Mayor of London's air quality consultation: British Lung Foundation submission

The British lung Foundation is pleased to submit a response to the second phase of the Mayor's air quality consultation.

Our response will cover:

- The impact of lung disease and air pollution in London
- The need for an emissions surcharge in 2017
- The urgent need for a wider and smarter Ultra-Low Emission Zone by 2019
- How we should be protecting vulnerable lungs from air pollution

London's public health crisis

London has some of the highest and most dangerous levels of air pollution in the UK. Around 12.5% of the total area of London remains above the legal limit for nitrogen dioxide (NO_2). Whilst legal limits for particulate matter (PM10) are being met, 88% of the total area of London breaches the safe limit defined by the World Health Organisation (WHO).[1] These levels often put London on par with other global cities such as Shanghai and Beijing.[2] Air pollution has a huge impact on all our respiratory health and has been linked to at least 9,400 early deaths a year in London.[3] Interventions to improve London's air have so far failed to rise to the challenge of this health crisis.

Extensive, widespread and ambitious action is needed to bring London's pollution levels to a safe and legal level.

Our lungs need clean air

Over 1.1 million people live with a lung condition in London.[4] They face worsening symptoms, exacerbations and increased hospitalisation from acute and everyday pollution exposure.[5] People with an existing lung condition are at a higher risk of early death from air pollution. Acute pollution episodes worsen their conditions and can determine how they are able to spend their day. In London over 1,000 people with a lung condition attend one of our 28 breathe easy support groups. These

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[1] Howard R, Beevers S, Danjank D (2016) Up In the Air: How to solve London's air quality crisis - Part 1, http://www.policyexchange.org.uk/publications/category/item/up-in-the-air-how-to-solve-london-s-air-quality-crisis-part-1
[2] AMEC (2014) Comparison of Air Quality in London with a Number of World and European Cities, https://www.london.gov.uk/sites/default/files/comparison_of_air_quality_in_world_cities_study_final.pdf
[3] Kings College London (2015) Understanding the Health Impacts of Air Pollution in London
[4] The British Lung Foundation (2016), The Battle for Breath: the impact of lung disease in the UK, May 2016 https://www.blf.org.uk/what-we-do/our-research/the-battle-for-breath-2016
[5] Halonen et al, (2008) *Urban air pollution, and asthma and COPD hospital emergency room visits*, Thorax Jul; 63(7):635-41. doi: 10.1136/thx.2007.091371. Epub 2008 Feb 11. p365

patients often tell us that pollution makes it harder for them to breathe and restricts where they are able to go in London. For these Londoners pollution hotspots have become "no-go" areas and being trapped in their own homes has become a real prospect.

Children's lungs are in the process of growing and developing which makes them more vulnerable to pollution. Children exposed to severe air pollution are five times more likely to have poor lung development,[6] and are more susceptible to respiratory infections.[7] Everyday exposure to pollution has been shown to contribute to increased inflammation of the airways in healthy children and children with asthma.[8] Additionally, children's height means they tend to be exposed to more traffic fumes at the roadside and more particulate dust which rests at ground level.[9] [10] Children with smaller lungs are more likely to face respiratory problems in later life.[11] Pollution can negatively impact on children's development before they are even born, studies have linked pollution with low birth weight and pre-term birth, both of which can impact on children's long-term lung development.[12] [13]

For all Londoners, long-term exposure to air pollution has been linked to an increased risk of lung cancer, coronary events and cardiovascular disease.[14] Emerging evidence also links air pollution to a decline in cognitive function in older adults,[15] and to type 2 diabetes.[16]

Our *Battle for Breath report*, showed that relative prevalence rates for chronic obstructive pulmonary disease (COPD) increased by a third across London between 2004 to 2012, similarly, rates have gone up for lung cancer and bronchiectasis. In comparison to other regions in the UK with a similar prevalence, London has notably more hospital admissions for COPD. In 2015, over 50,500 deaths in London were from respiratory disease.[17] Whilst air pollution is not the sole factor behind these statistics, it is likely to have played a large part. In order to improve health outcomes for respiratory, urgent action needs to be taken on air pollution.

