BIRMINGHAM CITY COUNCIL

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

17 FEBRUARY 2016
ALL WARDS

GOVERNMENT AIR QUALITY PLANS DECEMBER 2015

1 Summary

1.1 The Local Authority has a duty to monitor the air within its district and assess the concentrations of certain pollutants against a legal limit.

1.2 Within Birmingham the only pollutant that exceeds the legal limit is nitrogen dioxide and the primary problem area is the city centre, mainly within the A4540 ring road.

1.3 In order to demonstrate compliance in the shortest time possible Government have had to submit Air Quality Plans to the European Union, the latest being in December 2015.

1.4 One aspect of this Plan is the mandating of a Clean Air Zone (CAZ) within Birmingham, and it is proposed to restrict access to buses, coaches, HGV, LGV, and taxis dependent upon their emissions as directed by the euro class of the vehicle.

1.5 The extent of the zone has not yet been determined, whilst discussions will take place between City Council Officers and Defra to determine the actual composition of any vehicles covered.

2 Recommendations

2.1 That Committee support the further work to be undertaken by your Officers and by other Council Officers in working alongside Defra to fully scope the extent and composition of any CAZ.

2.2 That an update / progress report be brought to Committee within four months.

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3. Legislative Position

3.1 All EU Member States have the obligation to comply with the provisions of the Ambient Air Quality Directive. This sets limit values for a range of pollutants at a level to protect public health. The UK like many Member States faces significant challenges in meeting the annual average emission limit for nitrogen dioxide (NO_2), a pollutant emitted from combustion processes, a significant source being from transport particularly road vehicles. Birmingham is non-compliant with regards to the annual average value for NO_2 (the annual mean).

3.2 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.

3.3 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.

3.4 To inform this process Defra and 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.

3.5 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.

3.6 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 NO_2 (the annual mean).

3.7 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."

3.8 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.

3.9 With the internalisation of the Public Health service, Councils now have duties under the Public Health Outcomes Framework (PHOF), a couple 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 NO_2 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 NO_2 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.

5.2 These Plans identify six cities as being non-compliant beyond 2020, namely London, Birmingham, Leeds, Nottingham, Derby and Southampton.

5.3 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.

5.4 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 and Hackney carriages that are less than Euro VI (diesel) and Euro 4 (petrol) for NO_x.

5.5 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.

5.6 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.

5.7 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.

5.8 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.

5.9 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.

5.10 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.

5.11 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.

7 Birmingham's Compliance Position

7.1 Defra's approach for establishing compliance is based on national modelling with their stated compliance position for England underpinned by real time monitoring. With regards to Birmingham, this particularly identifies two stretches of the A38 as being specifically non-compliant by 2020. However, in addition to this, Environmental Health are aware, through their own monitoring and modelling, of other key city centre sites where there is exposure that have levels that exceed or are near to the EU compliance limits for Air Quality.

7.2 *Appendix I – Air Quality Modelling in the City Centre* presents a more detailed explanation of the various Defra models, the Birmingham model and overlayed monitoring data, along with a commentary on each.

7.3 What is interesting to note is that, setting aside differences to determining exposure, there are similarities between Defra and BCC models with both being limited by the inputs and most notably the lack of detail to the built up environment and the impact this has on dispersion.

7.4 It appears that Defra's strategy is to use the model to drive down overall pollutant emissions within an area, by focussing on those roads with the most traffic. If strategies can be employed to deal with the more trafficked routes then smaller / minor roads will also benefit. This is in theory a viable approach, albeit requiring input from local experts and hotspot monitoring / action. It does however have limitations.

8 Comments on the CAZ Approach

8.1 The possibility of the use of a CAZ (or Low Emission Zone as previously termed) to deal with the city centre air quality problem has been under consideration for a few years. The concept was originally raised in the Air Quality Action Plan 2011, with a commitment to undertake a feasibility study into the likely benefits arising from such a zone.

8.2 Due to resourcing issues it wasn't until the LETCP were able to secure funding from Government that such a study began in earnest and the outputs of that study are now being published. The study itself was limited and focused on a number of sites across the seven Mets as options for LEZ, one of which was Birmingham City Centre. Accordingly the study wasn't a full in depth assessment of Birmingham centre.

