



Response to WG Clean Air Plan consultation

Submission by Natural Resources Wales

Role of Natural Resources Wales

- Our purpose is to ensure that the natural resources of Wales are sustainably maintained, used and enhanced, now and in the future.
- Natural Resources Wales is responsible for regulating industrial (including waste treatment) sites minimising their impact on the surrounding environment including their contribution to air pollution.
- Natural Resources Wales is principal adviser to Welsh Government, adviser to industry and the wider public and voluntary sector, and communicator about issues relating to the environment and its natural resources.
- Natural Resources Wales is committed to supporting local authorities in achieving their responsibilities relating to the attainment of the EU and UK Air Quality Standards / Objectives. We do so by regulating industrial sites in line with the Environmental Permitting Regulations 2016, ensuring that their contribution to air pollution is minimised and does not lead to a breach of these objectives.
- We are also responsible for the production to the State of Natural Resources report every 5 years. This report informs the development of the national Natural Resources Policy as well as individual Area Statements.
- We lead on the development of the Area Statements working with public bodies and other stakeholders across Wales.
- We welcome the development of the Clean Air Plan and the range of initiatives proposed to improve Air Quality in Wales. We look forward to working with Welsh Government (WG) to support the delivery of the plan. Our State of Natural Resources report (SoNaRR) and Area Statements will be used to evidence and encourage action to deliver on air quality improvements across Wales.

1. The Clean Air Plan for Wales: Healthy Air, Healthy Wales - Thematic approach and summary of key commitments

Q1 Does the thematic approach in the Clean Air Plan bring together the key air quality issues in a clear and helpful way?

In general, the thematic approach in the Clean Air Plan helps to bring together the key air quality issues in a clear and helpful way.

However, we would advise that some aspects cut across all themes and the plan would benefit from highlighting these rather than only referring to them within specific sectors of the plan. In particular, the current themes only explicitly link behavioural change to communications in the first theme on 'Improving air quality to protect the health and well-being of current and future generations'. However, behavioural insights will also be beneficial to design and implement appropriate behaviour change interventions for aspects of the other themes such as achieving a modal shift from private vehicles to active travel.

We therefore, suggest that 'behavioural change' should be highlighted within the Clean Air Plan as a cross-cutting theme as behavioural insights can support the delivery of aspects of all the themes.

Similarly, the development of green infrastructure should also be regarded as a cross-cutting theme.

We would also suggest that the effectiveness of the interventions made across all themes is monitored and output used to improve targeted interventions to maximise the benefit.

2. Improving air quality to protect the health and well-being of current and future generations

2.1 Air Pollutants

The information presented in relation to Benzo[α]pyrene (BaP) in the table on p17 of the consultation document needs to be amended to include reference that BaP is a by-product of all combustion processes not just those mentioned. The impact of aerial deposition of BaP on water courses should also be noted. This leads to toxic effects on aquatic biota and accumulation in higher mammals.

2.2. Air pollution and health

Q2 Do you agree enhancing monitoring and assessment capabilities will help to understand and inform action to reduce the impacts of air pollution on health and well-being in Wales? Please provide evidence in support of your views, if possible.

We welcome the provision of additional monitoring and assessment of air quality. This could enable:

- Better informed decisions on issues such as planning and local authority interventions, leading to better protection of vulnerable populations.
- Better source apportionment of the causes of air pollution, allowing targeted action on the primary causes of poor air quality,
- Better understanding on air quality impact and trend due to local and national contributions,
- Improved assessment of exposure of vulnerable populations, enabling actions to be better targeted at those that are at greatest risk of harm. This improved information could be used in the methodology set out in the paper produced by Public Health Wales¹ to aid local air quality planning.

As well as, considering sensitive receptors such as schools and care homes, consideration should also be given to monitoring in green and blue spaces where we are encouraging people and children to visit. This will help improve their mental well-being, connect with nature and become more active.

Q3 Do the commitments and actions for health and well-being address the most important factors for improving air quality and realising health benefits?

We welcome the increased focus on PM_{2.5}, however, there maybe scope to go further than consideration of the existing legal framework. There is a rapidly increasing body of research that allows rigorous synthesis² that links short term exposure to PM_{2.5} with negative health impacts. This requires local monitoring at short temporal resolution using equipment that can demonstrate equivalence to the standard reference method (BS EN 16450:2017 “Ambient air. Automated measuring systems for the measurement of the concentration of particulate matter (PM₁₀; PM_{2.5})”).

In addition to emissions of PM_{2.5}, emissions of other pollutants from permitted sites continue to be a source of concern for members of the public.

We often receive challenges that the existing ambient air quality standards for other pollutants, particularly NO₂, do not reflect the latest health evidence. Some reference is made to this in the section indoor air pollutants; ‘effects occur.....even at levels below air quality standards previously considered to be safe’. In addition, the 2017 LAQM

¹ <https://www.sciencedirect.com/science/article/abs/pii/S1462901119301145>

² <https://www.ncbi.nlm.nih.gov/pubmed/24706041>

guidance makes reference to no safe threshold defined in relation to NO₂ and particulates³.

