

Defra

Draft Air Quality Plans

Background to CIWEM

CIWEM is the leading independent Chartered professional body for water and environmental professionals, promoting excellence within the sector. The Institution provides independent comment on a wide range of issues related to water and environmental management, environmental resilience and sustainable development.

CIWEM welcomes the opportunity to respond to the Defra consultation on its draft Air Quality plans. We were also pleased to take part in Defra's workshop. This response has been formulated with the expertise of our Members who work in air quality modelling and management and our Air Quality technical panel. To read more about CIWEM's work in this area and our recommendations for policies and practical action in the UK please see our report [Clearing the Air¹](#).

Summary

- The final Air Quality Plans need to be far more ambitious if the Government is to tackle the public health crisis from air pollution. The draft plans are limited to focussing on achieving compliance with the EU Directive limit values for a single pollutant rather than the wider protection of human and environmental health.
- It is welcome that the plans include the new nitrogen dioxide (NO₂) mortality data, acknowledging the important impact of air pollution on health. This underlines the need for urgent action.
- The draft plans contain only one new measure at the national level: a national framework for clean air zones, the details of which will not be published until early 2016. It is unfortunate that these are voluntary and it will be up to local authorities to decide whether to implement clean air zones with almost all responsibility passed on to them.
- The final plans must ensure that if Local Authorities are going to be responsible for delivering the plans, they are appropriately funded. These funds should be proportional to the cost of poor air quality.
- A wider national framework of low emission zones needs to be adopted sooner than stated and the criteria updated regularly to influence and reflect the changing fleet. If the Euro 6c emission standard delivers under real world urban conditions, this could be used as the basis for clean air zones.
- We urge Defra to consider other pollutants, in particular PM and primary NO₂, when setting standards for clean air zones. Focusing on one pollutant to the exclusion of others, will increase costs and health impacts in the long term.

¹ CIWEM. 2013. Clearing the Air. www.ciwem.org/clearingtheair

- Should the Euro 6 emissions standards not perform as modelled, it could result in up to 22 additional zones, 30 in total, being non-compliant in 2020. The scale of the problem in the 8 zones already considered will be much greater too, requiring more ambitious solutions. As this is the more likely scenario, Defra should ensure that there is a plan in place that can respond to a situation where the modelling data proves to be overly optimistic.
- CIWEM considers that Defra must rewrite the air quality plans if the portable emissions measuring systems (PEMS) testing programme that is being currently undertaken does not produce real world driving emissions data in-line with the modelled COPERT result.
- The consultation does not include a supporting document with the technical information and detailed modelling which is required to scrutinise the draft plans. The uncertainties in emission reductions from vehicles mean it is extremely difficult to judge if the measures will be enough and achieve limit values as soon as possible.
- There is little evidence in the draft plans of Defra working alongside other departments, such as the Treasury to consider fiscal drivers on diesel fuels, the Department for Transport's low emission vehicle programmes and DECC's energy and heat efficiency initiatives. DCLG should also be involved to reduce emissions through the planning system and Building Regulations.

General comments

The consultation document states that the '*consultation seeks views on draft plans to improve air quality*'. It is extremely disappointing then that the plans and the consultation are solely concerned with doing the minimum possible to achieve compliance with the EU limit value for NO₂ rather than wider improvements to air quality.

The impacts of poor air quality on the UK is widely reported as being tens of billions of pounds and in the region of 50,000 deaths per annum. It is therefore imperative that Defra recognise that the EU limit values for all pollutants are limits and not 'targets' and that air pollution should be controlled not only to achieve compliance with the Directive, but to aim to protect human health, by being considerably below them. This is particularly important for pollutants such as NO₂ and PM_{2.5} for which there are no thresholds. **There is no minimum concentration below which exposure is considered safe, and every reduction in exposure will be beneficial in terms of health benefits.**

It is for this reason that CIWEM (and many others including the Environmental Audit Committee) have for many years called for an update to the National Air Quality Strategy to ensure a coordinated approach is taken to tackling this issue.

