



Welsh Government

The Clean Air Plan for Wales

Healthy Air, Healthy Wales

Date of issue: 10 December 2019

Action required: Responses by 10 March 2020

Overview

This twelve week consultation seeks views on the Welsh Government's Clean Air Plan for Wales: Healthy Air: Healthy Wales. This plan sets out our policy direction and proposed actions to reduce air pollution to support improvements in public health and our natural environment.

How to respond

You can respond to this consultation by answering the questions on the form available at www.gov.wales/consultations.

We are planning to run some events during the consultation period to capture views on the issues and ideas presented in this document. Details of the events will be available at www.gov.wales/consultations.

Further information and related documents

This document is available at www.gov.wales/consultations.

Large print, Braille and alternative language versions of this document are available on request.

Contact details

For further information:

Address:

Air Quality Policy Team
Environment and Communities Division
Welsh Government
3rd Floor
Cathays Park
Cardiff
CF10 3NQ

Email: AirQualityPolicy@Gov.Wales

General Data Protection Regulation (GDPR)

The Welsh Government will be data controller for any personal data you provide as part of your response to the consultation. Welsh Ministers have statutory powers they will rely on to process this personal data which will enable them to make informed decisions about how they exercise their public functions. Any response you send us will be seen in full by Welsh Government staff dealing with the issues which this consultation is about or planning future consultations. Where the Welsh Government undertakes further analysis of consultation responses then this work may be commissioned to be carried out by an accredited third party (e.g. a research organisation or a consultancy company). Any such work will only be undertaken under contract. Welsh Government's standard terms and conditions for such contracts set out strict requirements for the processing and safekeeping of personal data. In order to show that the consultation was carried out properly, the Welsh Government intends to publish a summary of the responses to this document. We may also publish responses in full. Normally, the name and address (or part of the address) of the person or organisation who sent the response are published with the response. If you do not want your name or address published, please tell us this in writing when you send your response. We will then redact them before publishing.

You should also be aware of our responsibilities under Freedom of Information legislation. If your details are published as part of the consultation response then these published reports will be retained indefinitely. Any of your data held otherwise by Welsh Government will be kept for no more than three years.

Your rights

Under the data protection legislation, you have the right:

- to be informed of the personal data held about you and to access it
- to require us to rectify inaccuracies in that data
- to (in certain circumstances) object to or restrict processing
- for (in certain circumstances) your data to be 'erased'
- to (in certain circumstances) data portability
- to lodge a complaint with the Information Commissioner's Office (ICO) who is our independent regulator for data protection.

For further details about the information the Welsh Government holds and its use, or if you want to exercise your rights under the GDPR, please see contact details below:
Data Protection Officer:
Welsh Government
Cathays Park
CARDIFF
CF10 3NQ

e-mail:
Data.ProtectionOfficer@gov.wales

The contact details for the Information Commissioner's Office are:
Wycliffe House
Water Lane
Wilmslow
Cheshire
SK9 5AF

Tel: 01625 545 745 or
0303 123 1113

Website:
<https://ico.org.uk/>

Contents

Clean Air Plan for Wales: Healthy Air, Healthy Wales	7
Foreword	7
Executive Summary	8
Introduction.....	10
Our air pollution challenge	11
What are the main air pollutants?	14
Air pollutants	15
Legislation and Guidance supporting Air Quality Improvements	19
European Legislation	19
The National Emission Ceilings Directive (NECD)	20
Noise Pollution and Soundscape	22
Domestic Legislation.....	24
How the Clean Air Plan for Wales will deliver Welsh Government Priorities and Principles	26
Supporting delivery of our well-being goals	26
Well-being Goals and air quality	28
Five Ways of Working	31
Improving air quality for future generations	32
Prosperity for All	33
Air Quality and Climate Change	34
Prosperity for All: A Low Carbon Wales	35
Scope of the Clean Air Plan for Wales	36
The Clean Air Plan for Wales: Health Air, Healthy Wales - Thematic approach and summary of key commitments	38
Improving air quality to protect the health and well-being of current and future generations.....	40
Air pollution and health	40
Assessing Air Quality in Wales: a prevention focused approach	43
New targets to reduce exposure to particulate matter	45
A fit for purpose legislative and regulatory air quality management framework for Wales.....	50
Local Air Quality Management (LAQM)	50
Designation of Clean Air Zones/Low Emission Zones	53
Domestic Combustion	54
Smoke Control Areas	57
Integration of area-specific policies	60

Indoor air pollution.....	61
A Clean Air Act for Wales	63
Public awareness about airborne pollution	65
Empowering workforces to tackle air pollution	71
Improving air quality to protect the health and well-being of current and future generations - commitments and actions	73
Integration of area-specific policies	76
Improving air quality to support our natural environment, ecosystems and biodiversity	78
The Environment (Wales) Act 2016	78
Supporting a Greener Wales and Environmental Growth	83
Intelligent tree and hedge planting supporting air quality improvements	83
Agriculture and Land Use	86
Intensive farming and cumulative impacts of agricultural activities.....	86
Ammonia (NH ₃) emissions from Agriculture in Wales	86
The Code of Good Agricultural Practice (CoGAP).....	89
Welsh Government Rural Communities – Rural Development Programme for Wales 2014-2020	89
Sustainable Farming and our Land Consultation.....	90
Improving air quality to support our natural environment, ecosystems and biodiversity – commitments and actions	91
Improving air quality to support a prosperous Wales	93
Industrial Air Pollution	93
Economic Development	95
Waste	95
Improving air quality to support a prosperous Wales - commitments and actions	97
Improving air quality to support sustainable places	99
Planning policy supporting air quality improvements	99
The National Infrastructure Commission for Wales	101
Transport	101
Wales Transport Strategy	102
Promoting the shift from the private motor vehicle to active travel and public transport.....	103
Active Travel	103
Public Transport	104
Bus and Taxi	104
Rail.....	105

Ultra-low emission vehicles	106
Tackling roadside nitrogen dioxide concentrations in Wales	107
Aviation	109
Welsh National Marine Plan	109
Improving air quality to support sustainable places – commitments and actions	111
Annex A: The national air quality monitoring networks operating in Wales	114
Annex B: Legislation, Policies and Guidance	116
Annex C: Glossary	118
Welsh Government Consultation Response Form	120

Clean Air Plan for Wales: Healthy Air, Healthy Wales

Foreword

Air pollution is the largest environmental risk to health. There is strong evidence linking it with poor health and well-being outcomes such as heart and lung diseases, as well as adverse environmental impacts.

In Wales, whilst we can be proud to have areas where air quality is amongst the best in the UK, we know problems persist. Tackling these and preventing new ones occurring is a Welsh Government priority. Recognising air pollution is everyone's business, we can all play a part in cleaning our air. Doing so can deliver multiple health, biodiversity, environment, social, travel, prosperity and climate benefits for our current and future generations.

This is the Welsh Government's first Plan setting our commitment and long-term ambitions to improve air quality. It specifies a connected suite of policies and actions, which, across different thematic areas, will make positive differences to our health and well-being, natural environment, ecosystems and biodiversity, vibrant, sustainable and fair communities, and national prosperity. These include crucial developments such as monitoring, risk assessment and communication improvements, behaviour change interventions, local and national air quality management regime enhancement, and setting new health-based exposure standards. There is also the exciting prospect of a Clean Air Act for Wales.

As you work through this Plan, you will become aware not all policies and actions referred to are new. There are significant overlaps with other key Welsh Government work, some aspects of air quality management and improvement work are already well underway, for example, encouraging and supporting active travel (walking and cycling) and making better use of more sustainable transport modes, is a priority which straddles health, transport, planning and decarbonisation strategies and plans. Recognising these cross-sector interactions allows us to maximise impacts while making the most effective and efficient use of available resources.

The path ahead to clean air in Wales poses challenges along with some really exciting development opportunities. We need strong commitment, leadership and drive to make good progress in implementing this Plan and we look forward to our partners and the public working with Welsh Government to rise to deliver.

Together, we have an opportunity to work towards improving air quality throughout the country for us, for our children and for future generations.



Lesley Griffiths, Minister for Environment, Energy and Rural Affairs

Executive Summary

The aim of the Clean Air Plan for Wales is to improve air quality and in doing so reduce the burden of poor air quality on human health, biodiversity and the natural environment in Wales, and contribute to improved air quality in the UK and Europe.

Prosperity for All, our National Strategy commits us to building healthier communities and better environments. Clean air has a central role in creating the right conditions for better health, well-being and greater physical activity in Wales. This is reflected through a commitment to reducing emissions and delivering vital improvements in air quality through planning, infrastructure, regulation, and health communication measures.

Our first Clean Air Plan for Wales brings together work across many Government departments and public sector organisations. This plan includes ambitions to meet and where possible exceed requirements set down in UK and international guidance and legislation. This can only be achieved through collaborative endeavour between Welsh Government, public and private sector organisations, communities of interest and most importantly, individuals' personal commitment.

There are dynamic tensions to manage between energy demands, shifts to cleaner power sources, the industrial processes and agricultural practices that support our economy and the need to reduce emissions. This plan addresses these issues with the intention of delivering a sustainable framework for the future, within which further and increasingly rigorous and challenging targets and commitments can be developed.

Delivering a sustainable approach to improving air quality requires taking stock of the current evidence, legislative frameworks and actions already in train. Air pollution, decarbonisation, mobility and climate change are strongly interlinked. There are a wide range of legislative and regulatory powers which require review to ensure their continued effectiveness. The responsibilities and sanctions that govern enforcement need to be considered as part of this work. The results must provide a sound basis for future policy, planning and delivering change.

This Clean Air Plan:

- provides context about what we mean by clean air, current air quality management frameworks in Wales and the challenges we face;
- sets out how we will work collaboratively across sectors, taking action to reduce air pollution to improve public health, biodiversity and the natural environment;
- explains how air quality policy aligns with wider Welsh Government policy and the priorities and principles we will apply in delivering the Plan; and
- demonstrates how we act in accordance with the sustainable development principle and support the Well-being goals enshrined in our Well-Being of Future Generations and Environment Acts;
- demonstrates how we act in accordance The United Nations Convention on the Rights of the Child;

- includes information about the complex links and inter-relationship between decarbonisation and improving air quality;
- brings together existing commitments with new actions to address air quality improvement.

The Plan is focused on airborne pollution, its impact on the public health, the natural environment and well-being in Wales, and the action being taken to provide long-term, sustainable improvements.

The Plan uses a thematic approach to address broad areas of impact, where work across organisations and themes can better address problems and build collaborative approaches to future action. The themes complement each other and interact to create a sustainable approach to improving air quality, integrated with other policy and legislation. The themes are:

- **Improving air quality to protect the health and well-being of current and future generations**
- **Improving air quality to support our natural environment, ecosystems and biodiversity**
- **Improving air quality to support a prosperous Wales**
- **Improving air quality to support sustainable places**

Each theme in the Clean Air Plan is supported by a chapter and associated actions. The timescales for delivering actions are framed within the current Assembly (to 2021) and next Assembly period (2021-26) and the future from 2026 onward.



Introduction

Clean air is essential for a healthy life, environment and economy. Air pollution results from the way we currently generate power, heat our homes, produce food, manufacture consumer goods and power transport. Air pollution is a local, regional, national and international problem caused by emissions, which either directly or through chemical reactions in the atmosphere, lead to negative impacts on human health, ecosystems and the economy.

Outdoor air quality in the UK has, on the whole, improved steadily over recent decades. This has been largely due to controls on emissions of pollutants from power stations, industry, including agriculture, transport and domestic sources. However, problems persist and air pollution remains the largest environmental risk to the public's health in the UK with:

- estimates of an equivalent of between 28,000 and 36,000 UK deaths each year attributed to human-made air pollution; in Wales, the mortality burden is in an equivalent range between 1,000 and 1,400 deaths;
- a close association with cardiovascular and respiratory disease including lung cancer, and emerging evidence that other organs may also be affected, with possible association to dementia, low birth weight and diabetes;
- some people being more vulnerable because of exposure to higher air pollution concentrations where they live, work or travel; and others being more susceptible (because of a reduced ability to cope with and adapt to exposure) as a result of factors such as age and existing co-morbidities linked with wider socio-economic factors and health determinants;
- children are particularly vulnerable to the effects of air pollution. Exposure in early life can have a long-lasting effect. There is evidence the process of normal lung function growth in children is suppressed by long-term exposure to air pollution. Throughout childhood, there is a natural development of lung function and maximising this is important, as low lung function leads to less reserve if lung disease develops¹.

The sources of outdoor air pollution are well known. They include transport and the fuels used for transport, particularly road vehicles but also trains, shipping and aircraft. They also include industry, agriculture and emissions from our homes and businesses.

Air pollution carries severe social costs and risks adverse effects on economic growth, through its impact on the health and therefore the productivity of people of working age. There are knock-on effects to the economy through time off work and costs to the health service.

The interventions, which have the greatest impact on reducing harm to people's health, are those, which reduce air pollution at source. These are the focus of action throughout our Clean Air Plan. There are also opportunities for individuals to reduce their personal exposure.

¹ Review of interventions to improve outdoor air quality and public health, Public Health England © Crown copyright 2019

Air pollution also adversely affects wildlife. It has caused widespread changes to species distribution and to the quality of habitats in the UK. It is a threat to the conservation status of many habitats listed under the Habitats Directive and Section 7 of the Environment Act (Wales) Act 2016. It contributes to local ozone production, which damages agricultural crops, forests and plants.

There is a clear need to take action in Wales given the ever expanding knowledge of the harmful effects from air pollution on people's health and the natural environment. We need to encourage innovation and development and support the uptake of cleaner technologies and behaviours.

Air pollution is one of the most complex challenges we face. It does not follow local, regional or national boundaries. Actions required to improve air quality require a multifaceted approach. In this Plan, we demonstrate how we will build on existing actions and develop new measures to reduce air pollution.

To secure necessary improvements in air quality, all parts of society have a role to play, through changes in behaviours at home, when travelling, at work and at leisure. The impacts and benefits fall across all sectors. Funds and resources to support and focus on air quality improvements will in many cases be costly and some measures proposed (e.g. speed limits, traffic restrictions) have already been proven unpopular, despite the benefits.

Forecasts for the public finances are particularly uncertain at present, as outcomes will depend heavily on both the future performance of the economy in the context of decisions to be made about Brexit and on the budgetary choices of an incoming UK Government. Analysis by the independent Office for Budget Responsibility has indicated that, over the long run, the fiscal prospects of the UK, and therefore also of Wales, are likely to remain challenging with major spending pressures and risks to revenues.

Our air pollution challenge

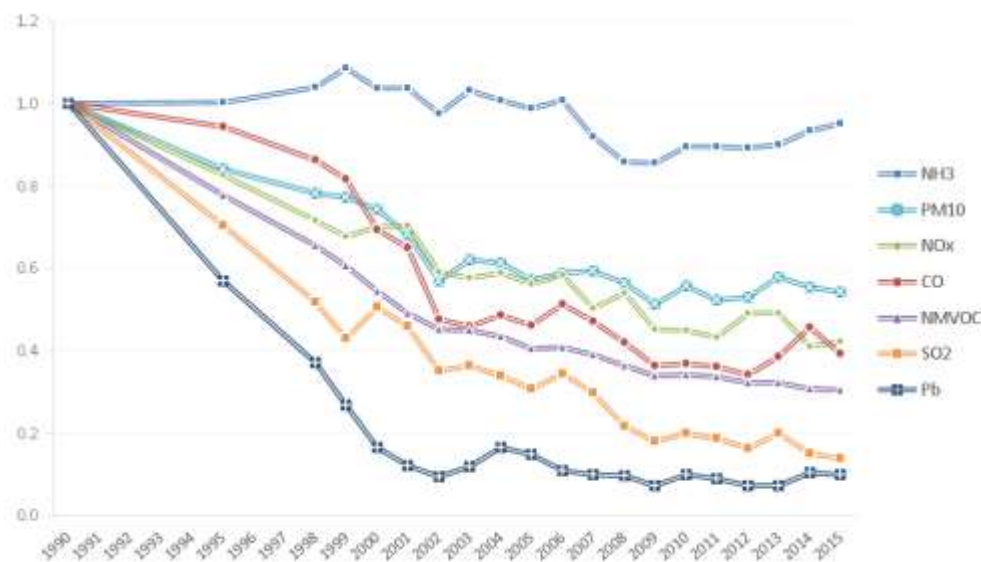
The term 'air quality' can be defined as a measurement of harmful airborne substances, with the lowest measurements representing the cleanest air. 'Air pollution' can be thought of as the contamination of the atmosphere by any chemical, physical or biological substance that changes the natural characteristics of the atmosphere i.e. the release of both man-made and natural substances into the air.

In the last century many UK cities suffered from 'smog'. The great smog of 1952 caused over 10,000 deaths in London from a blanket of pollution generated primarily by coal burning. This triggered the first legislation in relation to air pollution; the Clean Air Act 1956, which banned emissions of black smoke. Further legislation followed in 1968, and both pieces of legislation were consolidated by the Clean Air Act 1993, with controls on industrial, domestic and transport emissions, resulting in significant improvements in air quality.

There is a social, environmental, health, moral and political imperative to achieve the best possible air quality and to seek long lasting and sustainable solutions to ensuring the best possible air quality for ourselves and for future generations. The World Health

Organisation (WHO) has described air pollution as the world's largest single environmental health risk, causing up to 7 million premature deaths every year and , contributing to acidification of soil and surface water, eutrophication² in sensitive habitats and can damage vegetation through exposure to ozone.

