the A4540 ring road. This is a consequence of the volume of traffic on certain roads e.g. A38 Bristol Road, the heavily built up nature of the area which prevents pollutant dispersion and the higher percentage of heavy vehicles e.g. buses, on certain roads. This underlines the fact that there is a need to be holistic in any approach on the necessary interventions required.
- 6.5 For the most part, determining the actual problem roads within the city centre is difficult. Whilst monitoring has demonstrated elevated levels at certain sites, the focus has always been on those roads where there is known exposure. Technical Guidance 09 (TG09) states that the air quality objectives should apply at *"All locations where the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes, etc."* but not at *"Building facades of offices..."* not at *"Hotels..."*, and not at *"Kerbside sites... or any other location where public exposure is expected to be short term."*
- 6.6 This means that it is necessary to identify residential properties within the city centre and for the most part many of these do not experience levels above the air quality objectives, but some do. The increasing emphasis on city centre living, which has seen more residents within the city centre, has both intensified the problem and made monitoring much more difficult.
- 6.7 A further confounding factor has been the scale of redevelopment and changes to the roads and traffic network within the city centre. For instance,

historically Corporation Street has been a problem road in terms of poor air quality, but with the closure of the road to traffic, particularly buses to facilitate the Metro extension the pollution levels have dropped off markedly, and correspondingly have been transferred to other sites e.g. Moor Street Queensway.

- 6.8 In order to determine whether there is exposure it is necessary to determine the pollutant levels, typically by undertaking pollutant monitoring preferably for a period of 3 years to avoid any annual variance due to climatic conditions.
- 6.9 An alternative approach is to model pollution levels using a suitable software package. Environmental Health have undertaken this for the city on a number of occasions although the correlation between the model and the actual monitored levels within the city centre is not always satisfactory due to the complex nature of the urban landscape and the need to employ advanced modelling techniques for which we lack the expertise and resources.
- 6.10 The net result of the above points is that there are areas within the city which are above the legal limit, some will have exposure, others will not, yet which are not immediately evident, even to experts in the field.
- 6.11 An additional point for consideration is the apparent failure of past Euro standards to deliver required emission gains. This can best be explained by the following diagrams which show car Euro Standards compared to real world performance. Source: COPERT 4v11 (2014).





- 6.12 As may be seen, petrol cars are performing within the Euro standard whereas diesel cars, of which there are an increasing number are not. This is why the CAZ approach (see below) focuses more on diesel vehicles than petrol.

7 Comments on the CAZ Approach

- 7.1 Present thinking around a CAZ to date has centered on the need to have a cordon and to focus on vehicles by type within that cordon. On paper this appears sensible as it is the easiest approach to take, and indeed it is in terms of delivering such a zone. However, it is apparent that there are consequences to this approach.
- 7.2 The primary issue, having regards to the fact that cars are presently not considered, is what impact this will have on the public service fleet i.e. buses and taxis. Whilst there has been funding made available to upgrade the fleets and Birmingham has been successful in bidding for these funds (£500,000 to replace the diesel engine of 63 hackney carriages with an LPG fuel source, and £500,000 to upgrade 154 buses with selective catalytic reduction technology to reduce NO₂ emissions) it won't fully cover all the required fleets and more funding would be required if we were to depend on this solution.
- 7.3 There is a clear statement that private cars will not be affected, and many private hire vehicles provide both a function as a taxi and as a private vehicle. Clarification will be sought from Government on this subject.
- 7.4 A second issue is that of displacement i.e. how many vehicles will route away from the zone to avoid any penalties and whether this will lead to a non-compliance transfer for instance with raised pollution concentrations on the ring road. This is one of the reasons why the committee should apply an emissions standard to all hackney carriage and private hire vehicles. If we allow market forces to apply, only the cleanest few hackney carriages and private hire vehicles would enter the city centre; the remaining majority of

older, more polluting vehicles would remain outside the CAZ, thereby displacing the problem into suburban areas of the city.

- 7.5 A Licensing policy which sets high standards in respect of vehicle emissions will have the greatest incentive for drivers to replace their vehicles with low emission vehicles and, therefore, have the greatest health outcomes.