We would welcome a broadening of the remit of the independent panel of experts beyond standards for particulate matter to provide an authoritative view on current air quality standards across the full range of pollutants. Communication of these considerations, and where appropriate updated targets or limits, could help an increase in public confidence in the management of air quality in Wales. It will be important to us that the new targets and limits are built into legislation so that they become a material consideration in our assessment of permit applications for new developments.

Again, as stated above in response to Q1, the stated commitments and actions do not make explicit the need to utilise specialist behavioural science to understand the human aspects that affect many of the factors for improving air quality and realising health benefits, such as reducing traffic emissions and domestic combustion, including wood burning. Each of these areas will require scientific evidence to understand the specific causes of these behaviours, the associated barriers to change, and the design, testing, and monitoring of interventions in order to maximise the improvements that can be achieved. The use of a behavioural change approach would ensure that the most effective methods are utilised including legislative, fiscal, choice architecture (retaining the consumer's right to choose but nudging them to make certain choices), and communication approaches.

2.2 A fit for purpose legislative and regulatory air quality management framework for Wales

Q4 Are you satisfied the proposals for Local Air Quality Management (LAQM) will result in robust, effective air quality management arrangements?

We recognise that identifying 'hot spot' areas is central to the current LAQM approach. The identification of such areas is heavily reliant on carrying out air quality assessment based on data from a number of single point monitors that may not be located in the 'hot spot' areas. Expert knowledge on monitoring data analysis and modelling associated with weather conditions will be needed to provide a full picture for air quality evaluation and targeted improvement initiatives.

Although we welcome the review of the PM_{2.5} and other air quality legislative limits, as emissions of pollutants from permitted sites continue to be a source of concern, we feel that we need further clarity from WG as to how these limits would be applied in relation to the application of Best Available Technique (BAT) requirement under the Environmental Permitting Regulations 2016 and its inherent requirement to balance cost and benefit.

³ <https://gov.wales/sites/default/files/publications/2019-04/local-air-quality-management-in-wales.pdf>

We, therefore, recommend that a requirement to evaluate the costs and benefits of interventions to achieve the lower limits should be part of the legislative framework.

We note that reference has been made to some of the local authority initiatives to influence public behaviours in terms of travel. Whilst we would support these initiatives, it would be useful to understand whether there has been any assessment of the impact of these initiatives on behaviour change, so that we can learn and build on these initiatives. The factors affecting individual behavioural choices, such as private car use, are multiple and typically require sustained initiatives over a longer period of time to lead to permanent change in behaviours.

We would recommend that behavioural science is used to inform understanding of the causes of behavioural choices, barriers to change, and design of future initiatives as we move forward in reducing air pollution due to aspects such as domestic combustion and individual transport choices.

Q5 Are you satisfied with the proposed approach for Clean Air Zones/Low Emission Zones in Wales?

We are supportive of the introduction of Clean Air Zones and Low Emission Zones in Wales.

If there is a reliance on legislation to deliver outcomes then resource must be provided to the relevant competent authority to enforce the legislation, as any legislative requirement is only effective if it is policed in a proportionate and fair way.

Behavioural change initiatives could be used to complement or potentially replace legislation for some aspects of pollution control within these areas.

2.3 Domestic Combustion

Q6 Do you agree with the proposals for tackling air pollution from domestic combustion?

The proposal within the consultation to set measures to ensure that where wood fuel is burnt in a domestic setting the fuel type / quality and burning process minimises particulate emissions is a good pragmatic approach which we support.

Whilst we endorse the proposals for controlling emissions from domestic combustion any legislative requirement is only effective if it is assessed with regards to compliance and enforced. As mentioned above in the response to Q5, if there is a reliance on legislation to deliver outcomes then resource will need to be provided to appropriately enforce that legislation.

Legislating against all but the “least polluting appliances” or using exempt fuels will not remove the PM_{2.5} burden from domestic combustion, just reduce it. However, we appreciate that domestic wood burning is important in Wales as a source of space heating for a high number of properties, particularly those off the gas grid.

We consider wood fuel to be a sustainable energy source provided it comes from properly managed woodlands, is dry and an untreated waste wood, and is burned cleanly and efficiently to minimise pollution.

To maximise the improvements to air quality that can be achieved through a reduction in domestic burning we would recommend the development of a fully integrated mix of interventions, encompassing fiscal, legislative, and regulatory measures, with an interlinked awareness and information campaign, to achieve behavioural change. We welcome the intention to do more to improve customer awareness schemes but recommend that this should be informed by behavioural science, with the potential to adopt the Randomised Control Trial approach utilised by the UK's Behavioural Science Team to monitor the effectiveness of different messages.

2.4 Smoke Control Areas

Q7 Which aspects of Smoke Control would you like Welsh Government to consider or strengthen?

We welcome the review of controls within a Smoke Control Areas and the proposal to amend legislation to publish online lists of fuels and appliances. We believe that the designation of a Smoke Control Area should be more prescribed and based on a specific set of criteria which includes local measurements and assessment of harmful pollutants rather than just appearance of visible "smoky" plumes.

