



Chartered Institution of Highways & Transportation response to the DEFRA/DfT consultation tackling nitrogen dioxide in our towns and cities.

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CIHT is a charity, learned society and membership body with over 14,000 members spread across 12 UK regions and a number of international groups. We represent and qualify professionals who plan, design, build, manage and operate transport and infrastructure networks. Part of our mission is to demonstrate transport infrastructure's contribution to a prosperous economy and a healthy and inclusive society. Our values are to be Professional, Inclusive, Collaborative and Progressive.

Introduction

CIHT welcome the new air quality plan and believe some of the proposed interventions can help achieve some immediate improvement to air quality in our towns and cities.

Quality of place, improvements to health and wellbeing and reducing congestion are all desired outcomes. Cleaning up exhaust emissions and developing new vehicle technologies can help improve the quality of the air we breathe, but ultimately the best way to tackle air pollution would be to achieve a much reduced number of vehicle kilometres travelled. To help do this requires changes to planning policy and reducing our dependency on the motor vehicle in favour of more sustainable modes such as walking, cycling and low impact public transport.

CIHT has consistently called for a more joined-up and strategic view to how government policy is developed. The UK needs to take a coordinated approach to transport infrastructure to encourage innovation, deliver economic growth, social and environmental benefits. Infrastructure has been identified as one of the pillars of the current Industrial Strategy and we believe that the introduction of a UK Transport Strategy is now more important than ever.

The RAC Report on Motoring 2016¹ shows that there is increasing public support from motorists for action on banning vehicles that pollute the most. Communication and engagement with the public and business is key to making the desired improvements to air quality a success.

1. How satisfied are you that the proposed measures set out in this consultation will address the problem of nitrogen dioxide as quickly as possible?

Some of the potential shorter term measures set out in the plan, such as the diesel scrappage scheme and retrofitting on public transport and commercial vehicles will be a step forward. CIHT is concerned that some of solutions in the plan whilst potentially easing the problem do not address the bigger picture. CIHT believe these can be addressed through better integration in planning and transport policy. Planning must address the delivery of transport infrastructure and modes to meet the needs for development in the right place at the right time. An improved planning system should include transport networks and acknowledge the important role they play in economic and social development. The air quality plan has to coalesce with other strategies including recent airport, housing and industrial strategies.

- The plan requires more detailed guidance for Local Authorities, e.g. a hierarchy of interventions that would assist Local Authorities to address the problems of air quality as quickly as possible.

¹ <http://www.rac.co.uk/report-on-motoring>

- The Plan states that Local Authorities will need to demonstrate to the Secretary of State that the measures they propose to introduce will not have a negative effect on local business whilst achieving compliance in the quickest time. Further clarity and detail (as above) is required with regards to the development of CAZ's to help effectively achieve this.
- In Table Ex.3 of the Technical Report, CAZs are shown to provide significantly greater benefits in reducing NOx emissions than the other short listed options and even greater relative benefits in terms of reducing the concentration of NO₂ in the first year. However, it appears that the measurement of benefits was based on 'charging CAZs' rather than 'non-charging CAZs'. However, the Clean Air Zone proposals are not required to include a charging zone. The Government believes that charging zones should only be used where local authorities fail to identify equally effective alternatives. Therefore, in order for the estimated benefits of the CAZs to be realistic then the assessment should account for the number and type of charging or non-charging CAZs that are likely to be introduced within the additional 21 local authority areas which are being considered.
- The CAZ Framework identifies a wide range of measures which may be used to address air quality issues. Some of these are direct measures such as vehicle access and charging restrictions, whereas others are more indirect and complimentary interventions such as improvements to the public realm to encourage more walking. For a local authority to determine the geographic extent of their CAZ and the most appropriate type and combination of interventions to introduce, more information should be provided on the benefits of these measures and where they are most suited. For example, for non-charging CAZs, which measures are most suitable for improving air quality in residential streets? How effective is removing speed humps and might any benefits be negated by non-compliance with the speed limit and a reduction in actual/perceived road safety?
- Local Government continues to suffer from a reduction in both capital and revenue funding. The suite of short term solutions suggested may bring about some immediate changes to air quality, however these will require capital investment to implement and then revenue funding to maintain.
- Diesel scrappage schemes, real world emissions testing, retrofitting technologies, road layout/design, procurement of greener public sector fleets can all help make a difference in the shorter term.

