

Consultation on fine particulate matter air quality targets – ClientEarth response

Introduction and summary

1. This document is ClientEarth's response to the consultation being carried out by the Welsh Government on proposals for fine particulate matter targets.
2. ClientEarth is an environmental law charity which operates globally, from offices in multiple countries, including the UK. We use the law to fight climate change, tackle pollution, defend wildlife and protect people and the planet.
3. ClientEarth has a long history of working to push for action to reduce air pollution in the UK and abroad, with extensive experience working on the UK's domestic air pollution legal framework. We are also a member of Healthy Air Cymru.
4. ClientEarth welcomes the critical steps being taken by the Welsh government to set targets for fine particulate matter air pollution ("**PM_{2.5}**") to better protect people's health and the environment. In requiring the Welsh government to set new legally binding targets to improve air quality, the Environment (Air Quality and Soundscapes) (Wales) Act 2024 provides an opportunity for Wales to be bolder than the UK and EU in the fight against air pollution.
5. However, the proposed targets are modest, underpinned by conservative assumptions about feasibility that anticipate only slightly enhanced policy and market conditions. The lack of ambition of these targets will cause Wales to lag behind its neighbours to the detriment of the health of the Welsh people.
6. Government policy on air quality in Wales and across the UK in recent years demonstrates that binding targets are key to driving action. The targets proposed should be made more ambitious so that they act as a driving force to generate the robust response that is needed to tackle air pollution. Setting these targets should be the first step in developing a suite of broader air quality targets under the Environment (Air Quality and Soundscapes) (Wales) Act 2024, including a stronger concentration limit for nitrogen dioxide (NO₂) and a short-term target, or at least an alert threshold, for short term peaks in PM_{2.5}.

Annual Mean Concentration Target (AMCT)

Question 1: To what extent do you agree with the level of ambition proposed for the Annual Mean Concentration Target (AMCT)?

[Strongly agree/Agree/Neither agree nor disagree/Disagree/Strongly disagree]

Please explain your answer.

7. ClientEarth **strongly disagrees** with the level of ambition proposed for the AMCT. The Welsh government has proposed an AMCT of 10 $\mu\text{g}/\text{m}^3$ by 2035. We are calling on the Welsh government to improve its AMCT by requiring annual $\text{PM}_{2.5}$ concentrations to be reduced to within 10 $\mu\text{g}/\text{m}^3$ by 2030. The key pieces of evidence that support this increased level of ambition for the AMCT are summarised below.

A target date of 2035 will mean Wales lags behind its neighbours

8. The revised EU Ambient Air Quality Directive 2024/2881 (the “**Revised AAQD**”) sets an annual limit value for $\text{PM}_{2.5}$ of 10 $\mu\text{g}/\text{m}^3$ by 2030. Closer to home, the UK government recently made a policy commitment to achieve an AMCT of 10 $\mu\text{g}/\text{m}^3$ by 2030,¹ ten years ahead of its statutory target which requires compliance by 2040. We acknowledge that the Revised AAQD does allow for the extension of the 2030 deadline under certain circumstances and the UK 2030 target is regrettably a policy commitment, not currently underpinned by law. However, both targets are still strong signals of intent from these jurisdictions and if effective in driving down $\text{PM}_{2.5}$ pollution should also help make the upcoming Welsh targets easier to achieve, by reducing transboundary pollution. Furthermore, Wales should seize the opportunity to lead the way, committing to a legal 2030 target which cannot be extended. Wales is comparatively well placed to take up this opportunity, given the lower levels of $\text{PM}_{2.5}$ pollution experienced in Wales compared to the UK and many EU countries, especially those in south-eastern Europe.²

There are indications that the analysis underpinning the proposed target is overly pessimistic and that a more ambitious target is feasible

9. Firstly, the vast majority of Wales is predicted to be compliant with an AMCT of 10 $\mu\text{g}/\text{m}^3$ by 2030 under all modelling scenarios detailed in the Welsh Government’s consultation document (the “**Consultation Document**”), with only a minority of hotspot areas predicted to not comply. Figure