Technical supporting information and assumptions

CIWEM has already responded to the consultation and written to the Secretary of State to ask for the supporting technical detail to the consultation to be published. This will not be made available until the conclusion has finished. We consider that it is very difficult to respond to the consultation without the publication of the supporting technical detail. The consultation presents a wish list of emissions reductions and steers respondents away from questioning

how these have been quantified and accounted for in the modelling. The 25 page Evidence Annex is not adequate.

Defra has changed its views on how emissions will reduce in the future and is more optimistic, based on changes in COPERT² emission factors for Euro 6. COPERT is a tool used by all Member States and the recommended method for calculating vehicle emissions by the European Monitoring and Evaluation Programme and the European Environment Agency Emissions Inventory Guidebook. However whilst COPERT data is the best available, basing a plan only on this data is not sensible as its predictions may still not be the most likely case. It was also the best available data in 2011 and 2014 but its predictions did not materialise.

The sensitivity analysis shows what would happen if Euro 6 does not perform as necessary but the plans do not state any measures that would be used if this was the case. If the emission factors are overly optimistic, then in addition to the 22 extra zones, the scale of the problem in the 8 zones already considered will be much greater too, requiring more ambitious solutions. It would be sensible to at least have a plan that can respond to a situation where the COPERT data proves to be optimistic, and where the plan's actions could cope with a more polluted world. CIWEM considers that Defra must rewrite the air quality plans if the portable emissions measuring systems (PEMS) testing programme that is being currently undertaken does not produce real world driving emissions data in-line with the COPERT result.

The analysis uses the SL-PCM model which is not described nor peer reviewed. There is no data on what approximations it makes compared with the full Pollution Mapping Climate model and how these affect the findings. This must also be made available.

[Achieving limit values as soon as possible](#)

The draft plan is not a plan to achieve the NO₂ limit values as soon as possible, it appears to be a low cost 'wait and see' approach. The only change proposed is the suggestion of clean air zones in seven areas because they will not meet the limit value by 2020. If the plan was to achieve limit values as soon as possible then it should suggest the implementation of clean air zones more widely and earlier.

The draft plan accepts that breaches will happen until the general emission control measures, largely relying on the Euro 6 standard, have transitioned sufficiently into the fleet. Defra indicates that the proposed Clean Air Zone emission limits are set at the Euro 6 emission limits (for diesel cars). Current Euro 6 diesel cars do not meet the emissions standards in the real world, most by some margin, which means it will be a number of years before diesel cars will comply. The consultation assumes a car turnover rate of every four years, however to date there has also been a lack of turnover in fleet as fewer new cars have been purchased due to the recession.

The consultation notes the disparity of test cycle results with real world emissions. Paragraphs 64-65 of the Annex present the results of this more probable situation (at least by 2020 before real driving emissions are introduced and complied with). Table 6.2 shows that should

² COPERT ((Computer Programme to calculate Emissions from Road Transport)) is an MS Windows software program for the calculation of air pollutant emissions from road transport.

Euro 6 emissions standards not perform as modelled, it could result in up to 22 additional zones, 30 in total, being non-compliant in 2020.

Correcting the 'emissions scandal' that has allegedly been caused by Volkswagen (and may potentially involve others) will take years to have any real effect on NO₂ levels, so some additional actions will also be needed in the short term.

EU governments have also agreed to new limits for NO_x emissions from diesel cars³. If this proposal is passed it will allow car manufacturers to miss the Euro 6 NO_x limit by 210% (conformity factor of 2.1) between 2017 and 2020, resulting in a diesel car allowed to emit 168mg/km of NO_x on the road instead of the Euro 6 limit of 80 mg/km. From 2021, new diesel cars sold will be allowed to still emit 120 mg/km open-endedly. If this happens then real world emissions will not fall in line with the expected assumptions of the Euro 6 standard within the plans.

Response to specific questions in the consultation

Question 1: Do you consider that the proposed plan set out in the overview document strikes the right balance between national and local roles?

No, overall the majority of the new measures identified are locally driven and there is very limited additional national responsibility or measures identified.

Whilst CIWEM recognises that localism is key in ensuring local factors are taken into account, an overall strategy is required to ensure that the necessary actions can be implemented in a timely manner. A framework for clean air zones will not work without the supporting national data and infrastructure, such as national databases on vehicles and emissions, an accredited retrofit process and associated vehicle database, an exempt vehicle list, and a standard system for local authorities to use to register (and if necessary charge) vehicles. Defra should work with the Department for Transport to provide this infrastructure. They should also work with the Treasury to reverse fiscal measures that encourage the use of diesel vehicles such as Vehicle Excise Duty, fuel duty and company car tax.