8. Steps Already Taken

- 8.1 Work has already begun in Birmingham to address vehicle emissions from hackney carriages and private hire vehicles. We have been successful in obtaining £0.5m from the DfT's Clean Vehicle Technology Fund to fund the conversion of 63 hackney carriages to run on LPG. The funding has paid for a solution that involves new Vauxhall engines that are converted to run on LPG being put into hackney carriages. LPG has zero NO₂ emissions.

- 8.2 The City is also planning to bid for £5m from the DfT for a scheme to install electric charging points at key locations around the city to enable ULEV (Ultra Low Emission Vehicles) electric hackney carriages and private hire vehicles to recharge. If we are permitted to bid, we will know by spring 2016 whether the bid is successful. There are several different types of electrically powered vehicles:

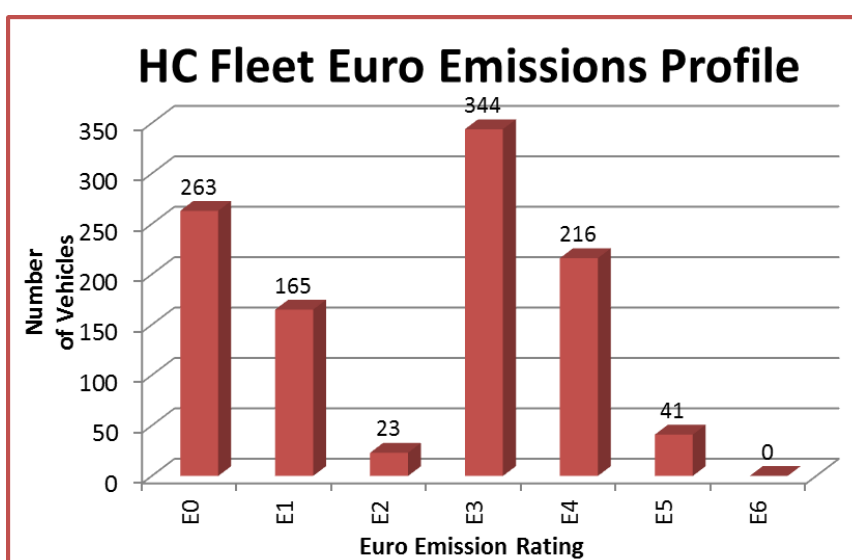
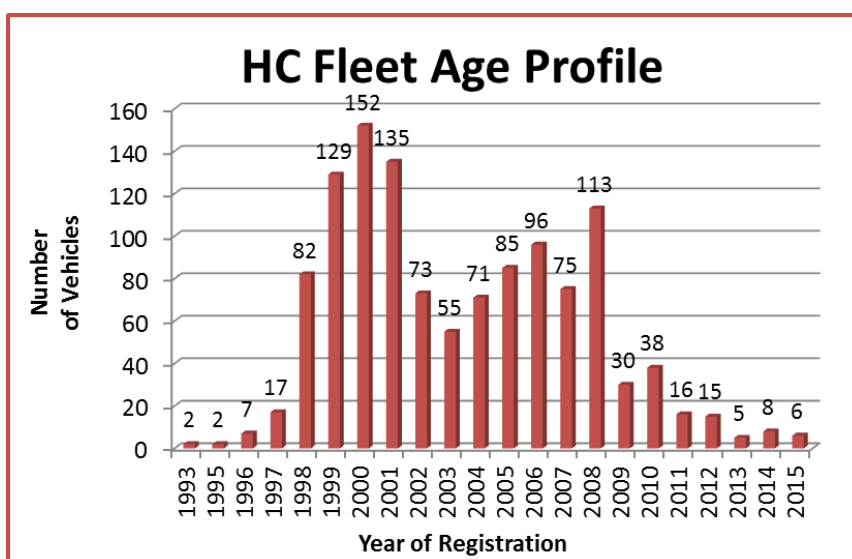
- **Conventional hybrids:** Hybrids burn fuel in an internal combustion engine (ICE) which drives the wheels via a gearbox. A battery charged by regenerative braking stores energy which is used to drive an electric motor and therefore the vehicle for a short distance (usually < 1 mile).
- **Plug-in hybrid electric vehicle (PHEV):** Combine a battery, electric motor and ICE like a conventional hybrid, a larger battery provides a longer electric only driving range. The battery can be recharged from a charge point reducing the amount of fuel consumed over a given distance. The vehicle reverts to petrol or diesel power when the battery charge is depleted.
- **Extended-range electric vehicle (E-REV):** Also combines a battery, electric motor and an ICE, however, unlike a PHEV the electric motor always drives the wheels. The ICE acts as a generator when the battery is depleted. The vehicle can also be recharged from a charge point. The battery in an E-REV battery is usually larger than in a PHEV, providing longer electrically driven range.
- **Battery electric vehicle (BEV or Pure-EV):** Powered only by electricity, a pure-EV has a larger battery than an E-REV or a PHEV and does not have an ICE.