¹Department for Environment, Food and Rural Affairs, ‘Environmental Improvement Plan (EIP) 2025’ (December 2025): <<https://www.gov.uk/government/publications/environmental-improvement-plan-2025/environmental-improvement-plan-eip-2025#chapter-2-environmental-quality>>

² See: <<https://www.eea.europa.eu/en/analysis/publications/air-quality-status-report-2025/particulate-matter-pm2.5>>

6 in the Consultation Document indicates that under all of the non-baseline emission scenarios only between 1-5% of low super output areas (“**LOASs**”) would be non-compliant with 10 $\mu\text{g}/\text{m}^3$ in 2030.³ In hotspot areas the Welsh government would appear to have a significant degree of control over $\text{PM}_{2.5}$ pollution. For example, in Cardiff Castle Street 67% of 2030 emissions under the baseline scenario are from Wales, with a smaller proportion (33%) from the UK, rest of the world and natural sources.⁴

10. Furthermore, there are various indications that the emissions scenarios (“medium”, “high”, “speculative”) developed to inform the assessment of what targets are feasible are overly conservative. For example, none of the emissions scenarios, not even the highest ambition “speculative” scenario include key policy measures advocated for by clean air advocates to reduce $\text{PM}_{2.5}$ pollution, including Healthy Air Cymru.⁵ For example, none of the emissions scenarios detailed in the Ricardo report produced as Annex B to the Consultation Document “**Annex B**”) include Clean Air Zones/Low Emission Zones, a ban on the installation of new stoves in homes (except in special circumstances), and the roll out of Smoke Control Areas nationwide with exemptions only for rural communities.⁶ In general, we also note that the development of the emissions scenarios may have been carried out with limited input from non-governmental organisations with a focus on health and the environment (only UKCEH and CIEH are mentioned). This might help account for the emissions scenarios erring on the conservative side. A different balance of voices may have led to different emissions scenarios and more optimistic assessments of feasibility.

11. In addition, the emissions scenarios also only include measures which reduce primary $\text{PM}_{2.5}$ emissions.⁷ This overlooks the reductions to $\text{PM}_{2.5}$ concentrations which can be made by effectively regulating agricultural ammonia emissions, given that ammonia is a precursor to $\text{PM}_{2.5}$. Secondary $\text{PM}_{2.5}$ pollution, including pollution caused by agricultural ammonia emissions is expected to account for 23% of $\text{PM}_{2.5}$ emissions across Wales in 2030.⁸ This is a significant amount, almost as large as all other sources of primary $\text{PM}_{2.5}$ from Wales added together (27%).⁹ It is not clear from the chart provided in the Consultation Document what proportion of this secondary $\text{PM}_{2.5}$ is from agriculture and the extent to which the apportionment may differ at hotspot locations. However, a recent study focused on cities in England showed that agricultural ammonia emissions were responsible for more than a quarter of $\text{PM}_{2.5}$ pollution in some English

³ Welsh Government, ‘Consultation Document’ (November 2025), p27

⁴ Ibid, p22

⁵ See Healthy Air Cymru’s 2026 manifesto: <<https://healthyair.cymru/our-manifesto/>>

⁶ Ricardo, “Annex B: Evidence to support the development of $\text{PM}_{2.5}$ target proposals in Wales” (2025), p30-32

⁷ Ibid, p28

⁸ Welsh Government, ‘Consultation Document’ (November 2025), p23

⁹ Ibid

cities.¹⁰ Accordingly, it seems reasonable to assume that measures to reduce ammonia emissions (including those pursuant to obligations under the National Emission Ceilings Regulations 2018) could have a significant impact on PM_{2.5} concentrations. This could significantly affect the Welsh government's assessment of what PM_{2.5} target is feasible.

12. Finally, the emissions modelling conducted in support of the government's proposals factors in a model adjustment of 1.2 µg/m³ to account for average difference between model predictions and measurements. It is notable that Figure 2-1 in Annex B shows that without the adjustment, less than 1% of LSOAs are predicted to be non-compliant with 10 µg/m³ in 2030 under the Medium and High target scenarios, and no LSOAs are predicted to be non-compliant under the Speculative scenario. While we appreciate the rationale for the model adjustment, it is important for Figure 6 in the Consultation Document to not be taken as conclusive evidence that 10 µg/m³ cannot be achieved 2030. This safety buffer may mean that Figure 6 is an overly pessimistic projection.