8.3 Nevertheless, the study gave good insight into the split of vehicles accessing the centre and the benefits that could accrue from restricting access to certain types by Euro classification (in effect an age based restriction).

8.4 The study provided outputs in terms of potential emission gains from requiring changes to certain parts of the vehicle fleet and whilst these outputs are interesting and informative, they have limits in their application. By way of example, the study suggested that if all diesel cars were Euro 6 vehicles then across the city centre the benefit would be minimal (<1μgm^{-3}) but at a key location, on the A38 outside the Children's Hospital the benefit would be considerable (6.8μgm^{-3}). This is probably the most informative output as the percentage of cars at this point is relatively accurate and means that the outputs are also more accurate. For the other scenarios assessed the study suffered due to a lack of more detailed traffic data, despite accessing data held by the Council and other bodies.

8.5 Despite this, the concept of a LEZ or CAZ was deemed worthy of pursuing further as the gains in terms of pollution reduction and by extension health benefits, if properly scoped could not be ignored.

8.6 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.

8.7 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 80 hackney carriages with an LPG fuel source, and £500,000 to upgrade 154 buses with selective catalytic reduction technology to reduce NO_2 emissions) it won't fully cover all the required fleets and more funding would be required.

8.8 A related issue is that it is unclear at this stage whether private hire vehicles would be covered by the proposed restrictions as, whilst there is a suggestion that taxis covers both Hackney carriages and private hire, it is not wholly clear whether that relates to all classes of CAZ. There is also the 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.

8.9 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.

9 Action Taken by Birmingham City Council

9.1 A range of options are available to the City Council, the emerging Combined Authority and other organisations and agencies to take action on air pollution through transport measures, many of which support the Birmingham Connected Transport Strategy, the Green Commission's Carbon Road Map Strategy and the Low Carbon Towns and Cities Plan. Officers have previously shared information with Defra on key transport interventions which have been delivered recently, being implemented or are proposed and play a positive contribution towards addressing air quality and these formed part of the Government's West Midlands Zone Air Quality Plan.

9.2 Appendix II sets out the range of interventions and provides an indication of their air quality impact, indicative timescales to introduce and level of cost associated with their introduction. It also provides examples of the schemes being delivered or planned by the Council.

9.3 One item of interest which does not feature on the list of interventions, because it is not directly relevant to the city centre, is that of the M6 / M6 Toll. The suggestion has been raised as to whether the M6 Toll could be better utilised in some way to relieve the congestion on the M6 and this has been communicated to Government as a key ask.

9.4 The rationale for routing through traffic up the M6 Toll is to free up the M6 to local traffic, journeys which are having a positive benefit to the citizens and businesses of the region.

9.5 The potential benefit is to improve journey time and also to smooth flows from link roads, e.g. the A38(M) and by extension the routes out of Birmingham city centre. In terms of pollution the LEZ Technical Feasibility Study suggested that by routing all through traffic up the M6 Toll the reduction in NO_2 concentrations at key locations near to the M6 would be around 3. 8μgm^{-3} whilst restricting the routing to diesel traffic only would still net a reduction of around 2.3$\mu gm^{-3.}$ Whilst no account was made of the possible benefit to the city centre, these reductions along the M6 corridor are not insignificant.

10 Implications for Resources

10.1 The resources employed in carrying out the work detailed in this report are partly delivered by Defra in the form of grant and anticipated support funding, whilst Officer time will be contained within this Committee's budget.

10.2 Environmental Protection have secured grant funding for various air quality projects over the past 5 years, one element of which was to fund the Low Emission Zone Technical Feasibility Study.

11 Implications for Policy Priorities

11.1 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'.

11.2 The work undertaken by Environmental Health also supports the Regulation and Enforcement Division's mission statement to provide 'fair regulation for all - achieving a safe, clean, green and fair trading city for residents, business and visitors'.

11.3 A 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 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.

12 Public Sector Equality Duty

12.1 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.

12.2 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