According to a recent survey, nearly half of respondents said poor air quality had a direct impact on their health, with asthma, breathing difficulties and coughing being the most frequently reported symptoms. People aged 25-34, those who live in inner London, and those who cycle or use public transport and those with children felt most affected. 39% of people said air quality impacted on decisions they made regarding their health.[18]

Tackling London's health inequalities

Health inequalities across London are inextricably linked with exposure to air pollution. Deprived communities are more likely to be exposed to toxic pollution levels, yet have less access to alternative transport infrastructure, less access to green spaces[19] and are more likely to have a long-term condition. People in London's poorest boroughs are twice as likely to have COPD and lung

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[6] Anderson, J. et al (2012) *Clearing the Air: A Review of the Effects of Particulate Matter Air Pollution on Human Health*. J Med Toxicol, Volume 8, pp. 166-175. p.170
[7] Macintyre, E.A., Gehring, U., Molter, A., Fuertes, E., Klümper, C., Krämer, U., et al. (2014). *Air pollution and respiratory infections during early childhood: An analysis of 10 European birth cohorts within the escape*
[8] Sara D. Adar et al, Adopting Clean Fuels and Technologies on School Buses: Pollution and Health Impacts in ChildrenAm J Respir Crit Care Med, Apr 2015
[9] Kenagy, H.S. Lin, C. Wu, H. Heal, M.R. (2016) Greater nitrogen dioxide concentrations at child versus adult breathing heights close to urban main road kerbside Air Qual Atmos Health. 2016;9:589-595. Epub 2015 Sep 15.
[10] Columbia University School of Nursing, 'Incidents Affecting Children', accessed 13 July 2016
[11] Stocks, Janet, and Samantha Sonappa, 'Early Life Influences on the Development of Chronic Obstructive Pulmonary Disease', Therapeutic Advances in Respiratory Disease, vol. 7, no. 3, 2013, pp, 161–173.
[12] Pedersen M et al, (2013) *Ambient air pollution and low birthweight: a European cohort study (ESCAPE)*, The Lancet Respiratory Medicine, Volume 1, No. 9, p695–704 p.695
[13] Shah PS, Balkhair T (2011). Air pollution and birth outcomes: a systematic review. Environment International, 37(2):498–516.
[14] Peters A et al. (2014) *Long term exposure to ambient air pollution and incidence of acute coronary events: prospective cohort study and meta-analysis in 11 European cohorts from the ESCAPE Project*. BMJ ;348:f7412 p.2
[15] Ailshire J et al (2014) *Fine Particulate Matter Air Pollution and Cognitive Function Among U.S. Older Adults*. J Gerontol B Psychol Sci Soc Sci p.325
[16] Peters A (2012) *Epidemiology: air pollution and mortality from diabetes mellitus* Nature Reviews Endocrinology, 8(12):706–707. p.706
[17] Office of National Statistics (2016) Deaths registered in England and Wales: 2015, https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregistrationsummarytables/2015
[18] London Councils (2016) Air Quality Poll, http://www.londoncouncils.gov.uk/our-key-themes/environment/air-quality-london , Accessed: November 2016
[19] Public Health England (2016) Working Together to Promote Active Travel: a briefing for local authorities

cancer when compared to people living in London's richest boroughs.[20] Children in more deprived areas are also likely to be at higher risk, 443 schools in London are located in areas that exceed legal levels of NO^2, 83% of these schools are considered deprived. [21] Reducing air pollution and promoting active travel will help create greener, safer and healthier communities. In turn, this is likely to have co-benefits across public health, such as increased physical activity rates and reduced obesity levels.

An Emissions Surcharge in 2017

- We strongly support the introduction of a new £10 emissions surcharge (ES) in the congestion charge zone area.
- We welcome the introduction of this charge in October 2017.
- The Emissions Surcharge (ES) should target the oldest and most polluting vehicles

We agree the ES will help discourage the use of older, more polluting vehicles in central London; this will help change behaviours and start to improve air quality. However, as identified in Transport for London's (TfL) modelling, the emissions reductions from the ES will not be enough to deliver the health benefits needed in London (0.5% reduction for NOx and 0.3% reduction for PM10 in the first year). Therefore, we agree that the surcharge is a good "stepping stone" policy to an expanded Ultra-Low Emission Zone (ULEZ). To be an effective transition policy, the ES should be implemented for all polluting vehicles. Whilst we recognise that Euro 6 standards may be unrealistic for all vehicles to achieve by 2017, the ES standards should be increased over time as these standards become more realistic. This will be particularly pertinent for vehicles that fall under the "sunset period" and therefore, could still be driving pre Euro-6 vehicles in 5 years. This will help ensure consistency between policies, set a high ambition level and enable people to start changing their behaviours as soon as possible.