There has been a long-term decline in the emissions of key air pollutants since 1970. Improvements have been driven largely by controls on emissions of pollutants from industry including energy, agriculture, transport and domestic sources (see graph below).



Air Pollutant Inventories for England, Scotland, Wales, and Northern Ireland: 1990-2016

Emissions of lead show a higher rate of reduction from 1990 to 2000 coincident with the phase-out of leaded petrol by the end of 1999. Ammonia (NH₃) emissions, by contrast, have declined at a much slower rate than other pollutants, even showing a slight increase in emissions in recent years.

Reductions in sulphur dioxide (SO₂) since 2006 are due, primarily, to the retro-fitting of flue gas desulphurisation and the co-firing of biomass at power stations, with the increase in 2013 due in part to increases in generation and hence the amount of fuel consumed. Many pollutant trends in Wales are also influenced by the combustion and process emission sources linked to the iron and steel industry.

The relationship between air pollutant emissions and ambient air quality concentrations is not straightforward as they are, for example, strongly affected by weather patterns and chemical reactions in the atmosphere. Total volumes of emissions in Wales and neighbouring countries contribute to background concentration levels. High levels of emissions from specific sources, for example vehicle emissions along busy roads, domestic solid fuel burning and industrial combustion, can raise concentrations in excess of background levels in or near the source locations. It is important to consider both emissions and concentrations in tackling the associated effects on public and environmental health.

² "Excessive richness of nutrients in a lake or other body of water, frequently due to run-off from the land, which causes a dense growth of plant life".

Long term exposure to the lower levels of pollution in today's atmosphere remains one of the biggest public health challenges, shortening lifespans and damaging the quality of life of many. We recognise more needs to be done to reduce the harmful effects of air pollution in areas where it remains an issue and the importance of evidence to underpin preventative action and mitigation.

Welsh Government is supported by UK evidence for reporting to the EU. We are committed to developing further evidence of sufficient local detail to enable a clear understanding of the degree of issues in Wales and their root causes. Improved Welsh evidence will enhance our understanding of air pollution in Wales to support the development of policy and to drive improvements in air quality where they are needed the most. We will continue to work with our partners across the UK and Wales to develop the assessment of air quality in Wales, including monitoring and modelling, to track the progress of improvement over time.

What are the main air pollutants?

Air pollutants are emitted from man-made and natural sources. They may be emitted directly (primary pollutants) or formed in the atmosphere (secondary pollutants), when primary pollutants undergo chemical changes.

Several key factors have to be considered in assessing the risk posed by air pollution. The degree of harm caused by a pollutant depends on the amount emitted, whether its emission is localised and concentrated or dispersed over a large area, its toxicity and the sensitivity of the environment and the exposed population.

Europe's most serious pollutants in terms of harm to human health are particulate matter (PM), nitrogen oxides (NO_x) including Nitrogen Dioxide (NO₂) and ground-level ozone (O₃)³.

The most harmful air pollutants in terms of damage to European ecosystems are ground-level O₃, ammonia (NH₃) and NO_x.

In Wales, several air pollutants either actually or potentially breach legislative limits:

- NO₂ national and European ambient air limit exceedances are a widespread issue, largely due to emissions from transport;
- exceedances of the European ambient air limit for particulate matter (fine dust), known as PM₁₀ continues to be a risk in Port Talbot;
- in Pontardawe, levels of Nickel (Ni) from industrial processing exceed European targets;
- levels of benzo[a]pyrene (B[a]P) exceed European targets. Sources are mainly industry and domestic solid fuel burning;
- levels of ground level O₃ exceed long-term European objectives.

³ Air Quality in Europe — 2017 report, European Environment Agency

Air pollutants

Particulate matter	
<p>Particulate matter is the term for a mixture of solid particles and liquid droplets found in the air. PM can be emitted directly from a source (primary PM), whereas PM can also form in the atmosphere due to chemical reactions between pollutant gases (secondary PM). PM covers many chemicals including wood ash, diesel exhaust, brake dust and ultra-fine sand particles.</p> <p>PM is classified by size, for example PM₁₀ (inhalable particles ≤10µm diameter) and PM_{2.5} (inhalable, finer, particles ≤2.5µm diameter). PM is not a single pollutant; it can consist of a variety of chemicals. Both PM and the gases that form it can travel large distances, with impacts occurring far from the original source. Concentrations of PM are a particular concern because of established links with health impacts, although the mechanisms and the relative toxicity of different components of the particulate matter are not yet clearly understood.</p>	
<p>Potential sources include:</p> <ul style="list-style-type: none"> • Domestic coal and wood burning • Road transport (exhaust emissions and tyre and brake wear) • Power stations • Industrial processes • Natural sources include wind-blown dust, sea salt, pollens and soil particles. <p>Secondary PM is formed from precursor gases such as NO_x, NH₃ and SO₂.</p>	<p>Effects on health:</p> <ul style="list-style-type: none"> • fine particles can travel deep into the lungs • links with a range of effects, including respiratory and cardiovascular illness and mortality • no threshold has been identified below which no adverse health effects occur <p>Effects on the environment:</p> <ul style="list-style-type: none"> • emissions of black carbon (soot) from incomplete combustion are associated with effects on climate change
Nitrogen Oxides	
<p>Nitrogen Oxides (NO_x) comprise nitric oxide (NO) and nitrogen dioxide (NO₂). It is a precursor pollutant for ground level O₃.</p> <p>Emissions of NO_x are a mixture of NO and NO₂; but chemistry in the atmosphere increases the proportion as NO₂.</p>	
<p>Potential sources include:</p> <ul style="list-style-type: none"> • Combustion e.g. sources include power generation, industrial combustion and road transport • Transport is now the largest source of NO_x in Wales, predominantly due to emissions from road transport, accounting for approximately one third of emissions 	<p>Effects on health:</p> <ul style="list-style-type: none"> • Short-term exposure to NO₂ can cause inflammation of the airways • NO₂ can also increase susceptibility to respiratory infections and to allergens • Difficult to identify the direct health effects of NO₂ because it is emitted from the same sources as other pollutants such as particulate matter (PM)

	<ul style="list-style-type: none"> Long-term exposure to NO₂ is associated with mortality and morbidity <p>Effects on the environment:</p> <ul style="list-style-type: none"> nitrogen-sensitive habitats can receive higher levels of nitrogen deposition than they can tolerate due to acidification and eutrophication, causing changes in biodiversity
Ground-level ozone	
<p>Ground-level ozone (O₃) is not emitted directly but is a secondary pollutant formed by chemical reactions in the atmosphere. Concentrations are highest in the summer. Ozone can travel long distances and reach high concentrations far away from the source of the original pollutants.</p> <p>Ground-level O₃ is found in the troposphere, as opposed to stratospheric ozone found high up in the atmosphere which protects the Earth from the sun's radiation.</p>	
<p>Potential sources include:</p> <ul style="list-style-type: none"> Ozone is produced by the effect of sunlight on NO_x and volatile organic compounds (VOCs) 	<p>Effects on health:</p> <ul style="list-style-type: none"> Respiratory irritant High levels may worsen asthma symptoms or trigger asthma attacks in susceptible people, and may cause chest discomfort for others <p>Effects on the environment:</p> <ul style="list-style-type: none"> Damage to plant species, forestry and crops
Sulphur dioxide	
<p>Sulphur dioxide (SO₂) is an acid gas, which can also combine with water vapour to form acid rain.</p>	
<p>Potential sources include:</p> <ul style="list-style-type: none"> Power generation Refineries Industrial processes Commercial solid and liquid fuel use Residential solid and liquid fuel use 	<p>Effects on health:</p> <ul style="list-style-type: none"> Associated with asthma and chronic bronchitis⁴ <p>Effects on the environment:</p> <ul style="list-style-type: none"> Damages plant species at high concentrations Acidification of habitats leading to loss of biodiversity

⁴ WHO Factsheet on Air Pollution. [https://www.who.int/en/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/en/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health) (accessed 14 November 2019)

Heavy metals	
Heavy metals include Nickel (Ni), a toxic metallic element.	
Potential Sources: <ul style="list-style-type: none"> • Industrial metal processes e.g. refining and plating • Combustion of heavy fuel oil 	Effects on health: <ul style="list-style-type: none"> • Irritation to the nose and sinuses and allergic responses • Long-term exposure may lead to respiratory diseases and cancers⁵
Benzo[a]pyrene	
Benzo[a]pyrene (B[a]P) is used as a 'marker' for a group of compounds known as polycyclic aromatic hydrocarbons (PAHs). PAHs are a group of chemicals that accumulate in the environment, people and animals and which have toxic and carcinogenic effects.	
Potential sources: <ul style="list-style-type: none"> • Industrial processes e.g. steelmaking • Domestic coal and wood burning 	Effects on health: <ul style="list-style-type: none"> • Toxic and carcinogenic effects, including lung cancer • Accumulated chemicals can pass up the food chain⁵
Ammonia	
Ammonia (NH ₃) is a colourless gas with a strong odour. It can also form secondary particulate matter through reactions in the atmosphere, travelling large distances and depositing on land and increasing background levels.	
Potential sources: <ul style="list-style-type: none"> • Mainly agriculture e.g. storage and spreading of manures, slurries and fertilisers • Some emissions from the waste sector 	Effects on Health: <ul style="list-style-type: none"> • Increases in levels of particulate matter are linked with a range of effects, including respiratory and cardiovascular illness Effects on the environment: <ul style="list-style-type: none"> • nitrogen-sensitive habitats can receive higher levels of nitrogen deposition than they can tolerate due to acidification and eutrophication, causing changes in biodiversity
Non methane volatile organic compounds	
Non-methane volatile organic compounds (NMVOCs) comprise a large group of organic chemical compounds, excluding methane.	
Potential sources: <ul style="list-style-type: none"> • Solvent processes, largely from domestic applications • Agriculture • Combustion processes in the residential, commercial and public sectors • Fugitive, evaporative losses 	Effects on health: <ul style="list-style-type: none"> • some have direct toxic effects; formaldehyde, for example, is known to cause cancer • other NMVOCs can worsen respiratory and cardiovascular illnesses • Indirect contribution to the formation of ground-level ozone, which causes

⁵ World Health Organisation Air Quality Guidelines 2000, PHE Chemical Hazards Compendium

<ul style="list-style-type: none"> Indoor sources include upholstery, carpets, aerosols and cleaning products 	respiratory and cardiovascular problems ⁶
Carbon Monoxide (CO)	
Carbon monoxide is a gas formed as a result of incomplete combustion, where the level of oxygen is insufficient to convert carbon based-fuels into carbon dioxide and water.	
<p>Potential sources:</p> <ul style="list-style-type: none"> Industrial combustion Industrial processes Residential combustion Road transport 	<p>Effects on health⁷:</p> <ul style="list-style-type: none"> absorbed in the lungs, reducing the capacity of the blood to carry oxygen. low concentrations can cause fatigue, breathing difficulties and stomach pain high concentrations, which are possible indoors or in enclosed environments, can cause dizziness, confusion and unconsciousness (for example, due to poor ventilation) high concentrations of CO are less likely to occur outdoors. However, when CO levels are elevated, they can be of particular concern for people with certain types of heart disease very high concentrations can be fatal <p>Effects on the environment:</p> <ul style="list-style-type: none"> can react with other pollutants to form ground-level ozone

⁶ Science for Environment Policy Issue 269, 2014 accessed 09/05/2019:
http://ec.europa.eu/environment/integration/research/newsalert/pdf/369na5_en.pdf

⁷ PHE Chemical Hazards Compendium

Legislation and Guidance supporting Air Quality Improvements

The framework for air quality policy is governed by international, European and domestic policies and legislation. Air quality issues need to be tackled at local, national and international scales to be effective. Although air quality is a devolved matter, the UK government ensures that UK policies meet international and European agreements.

European Legislation

National improvements have been driven by European Directives, including those that set limits on:

- concentrations of pollutants in ambient air (for example, the Ambient Air Quality Directive (AAQD) 2008/50/EC sets limits for ambient concentrations for a number of important pollutants);
- annual pollutant emission targets for each Member State, helping to tackle trans-boundary pollution (for example, the EU National Emission Ceilings Directive, along with the United Nations Economic Commission for Europe's (UNECE) international agreement, the Convention on Long-range Transboundary Air Pollution ('the Gothenburg Protocol')); and
- concentrations of pollutants from specific sources (for example, industrial emissions to air regulated by NRW or a local authority, and car and lorry exhaust pipe emissions).

The Ambient Air Quality Directive (AAQD) 2008/50/EC sets legally binding limits (termed 'limit values') for concentrations of sulphur dioxide, nitrogen dioxide, benzene, carbon monoxide, lead and particulate matter (PM₁₀). The Directive requires that Member States report annually on air quality within zones designated under the Directive. When limits are exceeded, the Directive requires the publication of air quality plans to set out actions which achieve compliance as soon as possible. The Directive is implemented in Wales through the Air Quality Standards (Wales) Regulations 2010.

Wales is divided into 4 zones:

- Two urban agglomeration zones (Cardiff and Swansea)
- Two non-agglomeration zones (North Wales and South Wales)

The only limit value the UK currently fails to meet is set with respect to annual mean concentrations of nitrogen dioxide (NO₂).

Wales Ambient Air Quality Directive Zones



The National Emission Ceilings Directive (NECD)

The UK is a Party to the 1979 Convention on Long-Range Transboundary Air Pollution of the UNECE and the original 1999 Gothenburg Protocol to the Convention which sets emission limits for four air pollutants. The UK currently meets all EU and international emission reduction commitments.

The NECD⁸ implements the commitments agreed under the 2012 amendment to the 1999 Gothenburg Protocol. The 2012 amendment was agreed among Parties with a view to further improving the protection of human health and the environment through the establishment of emission reduction commitments for five air pollutants to be achieved by 2020 and updating emission limit values of air pollutants at source.

The objective of the NECD is to reduce air pollution and reduce trans-boundary pollution, which is consistent with the Welsh Government's aim to improve air quality.

⁸ See: <https://www.eea.europa.eu/themes/air/national-emission-ceilings> (accessed 08/07/2019)

The Directive requires overall reductions in UK anthropogenic emissions of five damaging air pollutants: NO_x, NMVOCs, SO₂, NH₃ and PM_{2.5}, compared with levels in 2005. These national emission reduction commitments need to be met in two phases, from 2020 to 2029, with more stringent levels to be met from 2030 onwards. The more ambitious reduction commitments agreed for 2030 are designed to reduce the health impacts of air pollution by half compared with 2005. It also ensures that the emission ceilings for 2010 set in the earlier directive (Directive 2001/81/EC), remain applicable for Member States until the end of 2019. The NECD entered into force on 31 December 2016.

Welsh Government is working in partnership with the other UK countries to manage emissions and transboundary pollution in order to achieve our shared objectives. The Welsh Government, in conjunction with UK Government and the other devolved administrations, published its plans and associated evidence in April 2019 to achieve the UK's future emission reduction commitments within the UK National Air Pollution Control Programme⁹. The ambitious commitments to be met by 2030 aim to reduce the health impacts of air pollution by half compared with 2005.

The table below shows the percentage reductions in emissions required by 2020 and 2030 compared with emissions in 2005.

Table: UK Emission Reduction Commitments (ERCs) (% reduction from 2005 baselines)

	SO ₂		NO _x		NMVOC		NH ₃		PM _{2.5}	
Period	2020 -	2030 +	2020 -	2030 +	2020 -	2030 +	2020 -	2030 +	2020 -	2030 +
	2029		2029		2029		2029		2029	
UK Reduction (%)	59	88	55	73	32	39	8	16	30	46

We have assessed a range of measures from all emission sectors to reduce total emissions of pollutants in Wales. The table below shows the effectiveness of the measures in reducing total emissions across Wales and, to put them into context, how they compare to a notional Welsh share of the UK ERCs. For the purposes of illustration, the notional Welsh share of UK ERCs is based on the application of the same percentage ERCs as set for the UK with 2005 emissions in Wales used as a baseline.

⁹ UK Air Quality: National Air Pollution Control Programme - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/791025/air-quality-napcp-march2019.pdf (accessed 08/07/2019)

Pollutant	NO_x	SO₂	PM_{2.5}	VOC	NH₃
Total reduction required to meet notional ceilings by 2025 (kt)	6.7	-5.4	1.6	0.3 to 1.2	3.6*
Effect of measures by 2025 (kt)	6.7 to 7.4	1.1 to 1.2	1.7 to 3.5	1.1 to 2.3	Up to 3.6
Total reduction required to meet notional ceilings by 2030 (kt)	11.2	2.7	2.2	3.3 to 3.9	4.6*
Effect of measures by 2030 (kt)	9.7 to 11.4	3.4 to 3.9	2.1 to 3.8	3.4 to 4	Up to 4.6

(*) Based on NAEI estimates for 2016 and assuming future emissions do not change except when reduced by measures

These estimates show that we should be able to meet this notional Welsh share of UK emission ceilings with the measures set out in this document. Based on the most cost-effective measures, efforts in the industry, transport and domestic sectors are required in order to meet the ceilings in 2025 and 2030. Reductions in ammonia are almost entirely associated with efforts in the agriculture sector.