We question the practical aspects of ensuring compliance, as well as the benefits, of the proposal to expand Smoke Control actions to external appliances. When compared with the volumes of timber burned for space heating external appliances are likely to be used very infrequently and are more likely to cause a local nuisance from particulate emissions rather than have a significant contribution to ambient air quality. There are however likely to be benefits from regulating the quality of fuels available for use in such appliances in Smoke Control Areas.

2.5 Integration of area-specific policies

Q8 Are you satisfied with proposals to deliver a more integrated air quality management approach? If no, please provide evidence to support other alternatives.

We support the proposals to deliver a more integrated air quality management approach.

Our Corporate Plan, the Sustainable Management of Natural Resources (SMNR) principles and State of Natural Resources (SoNaR) reports as well as the soon to be published Area Statements are based on an integrated air quality management approach which we believe will maximise the improvements that can be realised.

These SoNaR report and the Area Statements are key documents in informing the work of the Public Service Boards across Wales.

2.6 Indoor air pollution

Q9 Are there aspects of indoor air pollution, which you would like Welsh Government to address? You may wish to consider what the Welsh Government's top priorities should be for regulating chemicals in articles and products, which may contribute to poor indoor air quality.

Indoor air pollution is not an area of expertise / responsibility for NRW, however we welcome the recognition of the role chemicals regulation has to play in reducing the impacts of indoor air pollution by removing potentially harmful chemicals from the supply chain.

There also needs to be consideration of waste management if people choose to dispose of household items that may affect their indoor air quality. A circular economy has a role to play in the long-term management of issues arising from indoor air pollution.

2.7 A Clean Air Act for Wales

Q10. Do you support the proposals for a Clean Air Act for Wales?

In view of the current focus on AQ from public, media and various organisations, the Welsh Government's proposal for a Clean Air Act is appropriate and we believe that the proposals will help deliver better air quality for Wales. We welcome additional legislative instruments to support our work in protecting our natural resources and people's health.

Q11. Are there additional issues a Clean Air Act should address?

We believe that the Clean Air Act should also include requirements for:

- The evaluation of the effect on air quality of all new developments, both residential and industrial, not simply from the emissions from the development and associated infrastructure but also the potential contribution they make to secondary pollutant formation. This is particularly relevant when considering ammonia from agricultural developments. This approach could help drive technological solutions and ensure that the design of any new development looks to prevent and mitigate its effects on air quality. This approach could be included within relevant Technical Advice Notes (TANs) that support the planning system.
- Air pollutants can adversely affect the resilience of ecosystems, including biological diversity, as well as harm human health and contribute to climate change. These links need to be strongly emphasised in any new Clean Air Act.
- The benefits of green infrastructure could be further enhanced by the development of a legal framework to ensure that where natural resources, such as trees (urban as well as rural) and hedgerows, are impacted by a development they are replaced

by equivalent green infrastructure so that the environmental benefits are not compromised.

- It may be beneficial, in this respect, to extend the Sustainable Management of Natural Resources (SMNR) requirements to all Public Bodies, so that it becomes an inherent part of planning decisions.

Q12. What other legislative or regulatory actions in relation to air quality should we consider to improve people’s lives and community well-being in a sustainable way?

The following approaches in other areas of Europe have been successful in improving Air Quality and therefore are worthy of consideration.

- Scotland’s approach to taking account of air quality at the planning stage may also be applicable in Wales. They are developing a regional model to support local authorities with regards to planning which will enable the cumulative impacts of developments on air quality to be assessed. This aspect is in the National Modelling Framework component of the Scottish Government Cleaner Air for Scotland strategy (CAFS)⁴.
- A number of reports have highlighted the need to regulate emissions from cattle (and provisions for this have been set out in the UK (England Clean Air Strategy) which makes express provision for the regulation of cattle in England by 2020. This may encourage developers of intensive cattle rearing facilities to locate to Wales and in so doing adding to the ammonia levels on air quality in rural areas. The dairy sector and slurry spreading have been identified within the National Atmospheric Emissions Inventory annual reports as being two areas of increasing ammonia emissions. The Netherlands and Denmark have seen significant reductions in ammonia emissions due to legislative control of the dairy industry. These reductions were achieved within both countries with the industry maintaining financial competitiveness.

2.8 Managing air quality in the event of a pollution incident

We welcome the on-going discussions between the two organisations in relation to the use of an external contractor to set up a new emergency air quality monitoring system to gather data and inform the multi-agency advice and response in the event of an incident. In the interim, we still resource the monitoring team from our laboratory in Swansea, on 24/7 standby to assist the Wales Air Quality Cell (WAQC) to respond to incidents.

⁴ <https://www.gov.scot/publications/national-low-emission-framework/>

2.9 Public awareness about airborne pollution

Q13. Citizen science projects to date have focused on work with young people. Are there other age groups or communities would you like to see us work with?

Q14. Which age groups do you think would benefit most from greater understanding of air quality, pollutants, evidence and interpretation, and developing personal awareness and responsibility?