An obvious opportunity for additional national action, is to optimise existing and new programmes to benefit air quality, and to focus these in the non-compliant zones. For example, the Department for Transport and the Office for Low Emission Vehicles work and the Department for Energy and Climate Change's efficiency and insulation programmes. Other mechanisms such as Building Regulations could also be more effectively used, for example by requiring all new boilers to be low NO_x boilers and controlling air pollution emissions from biomass and biofuel.

The final plans must ensure that if Local Authorities are going to be responsible to deliver the plans promptly, they are appropriately funded. CIWEM consider that these funds should be proportional to the cost of poor air quality and not result in prolonged competitions between local authorities for extremely limited funds. This is especially the case as Local Authorities are under huge budget constraints and will be liable under the Localism Act to pay any European

³ http://europa.eu/rapid/press-release_IP-15-5945_en.htm

infraction fines for failure. Defra should also make clear that development and transport planners are expected to play their important role in air quality, especially where upper-tier authorities exist.

Question 2: Are you aware of any other action happening in your area which will improve air quality and should be included in the plan?

CIWEM is not able to comment on actions being taken by individual Local Authorities.

Given the aim of the consultation it is disappointing that Defra has not targeted action at the main cause. It is readily apparent that diesel fuelled engines currently contribute overwhelmingly to the NO_x emissions in our urban centres (i.e. around 90% of the roadside increment from Figure 3 in Defra's consultation), and when coupled with the elevated proportion of NO₂ within diesel exhaust NO_x emissions; **a Euro 5 diesel car could conceivably be emitting well in excess of 100-times more NO₂ than a Euro 5 petrol vehicle** (Figure 6.1 in Defra Annex shows that a Euro 5 petrol car emits approximately 0.02g/km NO_x and a Euro 5 diesel car approximately 0.55g/km. The fraction of primary-NO₂ from a diesel exhaust is highly variable but considered to be circa 30% compared to circa 3% in petrol vehicle exhausts).

Defra therefore needs to consider whether diesel cars have any place within the clean air zones or indeed any of our urban centres prior to the introduction and adoption of robust real-world driving emissions in the Euro 6c standard by the EU (if these are proven).

Defra need to ensure that any measures included as part of the clean air zones are highly effective in influencing driver behaviour. Looking abroad for examples, other measures such 'car-free' days have been used in European capital cities in response to air quality issues and Oslo plans to ban private cars entirely from the city centre by 2019 to cut pollution. Defra should consider this level of ambition for clean air zones.

Question 3: Within the zone plans there are a number of measures where we are unable to quantify the impact. They are included in the tables of measures. Do you have any evidence for the impact of these types of measures?

In many Local Authorities, air quality monitoring is focused towards the Air Quality Management Areas and other areas of concern under the Local Air Quality Management process rather than potential EU Directive exceedances. This limits the ability to assess how individual measures to target reductions in emissions in the areas identified by the PCM model might deliver pollution concentration reductions. Many of the measures identified in the zone plans have been targeted at specific hotspots, and any effect on pollution concentrations is difficult to predict for those immediate areas, and even harder for a wider modelled area.

Question 4: Do you agree that a consistent framework for Clean Air Zones, outlined in section 4.3.6 of the UK overview document, is necessary? If so, do you think the criteria set out are appropriate?

CIWEM has previously called for a national framework of low emission zones (LEZ), based on ever increasing standards. We consider that a consistent approach is required across England to allow for economies of scale and to create certainty for vehicle users. It is important that the criteria for clean air zones are regularly updated to reflect the changing vehicle fleet.

It is confusing that throughout the plans they refer to a framework of 'clean air zones'. If these are in fact different to LEZs, and wider in scope then the plans should state this.

We would advise Defra to consider other pollutants, in particular PM and primary NO₂, when setting standards for clean air zones. Focusing on one pollutant to the exclusion of others, will increase costs and health impacts in the long term. As in the answer to question 2, Defra should really consider whether diesel cars have any place within clean air zones or indeed any of our urban centres prior to the introduction of a robust Euro 6c standard.

