

## BUILDING SCOTLAND'S LOW EMISSION ZONES - A CONSULTATION

### **Response by Chartered Institution of Highways & Transportation, Scottish Policy Forum**

The Chartered Institution of Highways and Transportation (“CIHT”) is a membership organisation representing over 14,000 people who work in the highways and transportation sector. CIHT members plan, design, build, operate and maintain best-in-class transport systems and infrastructure, whilst respecting the imperatives improving safety, ensuring economic competitiveness and minimising environmental impact.

CIHT Scotland embraces both public and private sectors across the whole geography of the nation and welcomes the opportunity to comment on this consultation which seeks views on practical aspects to enable the successful delivery of Low Emission Zones in Scotland.

We welcome the opportunity to respond and offer our comments on each of the questions below.

### **CONSULTATION QUESTIONS**

#### **1. Do you support the principle of LEZs to help improve Scottish air quality? Please be as specific as possible in your reasoning.**

CIHT Scotland supports the principle of LEZs as a way of improving Scottish air quality within the defined zones. However the implementation of LEZs in other countries has had only limited effect in most cities on their air quality in relation to EU thresholds; Holman et al (2015) show, in perhaps the most rigorous study of LEZs to date, that the German schemes that they studied only reduced pollutant concentrations by a few percent. Evaluations of other LEZs show reductions in absolute amounts of PMs and NOx but often not the reduction in concentrations that would meet the EU thresholds for air quality. The reasons for this are complex but seem to be related to distribution of traffic on the network, meteorological conditions and other non-traffic sources of pollutants. Therefore the Scottish Government should be clear that LEZs are an important step towards cleaner air, but not a panacea, and that other measures will be required if EU targets are to be met in the short term, in order to bring about a reduction in total vehicle miles travelled in areas subject to air quality problems.

**2. Do you agree that the primary objective of LEZs should be to support the achievement of Scottish Air Quality Objectives? If not, why not?**

This must be their primary objective but their benefits in terms of improved quality of life in cities, improved public health, reduced traffic noise (due to greater uptake of EVs) and potentially reduced traffic levels should also be emphasised. Their equity impacts should also be emphasised, since research shows that it is the poorest and most vulnerable people in society who are most exposed to poor air quality but at the same time who contribute least to the problem.

**3a. Do you agree with the proposed minimum mandatory Euro emission criteria for Scottish LEZs?**

The minimum emissions standards are demanding and CIHT Scotland agrees with the general principle of setting them at this level because of the pressing need to improve air quality in our cities. However, the consultation paper does not explain what the current Euro emissions standards profile of the Scottish fleet is nor provide an estimate of the cost to individual consumers and businesses of meeting the proposed minimum standards. There is a danger that by setting the standards at a high level, this will deter or preclude some people from travelling to some LEZs, particularly those not well-served by public transport. There is also an equity aspect to setting stringent standards in that is the wealthiest in society who are most easily able to meet them.

**3b. Do you agree with the proposal to use the NMF modelling in tandem with the NLEF appraisal to identify the vehicle types for inclusion within a LEZ?**

CIHT Scotland very much agrees with this proposal. It is essential that the LEZ addresses the mix of vehicles that are responsible for emissions in a particular AQMA, and does not only focus on commercial vehicles. We are particularly pleased therefore to see that bus only LEZs are not proposed. We believe it would be helpful if the NMF modelling could model taxis as a separate vehicle class so that their contribution to poor air quality can be made explicit.

**3c. Should emission sources from construction machinery and/or large or small van refrigerated units be included in the LEZ scope, and if so should their inclusion be immediate or after a period of time?**

As noted above, a range of sources contributes to poor air quality in an area and it is important therefore that as wide a range of these sources as possible is addressed by the LEZ. The sources mentioned in the question should be phased into LEZs on the same timetable as the vehicles affected by the LEZ.

**4. What are your views on adopting a national road access restriction scheme for LEZs across difference classes of vehicles?**

It is important that LEZs fit into a national framework that makes them as simple as possible to understand for the driver, and as easy as possible to introduce for their promoters (normally local authorities). Therefore a national scheme would have benefits, including, presumably, its application to trunk roads. However, some degree of local flexibility in scheme design and operation could be desirable (see below).

It is not clear from the paper how such a scheme would be enforced, yet this is absolutely fundamental to its effectiveness. Given the many other calls on the resources of Police Scotland, it seems unlikely that they would want to take a leading role in enforcing it. A lack of enforcement would risk bringing the scheme into disrepute, suggesting that an option for serious consideration should be decriminalisation of enforcement. However it is our understanding that this would require new primary legislation (something that could however be built into the Transport Bill currently being drawn up).