The government must be aware of potential unintended consequences and costs when making these decisions:

- CIHT have concerns regarding the impact of making policy choices aimed at one specific action that end up having another effect. For example, the proposal to remove speed humps and altering traffic signals to make traffic flow smoother would potentially reduce exhaust emissions but this could lead to increases in vehicular speeds and make walking and cycling more difficult or less attractive. This has potential for impacts on health (e.g. reductions in walking and cycling) and the added risk of more accidents.
- There is a danger that installing CAZ's could result in the displacement of polluting traffic to neighbouring areas. The desired solution must be to reduce the number of kilometres driven. CAZ's will be challenging to implement without central government funding and crucially their leadership.
- There is a very real potential for negative impact on bus patronage. There is a debate to be had with regards to where the money is going to come from to either retrofit or renew the older (non-compliant) bus fleet. At its simplest, this would either be from tax payer subsidy / grants, or through the fare box. Fare increases could have a negative impact on patronage leading to increased use of the car, increased

congestion and pollution and subsequently unintended impacts on local economic activity.

There could also be a reduced public transport patronage if the bus operators felt they could not operate services at the same level within the proposed CAZ's due to cost, and the speed at which local authorities require buses to reach the minimum Euro standard in their area. Therefore a related issue to consider will be the detailed geographic scope of any proposed CAZ, and what proportion of the existing fleet would be impacted (location of routes, services, termini etc.).

2. What do you consider to be the most appropriate way for local authorities in England to determine the arrangements for a Clean Air Zone, and the measures that should apply within it? What factors should local authorities consider when assessing impacts on businesses?

CIHT have previously broadly welcomed the Clean Air zone Framework² as it refocused attention on the desired outcome of 'clean air' rather than the issue of emissions which had been the focus of Low Emission Zones. The development of a consistent national framework of emission standards will help reduce uncertainty. Nevertheless for the measures to work they need to be:

- Consistent;
- Achievable;
- Affordable for local authorities unless alternative additional central funding is provided;

It is important to ensure that it is understood that CAZ's on their own are not enough and that other air quality measures outside of transport are necessary.

Whilst local accountability is desirable, there is a very necessary requirement for proactive national leadership. This is particularly important to address issues that are essentially national in nature such as the composition and environmental characteristics of the national road vehicle fleet, and how we propose to change it for the benefit of public health in the shortest possible time. National government has an important leadership role to play, acting as a visible and energetic champion for these policy initiatives. There is a strong requirement on central government to lead from the front and to make it clear where the lines of responsibility and accountability lie. For example where the local authority is not also the highway authority (either in two tier areas or with the motorway and trunk road network), the local authority is going to be faced with trying to deliver the required outcome whilst relying on others to put in place the necessary measures.

Given the clear legal responsibility of the Secretary of State to deliver on legislated air quality commitments, it is unclear from the CAZ framework what the future course of action will be if local authorities fail to take sufficiently radical actions to address local air quality problems (through CAZ's and/or other means), for whatever the reasons e.g. financial, economic, social.

As it stands, two types of Clean Air Zone (CAZ) are proposed, charging and non-charging, this will lead to an inconsistent approach that will not be understood by the road user. Whilst local authorities can choose to implement either type, their introduction would involve a considerable financial commitment. Without Central Government funding it is doubtful whether many local authorities will implement a CAZ on a voluntary basis. Unless a large number of local authority's implement CAZs, then there will be no common standards applied across the UK.

² <http://www.ciht.org.uk/en/document-summary/index.cfm/docid/B552244C-11AA-4E7F-944D3F86E94D4EE3>

Areas of poor air quality can be defined as part of an Air Quality Management Area (AQMA), or areas designated as a result of assessing compliance against EU Limit Values (i.e. by monitoring and modelling in accordance with the Directive requirements). Poor air quality does not respect the legal subtlety of the difference between the two, and therefore if the purpose of CAZs was to be effective in addressing the impact of poor air quality, then many more mandated CAZs should have been proposed. Having both CAZs and AQMAs risks confusing the public, thereby potentially reducing support for the measures.

3. How can Government best target any funding to support local communities to cut air pollution? What options should the Government consider further, and what criteria should it use to assess them? Are there other measures which could be implemented at a local level, represent value for money, and that could have a direct and rapid impact on air quality?