9. Birmingham's Hackney Carriage Fleet

- 9.1 Officers have attempted to categorise licensed vehicles according to their age and Euro emissions classification, although the correlation is not always exact. The figures provided for hackney carriages and private hire vehicles

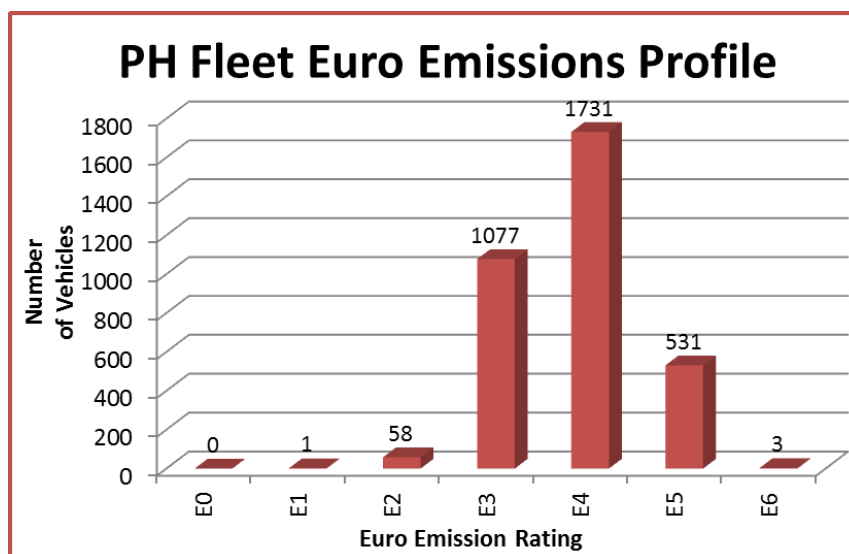
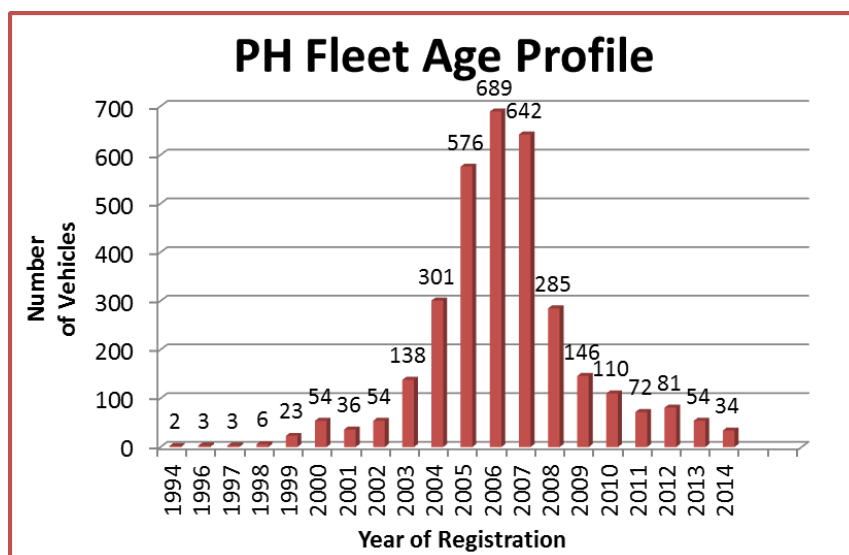
are our best estimates at this stage without carrying out a more detailed analysis.