**5. What are your views on the proposed LEZ hours of operation, in particular whether local authorities should be able to decide on LEZ hours of operation for their own LEZs?**

The primary role of the LEZ is to reduce pollutant concentrations over 24 hour periods in order to meet the EU targets for air quality. We do not have sufficient expertise in this highly specialized field to be able to say for certain, but we think it may be possible that in certain circumstances pollutant concentrations over a 24 hour period are in fact primarily driven by heavy traffic during the day and dealing with emissions at this time would solve the problem over the measurement period. If this is the case in a given LEZ area, there could be a case for operating hours that are not 24/7/365.

**6. What are your views on Automatic Number Plate Recognition enforcement of LEZs?**

ANPR is fairly well proven and is robust enough to support charging schemes, therefore, should be sufficiently reliable for LEZ enforcement. It is however important to point out that LEZ operating costs must be kept to a minimum. ANPR is used in London and other countries as an effective means of managing the Low Emission Zones. ANPR equipment is considered to have 'low visual impact' on urban areas as opposed to large gantries, which may provide a facility for more technologically advanced system, such as in Singapore, but are considered to be difficult to install, costly to maintain and unsightly (Wang et al, 2017).

The same authors demonstrated that the ANPR system used for the London Congestion Charge operates at a higher cost than other systems around the world, in particular Stockholm's ANPR costs 5%-10% of revenue, as opposed to 20%-25% for ANPR operation in London. They argue that this is due to simpler system Stockholm installed and the way it is contracted. Stockholm contracts all the components to one company, whereas London takes a more modular approach. Further investigation should be paid to implementing a simple ANPR system and a cost-effective way of managing it.

**7a. What exemptions should be applied to allow LEZ to operate robustly? Please be as specific as possible in your reasoning.**

Exemptions should be kept to a minimum in order to maximise scheme comprehensibility and make enforcement simple and efficient. There are strong grounds for determining eligibility for exemption at a national or regional not local level, in order to eliminate locally varying interpretations of eligibility criteria. Residents should not be fully exempt but as in Milan for example they could be given a certain number of free trips per year for a non-complying vehicle.

**7b. Should exemptions be consistent across all Scottish local authorities?**

Yes. Driver comprehension and enforcement would be simpler. This would also aid comparative evaluation of the performance of different LEZs.

## **8. What are your views on LEZ lead-in times and sunset periods for vehicle types shown in Table 2?**

The principle of lead in times and sunset periods is one that CIHT supports. It is important that there is some time for road users to become accustomed to the LEZ and that there is some time to retrofit vehicles, acquire new ones and/or change travel habits in order to comply with the LEZ. However, during a lead in period anyone using a non-compliant vehicle within an LEZ should be made aware that their vehicle is non-compliant (but not penalized for so doing), otherwise the lead in time is rather meaningless. Similarly, a sunset period must be made more meaningful than just a deferral of an otherwise hard deadline; it could be that during a (for example) three year sunset period, for the first year there are no penalties for and just notifications of non-compliance, but in the second year small but progressively higher penalties, “ramping up” to the full penalty associated with the scheme and vehicle type.

Table 2 does not appear to show sunset periods and in Figure 4 indicates that the length of any sunset period would be defined based on the results of this consultation. We consider a three year sunset period to be appropriate, but with the caveats as set out in the previous paragraph.

## **9. What are your views about retrofitting technology and an Engine Retrofitting Centre to upgrade commercial vehicles to cleaner engines, in order to meet the minimum mandatory Euro emission criteria for Scottish LEZs?**

This is absolutely essential in order to reduce the impact of the LEZ on commercial vehicle owners and operators, and also to create a useful skills pool in Scotland. Also, given that no vehicles are manufactured in Scotland (with the exception of bus bodies at Alexander Dennis), increasing the rate of purchase of new vehicles would be leakage of investment outwith the country which is also undesirable particularly at a time of great economic uncertainty.

## **10. How can the Scottish Government best target any funding to support LEZ implementation?**

Without a full impact assessment it is difficult to answer this question. The SG should investigate how other countries, particularly Sweden and Germany, have addressed this issue. CIHT is not aware of grant schemes in these countries that have funded large scale retrofits or scrappage of vehicles. It is in private operators' interests to overstate the likely costs of complying with LEZs. It is important that any grant funding does not create perverse incentives, does not create a set of monopoly providers of retrofits (who then simply increase their prices to absorb any subsidy for retrofits), and comes with some conditions so that, for example, if bus operators use the money to buy new buses they do not then move the buses out of the country to operate in England or Wales on more profitable routes. With respect to getting bus fleets that comply with LEZ standards, the cost of using grant funding to subsidise private operators' purchases (a continuation of the Green Bus Fund) should be weighed against the cost of achieving the same but through bus franchising, since in a franchised system contracts specify vehicle standards.