Independent analysis indicates that a more ambitious approach is feasible

13. Analysis published from Imperial College London, commissioned by the Clean Air Fund and published in March 2022 showed that if existing UK environmental, transport and clean air policies are implemented in full, PM_{2.5} pollution could fall within 10 µg/m³ by 2030 across 99.8% of the UK.¹¹ By putting in place additional measures, in particular those targeting the remaining hotspots in major cities, the analysis indicates that 10 µg/m³ would be achievable across the UK, including Wales, by 2030.

Realising the benefits of a more ambitious AMCT

14. We appreciate that under the Environment (Air Quality and Soundscapes) (Wales) Act 2024 Welsh Ministers can only set a target which they are satisfied can be met. However, the value of a legally binding AMCT is in proactively driving down pollution, stimulating and accelerating policy developments, behavioural change, and technological innovation. In the European Commission's Fitness Check of the Ambient Air Quality Directives, it noted the effectiveness of legally binding limits in facilitating downward trends in emissions.¹² The conservatism of the proposed target,

¹⁰ J Kelly et al., "Diagnosing domestic and transboundary sources of fine particulate matter (PM_{2.5}) in UK cities using GEOS-Chem" (April 2023) *City and Environment Interactions* 18 (100100): 2590-2520.
<https://doi.org/10.1016/j.cacint.2023.100100>

<<https://www.sciencedirect.com/science/article/pii/S2590252023000028>>

¹¹ Clean Air Fund and Imperial College London, *The Pathway to Healthy Air in the UK* (2022), available at: <<https://www.cleanairfund.org/resource/the-pathway-to-healthy-air-in-the-uk/>>

¹² See: <https://commission.europa.eu/document/download/096e018e-725c-4a17-9227-0c01f4b38031_en?filename=swd_2019_0427_en.pdf>, p86

rooted in a cautious feasibility analysis, significantly limits its potential as a tool for progressive health and environmental outcomes.

15. There is a wealth of evidence of the benefits a more ambitious target would bring. The WHO's latest air quality guidelines suggest that countries should be striving to reduce levels of this pollutant to within 5 $\mu\text{g}/\text{m}^3$ to minimise impacts on people's health. In addition, the benefits span beyond health outcomes and can also provide vital savings for healthcare services and cross benefits for reducing greenhouse gas emissions. For example, according to the Welsh government's own analysis, the speculative emissions scenarios, which involves the most ambitious measures, produce the greatest *net* benefits at roughly twice the net benefits of the "high" scenarios, and an even greater proportion compared to the "medium" scenarios.¹³ In addition, the people most likely to be positively affected by a more ambitious AMCT are vulnerable groups. People should not be condemned to poor health based on where they live, work or study. This is particularly true for the most vulnerable people exposed to the impacts of pollution, including children, older people, people with pre-existing health conditions, people on low incomes, people from ethnic minorities and outdoor workers. As acknowledged in the Consultation Document, the biggest reduction in $\text{PM}_{2.5}$ is predicted to occur in the most deprived areas (alongside the least deprived) and in areas with the highest proportion of children and high ethnic minority populations.¹⁴

The need for longer-term ambition towards current WHO guidelines for $\text{PM}_{2.5}$ pollution

16. Whilst a target of 10 $\mu\text{g}/\text{m}^3$ by 2030 would be a critical move to drive action to better protect people's health and the environment, it would still allow concentrations *twice as high* as the health-based recommendations of the WHO.
17. The WHO's latest air quality guidelines suggest that countries should be striving to reduce levels of this pollutant to within 5 $\mu\text{g}/\text{m}^3$ to minimise impacts on people's health. If Wales' ambition to clean up the air is to be led by the latest science on what is necessary to protect people, this 10 $\mu\text{g}/\text{m}^3$ target should be an interim target, as a stepping stone towards meeting WHO levels at a future date. Striving to meet the WHO guideline level should be at the forefront of the minds of Welsh ministers when reviewing the targets every five years under regulation 6 of the Environment (Air Quality and Soundscapes) (Wales) Act 2024.
18. Achieving WHO levels would save lives and reduce the incidence further of air pollution related health conditions such as COPD and asthma. For example, a 2023 joint report by British Heart Foundation Northern Ireland and the Irish Heart Foundation estimated that approximately 950