- 9.2 The current licensing policy allows vehicles up to 14 years old to be licensed, although vehicles older than 14 can still be licensed if they meet the exceptional condition test as part of the annual MOT. Consequently many of our vehicles are older than 14. There are (at the time of writing) 1,229 licensed vehicles. The average age of the fleet is 13.6 years with only 392 vehicles (32%) less than 10 years old.
- 9.3 No vehicles meet the most recent Euro VI/6 emissions standard and only 4% meet the Euro 5 standard introduced on 01.01.11. 21% meet Euro 4; 33% Euro 3; 2% Euro 2; 16% Euro 1 and 25% predate the Euro standards completely. The taxi fleet is, therefore, likely to be a major source of Particulate Matter and NOx emission in Birmingham.



10. Birmingham's Private Hire Fleet

- 10.1 Vehicles are only licenced for the first time if they are less than eight years old. Vehicles over eight years old must pass the Supplementary Test Plus on an annual basis before their licence can be renewed. At the time of carrying out this analysis there are 4,060 private hire vehicles licensed by Birmingham City Council. The average age of a private hire vehicle in Birmingham is 11.1 years old based on these numbers, which is considerably older than in many other cities in the UK.
- 10.2 Only 2% of the private hire vehicles are 2 years old or newer, and 4% are 3 years old or newer, indicating that the majority of vehicles are bought second hand. 16% of the fleet meets the Euro 5 emissions standard; 51% Euro 4; 32% Euro 3; and 2% Euro 2.



11. Matters for Discussion

- 11.1 The Committee is asked to consider the creation of a new policy based on vehicle emissions to dovetail with the CAZ. It is recognised that the need to replace their vehicle will impose a financial hardship on most drivers and therefore the sooner a new policy can be agreed, the greater the notice period that can be given to drivers of its implementation, allowing them to plan financially for it, and also allowing the City Council to bid for Government funds underpinned by a complementary and transparent policy.
- 11.2 The financial effects will be felt hardest by hackney carriage drivers. None of the vehicles that are currently licensed will meet the CAZ emission standards. Those that take up the option of the LPG conversion will meet the standard. Drivers have to pay the VAT element of the price, which is approximately £1,300. A number of manufacturers are developing plug-in electric Hackney carriages. Vehicles are expected to be on the market by 2017, but they will be expensive and because they are new there will not be the option of a second hand market to buy cheaper vehicles.
- 11.3 Private hire drivers will be less adversely affected because nearly half of their vehicles already meet the standard for petrol engine vehicles and there is already a range of electric or hybrid vehicles available to them as saloon cars which could be licensed and which would not be as expensive as purpose built hackney carriages.
- 11.4 Anyone buying an Ultra-Low Emission Vehicle, including taxi and private hire drivers, is entitled to claim a government grant from OLEV (the Office for Low Emission vehicles). The grants are up to a maximum of £5,000 for private hire vehicles and £8,000 for hackney carriages.
- 11.5 The creation of a CAZ will affect all hackney carriages and private hire vehicles operating within it, regardless of which authority has licensed them. Ideally we should consider having a policy that is agreed regionally with neighbouring licensing authorities in the West Midlands. Officers will engage with their counterparts in the West Midlands to start discussions about whether a common policy is achievable. Such a policy would be for agreement between the Integrated Transport Authority (ITA) and the West Midlands Combined Authority (WMCA) as part of an integrated West Midlands emissions framework.

12. The following options are open to the Committee:

Option 1

Do nothing. It is possible to do nothing and continue to license vehicles without any regard to their emissions. If this policy were adopted, when a CAZ is implemented, based on current knowledge, none of our hackney carriages would be able to enter the city centre without payment of a tariff and only 67% of our private hire vehicles.