Analysis shows without new actions the UK would be unlikely to meet its emission reduction commitments for PM_{2.5} and NH₃ in 2020 and its commitments for all five pollutants in 2030. However, the measures in this plan, together with measures planned across the UK¹⁰, are likely to help achieve the UK's emission reduction commitments for all pollutants in 2020 and 2030.

Noise Pollution and Soundscape

Airborne environmental noise pollution, meaning unwanted or harmful sound from transport and industry, has been ranked by the WHO as the second biggest environmental contributor to the burden of disease in Europe after ambient air pollution. The Defra-led Interdepartmental Group on Costs and Benefits noise subject group has estimated the social cost of road traffic noise in England alone at between £7bn and £10bn per year. The Welsh Government's noise maps suggest that the homes of more than 200,000 people across Wales are exposed to road traffic noise levels exceeding the WHO's night noise guidelines.

Environmental noise has much in common with air pollution. The sources of air and environmental noise pollution tend to be either identical or else closely linked, their transmission pathways are similar, and the most affected receptors are also often the same, typically the people situated closest to the source.

¹⁰ Clean Air Strategy, DEFRA, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf

For road traffic travelling at a fixed speed, emissions of both air and noise pollution increase or decrease in proportion to the number of vehicles. The noisiest and dirtiest vehicles are often the same, as are the quietest and cleanest. The levels of both air and noise pollution are highest at the road itself and fall off with distance. Buildings and terrain can obstruct or channel both air and noise pollution. Traffic travelling at very high speeds and congested traffic can result in high levels of both air and noise pollution. In addition, some adverse health effects have been linked to both air and noise pollution, for example increased risk of cardiovascular disease.

For all these reasons, it makes sense to consider both forms of airborne traffic pollution together. Pursuing them separately would at best result in duplication of effort and missed opportunities, at worst in the implementation of conflicting policies.

The purpose of air quality management is to improve human health and quality of life. This improvement to health and quality of life will be greater if improved soundscapes are achieved alongside reductions in air pollution.

The Welsh Government Natural Resources Policy (2017)¹¹ sets out that a mix of actions to address air and noise pollution are needed, both to address pollution from traffic and others sources and to improve the ability of the natural environment to absorb pollutants through tree planting and green infrastructure and to restore sensitive habitats damaged by air pollution.

In December 2018, the Welsh Government published its 'Noise and Soundscape Action Plan 2018-2023'¹². This is the Welsh Government's central noise policy document, and has been produced collaboratively with local authorities and other public bodies. It outlines the Welsh public sector's strategic policy direction in relation to noise and soundscape management for the next five years. It has a broader focus than simply clamping down on the decibels, recognising that we also need to create appropriate soundscapes, meaning the right acoustic environment in the right time and place. Towns and cities should contain a variety of soundscapes appropriate to the land use.

Key points in the noise and soundscape action plan include the following:

- The Welsh Government expects public bodies subject to the Well-being of Future Generations Act to follow the five ways of working contained in that Act when managing noise and soundscapes.
- By defining environmental noise as airborne pollution within our Clean Air Programme, we will create and pursue any opportunities to further align noise/soundscape and air quality policy and regulation in Wales over the course of the next five years, in order to achieve multiple benefits from our actions.
- We will build upon the new air quality and soundscape content of Planning Policy Wales as we take forward Wales' first statutory National Development Framework and produce further guidance on air and soundscape quality to assist local planning authorities in Wales. In particular, we will conduct a

¹¹ <https://gov.wales/sites/default/files/publications/2019-06/natural-resources-policy.pdf>

¹² <https://gov.wales/noise-and-soundscape-action-plan-2018-2023-0>

detailed review of TAN11: Noise with a view to replacing it with a new TAN addressing air quality and soundscape.

Domestic Legislation

Welsh Government has responsibility for air quality policy in Wales and works collaboratively with the UK Government to achieve our statutory objectives. Welsh Government's ability to take action in relation to air quality is limited to taking steps that fall within the scope of the matters within the devolved competence of the Welsh Ministers and the National Assembly for Wales.

Under the Environment Act 1995, local authorities tackle air quality issues at a local scale through the Local Air Quality Management process (LAQM). LAQM requires local authorities to review and assess air quality, producing action plans where air quality is found to be at risk of exceeding pollutant objectives.

Assessment of air quality is focused on locations where members of the public are regularly present and where there is exposure to the pollutant in question over the timescale for which the air quality objective is defined. Local Authorities have powers to regulate industry, domestic emissions and management of traffic (parking, access restriction, signalling and infrastructure etc.). They are legally obliged to demonstrate they are doing everything reasonably possible to work towards the legal objective values. Welsh Ministers also have a wide range of powers under the Act in relation to the setting of air quality standards and objectives, conferring powers on local authorities to help achieve the standards and objectives, prohibiting certain pollutant emission activities (including vehicle access restriction), provision in relation to charging and enforcement and requiring local authorities to undertake further monitoring.

Separate to this, local authorities have duties to investigate nuisance smoke, fumes, odours and dust complaints made by members of the public.

Welsh Ministers have a range of powers to restrict, prohibit or control polluting activities and the emissions of pollutants. Many of these powers are exercised by other public bodies e.g. NRW and local authorities. Examples include:

- The Pollution Prevention and Control Act 1999, with powers to prohibit activities otherwise than in accordance with an environmental permit. The power is exercisable in relation to any activity capable of causing environmental pollution or otherwise preventing or controlling emissions capable of causing pollution. Where a permit is required, permit conditions that can be imposed can include conditions relating to limits for emissions to air.
- The Clean Air Act (CAA) was originally introduced to address air pollution from smog caused by widespread burning of coal for residential heating and by industry in order to reduce pollution from smoke, grit, dust and fumes. The Clean Air Act (CAA) 1993 covers Wales, England and Scotland; there is separate legislation for Northern Ireland. The CAA deals with the designation (by local authorities) of 'smoke control areas' i.e. areas within which emission

of ‘smoke... from a chimney of any building’ is a criminal offence unless the emission is from an ‘authorised fuel’ or an ‘exempted class of fireplace. The legislation targets smoke emission from chimneys and premises, smoke emissions from non-residential furnaces, and domestic combustion of fuels. Welsh Ministers have powers to authorise the fuels, and exempt the classes of fireplace, which can be used in smoke control areas. Welsh Ministers also have powers under this Act to direct a local authority to measure and record levels of air pollution.

- The Environmental Protection Act 1990 – Section 140 – power to prohibit the use, supply or storage of substances for the protection of public and environmental health. This power has recently been used by the Welsh Ministers in relation to ‘microbeads’. In relation to air quality, it could potentially be used to restrict the supply of substances such as wet wood for domestic combustion (which is associated with high emissions of fine particulate matter), for example.
- The Environment (Wales) Act 2016 sets out the approach for the sustainable management of natural resources in Wales, which will help to mitigate for and adapt to the impacts of climate change. The Act draws on the United Nations Convention on Biological Diversity Ecosystem Approach. The Act also builds on the Well-being of Future Generations (Wales) Act and Planning Act (Wales) 2015, putting in place a modern legislative approach that recognises that our water, land, air and sea are all interlinked and our economy, society and environment are all interdependent. It sets out the requirements to manage, use and enhance Wales’ natural resources to deliver lasting, sustainable economic, social and environmental benefits. This approach also enables resilience of ecosystems to be considered as part of the decision making process for activities from the outset. The Welsh Government’s overall commitment to biodiversity is set out in the Nature Recovery Action Plan (NRAP)¹³, which states our ambition to reverse the decline in biodiversity, and our commitment to halting the loss of biodiversity.
- The Active Travel (Wales) Act 2013 requires local authorities to continuously improve facilities and routes for pedestrians and cyclists and to prepare maps identifying current and potential future routes for their use. The Act also requires new road schemes (including road improvement schemes) to consider the needs of pedestrians and cyclists at design stage.
- Under The Road Traffic (Vehicle Emissions) (Fixed Penalty) (Wales) Regulations 2003, local authorities can stop the commission of statutory idling offences and issue fixed penalty notices in respect of such offences.

¹³ Nature Recovery Plan, Welsh Government 2015.
<https://gov.wales/sites/default/files/publications/2019-05/nature-recovery-action-plan-2015.pdf>
accessed 26/09/2019

How the Clean Air Plan for Wales will deliver Welsh Government Priorities and Principles

Supporting delivery of our well-being goals

This plan is set within the context of our obligations under the Well-being of Future Generations (Wales) Act 2015 (WFG) sustainable development principle, which places a duty on all public bodies in Wales to consider how their actions might impact in the long term, and how they will alleviate problems of poverty, health inequalities and climate change.

Natural Resources Policy

This plan also supports the implementation of Wales' natural resources policy. Part 1 of the Environment (Wales) Act 2016 sets out the 'sustainable management of natural resources' – an approach to managing Wales' natural resources and ecosystems to ensure that the benefits they provide for our social, economic, environmental and cultural well-being are available now and for future generations.

The Welsh Minister's **Natural Resources Policy**¹⁴ sets out the national priorities for the sustainable management of natural resources. The national priorities are the key ways in which Wales' natural resources contribute across all the well-being goals. They have been developed to both address the challenges to our natural resources and realise the opportunities from them. The national priorities are:

- Delivering nature-based solutions.
- Increasing resource efficiency and renewable energy.
- Taking a place based approach.

The policy sets a key challenge of improving air and noise quality and recognises a mix of actions to address air and noise pollution are needed, both to address pollution from traffic and others sources, to improve the ability of the natural environment to absorb pollutants through tree planting and green infrastructure and to restore sensitive habitats damaged by air pollution.

Nature based solutions to improving air and noise quality such as tree planting and green infrastructure also have a huge potential for enabling wider benefits which contribute across all the well-being goals. As well as the opportunities set out in the table below, these benefits include supporting climate mitigation and adaptation, tackling flood risk and supporting wider public health issues such as improved physical and mental health.

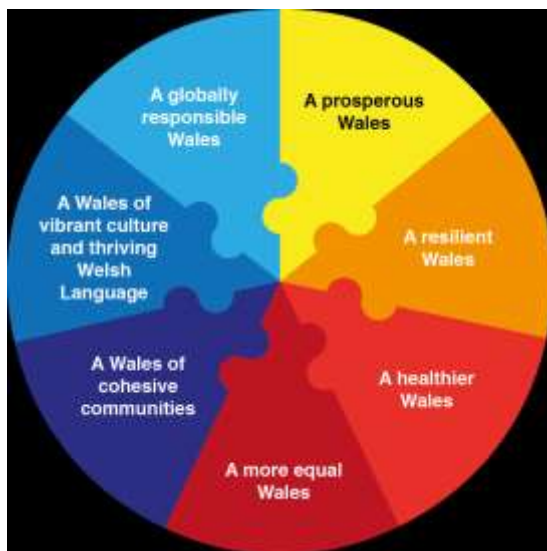
Natural Resources Wales' area statements will support place based approaches linked to the challenges, opportunities and national priorities in the Natural

¹⁴Natural Resources Policy - <https://gov.wales/docs/desh/publications/170821-natural-resources-policy-en.PDF>

Natural Resources Wales Area Statements - <https://naturalresources.wales/about-us/area-statements/?lang=enA>

Resources Policy. They are a series of products which translate the national priorities into the action that can be taken across Wales. They set out a local evidence base for the sustainable management of natural resources, including in relation to air quality, and identify the opportunities where working together can help us deliver the national priorities, build ecosystem resilience and make the most of the benefits Wales' natural resources and ecosystems provide for Well-being. Local Development Plans, Public Service Board Well-being Assessments, National Park and AONB plans must have regard to this evidence. Public bodies must provide Natural Resources Wales with information it requires for both the State of Natural Resources Report and Area Statements. Natural Resources Wales can also ask public bodies to assist in addressing the priorities, risks and opportunities for the sustainable management of natural resources identified in Area Statements.

To deliver the Natural Resources Policy, the priorities are being embedded into policy and plans across Welsh Government.



In this context, the Plan contributes to the delivery of the policy and the Well-being of Future Generations (Wales) Act 2015 Act goals, primarily toward achieving a healthier Wales and a resilient Wales, and demonstrates our commitment to being a globally responsible Wales. Developing our knowledge, skills and capabilities in addressing air quality and reducing harmful emissions will contribute to being a prosperous Wales. We can demonstrate a Wales of cohesive communities through the way in which we address change at personal, neighbourhood and spatial levels, and through our communities of interest (e.g. agricultural, business and industrial, cultural, historical and sporting, educational, environmental, technological, age-related) across Wales and the wider world.

Welsh Government, its public sector partners and stakeholders work together to address air quality using an integrated approach to deliver long-term sustainability and improvement. Under the WFG Act, we have established average population exposure to nitrogen dioxide as one of the Welsh Government National Indicators used to measure progress towards well-being goals in Wales. Regulations made under the Act require public services boards to consider air quality when carrying out their statutory assessments of local well-being.

Well-being Goals and air quality

Goal	Description	Impacts	Clean Air Plan contribution
A prosperous Wales	An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.	Impacts on businesses, competition and employment, productivity Effects of exposure to air pollution on health.	Action taken to improve air quality will support economic growth in Wales. Wales is dependent on a productive workforce and attractive places for businesses to invest. A healthy workforce and clean environment would contribute to prosperity through a productive workforce. Improvements in health reduce medical and health costs. Positive employment impacts would also arise for those companies that manufacture and install abatement technologies in the UK. Costs required to ensure the reductions in air pollution will affect a wide range of sectors. We will take action to manage any potential adverse impacts on employment, competition and small and medium-sized enterprises (SMEs).
A resilient Wales	A nation which maintains and enhances a bio-diverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example, climate change).	Impacts on air quality, greenhouse gas emissions and effects of pollution on biodiversity and natural habitats	Emission reduction from transport, industry and other sectors has a direct and significant positive impact locally, regionally and nationally on the Welsh environment and ecosystem functioning. The aims of the decarbonisation programme will have a direct effect on air quality and <i>vice versa</i> . Acting on climate change not only reduces emissions and builds resilience but also ensures the Wales we live in has clean air and water, liveable places, productive farmland, energy security and green jobs.
A healthier Wales	A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood	Impacts on human health	Poor air quality can have a disproportionate impact on the health and well-being of children, older, poor and vulnerable people. Reduction of air pollution will have a direct and significant impact on improving human health and welfare for everyone.
A more equal Wales	A society that enables people to fulfil their potential no matter what their background or	Impacts of air quality actions on equality	All people who live in and visit Wales will benefit from air quality improvements, no matter what their background or circumstances are.

Goal	Description	Impacts	Clean Air Plan contribution
	circumstances (including their socio economic background and circumstances).		Tackling impacts of poor air quality and improving air quality and human health will have a positive impact on promoting equality in Wales, especially where improvements coincide with deprived areas with high pollution.
A Wales of cohesive communities	Attractive, viable, safe and well-connected communities	air quality Impacts on communities	<p>Actions to improve air quality which are led by or co-produced with local communities will carry greater impact and be better integrated with other actions to improve the quality of life, health and well-being, the environment and opportunities for prosperity.</p> <p>Improved air quality in deprived communities would contribute to better quality of life and community cohesion.</p>
A Wales of vibrant culture and thriving Welsh language	A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, sports and recreation.	Impacts on health, environment, culture and population	<p>Action to support individuals, businesses and Government to understand, value and identify with the importance of improving air quality in Wales, will empower everyone to play their own role in supporting reductions in air pollution.</p> <p>We are committed to having air quality, which enables the people of Wales and visitors to enjoy and promote a wide range of recreation activities across Wales. Improved health would provide further opportunities for people to participate in sports and recreational activities.</p> <p>Protection of natural ecosystems and biodiversity would enhance the cultural capital of Wales and provide outdoor activities.</p> <p>We expect, and will actively encourage, promote and facilitate, the use of the Welsh language through education and services as set out in 'Cymraeg 2050: A million Welsh speakers. We will ensure equal standards of services in both English and Welsh. As we implement the Clean Air Plan, we will foster a Welsh identity which is distinctive.</p>

Goal	Description	Impacts	Clean Air Plan contribution
A globally responsible Wales	A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being. Goal 7 recognises that in an inter-connected world what we do to make Wales a sustainable nation can have positive and adverse impacts outside of Wales.	Impacts on air quality, greenhouse gas emissions and biodiversity/habitats	<p>Air pollution is major global environmental problem affecting everyone. Air pollution does not stop at or respect national and international borders. We will take strong positive action on air quality in Wales to meet our national and international ethical and legal obligations. Actions to improve air quality will be closely aligned with action on decarbonisation.</p> <p>Improved air quality would directly contribute to environmental well-being in Wales. Protection of ecosystems in NATURA 2000 sites and Sites of Special Scientific Interest (SSSIs) is an international contribution to maintaining biodiversity.</p> <p>Compliance with the national emission ceilings is a contribution to international progress in reducing transboundary air pollution outside Wales, with reciprocal benefits from emission reduction outside Wales, including in the rest of the UK.</p>

The Act describes Five Ways of Working toward achieving sustainable development.



Five Ways of Working

Five Ways of Working	The Plan aims to deliver in line with the Act's Five Ways of Working by:
Prevention	Taking preventative action to reduce the impacts of air pollution on public health and the natural environment, by adopting preventative approaches where we can, and developing successful early actions whilst devising long term solutions.
Long term	Establishing long-term targets and sustainable actions to achieve the progressive reduction of emissions and pollutants in the air.
Collaboration	Collaboration with relevant departments within the Welsh Government, UK Government, national partners and at a local level to ensure actions are implemented and well-being objectives are met.
Integration	Improving the integration of air quality management processes through better working practices between public, commercial and third sector organisations, balancing the tensions between, say, emissions and noise reduction with maintaining industrial productivity.
Involvement	Partners and stakeholder representatives have been involved in the development of the plan at all stages, and through consultation and delivery, to ensure understanding of what is needed in different places by different groups of people.