¹³ Ricardo, "Annex B: Evidence to support the development of $\text{PM}_{2.5}$ target proposals in Wales" (2025), p20

¹⁴ Welsh Government, 'Consultation Document' (November 2025), p9, p15

lives could be saved each year across the island of Ireland if PM_{2.5} levels were reduced to 5 µg/m³.

19. Various modelling studies show that compliance with WHO guideline recommendations is achievable in Europe, if supported by strong political will and ambitious policies. For example, a study from the International Institute for Applied Systems Analysis shows it is technically feasible to “deliver significant cuts in PM_{2.5} levels throughout the world with the right policies and measures, and that in Europe and the Americas, population weighted concentrations could be brought down to about 5 µg/m³” by 2040.¹⁵

Population Exposure Reduction Target (PERT)

Question 2: To what extent do you agree with the level of ambition proposed for the Population Exposure Reduction Target (PERT)?

[Strongly agree/Agree/Neither agree nor disagree/Disagree/Strongly disagree]

Please explain your answer.

20. ClientEarth **strongly disagrees** with the level of ambition proposed for the PERT.
21. In general, we support the use of a PERT alongside an AMCT. A robust AMCT can help guarantee that everybody across Wales can benefit from the same basic level of protection. At the same time, there is no “safe” level of PM_{2.5},¹⁶ so it is important to have a mechanism that enables the government to drive down average exposure to maximise public health gains across Wales.
22. However, the PERT could be more ambitious. The Welsh government has proposed a PERT that requires a 25% reduction in annual mean population exposure by 2035 compared to a baseline year of 2019. The current proposals would see Wales fall behind England, which has an interim policy PERT of reducing population exposure to PM_{2.5} by 30% compared to 2018 by December 2030, as a stepping stone towards its legal target of a 35% reduction by the end of 2040. We reiterate our comments in paragraphs 10 and 11 above that the conservative modelling assumptions built into the emissions scenarios may have resulted in an overly pessimistic assessment of what is feasible in Wales; this applies to the modelling behind both the AMCT and

¹⁵ M Amann et al., “Reducing global air pollution: the scope for further policy interventions” (30 October 2020) *Philos Trans A Math Phys Eng Sci* 378 (2183): 20190331. <https://doi.org/10.1098/rsta.2019.0331>

¹⁶ WHO Guidelines for Indoor Air Quality. World Health Organisation. 2014. <<https://rb.gy/8t50xc>>

the PERT. We also reiterate our comments in paragraphs 14 and 15 above about the net benefits of more ambitious PM_{2.5} targets.

Proposed arrangements for assessing compliance

Question 3: To what extent do you agree with the proposed arrangements for assessing PM_{2.5} levels and achievement of the targets?

[Strongly agree/Agree/Neither agree nor disagree/Disagree/Strongly disagree]

Please explain your answer.

23. We agree with the proposed arrangements for assessing PM_{2.5} levels and achievement of the targets.

Subtraction for natural contributions to particulate matter

Question 4: To what extent do you agree with the provision in the draft regulations to allow the subtraction of the ‘natural contribution’ to particulate matter where exceedances of a target are due in whole or in part to these natural contributions?

[Strongly agree/Agree/Neither agree nor disagree/Disagree/Strongly disagree]

Please explain your answer.