Doing nothing would have a displacement effect. It would encourage polluting vehicles to work outside the boundary of the CAZ in the suburbs, thereby having a disproportionate effect on the air quality outside the city centre.

Doing nothing would not recognize that the reason for these new measures are based on health grounds, not economic grounds. The effects of pollution from diesel engines and older petrol engines are having serious health consequences for the people that live and work in the city. For drivers who spend all day behind the wheel of their vehicles the effects are likely to be compounded. It is therefore in their own interests to invest in cleaner vehicles.

Option 2

Set a specific date by which all licensed vehicles must comply with specified Euro classifications to meet the Clean Air Zone standards for diesel and petrol vehicles. This could be referred to as a 'big bang' approach. It would give drivers the longest period to prepare for the cost of replacing their vehicles but it would encourage drivers to hold onto their vehicles for as long as possible and reduce the health benefits of newer vehicles being put on the road.

Option 3

Set a timetable of incremental improvements between now and 2020 by which all licensed vehicles must comply with specified Euro classifications to meet the Clean Air Zone standards for diesel and petrol vehicles. This option would have the effect of taking the oldest most polluting vehicles off the road first, but would still allow the majority of drivers a significant period of time in which to prepare for the cost of replacing their vehicles.

Option 4

In respect of options 2 and 3 above, the Committee is invited to consider linking an emissions policy to an age policy for vehicles in order to future-proof the policy. Vehicle emissions invariably improve every year as newer technologies are introduced by manufacturers. If the Committee agrees a policy purely based on today's knowledge and emission standards it is likely that it will become outdated as cleaner vehicles are introduced, but if the policy was also linked to the age of the vehicle it would automatically ensure that older vehicles would not be allowed to remain licensed and that vehicles would therefore meet any new higher standards if they were introduced.

13. Consultation

- 13.1 The subject of setting standards for vehicle emissions has been discussed on a number of occasions at trade liaison meetings where officers from Transportation have briefed trade reps on the introduction of low emission vehicles. Specific consultation meetings have been held with hackney carriage drivers and private hire drivers as part of the Council's bid for OLEV funding for an electric charging infrastructure to establish their patterns of

vehicle usage, where they would prefer charging points to be and whether they would consider an electric vehicle when they change their current vehicle.

14. Implications for Resources

- 14.1 The cost of replacing a vehicle rests with the owner of the vehicle, not the Licensing Authority. Although it has been suggested that the Licensing Authority could consider free or discounted licences to encourage the take up of cleaner vehicles, this is not thought to be legal. The only money available would be that contained in the hackney carriage and private hire ring fenced carry forward surplus, but there are restrictions on the use that can be made of licence fees; namely for the administration of the licence or to ensure compliance with the licence conditions. Subsidising the cost of replacement vehicles would not fit into those categories, and in any event, the cost of a licence, which is £124 for a hackney carriage and £128 for a private hire vehicle is unlikely to persuade a driver to change their vehicle when the total cost might be many thousands of pounds.

15. Implications for Policy Priorities

- 15.1 The management of air quality contributes to fulfilling the policies of Birmingham 2026: Our vision for the future and supports the strategic outcomes set out in the Council Business Plan for 2011+, specifically to 'stay safe in a clean, green city'.
- 15.2 The link between poor air quality and social deprivation has been established with the more inner city wards suffering the greatest amount of pollution. Consideration of a CAZ to limit pollution within the city centre is a worthy endeavor, although care must be taken to ensure that the knock on effects of any restrictions are considered so as to avoid transferring the vehicles and the associated pollution to other sensitive areas.

16. Public Sector Equality Duty

- 16.1 Air pollution has the potential to affect all members of society but can have specific impacts on pregnant women and the unborn child. The concerns about such are widely known and health advice is issued accordingly by relevant medical professionals.
- 16.2 The approach taken to address air quality is such as to protect all members of society and does not discriminate against any group.

ACTING DIRECTOR OF REGULATION AND ENFORCEMENT

Background Papers: Nil