Improving air quality for future generations

Poor air quality can adversely affect health by exacerbating underlying health issues or causing new health issues. Welsh Government recognises there are unique issues around children's exposure to air pollutants. Poor air can affect children's physical and cognitive development. Long term health issues can prevent children from attending school which can in turn damage a child's future prospects. Long term health issues can persist well into adulthood.

This Plan takes account of the United Nations Convention on the Rights of the Child (UNCRC)¹⁵ and the unique issues around children's exposure to air pollutants.

The aim of the United Nations Convention on the Rights of the Child (UNCRC) is to give children the best chance of a healthy, equal, free life. Both the UNCRC and Well-being of Future Generations (Wales) Act aim to ensure governments and public bodies consider the long-term effects of their action or inaction, with a view to mitigate and prevent problems such as poverty, climate change, poor health, inequality.

Under Article 3, we will ensure the best interests of the child are a key consideration in terms of implementation of this Plan.

Ensuring good air quality supports achievement of Article 6, in ensuring the inherent right to life.

The Plan supports delivery of Articles 12 and 17. We will educate future generations of young people about the air pollution challenges we face and the impacts on their health and our environment. We will also empower them with the tools and information they need to be part of the solution.

With respect to Article 24, the Plan aims to reduce the impact of poor air quality on children's health. This will have the associated effect of releasing resources currently used to resolve those health impacts to other areas of children's health care.

In terms of Article 27, the Plan will maximise the right to health by reducing air pollution and the associated risks to children's health. All available evidence indicates improvements in air quality lead to better health outcomes for children and young people, which in turn will have a positive impact on the availability of resources to support policies and programmes, through a reduction in expenditure on health interventions associated with poor air quality.

In relation to Article 31, the Plan will contribute to delivering greater access to active travel, and the results of its actions will result in people having the opportunity for outdoor recreation, increasing access to sport and leisure.

¹⁵ A Summary of the UN Convention on the Rights of the Child, https://www.unicef.org.uk/wp-content/uploads/2010/05/UNCRC_summary-1.pdf

Children have important roles as agents of change in the development and implementation of policy. Children must be protected from the effects of poor air quality and they should be empowered with the skills, knowledge and opportunities to enact change themselves. Children must have the option to make sustainable life choices and be involved in environmental decision-making. Children need to understand how to tackle poor air quality and reduce their exposure to it in order to drive forward change. Only through enhanced education about environmental issues will they be able to do so.

It is our collective responsibility to work to create a healthy environment and ensure actions we take work to the sustainable development principle. Failing to address environmental issues will mean policy makers will always fall short of respecting children's rights and meeting our well-being goals.

We address children's rights and needs through actions to address the impact of poor air quality on human health (especially vulnerable groups, old and young) and ecosystems by reducing exposure to pollution more widely. For example we will enhance the monitoring and assessment of air quality and associated risks in Wales, primarily focusing on sensitive receptor locations to benefit the highest risk areas and the most vulnerable people. We will work with Local Authorities, Public Health Wales and other stakeholders to build on our existing guidance in relation to schools and other sensitive receptor locations, to deliver pollution reductions, and review of the use of anti-idling legislation and enforcement to protect those most vulnerable from harmful transport emissions.

Prosperity for All

This plan supports delivery of Objectives related to clean air in our national strategy our Prosperity for All. These are to:

- Drive sustainable growth and combat climate change, and
- Build healthier communities and better environments

The contribution made by the environment to good health – both mental and physical – cannot be overstated. Air and soundscape quality, good housing, access to green spaces and energy efficiency schemes each have a part to play in creating the right conditions for better health, well-being and greater physical activity.

This plan identifies how we will reduce emissions and deliver vital improvements in air quality through planning, infrastructure, regulation, our economic contract and health communication measures.

Air Quality and Climate Change

Climate change poses an ongoing national and global threat to our health, economy, infrastructure and natural environment. In recognition of this, in April this year the Welsh Government declared a climate emergency in Wales.

Greenhouse gases are most active high up in the atmosphere, whereas the most important factor for air quality is the concentration of pollutants nearer the Earth's surface.

Air pollutants can have a cooling or a warming effect on the atmosphere. Air pollutants can also affect the concentrations of greenhouse gases (GHGs) through their impact on ecosystems, for example, nitrogen deposits increasing plant growth and therefore carbon uptake, and ozone having the opposite effect. Conversely, changes in the climate can affect air quality. For example, hot summers may lead to a higher frequency of summer pollution episodes, such as smog¹⁶.

Air pollution often originates from the same sources, which contribute to climate change (e.g. vehicles, buildings, domestic combustion, power generation, agriculture and industry). Actions taken to reduce greenhouse gas emissions can address emissions of air pollutants. It is important to maximise these synergies whilst minimising the trade-offs¹⁶. This means air quality, decarbonisation and natural resources policies should be closely integrated to achieve complementary outcomes, consistent with the approach introduced in the Well-being of Future Generations Act.

Tackling climate change and air pollution requires collaborative action across society and sectors. The Welsh Government is committed to playing a central role in enabling this to happen, securing environmental growth for Wales.

Collaborative action on Air Quality and Decarbonisation

Welsh Government has a Clean Air Programme for managing air pollution and a Decarbonisation Portfolio, which manages Wales' transition to a low carbon economy, in line with the Welsh Government's statutory emission reduction framework.

Whilst these are two separate programmes of work, we will ensure strong linkages and opportunities between them to deliver our policy aspirations and wider associated benefits, in the most economical way.

We will design policies, which are aligned at a strategic and local level to optimise outcomes. For example, action to improve air quality and reduce carbon emissions will have many co-benefits relating to improved public health. The type of interventions required in different areas may vary. These could include improvements in domestic energy conservation, improved industrial process efficiency and measures designed to empower individuals to change their behaviour to reduce the impact of their

¹⁶ Air Pollution – Action in a Changing Climate - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69340/pb13378-air-pollution.pdf

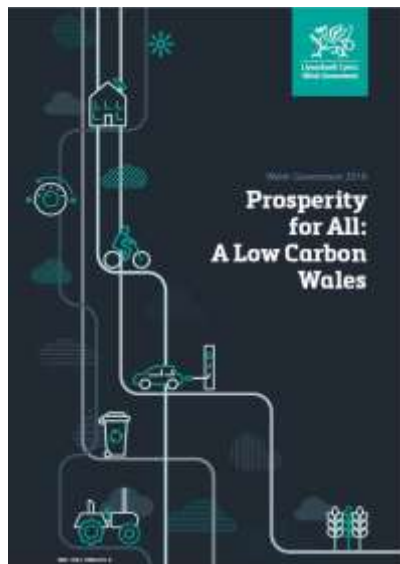
activities on air and the atmosphere. Given the significant influence of transport emissions, co-benefits could be realised through actions such as reducing the use of road vehicles, promoting ultra-low emission vehicles and renewable sources of electricity, which do not involve combustion.

The Welsh Government is working with the new Centre for Climate Change and Social Transformations to explore piloting behaviour change campaigns and understand how they can inform policy development.

We have world-leading legislation in place focusing on the protection of the well-being of future generations, our sustainable development and natural environment. We will use this legislation to support change in Wales. We will also deliver a Clean Air Act for Wales to build on this legislation, with a focus on delivering air quality improvements. However, we will also look at opportunities to deliver co-benefits supporting reductions in greenhouse gas emissions.

Prosperity for All: A Low Carbon Wales

In March 2019, we published 'Prosperity for All: A Low Carbon Wales'¹⁷. This is our plan for meeting Wales's first carbon budget. It demonstrates how we will cut our emissions across a range of sectors and move towards a low carbon economy, bringing opportunities around clean growth for business, as well as wider benefits for people and our environment. This Plan identifies the complex links and inter-relationship between decarbonisation and improving air quality.



¹⁷ Prosperity for all: A Low Carbon Wales, Welsh Government.

Cymraeg:

<https://gweddill.gov.wales/topics/environmentcountryside/climatechange/emissions/prosperity-for-all-a-low-carbon-wales/?skip=1&lang=cy>

English:

<https://gweddill.gov.wales/topics/environmentcountryside/climatechange/emissions/prosperity-for-all-a-low-carbon-wales/?lang=en>

Scope of the Clean Air Plan for Wales

Air pollution affects all parts of life in Wales. Improving air quality requires we address a complex set of interacting situations and conditions.

The aim of the Clean Air Plan for Wales is to improve air quality and in doing so reduce the burden of poor air quality on human health, biodiversity, the natural environment and the economy in Wales, and contribute to improved air quality in the UK and Europe.

The Plan supports delivery of the *Prosperity for All* commitment to reducing emissions and delivering vital improvements in air quality to support healthier communities and better environments. It is the first step to delivering a Clean Air Act for Wales. The Plan includes commitments and actions that will improve air quality and mitigate the causes of a changing climate (and *vice versa*).

Existing legislation, policies, strategies and guidance create the context in which to identify opportunities for increasing the scope and pace of beneficial intervention, to prioritise the problems to address and determine our personal, family, community and collective roles in responding to them.

This plan integrates with and complements other Welsh Government policies including plans for planning, de-carbonisation, noise and soundscape management, environment, infrastructure, land use, transport and marine and fisheries. A number of these policies have been referenced throughout this document.

This plan also sets out additional measures and actions to improve air quality and where possible achieve multiple beneficial results. We have ensured our approach is consistent with existing policy positions or those under development.

Annex B of this document lists current Welsh and UK legislation, Regulations, EU legislation, Welsh Government Policies, Guidance and other international agreements linked to this Plan.

This Plan demonstrates how we will work with others to deliver air quality improvements across Wales. We will use an integrated, thematic approach to address broad areas of investigation and impact, where collaborative work across organisations can better address complex problems and build sustainable approaches to action. The themes are:

- **Improving air quality to protect the health and well-being of current and future generations**
- **Improving air quality to support our natural environment, ecosystems and biodiversity**
- **Improving air quality to support a prosperous Wales**
- **Improving air quality to support sustainable places**

The themes complement each other to create a sustainable approach to improving air quality, summarised as evidence-based key commitments and associated actions. The actions are framed within the current Assembly (to 2021) and next Assembly (2021-26) periods, and the future from 2026 onward.

The Clean Air Plan for Wales - Thematic Approach



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

Improving air quality to protect the health and well-being of current and future generations	Improving air quality to support our natural environment, ecosystems and biodiversity
<ul style="list-style-type: none"> • Increase our understanding of the effects of airborne (air and noise) pollution on health. • We will establish a new national air pollution monitoring network by December 2021 (which complements existing monitoring capabilities), primarily focusing on sensitive receptor locations in Wales (including schools, hospitals, care homes and areas where evidence indicates poor air quality can amplify already persistent problems linked to deprivation and chronic illness). • We want concentrations across Wales to be below the WHO guideline for PM_{2.5} where it is possible, and lower still where there is sufficient potential and there is high public exposure or risk to sensitive groups. We will develop and consult on new targets for particulate matter in Wales as part of the development of a Clean Air Act for Wales • We will build on our Clean Air Zone Framework for Wales, LAQM policy, and Smoke Control Area provisions, to develop, by the end of this Assembly term, a single comprehensive framework for the efficient targeting of air quality interventions where most needed • We will continue to work with partners to develop and respond to new evidence on indoor air pollution as it emerges and to raise people's awareness of indoor air pollution, including ways to reduce exposure risks. • We will reduce emissions from domestic burning through an update of existing Smoke Control Regulations, by way of a Clean Air Act for Wales, to ensure local authorities have the means and tools required to undertake effective enforcement. 	<ul style="list-style-type: none"> • Enhance the natural environment through air and soundscape quality improvement, and emissions reduction. • Develop an Environmental Growth Plan by autumn 2020. The Plan will coherently coordinate and articulate our overall approach to achieving a greener Wales in the context of our wider responsibilities under the Well-being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016. • Establish biodiversity baseline indicators and data sets for Wales. • NRW's Area Statements will contribute to implementing the Natural Resources Policy in a local context. NRW will use their leadership role in encouraging others to take action. • Address the environmental challenge of the intensive farming sector and strengthen the control of emissions. • Reverse the decline in biodiversity, as set out in our Nature Recovery Action Plan (NRAP). • Expand woodland cover as set out in our Woodlands for Wales Strategy.

<ul style="list-style-type: none"> • We will legislate to prohibit the use and sale of the most polluting fuels used for domestic burning and ensure only the most efficient, and least polluting appliances are available for sale by 2022. • We will develop a Clean Air Act to take forward relevant measures in this plan, which require primary legislation to secure air quality improvements in Wales. • We will deliver behavioural change communications to enable people to understand the causes of air pollution, effects pollution could have on their health and how they can help to reduce air pollution and encourage others to do the same. 	
Improving air quality to support a prosperous Wales	Improving air quality to support sustainable places
<ul style="list-style-type: none"> • Achieve sustainable, continual reduction in the emission of airborne pollutants from industry by exploring opportunities to work with key sectors to secure further emission reductions. • Maintain the integrated pollution prevention and control regulatory regime post-EU exit, including a process for reviewing and updating Best Available Techniques. 	<ul style="list-style-type: none"> • Integration between the Clean Air Plan, Planning Policy for Wales and the forthcoming Wales Transport Strategy to ensure infrastructure and service investment across Wales supports reduction in air pollution. • Initiate a modal shift from private vehicle dependency to sustainable forms of transport. • Produce further planning guidance on air quality and soundscape. • Promote Active Travel as a contribution to personal health and as a community health benefit. • Deliver continued reductions in roadside NO₂ concentrations, at failing locations. • Reduce transport emissions.

Question

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

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

Air quality can have fundamental impacts on health and well-being. The health effects of air pollution have been extensively researched and are well documented. Outdoor air pollution is the largest environmental threat to health¹⁸.

Everyone has a role to play in reducing air pollution, health risks and inequalities in Wales. This section of the Plan highlights our current and planned actions to improve air quality through new evidence-based, health-focused targets for fine particulate matter in Wales (which take account of stringent WHO guidelines values) and improving national air pollution monitoring and modelling capabilities. Through a Clean Air Act for Wales, we intend to consolidate and enhance existing legislative frameworks for air quality assessment and management. This will include the Local Air Quality Management regime and emissions from domestic burning activities.

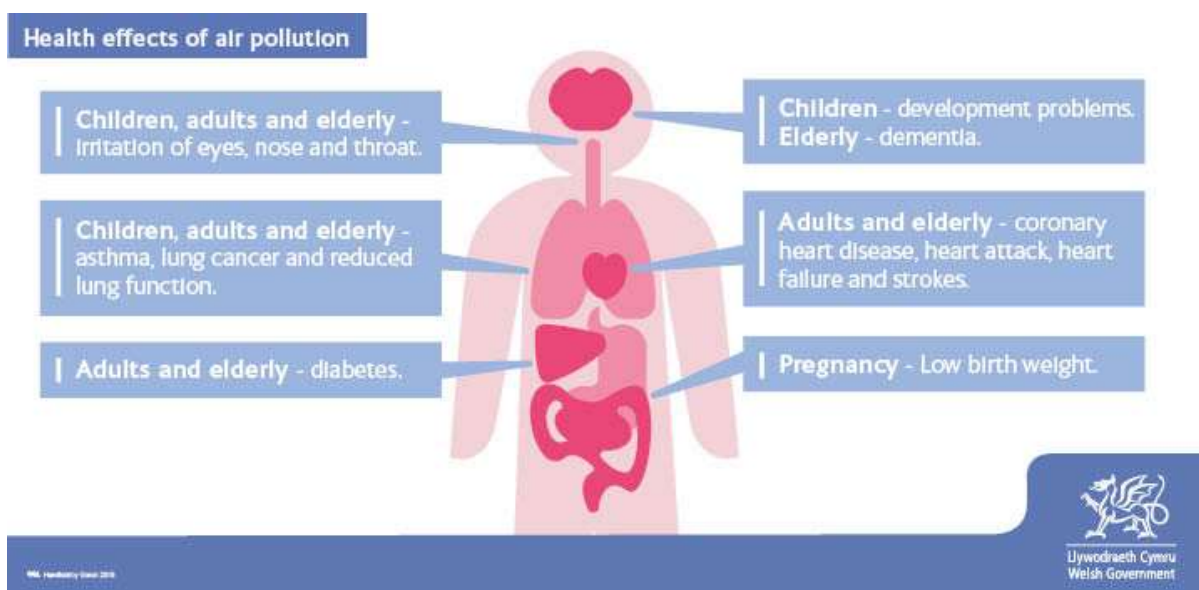
We want to empower everyone to reduce their exposure, risks and impacts from local air quality through better education and awareness-raising action. We will develop targeted and integrated communications to inform and enable behavioural change. This will complement action to reduce air pollution and help achieve linked objectives for decarbonisation, health and environment improvement, as well as tourism, sustainable transport and economic benefit.