24. We neither agree nor disagree with this proposed provision.

25. The draft regulations provide that “Where the Welsh Ministers consider that a target has not been met for a reason attributable to contributions from natural sources, the Welsh Ministers may assess and subtract the contributions from natural sources when assessing whether a target has been met.”¹⁷ There are reporting obligations on the Welsh Ministers in the event that such a subtraction is applied.¹⁸

26. We appreciate the rationale for this provision and the fact that it mirrors the position under the Air Quality Standards (Wales) Regulations 2010 and the Revised AAQD. However, we note the CAAP’s comments that subtracting natural contributions is “non-trivial”. We agree with the

¹⁷ Draft regulation 16(1)

¹⁸ Draft regulation 16(2)

CAAP's recommendation that subtraction should only be allowed if there is a robust method of assessment and justification. Details are not provided in the Consultation Document for this methodology indicating that these details may still need to be worked through.

27. In addition, no details are provided in the Consultation Document as to the proportion of PM_{2.5} pollution attributable to natural sources in Wales (either as a nationwide average or in specific locations), since in the pie charts provided PM_{2.5} from natural sources is grouped together in broader categories (e.g. "rest of the world & natural sources"). Accordingly it is unclear to what extent allowing the subtraction would make the proposed target easier to meet, and therefore potentially facilitate the setting of a more ambitious target. Relatedly, it is unclear if natural sources were excluded in the modelling behind "Figure 6: Matrix of AMCT options" in the Consultation Document. If natural sources were included in this modelling then given that the subtraction provision is anticipated this would be another indication that it is feasible to set a more ambitious AMCT.
28. Finally, it is worth noting that any compliance exemption does not negate the need from a public health perspective to implement effective short-term measures to mitigate acute episodes of high PM_{2.5} from natural sources. For example, in the event of wildfires, temporary traffic and combustion restrictions can be used to avoid exacerbating the public health risk.

General comments

Question 5: We have asked some specific questions. If you have any other relevant thoughts or comments on our proposals, please provide them here.

29. ClientEarth welcomes the provision of new targets for annual mean PM_{2.5} concentrations and population exposure reduction. This is important recognition by the Welsh government that the law as it stands is not strong enough to protect people's health from this harmful pollutant. However, there are additional gaps in the existing legal regime that allow a range of pollutants to persist at levels that are continuing to harm people's health and our natural environment. In order to tackle the threat that air pollution poses to human health and the environment, we urge the government to commit to a broader suite of air pollution targets to cover a wider range of air pollutants. The Environment (Air Quality and Soundscapes) (Wales) Act 2024 gives ministers three years to develop at least one other target for ammonia, coarse particulate matter (PM₁₀), ground level ozone, nitrogen dioxide, carbon monoxide or sulphur dioxide. We suggest that the Welsh government prioritise stronger concentration limits for nitrogen dioxide (NO₂) pollution. However, there is also a persisting gap regarding short-term PM_{2.5} targets and we urge as a

minimum that the Welsh government commit to a new 24-hour mean alert threshold for PM_{2.5} which aligns with the latest WHO guidelines. These proposals are elaborated upon further below.

The need for stronger NO₂ limit values

30. Both annual mean and hourly mean concentration limit values for NO₂ pollution already exist within the Air Quality Standards (Wales) Regulations 2010. However, these limits are well above (i.e. less protective) than the latest air quality guidelines published by the WHO in September 2021. The current annual mean limit value of 40 µg/m³ is four times higher than the 10 µg/m³ guideline the WHO now urges countries across the world to strive for in order to protect human health. The hourly limit value of 200 µg/m³ is eight times higher than the 25 µg/m³ 24-hour mean WHO guideline. The law on NO₂ is significantly out of kilter with the state of scientific understanding of the health risks associated with air pollution. This is translating into a lack of action to control levels of this pollutant, with all of the Welsh air quality reporting zones under the Air Quality Standards (Wales) Regulations 2010 continuing to greatly exceed the current WHO guidelines, with a maximum annual mean value recorded in North Wales of 30 µg/m³ and in South Wales of 31 µg/m³ in 2024.¹⁹
31. The disparities between our existing legal protections for NO₂ and the recommendations made by the world's leading scientists are now just as wide as those with respect to PM_{2.5}. In addition to setting the PM_{2.5} targets, ClientEarth urges the government to rectify this major lacuna in the law by setting new stronger legal limits for both annual mean and hourly mean NO₂ concentrations that reflect the latest WHO guidelines.