Q15. Are there other approaches or opportunities to develop greater understanding of air quality issues that you think we should explore?

Whilst we are supportive of citizen science projects for their potential to increase awareness and improve knowledge, we would like to emphasise that there has been little evaluation with regards to their effectiveness in changing behaviour. Existing studies of a wide range of environmental citizen science projects has found that there is little evidence of wider, sustained behaviour change. Therefore, we would support further scientific research into identifying whether citizen science projects would lead to appropriate behaviour change in relation to air quality, before committing to supporting in any wider role-out of these initiatives.

We think there is also a role for area statements to communicate and demonstrate (new ways of working) between local communities and partners to understand air quality issues and what they can do in their area.

2.10 Empowering workforces to tackle air pollution

As part of the planned review of the advice to NHS Wales staff document on air pollution, consideration should be given to including the promotion of green infrastructure on publicly owned buildings and grounds and the delivering of nature-based solutions. This has multiple benefits – potential air quality improvement, and access to green space which can improve mental health and potential to increase biodiversity.

We welcome WG plan to assess how this document can be adapted to give the guidance broader appeal and maximise its reach and impact.

Q16. Do the proposed communications work streams provide a suitable focus for air quality communications and behaviour change work?

Q17. Are there features you would like to see included on the Air Quality in Wales website?

Q18. Are there specific communications and behaviour change campaigns you would support?

Although communications can be an integral part of a behavioural change intervention, they are insufficient on their own to influence or deliver sustained behavioural adaptation. Behavioural science advocates the use of insights from social-psychology to understand inherent behavioural factors, such as bias and habits, to inform an intervention mix, which could include attributes of choice architecture, regulation, legislation, incentives, and communications. This type of simultaneous, evidence-based approach is more likely to deliver effective population-level change.

In addition, behaviourally focused communications are more effective when developed using behavioural insights to provide evidence on the most effective messages, followed by a scientific, experimental approach to testing and monitoring response, prior to wider roll-out. The ‘test – learn – adapt’ approach has been developed by the UK’s Behavioural Insights Team, and could be an effective model for air quality communications.

Q19. Are there age groups or communities who could contribute to developing citizen science projects?

Reference should be made to response to Q13 to Q15 above.

In addition we are aware of certain specialist interest groups such as anglers, friends of forests, National Trust, many of the species groups and associated habitats which are affected by air quality and are already collecting data.

Q20. Which age groups would benefit most from developing personal awareness, understanding and responsibility in terms of air quality and pollutants?

We recommend that the focus for increasing awareness, understanding and responsibility should be focused on a range of demographic factors such as age groups, gender, or other isolated characteristics. This could be made more effective by undertaking appropriate research into the socio-demographic, attitudinal and life stage factors that differentiate between different levels of uptake of desired behaviours. We believe that ascertaining the combination of these attributes would allow for the identification of targeted groups that would either benefit most from behavioural interventions, or whose actions would have the greatest impact on reducing air pollution.

Q21. Are there additional approaches or opportunities to develop greater understanding of air quality issues that should be explored?

In terms of behavioural change, it would be useful to distinguish between:

- actions that are aimed at reducing individual or collective contributions to increased air pollution
- actions that are required in response to high levels of air pollution, especially to mitigate the effects on the health and well-being of vulnerable groups

To address many of the challenges associated with the behavioural aspects of air quality in Wales, we would recommend the establishment of a specialist team of behavioural scientists to ensure that interventions are informed by the best available evidence, rigorously monitored, and thereby maximise effective uptake.

2.11 Improving air quality to protect the health and well-being of current and future generations - commitments and actions

Q22. Do the proposed commitments and actions address the issues described in the health and well-being section of the Plan?

Q23. Do you agree the actions will help to reduce the impact of air pollution on health and well-being in Wales?

We are not health professionals, so our comments are predominantly in the context of reduced exposure to air pollution. The proposed measures, if achieved, can reduce the exposure of the public to the common air pollutants. The increased level of air quality monitoring and assessment will help to determine how effective the measures have been in reducing exposure.

Q24. What additional commitments or actions would you propose?

We propose that there should be a periodic review at a frequency appropriate for the measure to ensure that only those that are effective are being pursued. We would welcome a common position on how we manage – particularly through planning and permitting processes – emissions of non-threshold pollutants.

3. Improving air quality to support our natural environment, ecosystems and biodiversity

3.1 The Environment (Wales) Act 2016

3.2 Supporting a Greener Wales and Environmental Growth

Air pollution is adversely affecting the resilience of ecosystems, including biological diversity, in addition to its impact on human health and contribution to climate change. It is suggested that the impacts are more strongly emphasised in the way Welsh Government implements the new Act.