Air pollution and health

Health Effects

Short-term exposure to those pollutants of most public health concern (fine particulates and nitrogen dioxide) can result in eye, nose and throat irritation, headaches and nausea, and exacerbating respiratory disease (e.g. asthma) symptoms. Long-term exposure increases morbidity and mortality risks from cardiovascular and respiratory disease, and lung cancer. There is emerging evidence other body organs may also be affected, with possible effects on dementia, low birth weight and diabetes. Air pollution exposure can affect people in different ways throughout their lifetime.

¹⁸ Ten Threats to Global Health in 2019, WHO 2019. See: <https://www.who.int/emergencies/ten-threats-to-global-health-in-2019> (accessed 30/10/2019)



In the UK, it is estimated between 28,000 and 36,000 deaths each year are attributed to human-made air pollution. In Wales, the long-term mortality burden attributable to air pollution exposure is an estimated effect equivalent range of between 1,000 and 1,400 deaths (based on data for 2017 – the latest year for which data are available¹⁹).

While national estimates such as these help to describe the scope of the problem, they mask local and regional variations in vulnerability and susceptibility.

Children, older people and those with chronic lung or heart conditions are more vulnerable and/or susceptible to air pollution exposure. There is emerging evidence that children in their early years are especially at risk of exposure to air pollution, with adverse outcomes including asthma and poorer lung development. Beyond these population groups, it is possible that others are at a higher risk e.g. those working in polluted places or commuting to work through heavily congested urban areas.

People living in the most deprived areas may also be more susceptible to air pollution than those who live in least deprived areas. This is a problem because analyses of local air pollution, multiple deprivation and health data in Wales show that average air pollution concentrations are highest in 'most' deprived areas where levels of chronic ill-health tend to be highest. It is worth noting that the next highest average air pollution concentrations in Wales are experienced by those living in 'least' deprived areas.

The same Wales-specific research also suggests that air pollution, impaired health and deprivation status interactions can modify associations and create disproportionate disease burdens within and between communities (inequalities) i.e.

¹⁹ Mortality burden estimates are simple calculations that provide a useful 'feel' for the size of the air pollution problem in a given area at a certain point in time. They require careful interpretation: numbers of deaths do not refer to 'actual' numbers of deaths but reflect the sum of the small contributions that air pollution exposure makes to life-expectancy reductions amongst all individuals in a population; it is not appropriate to compare estimates between different geographical areas; it is not appropriate to use successive year's estimates to describe trends over time. These mortality burden estimates have been derived by using relatively new methods recommended by the UK Committee on the Medical Effects of Air Pollution (COMEAP). They take account of multi-pollutant impacts from both fine particulate matter and nitrogen dioxide exposure, and present the burden of attributable all-cause (non-accidental) deaths as an 'effect equivalent to' range, rather than a central estimate.

a 'triple jeopardy' effect. In the context of particulate matter air pollution, this research suggests, compared with 'low' pollution and 'least' deprived areas, rates of respiratory disease mortality were twice as high in 'low' pollution and 'most' deprived areas, and increased to 2.4 times in 'high' pollution and 'most' deprived areas. For all-cause mortality, compared with 'low' pollution and 'least' deprived areas, mortality rates were 56% higher in 'low' pollution and 'most' deprived areas and 65% higher in 'high' pollution and 'most' deprived areas.

This available evidence suggests it is a mistake to consider air pollution problems (and solutions) in isolation. Understanding relationships between air pollution and wider health determinants is essential in informing and targeting effective air quality management activity. Acting on only a limited understanding of these relationships, or worse ignoring them altogether, could compound problems through ill-informed decisions and ineffective or poorly-targeted intervention.

A focus on children and young people

Exposure to air pollution in early life can have a long-lasting effect on lung function. There is evidence the natural development of normal lung function through childhood is suppressed by long-term exposure to air pollution²⁰. Poor lung function means less reserve, should lung disease develop later on.

Protecting children and young people from the impacts of air pollution is integral to the development and delivery of actions in this Plan.

Reducing airborne pollution

Reducing levels of airborne pollution across Wales, at least to within legislative limits and, as far as possible, well below them, will contribute significantly to the majority of our National Well-being Goals.

In general terms, air quality has improved over recent years. Concentrations of some air pollutants continue to either actually or potentially breach legislative limits in Wales. We recognise more needs to be done to develop an evidence based, prevention-focused, approach to tackle existing problems and prevent new ones occurring.

The Welsh Government Healthier Wales Plan²¹ emphasises the need for a prevention-focused NHS. We need to look at all the other things we are responsible for as a Government that can make a difference to people's health. This includes support for families, education, housing, employment and the environment.

²⁰ Air Pollution and Child Health: Prescribing Clean Air, WHO 2019. See: <https://apps.who.int/iris/bitstream/handle/10665/275545/WHO-CED-PHE-18.01-eng.pdf?ua=1> (accessed 30/10/2019)

²¹ In Brief – A Healthier Wales: our Plan for Health and Social Care, Welsh Government 2019. , <https://gov.wales/sites/default/files/publications/2019-04/in-brief-a-healthier-wales-our-plan-for-health-and-social-care.pdf> (accessed 26/09/2019)

Assessing Air Quality in Wales: a prevention focused approach

Monitoring across Wales includes numerous networks. This includes Local Authority Monitoring, Automatic Urban and Rural Network (AURN), Heavy Metals Network, PAH Monitoring Network, Black Carbon Network, UK Upland Waters Monitoring Network and the UK Eutrophying and Acidifying Pollutants Network²² (Please see Annex A for further details).

Modelling helps to assess levels across the geographic areas as well as predicting future levels with and without additional measures. National and local monitoring and modelling were established for different purposes. The national assessment seeks to represent general exposure and must accord with the location and sampling point requirements of the Ambient Air Quality Directive, whereas air quality assessments for Local Air Quality Management focus on targeting local pollution hotspots so pollutant concentrations are considered at all areas of relevant public exposure within the local area.

Action: We are working with UK partners to develop existing air quality frameworks to ensure they continue to satisfy legislative requirements and reflect our priorities where it is possible to do so.

Along with driving improvements in levels of compliance with statutory limits in Wales, we want to prioritise and sustain action to address the impact of poor air quality on human health (especially vulnerable and susceptible population groups) and ecosystems, by reducing exposure to pollution more widely.

While the national scale impacts of poor air quality are significant, they mask local-level variations in air pollution concentrations, exposures, risks and impacts. These small-area differences can lead to environmental inequities and health inequalities. Action on airborne pollution needs to be taken where it is needed the most, based on robust evidence in relation to all airborne pollutants and developed at the right scale.

Action: We are developing a more granular evidence base to support this action, in partnership with Public Health Wales and Natural Resources Wales, investing in and enhancing the monitoring and assessment capabilities regarding air quality and the associated risks in Wales.

Action: We will establish a new national air pollution monitoring network by December 2021 (which complements existing monitoring capabilities), primarily focusing on sensitive receptor locations in Wales (including schools, hospitals, care homes and areas where evidence indicates poor air quality can amplify already persistent problems linked to deprivation and chronic illness).

This initiative will provide a nationally consistent approach and lead the way in tackling air pollution in the highest risk areas for benefit of those most vulnerable.

²² Air pollution in the UK 2018 - https://uk-air.defra.gov.uk/library/annualreport/viewonline?year=2018_issue_1#report_pdf.

It will assist bodies with existing duties for air quality management to accelerate compliance and help to reduce exposure more widely for the benefit of those most affected. The specific objectives will be:

- To assess and interpret new data and intelligence generated to inform action to meet legal requirements, the development of local air quality management and national policy, risk communications, and general action to drive air quality improvements for public health (including inequalities reduction) and ecosystems in Wales.
- To report on new data and intelligence generated to inform future health research and surveillance in Wales.
- To ensure robust monitoring methods are adopted, enabling monitoring sites in the new network to be affiliated with recognised national networks and standards; this can help improve modelling outputs for Wales and future assessments in relation to compliance with relevant air pollution limits.
- To trial and evaluate the effectiveness of innovative monitoring, modelling and assessment techniques.

We expect the objectives will be achieved through:

- Risk prioritisation of sensitive receptors across Wales, accounting for the effects of air pollution on public and environmental health and deprivation.
- Identification of sensitive receptor locations for new monitors across Wales.
- Better local, regional and national level information to inform preventative and evidence-based action to reduce air pollution, risks and inequalities.
- Local, regional and national scale risk assessment and intervention evaluation reports. An annual report covering these matters, including local air quality management performance across Wales, promoting public confidence in air quality management.
- Enhancement of the effectiveness of the Local Air Quality Management system in Wales.
- Trials of innovative new monitoring and modelling techniques.

We expect these actions will provide multiple benefits which will enable:

- An improved understanding and communication of air pollution risks, especially at sensitive receptor locations.
- Prevention-focused, needs-based action.
- Air quality improvement, with associated environmental and public health benefits.
- Improved accuracy of modelled air pollution data in Wales.
- Innovation in Wales of air pollution monitoring approaches.
- Demonstrable contribution to Wales' policy priorities.

Questions

2. 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 where possible.

New targets to reduce exposure to particulate matter

Concentrations of fine particulate matter are a specific concern because of established links with adverse health outcomes, although the mechanisms and the relative toxicity of different components of the particulate matter are still not clearly understood. Whereas limit values were initially set for PM₁₀, particles of diameter less than 10 µm were more widely measured, emphasis has since moved to the finer fraction PM_{2.5} below 2.5 µm which can penetrate deeper into the lungs. The World Health Organisation (WHO) has recommended concentration guidelines of particulate matter for PM_{2.5}, the annual mean guideline of 10 µg/m³ being half the current EU limit. Advice from WHO is based solely on scientific conclusions about public health aspects of air pollution; they do not consider the technical feasibility or the economic, political and social aspects of the achievement of these levels.

WHO has found the 10 countries with the lowest national PM_{2.5} exposure levels in 2017 were the Maldives, the United States, Norway, Estonia, Iceland, Canada, Sweden, New Zealand, Brunei, and Finland²³. In assessing health effects an informative measure is the population weighted mean concentration (PWMC). The PWMC is the average outdoor PM_{2.5} concentration to which a population is exposed. PWMCs for PM_{2.5} averaged 8 µg/m³ or less in these countries. The estimated PWMC for the population of Wales in 2016 was 6.0 µg/m³, compared with 7.5 µg/m³ for the UK as a whole.

Although we comply with current legislative EU limits for particulate matter in Wales, we recognise the importance of reducing average population exposure to particulate matter further and the positive health benefits this can bring. In 2019, the Welsh Index of Multiple Deprivation air quality ranking is now purely based on concentrations of NO₂, PM₁₀ and PM_{2.5} and the associated WHO guidelines, in recognition of these being seen as the pollutants of prime concern to human health nationwide²⁴. This is also consistent with the pollutants considered under the national well-being indicators. Overall concentrations of fine particulate matter in most of Wales are low, although there are hotspots of high concentrations in industrial and densely populated urban areas. However, the potential for adverse health effects from exposure to fine particulate matter remains even if the WHO guideline value is achieved. There is further work to do to reduce air pollution and its toll on public health.

Action: We want concentrations across Wales to be below the WHO guideline for PM_{2.5} where it is possible, and lower still where there is sufficient potential and there is high public exposure or risk to sensitive groups. Our aim is to put this ambition into Welsh law.

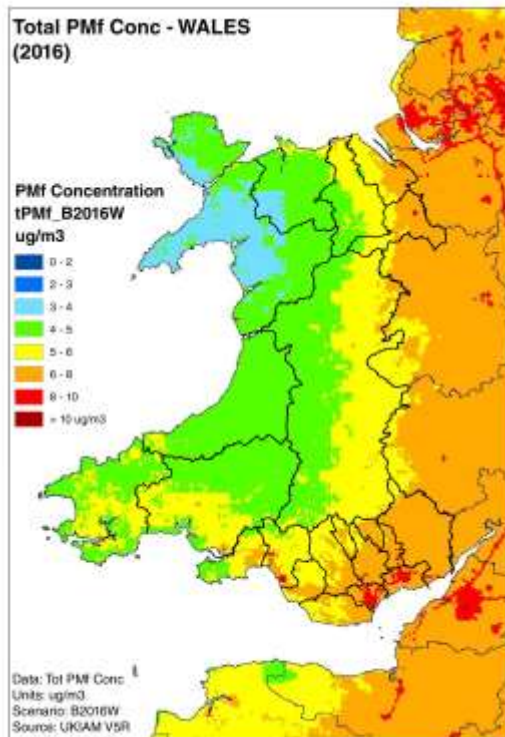
To support this aim the Welsh Government has commissioned an assessment of current and future levels of PM_{2.5} in Wales, where it comes from, and the potential for further reductions through measures which achieve a notional Welsh share of the

²³ https://www.stateofglobalair.org/sites/default/files/soga_2019_report.pdf

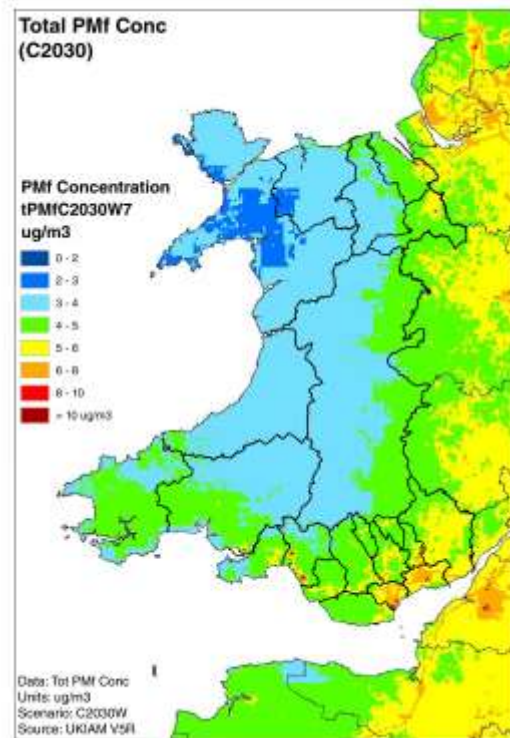
²⁴ <https://gweddi.gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en>

UK's statutory emission reduction targets. We have assessed the effect of these measures and, together with action in neighbouring countries, the measures will significantly reduce the number of people exposed to levels exceeding the guideline levels and reduce overall exposure at lower levels too.

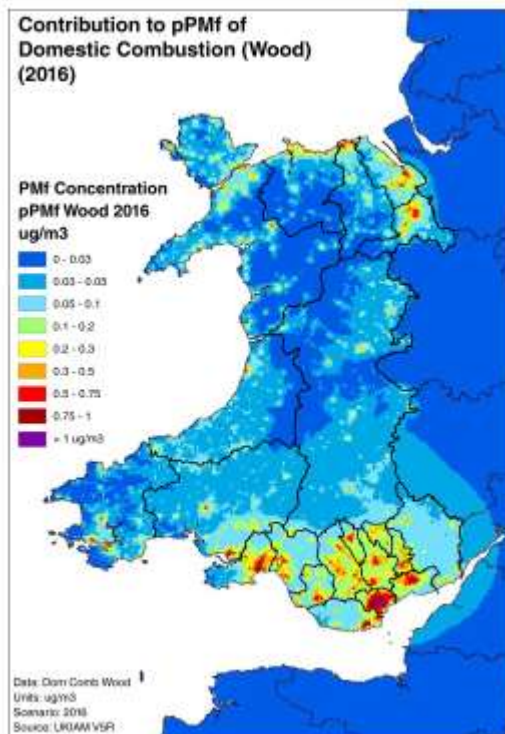
The illustrations below show the modelled concentration of fine particulate matter in 2016, the projected levels in 2030 as a result of measures which achieve a notional Welsh share of the UK's NECD emission reduction targets, and the contribution of wood burning to average concentrations in 2016.



Modelled concentration of fine particulate matter in 2016 based on Welsh and NAEI emissions in the UK, reported emissions in other countries and shipping emissions in sea areas surrounding the UK



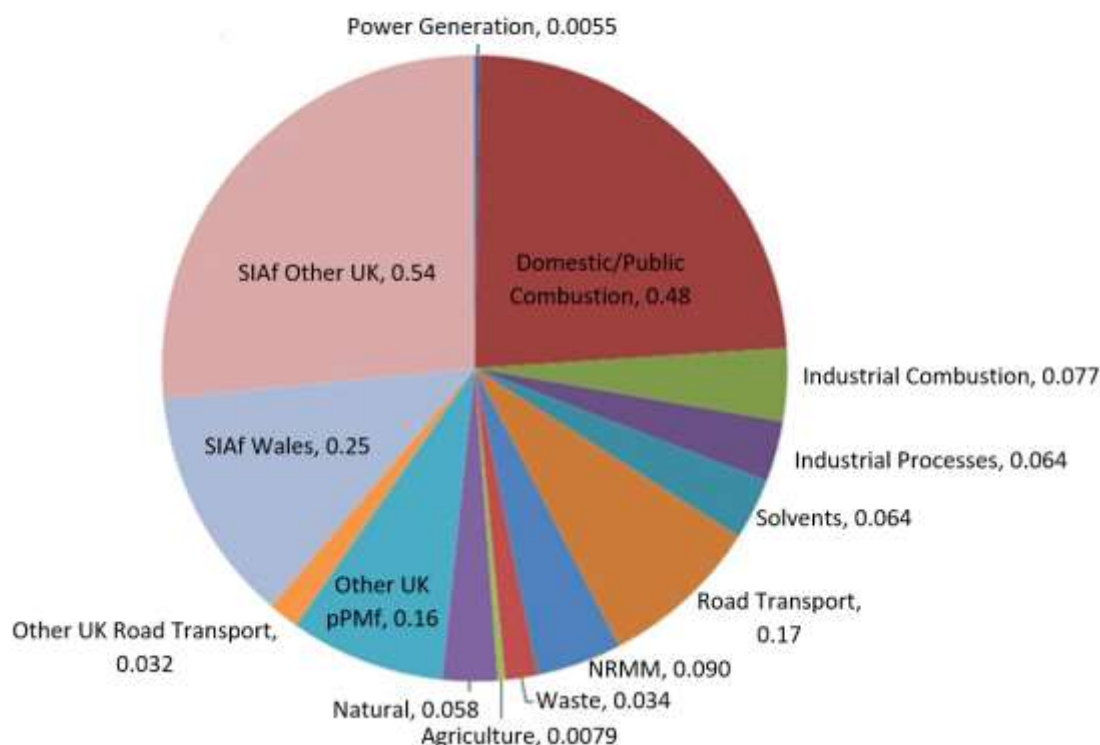
Modelled concentration of fine particulate matter in 2030 as a result of measures which achieve a notional Welsh share of the UK's NECD emission reduction targets



Contribution of wood burning to average concentrations in 2016

The pie chart below gives a detailed break-down of Welsh contributions to PWMC in Wales in 2016, indicating which source sectors are contributing to this primary contribution compared with secondary inorganic aerosols (SIA) from Wales and the rest of the UK (excluding imported and irreducible components).