A clear and equitable exemption policy

- We would be concerned about exemptions being made for all 9 seater vehicles.
- Both the ULEZ and ES must ensure they don't penalise against people with existing health conditions
- TfL should continue to monitor socio-economic impacts of the ES and ULEZ

The proposals for the ES and early implementation of the ULEZ are welcome, however there is a risk that the schemes could negatively impact on people with reduced mobility and exacerbate existing health inequalities. This has been acknowledged in TfL's impact assessment and we urge TfL to monitor these impacts closely as the schemes are rolled out.

People who live with a long-term respiratory condition often have fluctuating symptoms, this may mean they are not eligible for a blue badge but rely on a car to move around on days when their condition is at its worst. Therefore, the exemption policy for the ULEZ and ES must be carefully communicated to Londoners so they are able to ensure they have the correct benefits. Additionally, TfL should work with trusted health voices, such as health care professionals and charities to monitor any adverse impacts on people with long-term conditions. We would be happy to work with TfL on this and forward any inquiries from our helpline.

We would recommend that exemptions are not made for vehicles that contribute harmful levels of pollution. Buses and coaches tend to be one of the largest contributors of NOx, therefore, we would be concerned if all 9 seater vehicles were not included within the ES. Likewise, a blanket policy to exempt all residents could enable some older, polluting vehicles to continue hampering progress on

[20] The British Lung Foundation (2016), The Battle for Breath: the impact of lung disease in the UK, May 2016 https://www.blf.org.uk/what-we-do/our-research/the-battle-for-breath-2016
[21] Mayor of London (2016) Analysing Air Pollution Exposure in London, Accessed: November 2016

air quality. The ES should be based on the actual emissions that are contributed from vehicles rather than the purpose of the vehicle.

An Ultra-Low Emission Zone sooner, wider and smarter

- We strongly support the introduction of the central London ULEZ in 2019
- We support expansion of the ULEZ to the north and south circular at the very least.
- We strongly support the expansion of the ULEZ to the North and South Circular by 2019
- The charge should be the same for heavy and light vehicles across London.
- Inclusion of places where vulnerable people frequent should be prioritised, as well as pollution hotspots

We support earlier implementation of the ULEZ so that the health benefits are felt as soon as possible. Earlier implementation will save lives, improve people's quality of life and reduce the burden on health services. These health impacts will benefit vulnerable people the most. Children can't wait another 9 years for pollution levels to become safe, emissions reductions need to be implemented as soon as possible.

The ULEZ should be extended to cover a London-wide area, for both light and heavy vehicles. Given the extensive and widespread health impacts attributed to air pollution across central and greater London, all options for an extended ULEZ should be modelled. A ULEZ based on the boundaries of the north and south circular would fail to encompass some of the most polluted hotspots in London. It would also create a zone based on arbitrary delineation, rather than a zone that has been modelled and designed to benefit the most Londoners.

The ULEZ should seek to cover areas where the most vulnerable Londoners frequent. This could be done by ensuring that the most deprived boroughs and the boroughs with the highest rates of lung disease are included within the ULEZ. Additionally, the boundaries of the ULEZ should be drawn up to include as many schools, hospitals and care homes as possible. Whilst we recognise the challenge in extending the ULEZ, we urge TfL to carry out modelling for a London-wide ULEZ and for a ULEZ that has been mapped against pollution hotspots and population characteristics. This will ensure the ULEZ benefits the people who are at most at risk from air pollution.