We acknowledge that there have been significant improvements to air quality in the UK although air pollution in the past has caused widespread changes to sensitive ecosystems in Wales. The effects of ammonia and nitrogen deposition and ground-level ozone on ecosystems are still a concern for habitats, species, water quality and soil health because many of the thresholds for protection of ecosystems are exceeded. There are only a few studies which have considered how these effects might be modified under future climatic conditions or what factors control the extent and speed of recovery. This makes it important to understand the impact pathways of airborne pollutants upon human well-being that are mediated by ecosystems, for example how concentrations of atmospheric pollutants and their deposition affects the biophysical functioning or processes of different habitats resulting in effects, positive or negative, on an ecosystem's resilience by altering the condition, diversity and extent. This understanding should be underpinned by a good evidence base, so

monitoring and data analysis should play an important role in fulfilling regulatory commitments. When developing the existing air quality sampling strategy consideration should be given to expanding the sampling objectives to include surveillance of habitats in order to design and implement projects and ways of working that improve ecosystem resilience.

There is little published evidence that addresses how to regulate air quality through nature-based solutions i.e. habitat management interventions, therefore, we believe that the main mechanisms for reducing impact will lay in the land-use sector and should focus on:

- good agricultural practice for stock management and
- measures to reduce the effects of accumulative doses on ecosystem resilience, and

3.3 Intelligent tree and hedge planting supporting air quality improvements

We welcome the inclusion of a plan to develop green infrastructure to contribute towards the reduction of air pollution and minimise climate change impacts. We recognise that planting more trees or shrubs in either urban or rural situations will always contribute towards improving air quality as well as meeting other aims, both social and environmental at the same time. We recognise that this is a well-established aim of the WG Woodlands for Wales strategy although it has not been possible to reach the ambitious targets set to date. We would welcome further opportunities to work with officials to develop strategies, incentives and a legal framework to further encourage the planting of trees and shrubs.

Reference should also be made to the response to Q11 above.

3.4 Evaluating progress with actions under the Natural Resources Policy

Q25. What sorts of nature-based solutions could be promoted to help to reduce human exposure to air pollution?

We believe that nature-based solutions can have an important role to play in improving air quality in targeted areas as well as more generally across the whole of Wales. To work as a solution, nature-based solutions must be looked at in the context of land use and the way different land management practices work together to improve outcomes. This is an area that needs to be strengthened in the draft Plan and associated list of actions so that actions with multiple benefits and beneficial actions that sit within other strategies and workstreams can be realised.

Tree planting is a nature-based solution that could provide many benefits to air quality in Wales through targeted planting in the right locations^{5,6}. It is also an useful tool that can be used in collaboration to mitigate the effects of current or future activities that impact air quality; the benefit of tree planting around intensive poultry and pig units can now be calculated⁷.

Therefore, we would suggest that consideration of tree planting or other land management techniques could be included within the planning system for all new or expanding intensive poultry and pig units.

Q26. How can we speed up the recovery of our biodiversity and ecosystems alongside emission reduction?

We are committed to maintain and enhance the decline in biodiversity to achieve our statutory purpose, namely the sustainable management of natural resources.

Improving nature connectivity through nature-based solutions and integrated land management to deliver multiple benefits (including air quality) are central to our purpose. Air quality improvement cannot be delivered in isolation.

We are keen that NRW and WG should work with land managers to focus on outcomes of land management, such as contributing to air quality improvements, rather than being prescriptive on how the land should be managed. This approach was proposed in the recent Sustainable Farming and our Land consultation document. We believe that this will lead to mutual benefit to both NRW/ WG and the land owner.

The consultation was an entirely new way of looking at land management and how NRW and WG work with land managers e.g. looking at outcomes rather than actions e.g. air quality would be an outcome of the land management rather than be prescriptive adaptive management where landowners get benefit as well as us.

As poor air quality, especially nitrogen pollution, is an increasing driver of biodiversity loss we recommend that a map showing the sensitivity of ecosystems and their constituent species to Nitrogen pollution would be a useful tool to be made available to public bodies and developers. This will enable targeted improvements to be made and enable pathways to be developed between the separate semi-natural ecosystems in Wales. Air pollution affects semi-natural ecosystems around pollution sources, regardless of designations or on-site management, reducing ecosystem resilience and causing loss of many sensitive species.

⁵ <https://www.forestresearch.gov.uk/research/i-tree-eco/i-tree-eco-projects-completed/i-tree-eco-wrexham/>

⁶ <https://www.forestresearch.gov.uk/research/i-tree-eco/i-tree-eco-projects-completed/i-tree-eco-tawe-catchment/>

⁷ <https://www.forestresearch.gov.uk/news/trees-can-help-mitigate-farm-ammonia-emissions/>

Q27. What activities can we emphasise in our environmental growth plan to help tackle air pollution and its impact on ecosystems in Wales?

Investment in green infrastructure and the pursuit of a more circular economy have key roles to play in responding to the climate emergency and the nature crisis. The simultaneous achievement by 2050 of prosperity, net zero greenhouse gas emissions and one planet living requires an environmental growth plan that will tackle air pollution and its adverse impact on ecosystems. Elements of such a plan could consider:

- Renewable energy supported by an extended distribution network.
- Sustainable, regenerative, agriculture.
- Widespread substitution of organic for inorganic raw materials
- Smart regulation augmented by new institutions such as Payments for Ecosystem Services (PES) that provide incentives for land managers to go beyond the regulatory floor.