Contribution to PMf concentrations in Wales (excl. imported & background)
2016



Source apportionment of Welsh emissions and the rest of the UK to PWMCs in Wales in 2016 (excluding imported and irreducible components)

The assessment, based on outdoor concentrations in 2016, estimates the sources of fine particulate matter in Wales came from:

- Primary emissions in Wales account for ~17.5% PWMC.
- Primary emissions in Wales cause local peaks ($3\text{--}5\ \mu\text{g}/\text{m}^3$ in urban areas) due to traffic, NEE and industry and domestic combustion.
- Natural irreducible sources (sea salt, and natural rural and urban dusts, SOA: biogenic) account for ~1/3 of the WHO standard over areas of S Wales, equivalent to ~45% PWMC.
- Imported contribution (primary and secondary PM) from EU and international shipping reduces from east to west across Wales, equivalent to ~20% PWMC.
- Primary emissions from UK (exc. Wales), equivalent to ~5% PWMC.
- UK secondary PM precursor emissions (SIA), equivalent to <10% of PWMC.
- Welsh secondary PM precursor emissions (SIA), equivalent to <5% of PWMC.

Traffic, non-exhaust road transport emissions, domestic and industrial emissions contribute to the local peaks in urban areas. The contribution of domestic wood-burning to PM_{2.5} concentrations makes a significant contribution along the north coast and in urban areas, including for the large urban populations in Swansea and Cardiff. We have set out measures we will take in Wales to help the UK achieve its NECD targets in this plan. As we achieve a notional Welsh share of emission reductions, the population in Wales exceeding the WHO guideline threshold is expected to reduce by over 95% in 2030 compared with 2016, leaving just a few hot-spot areas where more detailed spatial modelling and investigation is required.

Based on the PwMC in 2016, it has been estimated that the exposure of 3.16 million people in Wales to an average concentration of 6.0 µg/m³ of fine particulate matter corresponds to a monetised health impact of £950 (central estimate) million per year. Depending on the specific pathway chosen to achieve Wales' share of NECD targets for 2030, the associated reductions in overall population exposure to fine particulate matter is estimated to result in monetised health benefits in Wales of between £50M - 96M per year.

Although the analysis is subject to uncertainties and has considered a subset of all potential combinations of measures and the practicalities of implementation, it has helped us to understand where further action is likely to be needed. However, without further analysis, we do not yet know whether it is possible to achieve the WHO guideline absolutely everywhere across Wales, and how and by when it could be achieved if it is possible.

As recognised by the WHO, the standard-setting process needs to aim at achieving the lowest concentrations possible in the context of local constraints, capabilities and public health priorities. To do this, the WHO encourages the adoption of increasingly more stringent standards and tracking their effectiveness over time. Future targets for ambient levels of fine particulate matter need to be underpinned by the right evidence and metrics to achieve the most effective improvement, supporting the delivery of our well-being goals.

Action: We are convening an independent panel of experts to advise us on the right approach to take in developing ambitious targets for the benefit of current and future generations in Wales.

Action: We will develop and consult on new targets for particulate matter in Wales as part of the development of a Clean Air Act for Wales.

Question

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

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

The delivery of our proposals to improve air quality are dependent on effective regulation. In the event of Brexit, we aim to meet, if not exceed, EU environmental standards in the future to protect both human health and the environment. We want a clear and joined-up regulatory system, which meets the requirements of our people and policies. We need to ensure we have fair and effective regulation, which does not place unnecessary burdens on relevant organisations. We will consolidate and enhance the existing legislative framework for air quality, including local air quality management and smoke control, through a Clean Air Act for Wales.

Local Air Quality Management (LAQM)

Effective air quality management comprises national, regional and local level action to assess and tackle ‘hot-spot’ problems through tailored evidence-based interventions.

Welsh Government has responsibility for managing compliance with the Environment Act 1995, in relation to Local Air Quality Management (LAQM), and the Clean Air Act 1993, which provides the framework for Smoke Control Areas. LAQM requires local authorities to work with others to assess and manage public health risks from air pollution. Local authorities must carry out regular reviews and assessments of air quality in their area against the objectives. Where these are unlikely to be met, local authorities must designate Air Quality Management Areas (AQMAs) and prepare and implement Air Quality Action Plans to reduce pollution levels within 18 months of declaration.

Assessment of air quality is focused on locations where members of the public are regularly present and where there is exposure to the pollutant in question over the timescale for which the air quality objective is defined. Authorities are legally obliged to demonstrate they are doing everything reasonably possible to ‘work towards’ the legal objective values.

Welsh Government has issued extensive statutory guidance setting out what is expected of local authorities in fulfilling their duties. A significant part of our role is working with local authorities to deliver these expectations by overseeing appraisal of Annual Progress Reports (APR) and Air Quality Action Plans (AQAP) to ensure they meet the standards set out in both the statutory²⁵ and supplementary technical guidance²⁶ and are aligned with the Well-being of Future Generations principles.

Recent changes to the LAQM regime include updated guidance to local authorities, aligned with the sustainable development principles, and improvements to the annual progress report template.

The current LAQM exposure-based approach has remained largely unchanged since its inception in 1997. While this has greatly improved our knowledge of the sources and extent of air pollution, improvements are required to sufficiently deal with the scale

²⁵ <https://gov.wales/air-quality-management-guidance-local-authorities>

²⁶ <https://laqm.defra.gov.uk/technical-guidance/>

of the challenges we face. At its core the regime continues to operate reactively, requiring action where a problem area has already been identified as nearing or exceeding legal limits. The approach remains valid but there are key areas that can be improved to strengthen the regime, including monitoring strategies, public engagement, fine particulate matter (PM_{2.5}), smoke control zones, clean air zones and collaborative working.

An effective monitoring strategy is key to ensuring hot spots and other high risk areas are proactively identified throughout Wales. Currently, local authorities are asked to take a risk based approach to siting monitors, informed by where the evidence, including that brought by the community, indicates that people are likely to be exposed to the highest levels of pollution. As part of their duties, local authorities are expected to continually review the location of sited monitors, taking account of new data as it becomes available. To support local authorities in better carrying out this core element of LAQM, we will explore opportunities for providing expertise and ongoing technical support through our enhanced monitoring and assessment to ensure local authority monitoring strategies are proactive and robust.

Public engagement must be at heart of the LAQM regime; working with communities is essential for LAQM to be successful. The current statutory guidance outlines that local authorities are required to engage with the community on their air quality plans but we would like the LAQM regime to be more ambitious.

Many local authorities deliver excellent examples of public initiatives such as Cardiff Council's Car Free Day, Swansea Council's Clean Air Roadshow and Caerphilly County Borough Council's Clean Air Day event. These events impact a wide range of audiences and promote positive actions such as active travel that have the potential to change behaviour. This change in behaviour can lead to air quality improvements that help local authorities to tackle airborne pollution.

We will update our statutory guidance LAQM guidance to build further public engagement into LAQM and to see local authorities develop ambitious public engagement plans that deliver air quality and well-being benefits for communities and focus on protecting vulnerable groups such as children. Bringing greater public engagement to the centre of LAQM is a significant development to the current delivery model and complements the proposed public health-centred approach to air quality improvement.

Welsh Government has supported local authorities in their Clean Air Day activities and we will work with local authorities in the future to develop and implement their public engagement plans, for example, to host workshops that facilitate sharing best practices around delivering regular Car-Free Days.

LAQM requires local authorities in Wales to focus on monitoring and reporting nitrogen dioxide and particulate matter (PM₁₀). Monitoring of fine particulate matter (PM_{2.5}) is encouraged but is not currently mandatory. Given the known health impacts associated with PM_{2.5}, the requirement to meet the National Emission Ceilings Directive and the contribution domestic households make to levels of PM_{2.5}, we propose to investigate to extent to which local authorities can support monitoring, reporting and action on PM_{2.5} as part of their existing LAQM functions. This work will

be defined in part by the outcome of the assessment of current and future levels of PM_{2.5} in Wales.

Identifying hotspot areas is central to the current LAQM approach. Currently, there is no specific requirement as to how frequently local authorities should undertake a review of monitoring strategies to ensure hotspots are captured.

We propose to strengthen the LAQM regime by adopting into legislation a specific time period for monitoring strategies to be reviewed. This review will need to be incorporated in the Annual Progress Report mechanism. This will ensure the appropriateness of monitoring sites within AQMAs, which are evidenced and evaluated more regularly.

We believe the limitations within the current delivery model are compounded by the absence of legislation requiring local authorities to go further than identifying possible solutions in an AQAP.

We propose to bring forward legislation which requires local authorities to deliver compliance in an AQMA within a period of time agreed between the responsible Authority and Welsh Ministers and following production and appraisal of an AQAP. The Welsh Government believes this approach will deliver a more proactive and prevention-based approach.

We will review the appraisal process of Annual Progress Reports to ensure the updated LAQM regime is being appropriately assessed and local authorities are receiving relevant support in delivering their duties.

Action: We will place a requirement on local authorities to undertake a periodic review of monitor siting (e.g. every three years) and to include the reviews in the Annual Progress Report template for further consideration through the Welsh Government's appraisal process or an otherwise appropriate and independent means.

This work will include:

- a comprehensive review of LAQM in Wales throughout 2020 with a view to modernising the regime and adopting a public health-driven approach to enhance its outputs and outcomes.
- development of potential new legislation by 2021 to strengthen the Local Air Quality Management regime and deliver air quality improvements.
- working with Local Authorities to build greater public engagement into the centre of the LAQM approach to encourage behaviour change and deliver well-being benefits for communities alongside air quality improvements.
- engagement with local authorities and other stakeholders to better identify a delivery model for providing access to ongoing technical support, as well as more sophisticated monitoring instruments where there is a case for this.
- Updating and integration of Smoke Control regulations within our Clean Air Zone framework, under the wider banner of LAQM, ensuring a more coherent, deliverable and enforceable framework is available to local authorities.

Question

4. Are you satisfied the proposals for Local Air Quality Management will result in robust, effective air quality management arrangements?

Designation of Clean Air Zones/Low Emission Zones

In recent years there have been increasing calls for charging Clean Air Zones/Low Emission Zones to be introduced as a means of achieving local reductions in polluting emissions largely resulting from road transport. Powers under the Transport Act 2000 enable local authorities to introduce local charging schemes in respect of the use or keeping of motor vehicles on roads, and may also impose a charge for every parking space provided by an employer.

In 2018, Welsh Government consulted on a Clean Air Zone Framework for Wales²⁷, with a summary of response published in April 2019. The framework provides guidance to local authorities who are considering options to address local air quality issues to support the achievement of EU limits as well as LAQM actions. It describes what a clean air zone is, under what circumstances it may be applied, and the key considerations for in establishing one. The reasons for reducing airborne pollution through a Clean Air Zone may be to reduce exposure to within legal limits, but most importantly, to bring about improvements in the environment and to deliver better health for all.

Action: We will:

- Publish an interim Clean Air Zone Framework by March 2020, following our consultation exercise in 2018.
- Work with local authorities and other stakeholders to consider how the Framework can, and should, be utilised as part of routine LAQM as a substantial means of delivering reductions to pollution levels.
- Continue to review the role of vehicle access restriction, including whether road-user charging and banning of the most polluting vehicles has a role to play in reducing roadside levels of air pollution.

Question

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

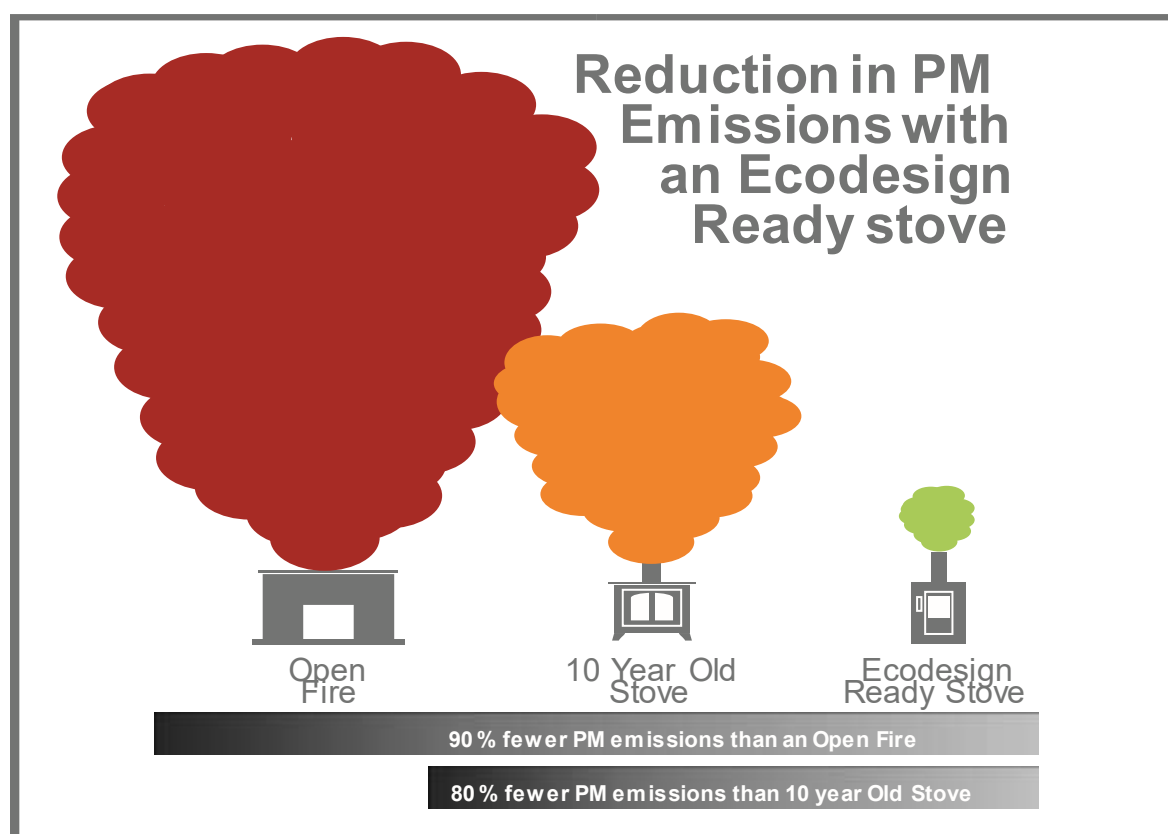
²⁷ Clean Air Zone Framework for Wales - <https://gov.wales/sites/default/files/consultations/2018-04/180424-clean-air-zone-framework-en.pdf>

Domestic Combustion

The term domestic combustion refers to residential burning for heating, such as boiler and fireplaces, cooking, both indoor and out, and includes housing and garden machinery. For the purposes of this plan we have focused on indoor domestic burning of solid fuels such as wood and coal.

We want to reduce, and in time eradicate, all emissions from domestic sources including through burning of solid fuels. However, we do recognise a proportion of people rely on solid fuels as a primary means to heat their home. In the short term there are things we can do to drastically reduce domestic emissions without moving to an immediate, unmanageable and unsustainable all out ban of domestic burning.

According to the National Atmospheric Emissions Inventory²⁸ Residential sector emissions had fallen significantly from 1990 to 2002, reflecting declining coal use, but emissions from this source are now back at around the same levels as seen in 1990 attributed in part to increased use of wood as a fuel for homes. Whilst there is significant uncertainty around the exact contribution, domestic burning of solid fuels is now said to be the largest single contributing source of the UK's levels of PM_{2.5}.



An anecdotal increase in use of wood burning stoves, particularly in urban areas, has led to a corresponding rise in particulate emissions. For a small number of homes, solid fuel burning is the only source of heating but for the majority of stove or log

²⁸ <https://naei.beis.gov.uk/>

burners owners, these appliance complement existing forms of heating such as gas and electricity.

Domestic use of fuels which create emissions impacts both the household and the air quality of the immediate neighbourhood and wider area.



Using cleaner fuels in an efficient appliance which is being used correctly and has been installed by a competent person in an appropriate setting and is maintained regularly by a professional all makes a big difference to emission and concentration levels. A multifaceted approach which takes action in each of these measures is therefore required to fully address the issue.