Examples could include targeted investment in local infrastructure projects. How can Government best target any funding to mitigate the impact of certain measures to improve air quality, on local businesses, residents and those travelling into towns and cities to work? Examples could include targeted scrappage schemes, for both cars and vans, as well as support for retrofitting initiatives. How could mitigation schemes be designed in order to maximise value for money, target support where it is most needed, reduce complexity and minimise scope for fraud?

Central government must take account of the funding resources required by local authorities if they are to be responsible for delivering air quality improvements locally. The most obvious barrier to implementation of the measures for local authorities is resources.

Many local authorities are currently cutting back on air quality monitoring and management services in response to budget constraints and competing calls on public finances. Local authorities will find it difficult to justify diverting capital and revenue funds from other schemes and services in order to implement the required air quality management interventions. Capital funds will be required for the proposed local feasibility studies and scheme implementation. Revenue funding will be required to facilitate staffing, ongoing monitoring, and scheme management (for example to design, implement, and operate a Clean Air Zone).

Freight consolidation centres will be an important measure in offering alternatives to businesses, and their servicing needs, within CAZ's. Locations for these should be positively identified and safeguarded through the plan making process.

Fleet adjustment costs incurred by existing owners are discussed in the consultation documentation, but potential social equity issues (variation in ability to pay) are not specifically mentioned (they are touched on in the supporting Technical Report). What actions are proposed by government to ensure that the less affluent members of society, already affected by transport poverty, are not penalised disproportionately? What financial support is proposed by government, for example through targeted scrappage schemes or other means, to mitigate such equality issues?

There are good examples of successful measures that have been introduced across the country:

- Nottingham introduced a Workplace Parking Levy (WPL)³, a charge on employers who provide workplace parking, to address traffic congestion. The money raised is spent

³ <http://www.nottinghamcity.gov.uk/transport-parking-and-streets/parking-and-permits/workplace-parking-levy/>

on the Nottingham trams and bus networks. At the time of its introduction in 2012 there had been concerns that businesses would desert the city due to the added cost; these concerns were unfounded. Nottingham has enjoyed reduce traffic levels at peak times and has seen an increased use in public transport, cycling and walking.

- In January 2015 the Government launched the Total Transport pilot fund⁴. Local authorities in England were able bid for resources to implement a cross-sector integrated approach to the delivery of transport services and a number of pilots were established across the country.

CIHT played a supporting role on the Governance Board of the Network Northamptonshire Total Transport Pilot. This pilot provided a holistic approach to transport provision which allows for flexibility (mix and appropriate match to the journey) in provision of transport services. An interaction between the NHS, Clinical Commissioning Groups, Universities, the local authority and public transport service providers. Northampton is demonstrating changing behaviours, combining services and reducing congestion.

Dissemination of the knowledge and research from these schemes and pilots should be publicised and there should be consideration by government to further support new pilot schemes.

Devolution provides an opportunity for more linking of air quality policy across a wider area.

4. How best can governments work with local communities to monitor local interventions and evaluate their impact? The Government and the devolved administrations are committed to an evidence-based approach to policy delivery and will closely monitor the implementation of the plan and evaluate the progress on delivering its objective.

If a CAZ is restricted to a small area then there could be significant adverse effects as a result of diversion of vehicles away from the zone. There is uncertainty regarding the behavioural responses to the introduction of CAZ's which should receive appropriate attention in any local feasibility studies, and within the wider context of the development of a national framework.

For example, there is potential for unintended or undesirable consequences such as the geographic movement of air quality problems from inside to outside the boundary of the CAZ, as a consequence of traffic re-routing, or choosing alternative destinations. In such circumstances, the focus should not just be on legislated air quality limit values (pass / fail), but on the wider issue of geo-spatial distribution of health costs more generally (i.e. is it acceptable to make air quality worse in one location (but still below the limit value), if it brings air quality below the limit value in an adjacent location?). As noted in Section 1.3, page 19 of the Technical Report, there is no known lower limit to the adverse effects of NO₂ on human health.

Recent research indicates that the source apportionment of road vehicle emissions can vary significantly depending on context (even within a local authority AQMA). The proposed CAZ structure may limit the options / permutations available to local authorities if, for example, they only wish to target light goods vehicles. If accountability to improve air quality is being placed on local authorities then consideration should be given to allowing local authorities to be able to determine the CAZ criteria and classifications for their local area.

⁴ <https://www.gov.uk/government/news/76-million-for-local-transport-in-rural-and-isolated-areas>

5. Which vehicles should be prioritised for government-funded retrofit schemes? We welcome views from stakeholders as to how a future scheme could support new technologies and innovative solutions for other vehicle types, and would welcome evidence from stakeholders on emerging technologies. We currently anticipate that this funding could support modifications to buses, coaches, HGVs, vans and black cabs.