Through the Welsh Government Woodland Estate, we manage a significant proportion of the woodland ecosystem with the potential to contribute significantly to air quality management. A recent study from Forest Research looking at the value of trees, estimated that 16,211 tonnes of PM₁₀ and 145 tonnes of SO₂ were absorbed by forests in Wales in 2015.

Whilst the proportion of conifer versus broadleaf woodland in Wales is roughly 50:50, the largest values for PM₁₀ and SO₂ absorption are attributed to coniferous woodlands, with higher values in rural areas than in urban areas⁸.

This emphasises the significant contribution that initiatives such as the National Forest and intelligent tree planting could make to improvement in Air Quality

⁸ <https://www.forestresearch.gov.uk/research/valuation-of-welsh-forest-resources/>

3.5 Agriculture and Land Use

We welcome the focus on reviewing the impact of the expansion of the intensive farming poultry units, in particular those of less than 40,000 units that fall outside the legal requirement for an environmental permit, and the opportunity to consider the controls on ammonia emissions from this sector.

We believe that ammonia is a key pollutant both in terms of human health (secondary particulates) as well as its impact on biodiversity in Wales. The impacts of agriculture on biodiversity has been quantified in NRW Evidence Reports^{9,10}.

There is scope that the development of the WG Intensive Agriculture Technical Advice Note (TAN) on managing ammonia emissions could also contribute to a reduction in ammonia emissions from agriculture.

The Clean Air Plan consultation rightly identifies that 88% of those areas designated as sensitive habitats exceed their critical loads for nitrogen deposition. The total UK deposition of nitrogen is currently more or less equally derived from emissions of oxides of nitrogen (NO_x) and ammonia (NH₃). NO_x is derived primarily from transport, industry, power generation and other combustion sources, while NH₃ is produced mainly from agricultural sources. UK and European policies implemented over recent decades have resulted in a considerable reduction in NO_x emissions, with an expected decrease of 55% between 2005 and 2020. However, the consultation shows that in Wales ammonia emissions have increased since 2008.

Therefore, many of the potentially more effective measures that could reduce nitrogen deposition on protected sites are likely to be related to agricultural practices.

We would therefore support the intention to give consideration to legislation and policies to reduce the impact of agricultural ammonia on biodiversity in Wales.

⁹ <https://cdn.naturalresources.wales/media/686008/eng-report-218-powys-poultry-pilot-study.pdf>

¹⁰ <https://cdn.naturalresources.wales/media/689206/nrw-evidence-report-no-298-lichen-surveys-to-investigate-ammonia-impacts.pdf>

3.6 The Code of Good Agricultural Practice (CoGAP)

We suggest that in order to maximise air quality benefit WG should consider exploring whether it would be feasible to make some of the aspects of the CoGAP mandatory, for example covering of slurry stores.

3.7 Welsh Government Rural Communities – Rural Development Programme for Wales 2014-2020

3.8 Sustainable Farming and our Land Consultation

3.9 Improving air quality to support our natural environment, ecosystems and biodiversity – commitments and actions

Q28. Do the proposed commitments and actions address the issues described in natural environment, ecosystems and biodiversity section of the Plan?

We believe that the proposed commitments and actions will make a significant contribution towards addressing some of the issues described in the natural environment, ecosystems and biodiversity section of the plan.

Many of the actions identified to reduce ammonia in the agriculture sector are already being looked at through the design of the domestic policy to replace the Common Agricultural Policy. Identifying, embedding and reinforcing the added value benefits between air quality and the work being undertaken within all these workstreams can maximise benefits.

Whilst the actions listed in the draft Plan are extensive in relation to agriculture, the focus on a sector-based approach means that opportunities inherent from integrated land management are not explored as extensively and opportunities may be missed.

Whilst the text acknowledges the importance of trees, it is contradictory in terms of the statement on p83 that the Air Quality Expert Group have concluded vegetation and trees in particular are regarded as beneficial for air quality but they are not a solution to the air quality problems at a city scale, and the one action in the table which talks about encouraging the use of specialist tools by planners and developers to quantify the “structure and environmental effects of urban trees and calculate their value to society, in order to use them more creatively in green infrastructure in and around urban areas to provide a range of benefits, including intercepting air pollution”.

The action table could highlight more actions linked to tree planting for both targeted actions in areas with specific air quality problems but also as a general tool for use across Wales in relation to ambient issues¹¹.

Of note is Welsh Government's proposed National Forest, a key theme of which is targeted, purposeful planting that delivers the right tree in the right place. Also, as previously mentioned, linkages to tree planting that come from the policy currently under development that will replace CAP. Tree planting has been identified as a key land use that, when integrated across the landscape where appropriate, can provide outcomes of multiple benefit including air quality.

Air quality options and scenarios should link into the Environment and Rural Affairs Monitoring and Modelling Programme (ERAMMP) evidence pack that is being prepared to inform both the National Forest proposals and the design of the new Sustainable Farming Scheme.