Measures which reduce levels of harmful PM_{2.5} also have the potential reduce associated levels of Coarse Particulates (PM₁₀), Carbon Monoxide (CO), Sulphur Dioxide (SO₂), Volatile Organic Compounds (VOC), Benzo a Pyrene (BaP) and other Dioxins.

A Task and Finish group of key stakeholders was established in February 2019. The group includes industry, fuel suppliers, PHW, Healthy Air Cymru, Local authorities and organisations such as Hetas and Woodsure to consider all available evidence and develop a comprehensive package of interventions.

We are considering the impacts, risks and potential benefits of different interventions including prohibiting the sale and use of the most polluting solid fuels (which current evidence suggests is wet wood and traditional house coal), legislating to ensure only the most efficient appliances are available and regulating to ensure appliances are regularly maintained by a qualified professional.

Recognised Good Practice

Success in this area can only be achieved by raising awareness of the associated issues, in order to change how and what people burn. There are currently a number important of industry led schemes which are intended to educate and in doing so facilitate behavioural change.

Welsh Government supports such schemes but wants to do more to ensure consumers are aware of the issues and know what to do to support future improvements.

A 1kg freshly cut log may contain around a pint of water.

Woodsure's **Ready to Burn** scheme offers a simple, but scientifically proven, message that proves burning wood with between 12% and 20% moisture content will produce significantly less emissions compared to trying to burn freshly felled wood



The Stove Industry Alliance has introduced its **Ecodesign Ready** brand ahead of the implementation of the ecodesign provisions due to be introduced in 2022.

This shows consumers which stoves are already compliant with the key components of the new legislation and therefore emit significantly fewer emissions as part of normal operation

Burnright is an independent, grass roots campaign – run by chimney sweeps for the wider benefit of everyone.

The scheme aims to provide clear advice on how to save money and reduce pollution by following certain simple rules.



We will be using the Multi Pollutants Measures Database findings, developed specifically to address key measures to deliver compliance with NECD requirements,

to better understand the specific position in Wales to inform the most effective behaviours and interventions.

We also propose to look further at measures to reduce emissions from burning garden and household waste (including at allotment sites) for which evidence is currently only anecdotal.

Smoke Control Areas

The Clean Air Act (CAA) was introduced in 1956 after a Government report into the great smog of 1952. The Act aims to control emissions of dark smoke, grit, dust and fumes from industrial premises and furnaces and to give Local Authorities power to designate and control Smoke Control Areas.

Within a Smoke Control Area it is an offence to emit smoke from any chimney of a building (including domestic, residential and industrial premises) unless using a fuel or appliance approved for use in a Smoke Control Area.

In Wales exempted appliances and authorised fuels are currently listed in two Statutory Instruments, which are each intended to be updated yearly. Manufacturers obtain a listing in the regulations by paying a fee to submit their products for testing by technical advisors (under contract with the UK Government on behalf of Wales, Scotland and England) who subsequently make recommendations for inclusion in the Welsh legislation.

We propose first to amend existing primary legislation to move from updating these lists through Statutory Instrument to online published lists. We recognise this would be more beneficial to businesses as it overcomes the delay between testing the new product and obtaining a listing in one of the annual Statutory Instruments and resulting in reduced burdens for businesses. The proposed changes benefit consumers by allowing new technologies to be brought to market more rapidly as the lists are updated on a more frequent (e.g. monthly) basis.

Smoke Control is currently limited to indoor installed appliances such as log burners and stoves which generally use the existing property chimney or other suitable infrastructure to install. No consideration is currently given to the impact outdoor solid fuel burning appliances (E.g. barbeques, chimineas, pizza ovens, outdoor fireplaces and firepits), or the fuels they use, have on air quality.

Existing statutory nuisance legislation exists to deal with incidents of smoke, fumes, gases, dust and odours emitted from a premise. The legislation does not and was never intended to tackle outdoor burning appliances.

We will investigate the practicalities, advantages and challenges of regulating outdoor appliances and fuels for use within a SCA or throughout Wales. As with burning more generally, we will promote good practice and raise awareness of the impact these appliances can have on air quality, especially in concentrated or built up areas.



We will explore the merits of introducing various tiers of Smoke Control Area; allowing local authorities to choose a more or less stringent approach to implementation and enforcement based on pollution levels.

Fireworks and traditional bonfires are enjoyed by many people, particularly at certain times of the year. However, they can also cause distress to certain people and animals, and emit pollutants that may affect the respiratory systems of healthy individuals as well as those already suffering from respiratory diseases such as asthma and chronic obstructive pulmonary disease (COPD).

Action: We will assess the contribution domestic bonfires and fireworks make to levels of PM_{2.5} emissions.

Action: We are taking a cross-Government approach to consider what, if any, further regulatory and/or non-regulatory action should be taken in this area in 2020.

Enforcement

Where a local authority declares a Smoke Control Area, the emission of smoke from a chimney of a building becomes an offence. The Act provides defences, including the use of an exempt appliance or an authorised fuel (both of which are specified by the Welsh Ministers in regulations).

Through Engagement with local authorities we have become acutely aware of the challenges faced by Authorities in properly enforcing Smoke Control Areas under this outdated regime.

We propose to update existing Smoke Control Regulations, by way of a Clean Air Act for Wales, to ensure local authorities have the means and tools required to undertake effective enforcement against offenders.

Work in relation to domestic combustion will include:

- Legislating to prohibit the use and sale of the most polluting fuels throughout Wales.
- Ensuring that only the most efficient and least polluting appliances are available for sale by 2022.
- Changes to smoke control legislation to make it easier for local authorities to proactively and effectively enforce and modernise the approach it takes to ensure it deals with the problems as they now stand.
- We will work with industry and other devolved administrations to identify appropriate test standards for new solid fuels entering the market.
- Consider whether outdoor solid fuel burning appliances and the fuels they use should be subject to regulation if purchased for use within a SCA or throughout Wales. (E.g. barbecues, chimineas, pizza ovens, outdoor fireplaces and firepits).
- Amending legislation to allow Welsh Ministers to publish an online list of fuels and appliances, moving away from the method of updating through Statutory Instruments.

Question

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

Question

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

Improving domestic energy efficiency

Improving the energy efficiency of the homes of people living on a lower income is one of the ways in which the Welsh Government is tackling fuel poverty. Since its launch in 2011, the Warm Homes Programme designed to install home energy efficiency measures in Welsh homes consider a whole house approach to home energy efficiency improvements. This helps to tackle harder to treat homes where the impact of fuel poverty tends to be most severe. Under the programme, our area based Arbed and demand led Nest Schemes both require whole house assessments to be undertaken to ensure the correct energy efficiency measures are identified and installed to provide the best opportunity to lift people struggling to meet the cost of their home energy needs out of poverty.

The latest estimates for fuel poverty in Wales published in May 2019 suggests 155,000 households in Wales were living in fuel poverty, equivalent to 12% of all households. Of these households, 32,000 households were living in severe fuel poverty, equivalent to 2% of all households or 21% of fuel poor households. 130,000 vulnerable households in Wales were living in fuel poverty, equivalent to 11% of all vulnerable households. Of these vulnerable households, 19,000 were living in severe fuel poverty, equivalent to 2% of all vulnerable households or 15% of vulnerable households in fuel poverty.

To reduce fuel poverty still further, the Welsh Government has consulted on a new plan to tackle fuel poverty, which it expects to publish by April 2020. Reducing Fuel Poverty still further over the next fifteen years requires expanded advice and support for people experiencing difficulty securing better energy deals. It also requires an expansion and extension, in some form, of the Warm Homes Programme to install home energy efficiency measures in energy and thermally inefficient Welsh Homes. Any future programme will be created in conjunction with efforts to develop a programme to decarbonise all existing homes to meet our statutory climate change targets and meeting our obligations under the Clean Air Plan.

Integration of area-specific policies

Air pollutants do not respect local or national borders. Effective air quality and noise management requires national, regional and local level action to assess and tackle 'hotspot' problems through tailored evidence-based interventions. We will develop an approach where local authorities can address 'hotspots' individually and work collaboratively to achieve improvements on a regional scale.

Clean Air Zones/Low Emission Zones specifically target a defined geographical area with the aim of achieving reductions in polluting emissions locally. The consultation on our Clean Air Zone Framework for Wales revealed the need for a clearer integration with the LAQM regime, and also further consideration of how Clean Air Zones/Low Emission Zones may be most effectively introduced in Wales.

Workplace Parking Levies can encourage commuters to find alternative means of travel by applying a direct charge on employees for using employer-provided parking. Reduced car journeys and road congestion can deliver reductions in polluting emissions and revenue generated by such a scheme may be used to support improvements in local transport provision.

Smoke Control Areas also provide a means to address particular localised issues by targeting action in a specific area with the purpose of tackling a known, existing problem.

Action: We will:

- Engage with local authorities throughout Wales to identify the main challenges to delivering improvements to local air quality within the current delivery model and legislative framework. In particular, we would like to identify how outcomes can be improved by collaborative working between local authorities.

- Build on our Clean Air Zone Framework for Wales, LAQM policy, and Smoke Control Area provisions, to develop, by the end of this Assembly term, a single comprehensive framework for the efficient targeting of air quality interventions where most needed.

Question

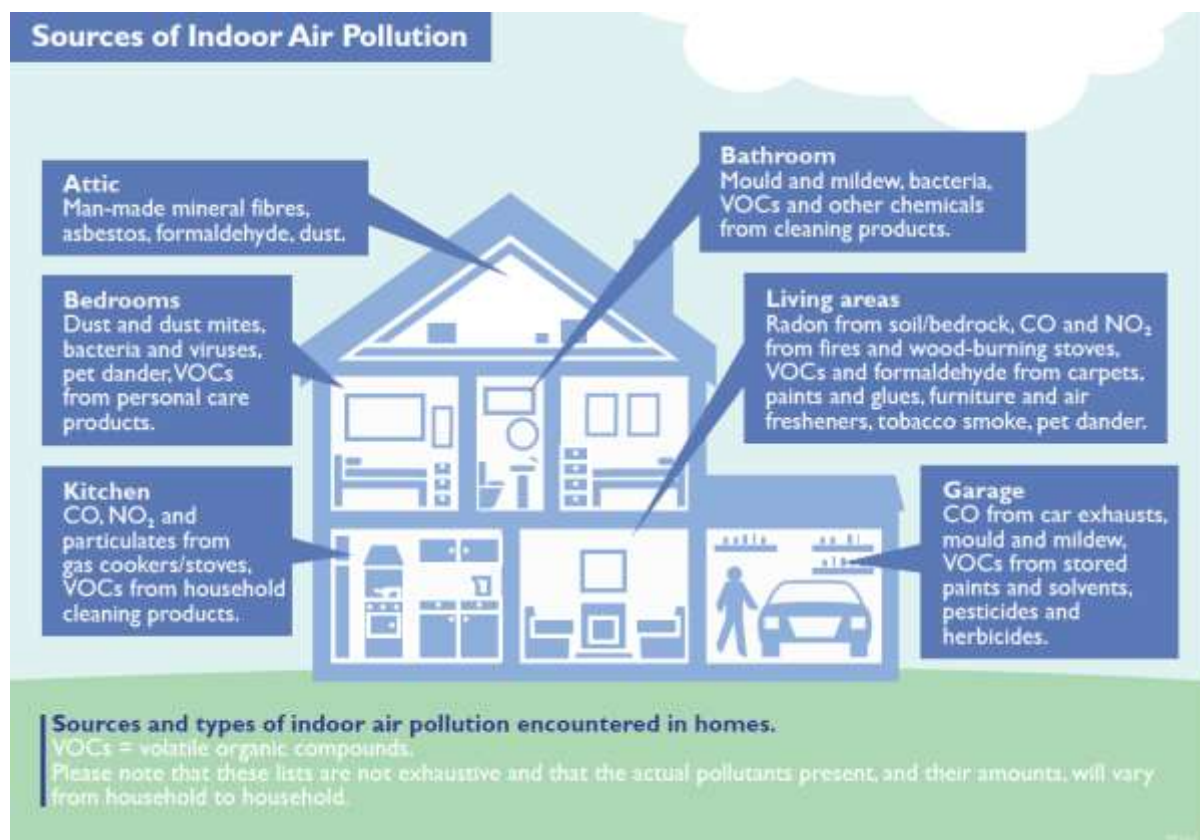
8. Are you satisfied with proposals to deliver a more integrated air quality management approach? If no, please provide evidence to support other alternatives.

Indoor air pollution

The World Health Organization attributes 3.8 million additional deaths to indoor air pollution. Air pollution can harm acutely, usually manifested by respiratory or cardiac symptoms, as well as chronically, potentially affecting every organ in the body. It can cause, complicate, or exacerbate many adverse health conditions. Tissue damage may result directly from pollutant toxicity because fine and ultrafine particles can gain access to organs, or indirectly through systemic inflammatory processes. Susceptibility is partly under genetic and epigenetic regulation. Although air pollution affects people of all regions, ages, and social groups, it is likely to cause greater illness in those with heavy exposure and greater susceptibility. Persons are more vulnerable to air pollution if they have other illnesses or less social support. Harmful effects occur on a continuum of dosage and even at levels below air quality standards previously considered to be safe²⁹.

Indoor air quality is increasingly recognised as an important aspect of exposure to air pollution because much of our time is spent indoors. Exposure to air pollution occurs in the home, at school and in workplaces, whilst travelling, and during leisure activities. Indoor emissions and levels of ventilation are important factors in managing personal exposure. Emissions from open fires and stoves can include particulate matter, nitrogen dioxide, carbon monoxide and sulphur dioxide. Emissions of formaldehyde or non-methane volatile organic compounds (NMVOCs) can occur from many other sources including, glues, paints, carpets, upholstery, cleaning products, personal care products, air fresheners and tobacco smoke.

²⁹ Air Pollution and Non-communicable Diseases: A Review by the Forum of International Respiratory Societies' Environmental Committee, Part 1: The Damaging Effects of Air Pollution.
<https://doi.org/10.1016/j.chest.2018.10.042> (accessed 02/07/2019)



From a public health perspective, some of these sources can affect susceptible individuals with existing conditions. In all cases, it is important to follow the manufacturer's instructions for using each product. Regardless of circumstances, it is always important from a public health perspective to ensure good ventilation within any building where people may be present.

We need improved evidence on which to base the technical, behavioural and policy approaches used to assess and manage the inside-outside continuum of exposure to air pollution.

Action: We will continue to work with academia, public health organisations and other partners to develop and respond to new evidence on indoor air pollution as it emerges.

Action: We will raise people's awareness of indoor air pollution in future communication interventions, including ways to reduce exposure risks.

The UK's exit from the European Union may result in the need for a separate UK regime for the regulation of chemicals ('UK REACH'), where policies are made and decisions taken domestically rather than at an EU level. In such a scenario, the Welsh Government will play an active role in the new regime's governance, to ensure that it upholds a high level of protection for human health and the environment, including regulating articles and products containing chemicals that contribute to poor indoor air quality.

Question

9. 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.

A Clean Air Act for Wales

The First Minister prioritised the development of a Clean Air Act for Wales in his leadership Manifesto to ensure our children can go to school, be active and play outside safely without fear of respiratory problems, such as asthma, because of pollution levels in some of our towns and cities.

We will develop a Clean Air Act to enhance existing legislation and bring forward new legislation to deliver air quality improvements in Wales. The aim of the Act will be to deliver the First Ministers Manifesto commitment and reduce the burden of poor air quality on human health, our economy, biodiversity and natural environment. The Act could also support wider actions to address the Climate emergency and support environmental growth.

The current focus for the Bill, based on initial stakeholder and cross-Government engagement, will be to introduce a fit for purpose air quality legislative and regulatory framework. This is likely to include, but is not limited to:

- new powers for smoke control linked to tackling air pollution from domestic burning (PM_{2.5});
- a requirement for a Clean Air Plan / Strategy to be published / reviewed every 5 years
- potential new air quality targets (for example, taking account of World Health Organisation Guideline standards for air quality);
- a revised local air quality management regulatory structure;
- strengthened powers to address road vehicle idling;
- consolidated powers to implement Clean Air Zones / Low Emission Zones;
- focused powers to protect vulnerable groups from the effects of air pollution.
- enhanced air quality monitoring and modelling.
- a potential new duty on public bodies to adhere to guidance encouraging different ways of working and actions to reduce air pollution and support decarbonisation.

We will review legislative measures being taken by the Scottish Government through their 'Transport (Scotland) Bill' and air quality measures being developed through the UK Government Environment (Principles and Governance) Bill to consider whether they will deliver air quality benefits for Wales if adopted in our own Clean Air Act.

Action: We will consult on and publish a White Paper before the end of this Assembly Term on legislative proposals to improve air quality through a Clean Air Act for Wales.

Consideration will be given to existing regulatory powers, enforcement and sanctions, and whether there is a case to strengthen these. Evidence from the consultation will be used to inform any necessary action to ensure that the most appropriate tools are available.

Questions

10. Do you support the proposals for a Clean Air Act for Wales?
11. Are there additional issues a Clean Air Act should address?
12. 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?

Managing air quality in the event of a pollution incident

Arrangements exist in Wales to respond immediately in the event of an incident, such as a large fire or chemical release, which has the potential to impact air quality. In the event of such an incident, an Air Quality Cells facilitates the co-ordination, collection, collation and interpretation of air quality data to inform what level of action is required to protect public health and the environment.