CIWEM is concerned by the voluntary approach. The introduction of piecemeal clean air zones could serve only to displace more polluting vehicles to areas not identified by Defra's Pollution Climate Mapping (PCM) model as exceeding the NO₂ limit value, when in fact monitoring data shows that many other urban areas greatly exceed the NO₂ limit values. It is for this reason that we advise Defra to be more ambitious and to aim to protect the health of all residents (particularly those in urban areas), as opposed to trying to identify the bare minimum required to achieve borderline compliance with the EU Directive 'limit' values for a single pollutant.

A national framework should not stop local authorities from going further and implementing more stringent targets where necessary. For example, the London Ultra Low Emission Zone requires all new taxis to be zero emission capable from 2018.

The plans do not propose any means to overcome the main barriers to the introduction of clean air zones, namely public acceptance and the scheme implementation costs, which may be substantial.

The final plans need to show the assumptions regarding road improvements on the strategic highway network or if any large new developments have been included such as new towns. Solutions to improve air quality on the UK's motorway and trunk road network will be developed by Highways England as traffic on these roads plays no small part in contributing to the emissions and pollutant concentrations found in many city centres.

Question 5: What do you consider to be the barriers that need to be overcome for local authorities to take up the measures set out in section 4 of the UK overview document? How might these be overcome? Are there alternative measures which avoid these barriers?

Political will is necessary as low emission zones are often seen as politically unpopular. Air quality needs to be a higher priority for transport and development planners, upper tier local authorities, Directors of Public Health, the associated Government departments and their agencies. There is no discussion on this aspect or commitment for support within the draft plans.

It is clear that the funding needed for the introduction of a clean air zone is substantial, both to overcome local opposition and to facilitate the adoption of low-emission vehicles. There are costs associated with the required refuelling infrastructure and to install and operate a system to manage the clean air zone charging. Given the evident cost of poor air quality in the UK, it is clear that the current level of funding for such measures is severely lacking and Defra needs to provide proportionate funding to allow Local Authorities to implement the required measures in an acceptable timeframe.

In addition to the political and financial support necessary for each Local Authority implementing a clean air zone, the government will also need to provide overarching support. This must include freely available databases on vehicles and their emission standards, a national retrofit database (and an accredited list of approved technologies), a list of exempt vehicles, and a standard system which local authorities can use to operate the registration and any payments from vehicle operators. This is necessary for a consistent approach.

Question 6: Are you aware of any additional action on non-transport sources to improve air quality that should be included in the plans?

Emissions of the main greenhouse gas carbon dioxide (CO₂), and NO_x and PM are linked, as they are all emitted from the same sources (during combustion of fuels). Many measures to reduce CO₂ emissions also reduce urban air pollutants, such as energy efficiency measures. For example in central London the heating of commercial buildings is an important source of NO_x; reducing energy demand will also reduce air pollution emissions. Building Regulations could be used to address air quality more effectively, measures which could be included are that all boilers should be low-NO_x and all new houses should have a vehicle electric charging point.

A stronger emphasis is needed in the National Planning Policy Framework and the paragraphs that point to the importance of planning policies in helping to deliver cleaner air (paragraphs 124 and 35 on sustainable transport). Air quality needs to be more than a material consideration when limit values are or may be breached.

Defra should work with DCLG to ensure that planning guidance aims to reduce air pollution through the planning system. This could include air quality neutral zones where all new developments must comply with benchmarks for both building and transport emissions. A clean air zone should also address dust and emissions from construction and demolition sites, including non-road mobile machinery (NRMM), as these can have a significant impact on air quality both within and around the site. The London 'Planning Practice Guidance on the Control of Dust and Emissions from Construction and Demolition' includes best practice and emission standards for NRMM, and could be adopted as part of the network of clean air zones.

Scotland's low emissions strategies and the Wales active travel initiative should be exemplars to be adopted throughout the UK rather than just additional information in the document.

The Low Emission Neighbourhood concept, as developed by Transport for London, contains some useful ideas for the non-transport elements of a clean air zone. This is an area-based

scheme that includes a package of measures focused on reducing emissions and promoting sustainable living more generally.