A firmer legislative framework rather than good practice guide may lead to an increase in the take up of good practice, however, we recognise that there would be several challenges in setting up the framework to ensure compliance.

Behavioural change campaigns could also play a part here.

Q29. Do you agree the actions will help to reduce the impact of air pollution on natural environment, ecosystems and biodiversity in Wales?

We believe that if the proposals are adopted then the agreed actions will lead to a reduction in impact on the natural environment, ecosystems and biodiversity.

Q30. What additional commitments or actions would you propose?

Improving outcomes such as air quality through integrated land management practices is a key aspect of our remit to deliver SMNR and we would welcome all opportunities to work with officials on this strategy to help deliver both the outcomes the plant identifies, and potential new areas for exploration highlighted in this response.

In looking to deliver outcomes for any ecosystem service, collaborative action is key to deliver long-term sustainable solutions. Ultimately, it is the people that live and work in the landscape that need to work with NRW and Welsh Government to make actions a reality.

To deliver SMNR, we, in response to Welsh Governments' Sustainable Farming and Our Land consultation, laid out a vision for delivering sustainable land management via five themes: formal regulation, advice and guidance, voluntary initiatives, innovation and incentives. It is through developing and delivering

¹¹ <https://www.forestresearch.gov.uk/research/i-tree-eco/i-tree-eco-projects-completed/i-tree-eco-cardiff/>

appropriate tools within these five themes that ecosystem services, such as air quality can be delivered in Wales.

We would welcome working with officials on the design and delivery of air quality improvements through land management routes in order to better understand how this vision can be maximised to deliver mutually beneficial outcomes.

A comprehensive living landscape style data set used in the right way would provide up to date information on existing land cover and indicators of condition¹².

As part of our Area Statement work we have mapped a series of priorities from the WG Natural Resources Policy, including where planting in urban areas could help with air and noise pollution, across Wales.

We recommend that consideration is made for further investment to develop a comprehensive land use data set in order to inform identification of land use opportunities that would contribute to improvements in air quality.

We currently regulate larger pig and poultry farms under the Environmental Permitting Regulations. We would be happy to support consideration of opportunities to revise legislation and associated guidance to improve farming practices within our regulated sites to minimise ammonia emissions. We believe that consideration should also be given to extending the requirements of the environmental permitting regulations to a wider range of livestock, in particular, cattle.

In addition, we suggest that the land based economy is one of the areas most effected by EU Exit. Changes wrought by that process will present both opportunities and challenges to the way industries such as agriculture and forestry evolve in Wales in the future as well as our ability to use land management practices as a route to deliver beneficial outcome such as air quality improvement.

4 Improving air quality to support a prosperous Wales

4.1 Industrial Air Pollution

Q31. On which sectors, processes or areas should we focus our action to reduce public exposure to industrial emissions to air pollution?

The industrial sectors that make the largest contribution to air pollution in Wales are the Iron and Steel and the Oil and Gas sectors. Historically, we have concentrated on the use of abatement to reduce the impact of industrial sites on ambient air quality and to ensure the requirements of the Industrial Emissions Directive and air quality legislation is met.

Moving forward, to maximise further improvements to air quality, health and wellbeing, we may need to take a more holistic approach. For example, it may be

¹² <https://wales.livingearth.online/>

more beneficial in some areas for industrial expenditure to be targeted at initiatives to create green space or establish active travel infrastructure rather than installing abatement equipment in areas, depending on what will give the most additional benefits to the health and wellbeing of those living in the locality.

Q32. Are there any specific legislative changes you think we should consider in order to tackle industrial emissions to air?

Extending the SMNR duty to all public bodies in Wales will help ensure new industry is designed and located in the appropriate place to minimise their environmental impact. Consideration could also be given in the future, to developing a Wales specific industrial regulatory regime that has an outcome focused rather than site focused target, which would enable investment from industry to achieve the best environmental gain.

There may also be opportunity to assess our approach to what is considered best available techniques for industrial units, potentially evaluating the emissions produced in the context of the output rather than simply as a concentration measurement. For example, some types of power stations may have a higher mass release of NO_x but when this is considered in terms of energy output, then the NO_x production may be lower per unit of energy produced.

Q33. Are there any specific actions or measures with which we can encourage investment by industry to reduce air pollution?

There are synergies between energy usage and air pollution as well as decarbonisation initiatives. Industry could be encouraged to maximise energy efficiency and maximise their use of green energy in order to reduce their overall impact on air quality.

Consideration should be given within the planning system to co-location of potentially symbiotic industry to maximise the potential for waste energy and gas from a given site to be utilised by another.

Q34. Are there any novel or emerging approaches to reducing emissions to air from industry that you think we should consider?

We would recommend that consideration is given to:

- use of hydrogen as a fuel
- use of industrial waste gases as feedstock to produce hydrocarbon polymers
- sequestration of carbon dioxide to produce limestone.

There are many established techniques that can be scaled up to an industrial scale providing the policy and regulatory framework is clear.

Q35. Do you think generators used for research and development should be treated differently in terms of emission controls?