As noted in Table 8.9 of the Technical Report (page 160), retrofit systems for buses are well established. Retrofit for HGV's remains unproven. Retrofit for taxis (black cabs) has been implemented on a limited scale.

It would appear logical to encourage support for retrofit for buses, given that the technology is proven (although lessons learned from TfL implementation, e.g. relating to in-use temperature management of emissions control systems, should be recognised). Retrofit systems may need to be optimised for particular operating regimes and localities.

Whilst retrofit systems have been developed for black cabs, it is not known whether such systems are available or feasible for standard passenger cars used as taxis (e.g. private hire).

6. What type of environmental and other information should be made available to help consumers choose which cars to buy?

CIHT supports in principle the proposal for an enhanced National labelling scheme, to include NO_x, as set out in Section 7.3.4 of the consultation document.

However, we would highlight a potential shortcoming in the scenario assumptions described in Section 6.4.2 of the Technical Report. Scenario A assumes a 0.5% shift in purchasing decisions from new diesel cars to new petrol cars from April 2018; Scenario B assumes a 1% shift.

According to the latest available data from SMMT⁵, the diesel passenger car market share (new car registrations) declined from 50% in May 2016, to 43.7% in May 2017. The 'real world' changes in observed consumer purchasing behaviour should be taken into account in the scenario development. Consumers are already responding to the market signals generated by heightened awareness of the environmental impact of diesel vehicles, and associated potential government interventions.

7. How could the Government further support innovative technological solutions and localised measures to improve air quality?

- Refer to Total Transport Pilots in question 3 above.
- Consider further Workplace Parking Levy schemes – see question 3 above.
- Private vehicles be included within CAZs, additional measures such as 'Park and Share' or 'Park and ULEV' on radial routes into towns and cities with CAZs should be identified. These could be provided at existing / new Park and Ride locations, but with dedicated 'ULEV Car Club' and/or charging points included within priority areas.
- The Industrial Challenge Strategy Fund is right to look at growth areas of automation and robotics. For transportation this could have profound effects on not just how we build our infrastructure but also on how we maintain it. Satellites and space technology are already helping transport networks to manage traffic flows and network resilience issues.
- By ensuring that the Air Quality Plan is recognised as part of the Airport, Housing and Industrial Strategies.

⁵ <https://www.smmt.co.uk/2017/06/new-car-registrations-decline-may-ahead-general-election-2/>

- An effective public education and publicity strategy is vital in achieving awareness and acceptance of the need to change behaviour to achieve better air quality. Engagement with the public is also key. Advice to the general public and businesses could also include education on acceleration and deceleration which can be a greater source of exhaust and no-exhaust emissions than idling.

8. Do you have any other comments on the draft UK Air Quality Plan for tackling nitrogen dioxide?

An effective public education and publicity strategy is vital in achieving increased awareness and acceptance of the need to change behaviour to achieve better air quality. Signing of CAZs will be required but should be done as part of the authorities overall signing strategy. Some work will be required to be carried out with the Department for Transport teams responsible for TSRGD which has recently been updated and will require necessary amendment to accommodate these new signs.

A vital issue to be considered by government is the management of uncertainty, and the minimisation of uncertainty where it is possible to do so, as discussed in Section 8 of the Technical Report. An effective and systematic monitoring system for both local air quality and vehicle fleet emissions is required to ensure that operational and policy interventions are effective, and that expected (hoped for) improvements in vehicle exhaust emissions with the introduction of Euro 6, RDE testing, and progressively tighter conformity factors are actually realised. Monitoring should be sufficiently regular to facilitate timely changes in operational and policy interventions if either emission rates do not reduce as quickly as expected, or air quality does not improve at a fast enough rate, to ensure that objectives are achieved.

This is illustrative of a more general historical problem in the UK where there has been a lack of an appropriate and systematic UK national monitoring system for 'real world' road vehicle exhaust emissions. This is one of the reasons why we find ourselves in this situation today; we 'assumed' that developments in vehicle technology and Euro standards would solve the air quality problem, but we did not have an appropriate monitoring system in place to give early warning of failure.