## **11. What criteria should the Scottish Government use to measure and assess**

## LEZ effectiveness?

It is important that assessment of the LEZ includes data collection on how people are travelling in the zone. This will capture any other benefits that the LEZ has delivered, such as increase in public transport use, walking and cycling or decreasing the numbers of vehicles.

The negative effects of the LEZ should also be recorded, for example any negative impact on local economy and the cost of operating the LEZ against the benefits it has delivered.

The collection of annual NOx and PM is acceptable, but as previously mentioned there are monitoring of non-exhaust emissions and other carbonaceous particles that need to be captured. Monitoring of the area outside the zone should also take place to ensure that old buses and other high polluting vehicles are not being moved to non-LEZ areas (Ezeah et al, 2015).

## 12. What information should the Scottish Government provide to vehicle owners before a LEZ is put in place, during a lead-in time and once LEZ enforcement starts?

Our answer to Q8 refers.

## 13. What actions should local or central government consider in tandem with LEZs to address air pollution?

Given that, as noted in our answer to Q1, there is either a lack of evidence on the effectiveness of existing LEZs in meeting EU air quality targets, or the evidence shows that they have not achieved the targets, then clearly there is a need for other measures to tackle air pollution from transport – related essentially to reducing vehicle miles travelled. Ways in which this can be achieved include:

- Demand management. Road pricing schemes in London and Sweden reduced local emissions significantly when first introduced.
- Densification of land use to reduce the need to travel (as far) by car and to minimise distances to town and city centres (a key determinant of modal split for all trips). Unfortunately land use planning outcomes in Scotland over the last 15 years have moved in the opposite direction towards less dense development, unlike in England where flatbed development on brownfield sites have reduced travel distances.
- Improvement of alternative means of transport. However, if implemented without the previous two measures this is likely to have only a minor impact on how people travel and improvement in rail may lead to more dispersed land use.

## 14. How can LEZs help to tackle climate change, by reducing CO2 emissions in tandem with air pollution emissions?

GHG emissions from passenger transport are a product of vehicle fuel type (including the “fuel” for walking and cycling), the carbon intensity of the fuel, modal share, distance travelled, and the number of people travelling. The factors for goods transport are similar except that number of freight items to be moved should be substituted for number of people travelling.

LEZs will influence vehicle age and to an extent vehicle fuel type as people seek to use a vehicle that complies with the LEZ’s requirements. They will contribute to reducing CO2 emissions by speeding up the move to more fuel-efficient vehicles. They will not influence the other factors that interplay to generate GHG emissions.

## 15. What measures (including LEZs) would make a difference in addressing both road congestion and air pollution emissions at the same time?

See our response to Q13. Demand management measures are proven to reduce congestion.

**16. Do you have any other comments that you would like to add on the Scottish Government's proposals for LEZs**

Most AQMAs are located in city centres and inner urban areas. It is imperative that people are not deterred from travelling to these areas for work, shopping and leisure by the LEZ. Therefore funds should be made available to local authorities and business improvement districts to improve the environmental quality of these areas (better public space, more green space, more civic activities and attractions) in order that they remain attractive in comparison with non-central shopping and business locations which are not LEZs.

We would like to know how poor landside and airside air quality at airports is to be tackled. Will these also be made LEZs even if the main contributor is aircraft and airside vehicles?

**17. What impacts do you think LEZs may have on particular groups of people, with particular reference to the 'protected characteristics' listed in paragraph 5.2? Please be as specific as possible in your reasoning.**

There are potential equity impacts of LEZs as outlined earlier. These are likely to be more positive than negative since poorer and more vulnerable people suffer disproportionately from the impacts of poor air quality at present and LEZs will reduce this impact on them.

**18. Do you think the LEZ proposals contained in this consultation are likely to increase or reduce the costs and burdens placed on any sector? Please be as specific as possible in your reasoning.**

It is very difficult to answer this question given the lack of information in the consultation document about the current emissions characteristics of the Scottish fleet and the costs of replacing or retrofitting non-complying vehicles. There will be costs but it is not possible to be specific about how these would be distributed across sectors.

**19. What impacts do you think LEZs may have on the privacy of individuals? Please be as specific as possible in your reasoning.**

No additional impacts; only the same impact as currently existing ANPR systems have.

**20. Are there any likely impacts the proposals contained in this consultation may have upon the environment? Please be as specific as possible in your reasoning.**

It is to be hoped that the proposals will have a positive impact on air quality; although effects may involve some geographical redistribution of impacts.

**References**

- Holman, C., Harrison, R., Querol, X, (2015), Review of the efficacy of low emission zones to improve urban air quality in European cities, *Atmospheric Environment*, p 161 -169  
Morfield, P., Groneberg, D., Spallik, M., (2014), Effectiveness of Low Emission Zones: Large Scale Analyses in Environmental NO<sub>2</sub>, NO and NO<sub>x</sub> Concentrations in 17 German Cities. *PLOS*