We would recommend that the assessment of the impact that the generators may have on the surrounding environment is taken into consideration before alternative emission controls are agreed.

4.2 Economic Development

4.3 Waste

We acknowledge the reference to our role in the regulation of the landfill sector and confirm that landfill gas capture is a key regulatory priority for the sector.

We note the omission of reference to Anaerobic Digestion (AD) facilities within the Clean Air Plan. These facilities are key in diverting bio-degradable waste from landfill. AD facilities may also help in the management of diffuse agricultural pollution, so reducing the impact of nutrients on biodiversity and waterways.

AD is a source of renewable fuel, heat or energy and produces a solid organic output that can replace virgin sources of soil improvers and fertilisers. However, the process and the storage and use of the digestate can contribute to ammonia emissions.

The National Atmospheric Emissions Inventory (2018) estimates the contribution from AD to UKs ammonia emissions at around 3%. This estimate is based on the assumption that all digestate stores are covered. In practice, this is not the case and hence the contribution may, in fact, be higher.

We support the aims to move towards a more circular economy by putting mechanisms and drivers in place to encourage prevention and re-use of waste to keep resources in service for as long as possible. Keeping products and resources in use for as long as possible requires them to be of a high enough quality and handled appropriately which can lead to the creation of enduring and high-quality business opportunities and jobs which support enterprise and promotion of the circular economy and green growth.

4.4 Improving air quality to support a prosperous Wales - commitments and actions

Q36. Do the proposed commitments and actions address the issues described in the prosperous Wales section of the Plan?

We believe that the proposed commitments and actions will make a significant contribution towards addressing the issues described in the prosperous Wales section of the plan.

See previous comments within this section.

5 Improving air quality to support sustainable places

5.1 Planning policy supporting air quality improvements

5.2 The National Infrastructure Commission for Wales

Q37. Should air quality issues be referenced in the remit of NICW?

We believe that there would be an advantage of air quality to be referenced in the remit of NICW. There would need to be clear guidelines on how the Commission would work with others to deliver the aspects of the Clean Air Plan.

5.3 Transport

Q38. Are there other air quality matters relating to transport which Welsh Government should consider or review?

We have no role that relates to air quality and transport.

Welsh National Marine Plan

We welcome recognition of the Welsh National Marine Plan (WNMP), adopted in November 2019, as a framework that can help to contribute to improving air quality to support sustainable places, with respect to developments at sea, through its general cross-cutting policies:

- **SOC_10: Minimising climate change:** Proposals should demonstrate how they, in order of preference: avoid, minimise and / or mitigate the emission of greenhouse gases; and
- **ENV_06: Air and Water Quality:** Proposals should demonstrate that they have considered their potential air and water quality impacts and should, in order of preference: avoid, minimise and / or mitigate adverse impacts.

We are committed to supporting implementation of all the WNMP policies through our regulatory (e.g. marine licensing) and advisory functions in support of WG's

vision for clean, healthy, safe, productive and biologically diverse seas. WG's vision recognises the strong contribution the Welsh marine area can make to energy security and climate change emissions targets through the responsible deployment of low carbon technologies.

5.4 Improving air quality to support sustainable places – commitments and actions

Q39. Do the proposed commitments and actions address the issues described in the Plan?

The proposed actions set out on p111 -113 of the consultation document have the potential to help address the identified issues. However, we consider that the Plan should also include a monitoring framework to assess the effectiveness of the proposed measures.

Additionally, the requirement for local planning authorities to undertake Green Infrastructure (GI) Assessments presents an opportunity to explore the feasibility of what evidence can usefully be made available to planning authorities so that they can develop policies which target improving appropriate GI provision within residential and office areas which may be in close proximity to areas of poor air quality or experiencing high noise levels.

Q40. Do you agree the actions will help to reduce the impact of air pollution to support sustainable places in Wales?

We believe that the actions set out on p111 - 113 of the consultation document will contribute towards reducing the impact of air pollution to support sustainable places in Wales.

Q41. What additional commitments or actions would you propose?

We have no additional commitment or actions to propose relating to this part of the plan.

6 Welsh Language

Q42. We would like to know your views on the effects the *Clean Air Plan* will have on the Welsh language, specifically on:

- a. opportunities for people to use Welsh; and
- b. treating the Welsh language no less favourably than the English language.

Q43. What effects do you think there would be? How could the positive effects be increased, or negative effects be mitigated?

Q44. Please also explain how you believe the proposed Plan could be formulated or changed so as to have:

- a. positive effects or increased positive effects on opportunities for people to use the Welsh language and on treating the Welsh language no less favourably than the English language

b. no adverse effects on opportunities for people to use the Welsh language and on treating the Welsh language no less favourably than the English language.

We do not believe that the aims and objectives of the Clean Air Plan will have a direct impact on opportunities for people to use the Welsh language or treat the Welsh language less favourably than the English language.

All forms of communication in Welsh need to be in “Cymraeg Clir” (Clear Welsh). This will help ensure that the Welsh and English languages are treated equally at all times and help Welsh Government and those working with them to build trust with those they wish to influence to improve air quality in Wales for the future.