Cleaning up London's air will require extensive action on emissions from light and heavy goods vehicles, including cars. The largest share of NOx and PM10 emissions come from road transport. With 48% of these NOx emissions coming from diesel cars (24%), Petrol cars (14%) and vans (14%).[22] [23] Studies have shown that diesel cars tend to emit more in real-world driving emissions than recorded by manufacturers, one study found that Euro 6 diesel cars produce between 2.5 and 7 times their own emissions standard in real-world conditions.[24] A recent report showed that if the number of diesel cars in London were reduced to around 10% of the car fleet (from its current level of 57%) then London would be much closer to legal compliance for NO_2. This modelling showed that even this radical reduction won't deliver legal compliance for London. Therefore, achieving legal compliance will require all actions to include light goods vehicles. The Mayor's air quality plan will need to be supported by an effective national clean air framework.[25]

London's current Low Emission Zone has failed to provide positive health outcomes, largely because it does not go far enough and has failed to regulate light goods vehicles. In the three years it has been operating, there has been no evidence of air quality improvement or improvement in children's

[22] Transport for London (2016) New proposals to improve air quality, consultation and information document.
[23] Department for Transport, Vehicle Certification Agency. Cars and fuel options (webpage: last checked May 2015).
[24] Weiss et.al (2011) Analyzing on-road emissions of light-duty vehicles with Portable Emission Measurement Systems (PEMS), European Commission, Joint Research Centre
[25] IPPR (2016) Lethal & Illegal: London's air pollution crisis, http://www.ippr.org/publications/lethal-and-illegal-londons-air-pollution-crisis

lung health.[26] Clean air zones have effectively reduced emissions in many other European cities, these have tended to include cars. For instance, one introduced in Berlin in 2008 (which included cars) and expanded in 2010 led to PM and NO_2 emissions 50% and 20% lower than the predicted trend.[27]

In the long-term, emissions should be regulated across a London-wide area in order to reduce the amount of vehicles on the road and encourage modal shift towards alternative transport sources. A significant reduction in PM10 emissions is going to be very hard to achieve without a reduction of actual vehicles on the road – due to the contribution from non-exhaust emission sources. Around half of PM10 emissions come from brake and tyre wear, this PM10 contribution is only expected to increase as exhaust emissions decrease.[28] In order to protect all our lungs and have a tangible health impact, pollution control measures are going to have to go much further and faster in London.

Vulnerable lungs must be protected whilst pollution remains at harmful levels

- Increased air pollution monitoring outside schools
- Public health alerts with clear health advice
- London-wide public health campaign on air pollution

Under TfL's projections the ULEZ will deliver at least 50% reduction for NOx and PM10 emissions, primarily in central London. Such emissions reductions are very welcome and will hugely benefit public health. However, change will not be immediate. The expected compliance date is still only predicted to be 2025. During this transition time the health of children, older people and deprived communities must be protected.

TfL's plans for health alerts at tube stations and bus stops will help raise awareness and provide essential health information during acute pollution episodes. However, we urge TfL to ensure that these alerts are accompanied with clear, concise and accurate health information. This will ensure that people can make the best decisions for their health. This advice could be delivered in partnership with trusted voices such as health charities and/or health practitioners. Changing behaviours will require careful and tailored interventions with different groups. Therefore, a health awareness campaign across London should be rolled out.

Given the damage that pollution is likely to do to children's lungs in the next 9 years, measures should be put in place to increase monitoring and reporting of pollution outside schools. This is particularly pertinent for the 443 schools located in proximity of illegal levels of NO_2. Local monitoring guidance should be amended to encourage increased monitoring outside schools. 63% of London boroughs are only monitoring pollution outside one or two schools, this includes 6 of the most polluted boroughs in London.[29] This monitoring data would enable schools and parents to put measures in place to protect children's health in the most polluted schools, such as filtration systems and anti-idling schemes. London already has the best monitoring network in the country, it's time to make sure this network is delivering support, guidance and information for the most vulnerable Londoners.

About the British Lung Foundation

The BLF is the only UK charity looking after the nation's lungs. We offer hope, help and a voice. Our research finds new treatments and cures. We help people who struggle to breathe to take control of

[26] Mudway et al (2015) Effects of Air Pollution and the Introduction of the London Low Emission Zone on the Prevalence of Respiratory and Allergic Symptoms in Schoolchildren in East London: A Sequential Cross-Sectional Study, Accessed: 15 Nov 2016
[27] German Partnership for Sustainable Mobility (2014) *Clean Air – Made in Germany* p.26
[28] Mayor of the London (2010) Clearing the air: The Mayor's Air Quality Strategy, https://www.london.gov.uk/sites/default/files/air_quality_strategy_v3.pdf
[29] British Lung Foundation (2016) FOI research: Air pollution and Schools (unpublished)

their lives. And together, we're campaigning for better lung health. With your support, we'll make sure that one day everyone breathes clean air with healthy lungs.

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