The lack of short-term PM_{2.5} targets or alert thresholds

32. There are currently no specific legal protections against short-term peaks in PM_{2.5} pollution set out in domestic legislation. The Air Quality Standards (Wales) Regulations 2010 provide no daily or hourly legal limit for this harmful pollutant. Furthermore, those Regulations also fail to include any legal alert threshold for PM_{2.5} above which the government is required to draw up and implement 'short-term action plans' to reduce short-term peaks in this harmful pollutant and communicate to the public about the risks posed by spikes in concentrations.²⁰ These gaps in the law mean that the Welsh legal framework as it stands does not require any action on the part of the government to protect people from harmful short-term episodes of PM_{2.5} pollution or inform them about the associated risks.

¹⁹ See: <https://compliance-data.defra.gov.uk/datasets/2be64999a5cf4968a30c2d8511a53033_0/explore?location=52.226240%2C-3.503010%2C7>

²⁰ See Air Quality Standards (Wales) Regulations 2010, reg 21

33. The CAAP's advice noted that exposure to short-term peaks remains important for susceptible people but that action to reduce long-term exposure would broadly be protective of short-term acute health impacts, given that the two are interconnected. This led the CAAP to propose focusing on reducing long-term average concentrations of PM_{2.5}.
34. However, the WHO guidelines highlight the importance of short-term targets alongside long-term targets. Reflecting the wealth of evidence about the adverse health impacts of short-term exposure to PM_{2.5}, the 2021 WHO air quality guidelines recommend a 24-hour average concentration for PM_{2.5} pollution of 15 µg/m³.
35. Those with pre-existing health conditions can be more vulnerable to the effects of peaks in pollution levels. A report from Asthma + Lung UK revealed that more than half (53%) of people with asthma and 47% of people with COPD²¹ say air pollution is a trigger for their symptoms which can include a tight chest, coughing and breathlessness.²² Pollution peaks can have wide-ranging effects on these people's quality of life, with a third reporting that they do not leave their homes when air pollution is high, almost half saying air pollution prevented them from exercising outdoors and almost a quarter saying air pollution made them feel low or depressed.²³
36. The government's consultation proposals currently do not include new targets to limit short-term concentrations of PM_{2.5} pollution. At the very least, we urge the Welsh government to commit to a new 24-hour mean alert threshold for PM_{2.5} which aligns with the latest WHO guidelines to ensure that people are informed of the risks posed to their health.

²¹ Chronic obstructive pulmonary disease

²² Asthma and Lung UK, *Alerting the Nation: Improving the way information is used to protect the most vulnerable from air pollution* (2022) p11, available here:

<https://www.blf.org.uk/sites/default/files/Alerting%20the%20Nation%20Report_v4.pdf>

²³ Asthma and Lung UK, *Alerting the Nation: Improving the way information is used to protect the most vulnerable from air pollution* (2022) p9 and p11, available here:

<https://www.blf.org.uk/sites/default/files/Alerting%20the%20Nation%20Report_v4.pdf>

To discuss the points made in this response further, please contact:

Redacted information - regulation 13 - personal data.

Brussels	Beijing	Berlin	London	Warsaw	Madrid	Los Angeles	Luxembourg
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ClientEarth is an environmental law charity, a company limited by guarantee, registered in England and Wales, company number 02863827, registered charity number 1053988, registered office 10 Queen Street Place, London EC4R 1BE, a registered international non-profit organisation in Belgium, ClientEarth AISBL, enterprise number 0714.925.038, a registered company in Germany, ClientEarth gGmbH, HRB 202487 B, a registered non-profit organisation in Luxembourg, ClientEarth ASBL, registered number F11366, a registered foundation in Poland, Fundacja ClientEarth Poland, KRS 0000364218, NIP 701025 4208, a registered 501(c)(3) organisation in the US, ClientEarth US, EIN 81-0722756, a registered subsidiary in China, ClientEarth Beijing Representative Office, Registration No. G1110000MA0095H836. ClientEarth is registered on the EU Transparency register number: 96645517357-19. Our goal is to use the power of the law to develop legal strategies and tools to address environmental issues.