We recommend that an appropriate and systematic monitoring system be designed and implemented in the UK at the earliest opportunity to achieve two primary objectives:

- a) To independently confirm (or otherwise) the 'real world' emissions performance of new technology vehicles as they enter the UK national fleet, and;
- b) To monitor the longer term emissions performance of vehicle sub-groups as they age, as mileage increases, and as changes in ownership patterns and maintenance regime take place. Currently, no reliable UK data is available on such emission time trends.

Such a monitoring system could be designed to incorporate a range of monitoring technologies, such as:

- Portable Emissions Measurement Systems (PEMS);
- Roadside Remote Sensing Devices (RSD), and;
- Laboratory based rolling road measurements.

Each of these measurement technologies have their own inherent strengths and limitations, in terms of relevant factors such as sample size, accuracy, and the ability to capture aspects such as variability in driving conditions and driver behaviour. The design of any such monitoring system should take such relevant issues into account.



Together with an effective local air quality monitoring system (incorporating the AURN network and local diffusion tubes), robust and reliable data on real world exhaust emissions and time trends will permit policy makers to monitor the effectiveness of air quality management interventions, and take corrective actions in good time if divergence is identified.

The nature of travel and the expectations of individuals/businesses are changing. CIHT believes in the overarching principle of creating better places that provide for all society's needs. Understanding people's needs and requirements (for example in investing in sustainable transport and through creating accessible and inclusive environments) should be used when planning, designing and providing transport infrastructure and services.

From a practical point of view, any policy interventions should ideally be targeted (both in terms of emissions sources (mobile, static), and emissions receptors i.e. people), to achieve the most cost efficient solution. There is likely to be variability in the problem and the solution depending on geographic location. On the other hand, some have argued for common standards / solutions to avoid market distortions, and to avoid making some locations relatively less economically attractive.

The following comments relate primarily to the supporting Technical Report (May 2017), published as part of this consultation.

Appraisal Period and Scope

An appraisal period of 10 years has been used in the economic assessment. However, it is stated in Section 5.3.1, page 85 (Scrappage) that not all benefits could be monetised "due to the relatively short appraisal period".

Similarly, Section 5.4.1, page 92 (ULEV's) states that "The short appraisal period used fails to capture the full lifespan of the cars bought using the grant".

Page 1 (The Air Quality Challenge) highlights the view of the Department of Health that air pollution has been identified as "one of the biggest health risks across the UK". Page 131 (Health Effect) states that "...areas...with high air pollution levels were also areas with high levels of respiratory conditions and hospital admission rates", and that "Poor air quality has also been linked to dementia". Given the long term, life long, and chronic nature of these negative health impacts, the choice of a short 10 year appraisal period would appear to be excluding significant costs from the economic appraisal, by excluding longer term costs.

Finally, 8.4.3, page 167 (Sensitivity of morbidity impacts) states that "...other costs such as short-term health impacts on hospital admissions and other health care costs have not been assessed", and that (page 168) "...air pollution, including NO₂, is linked with a number of morbidity impacts, which have not been valued in the analysis presented in this report".

It would appear that the economic assessment is excluding potentially significant costs, as a consequence of the short appraisal period, and the limitations with respect to scope.

Page 43 states that "A ten-year appraisal period for assessment was chosen as this was considered the time-horizon over which most of the impacts of options were expected to be observed...". This statement does not appear to be consistent with other statements (above) contained in the Technical Report.

Tax (VED, CCT, and fuel duty)

Table 3.4 (Page 41) states that tax is a "reserved matter for the Treasury and will be assessed independently of this exercise".



Taxation is a potentially very significant policy lever available to Government. When and how will this assessment take place? Will it take place before the final plan is published in July 2017?

The exclusion of tax from the assessment is a significant omission.

Timing of potential VED and/or CCT interventions

Table 3.5 (Page 42) 'Multi-criteria analysis' gives the 'Use of VED and/or CCT to promote low NO_x vehicles' a Key Criteria (Timing) score of '6'. Why would the use of VED and/or CCT to promote low NO_x vehicles have a longer timing to impact than the eleven other emission reduction options (e.g. CAZ, retrofit, ULEV's etc., all scored as '9')? This does not appear plausible.

Role of Charging CAZ's

In Section 10.2 of the Technical Report, 'Discussion' (Page 189), it is stated that "*It is clear that charging CAZ's have the greatest impact by bringing the majority of zones into compliance by 2021.*"

The main consultation document (Section 7.4.1, page 25, Clean Air Zones) does not reflect the strength or definitiveness of this statement.