Incidents can have a significant short term impact on air quality and cause acute health issues.

Air Quality monitoring equipment is deployed in response to such an incident, where members of the Air Quality Cells deem it necessary. Such equipment is managed, maintained and operated by NRW.

The air quality Cell, Chaired by Natural Resources Wales, is supported by Public Health Wales, Public Health England, the Centre for Radiation, Chemicals and Environmental Hazards Wales, Local Authorities and the Met Office. Further support is provided by other organisations, such as the Food Standards Agency and Fire and Rescue Service as and when it is required.

In recognising the vital importance of both the Air Quality Cell and monitoring equipment it provides, we are committed to supporting NRW to ensure it remains resilient, robust and able to respond quickly and effectively in the event of an incident.

Action: Welsh Government and NRW will work together to ensure continued improvements in response capabilities of the Cell by updating monitoring equipment and building on the existing services to ensure arrangements are in place to respond quickly and efficiently 24/7, 365 days of the year, anywhere in Wales.

Public awareness about airborne pollution

Communications and behaviour change

This plan demonstrates wide ranging actions being developed and delivered by the Welsh Government to improve air quality. However, we cannot tackle air pollution alone. We will provide tools to enable people to understand the causes of air pollution, effects pollution could have on their health and how they can help to reduce air pollution and encourage others to do the same. Everyone has an individual responsibility to support collaborative action needed to achieve clean air for Wales.

Effective communication about air quality is key to protecting the environment and the health of current and future generations. People expect high quality, useful information from government and public health agencies regarding:

- the status of their local air quality
- the health impacts of air pollution
- the actions they can take to reduce their personal exposure and potential contribution to air pollution
- advocating actions they can take to tackle air pollution more widely

Welsh Government and public bodies will be proactive in communicating problems, progress and practical solutions associated with air quality in Wales. We are using a focused approach to our communications, which develops and delivers work through the following three streams:

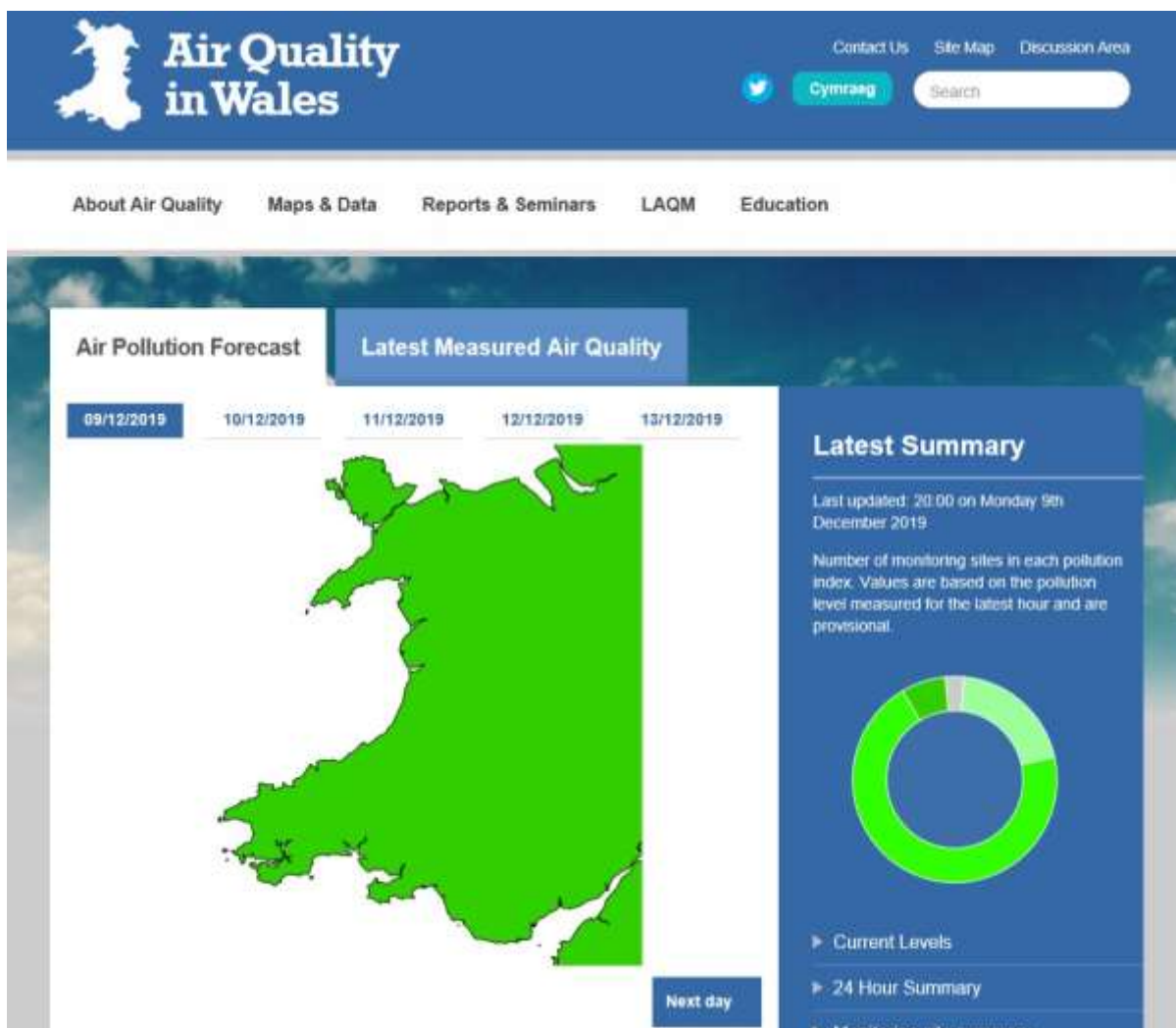
- Information Provision
- Increasing Awareness
- Promoting and Supporting Local Initiatives

The three streams have been developed to focus efforts and ensure we deliver across all three of these areas. Each stream is equally important and will be developed simultaneously given the interaction and overlap between them. Further detail about each stream and how they will be delivered is set out below.

Information Provision

It is vital we provide key information regarding air pollution, which is easily accessible to the public. Information provision has a key role to play in supporting air quality improvements and enabling the public to protect their health.

The Air Quality in Wales website maintained by the Welsh Government currently includes data from monitoring sites and is our central data repository that meets our legal requirements. The monitoring information on the site helps people to determine whether they or their families are likely to be at risk from air pollution. If users find that they may be at risk, they are referred to health guidance messages corresponding to the forecast level of pollution.



Action: We will redesign the existing website to become our central information hub, broadening its scope to include easily accessible information on pollutants and their health impacts, exposure reduction guidance, specific guidance for vulnerable groups and an improved children and young people section.

We will use the Air Quality in Wales hub to share ideas, information and best practice between local delivery partners across Wales to foster collaborative ways of working and contribute towards creating connected and cohesive communities. We will have an active social media account promoting key information and messages to increase awareness and support local initiatives. There will also be a range of behaviour change suggestions and up to date information on air quality actions being carried out across Wales, with signposting to Local Air Quality Management activities.

Information about air quality can often be written in technical language, which may create barriers and reduce accessibility. We will work with the public, stakeholders, Local Authorities and Public Health Wales to ensure materials are accessible to all and easy to understand. We will also co-ordinate messaging with Public Health Wales to ensure information and advice is consistent.

In addition to digital communications, we will provide physical communications. We will work with Public Health Wales and through the Healthy Weight – Healthy Wales Strategy³⁰ to explore how we can use settings such as hospitals, GP surgeries, pharmacies and leisure centres to promote healthy and informed choices.

Increasing Awareness

We are committed to taking a lead role in raising public awareness about air quality. Through the Increasing Awareness stream we will develop communications at a national level using a range of media to promote key information and to encourage behaviour change that supports improvements in air quality. We recognise that air quality is a cross-cutting policy area and are already engaging with policy teams across Welsh Government to deliver effective communications which also support wider objectives for health, decarbonisation, tourism, transport and the environment. We will engage with stakeholders to identify priority areas and the most appropriate delivery methods.

We have begun increasing awareness about air quality through supporting Clean Air Day. This is a UK-wide awareness-raising day run by the charity Global Action Plan (GAP) that takes place annually in June. In 2019, the Welsh Government partnered with GAP to deliver Clean Air Day Wales.

We published free resources on a Welsh specific page of the Clean Air Day website and delivered a social media campaign which included an air quality quiz and a 30 day countdown. Through Clean Air Day we were able to contribute to our goal of a thriving Welsh language with Welsh materials and messages promoted at a Wales and UK level³¹. Linked to this, agriculture-specific air quality information was published on Farming Connect.



We worked with organisations across Wales to support local activities, including providing Local Authorities with resources for their events. We also developed

³⁰ See: <https://gov.wales/healthy-weight-healthy-wales>

³¹ Resources can be viewed and downloaded for free at: <https://www.cleanairday.org.uk/wales>

informative posters with Public Health Wales, which were endorsed by the Future Generations Commissioner's Office, Natural Resources Wales and the Welsh Local Government Association.



Our evaluation of the first year of Clean Air Day Wales showed an increase in awareness and knowledge of air pollution and mitigating actions. This demonstrates the value of combining national level communications with local delivery.

Action: Welsh Government is committed to delivering Clean Air Day Wales and supporting organisations to participate in the initiative. Welsh Government will work with public bodies across Wales to increase their involvement. We will integrate Clean Air Day with the theme years run by Visit Wales and other air quality communications that will be developed.



Promoting and supporting local initiatives

While many areas in Wales share similar air quality issues, each community has individual circumstances requiring a unique approach and we recognise local delivery is key to building sustainable behaviour change. As part of the integrated approach set out in Prosperity for All, our national strategy, we are striving to deliver communications and behaviour change projects that support, empower and build on community initiatives.

We will work with local delivery partners to support existing work and provide complementary online resources across a number of sectors including education, healthcare and business. We will take a community-based approach to ensure we develop relevant communications and resources that can be easily tailored and delivered by local partners, such as Local Authorities and community/voluntary organisations, who best understand local issues. We will also work closely with Local Authorities to ensure that resources can support them in communications activities related to their Local Air Quality Management duties.

Ongoing evaluation helps us to deliver effective activities. We will work with stakeholders at the local, regional and national level to ensure that we develop appropriate and relevant indicators to measure impact, progress and highlight areas for improvement.

Citizen Science

Action: We recognise citizen science projects have the potential to encourage behaviour change. In 2018 the Welsh Government funded the ‘Young Dragons’ initiative which was delivered by Keep Wales Tidy through the Eco-Schools network. The initiative provided monitors to the participating schools and introduced pupils to the causes, impacts and mitigating actions of air pollution in a local context. Taking on board the evaluation from this initiative and feedback from stakeholders we will explore potential future citizen science projects and the best vehicle to deliver them.

Education and the new Curriculum for Wales

The Curriculum for Wales to start being taught in schools from 2022³² includes many opportunities to develop greater understanding of air quality, pollutants, and personal contribution to preserving and improving our environment.

The health and well-being area of learning and experience addresses environmental factors that affect health and well-being, and the impact the environment can have upon our mental health and emotional well-being.

The science and technology area of learning and experience addresses, as examples, developing how an understanding of harmful factors in our environment allows us to make informed decisions, including about seeking prevention and treatments for diseases, the effects of industrial activities on Wales’ ecology and the effects of Wales’ activities on ecosystems in other countries, investigating indoor and outdoor environments in a safe and systematic way and how industry past and present has impacted on human health and the environment.

Action: Welsh Government will work with education partners to promote and develop educational resources and opportunities that lead to greater understanding of air quality, pollutants, evidence and interpretation, and developing personal awareness and responsibility.

Questions

13. 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?
14. 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?
15. Are there other approaches or opportunities to develop greater understanding of air quality issues that you think we should explore?

³² The Welsh Government published the Draft **Curriculum for Wales 2022** on 30 April 2019. See: <https://hwb.gov.wales/draft-curriculum-for-wales-2022> (accessed 05/09/2019)

Empowering workforces to tackle air pollution

In April 2018, the Welsh Government and PHW published 'Advice for NHS Wales staff - Working together to reduce outdoor air pollution, risks and inequalities'³³. This guidance complements existing air quality responsibilities and uses four principles to influence, communicate and champion air quality improvement within and beyond the NHS:

- supporting others to assess and appropriately prioritise air pollution in local areas;
- engaging senior local decision-makers to take local action on air pollution;
- communicating with the public (including patients) about local air pollution; and
- championing air quality improvement both outside and inside their organisations.

Very few of the actions suggested in the health guidance are unique to the NHS. The majority are equally relevant to other public and private bodies.

Action: During 2020, we will review the guidance with NHS and wider partners (including Public Health Wales, health boards, local authorities and Natural Resources Wales) to see how it can be adapted to give the guidance broader appeal and maximise its reach and impact. We intend to complete this work by spring 2021.

Through this work, it will be important to ensure actions proposed, applied across other sectors and organisations, can help deliver multiple air quality, health and linked decarbonisation benefits simultaneously. Consideration will also be given to establishing a proportionate reporting mechanism to help organisations demonstrate progress and share details and examples of how they are implementing the guidance in practice.

Action: As we develop our Clean Air Act for Wales, we will consider whether this guidance should be placed on a statutory footing.

Action: We will establish a reporting mechanism to support existing and potential new guidance to enable relevant bodies to provide details of how they are implementing the guidance in practice.

Questions

- 16 Do the proposed communications work streams provide a suitable focus for air quality communications and behaviour change work?
- 17 Are there features you would like to see included on the Air Quality in Wales website?

³³ Advice for NHS Wales staff - Working together to reduce outdoor air pollution, risks and inequalities - <https://gov.wales/sites/default/files/publications/2019-06/working-together-to-reduce-outdoor-air-pollution-risks-and-inequalities.pdf>

- 18 Are there specific communications and behaviour change campaigns you would support?
- 19 Are there age groups or communities who could contribute to developing citizen science projects?
- 20 Which age groups would benefit most from developing personal awareness, understanding and responsibility in terms of air quality and pollutants?
- 21 Are there additional approaches or opportunities to develop greater understanding of air quality issues that should be explored?

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

Commitments & Actions	Short term (to 2021)	Medium Term (2021-26)	Longer Term (post 2026)
Increase our understanding of the effects of airborne (air and noise) pollution on health.			
We are working with UK partners to develop existing air quality frameworks to ensure they continue to satisfy legislative requirements and reflect our priorities where it is possible to do so.	●	●	
We will develop a more granular air quality evidence base, in partnership with Public Health Wales and Natural Resources Wales, investing in and enhancing the monitoring and assessment capabilities regarding air quality and the associated risks in Wales.	●	●	
We will establish a new national air pollution monitoring network by December 2021 (which complements existing monitoring capabilities), primarily focusing on sensitive receptor locations in Wales (including schools, hospitals, care homes and areas where evidence indicates poor air quality can amplify already persistent problems linked to deprivation and chronic illness).	●	●	●
A fit for purpose legislative and regulatory air quality management framework for Wales			
New targets to reduce exposure to particulate matter - We want concentrations across Wales to be below the WHO guideline for PM _{2.5} where it is possible, and lower still where there is sufficient potential and there is high public exposure or risk to sensitive groups. We will develop and consult on new targets for particulate matter in Wales as part of the development of a new Clean Air Act for Wales.	●	●	
Convene an independent panel of experts to advise us on the right approach to take in developing ambitious targets for the benefit of current and future generations in Wales.	●	●	●

Local Air Quality Management			
A comprehensive review of LAQM in Wales throughout 2020 with a view to modernising the regime and adopting a public health-driven approach to enhance its outputs and outcomes.	●	●	
Development of potential new legislation by 2021 to strengthen the Local Air Quality Management regime and deliver air quality improvements.	●	●	
We will work with Local Authorities to build greater public engagement into the centre of the LAQM approach to encourage behaviour change and deliver well-being benefits for communities alongside air quality improvements.	●	●	●
We will engage with local authorities and other stakeholders to better identify a delivery model for providing access to ongoing technical support for LAQM, as well as more sophisticated monitoring instruments where there is a case for this.	●	●	
We will place a requirement on local authorities to undertake a periodic review of monitor siting (e.g. every three years) and to include the reviews in the Annual Progress Report template for further consideration through the Welsh Government's appraisal process or an otherwise appropriate and independent means.	●	●	
Updating and integration of Smoke Control regulations within our Clean Air Zone framework, under the wider banner of LAQM, ensuring a more coherent, deliverable and enforceable framework is available to local authorities.	●	●	
Designation of Clean Air Zones/Low Emission Zones			
Publish an interim Clean Air Zone Framework by March 2020, following our consultation exercise in 2018.	●		
We will work with local authorities and other stakeholders to consider how the Clean Air Zone Framework can, and should, be best utilised as part of routine LAQM as a substantial means of delivering reductions to pollution levels.	●	●	

Continue to review the role of vehicle access restriction under the Clean Air Framework, including whether road-user charging and banning of the most polluting vehicles has a role to play in reducing roadside levels of air pollution.	●	●	
Domestic Combustion			
We will assess the contribution domestic bonfires and fireworks make to levels of PM _{2.5} emissions. We are taking a cross-Government approach to consider what, if any, further regulatory and/or non-regulatory action should be taken in this area in 2020.	●	●	
Engage with local authorities throughout Wales to identify the main challenges to delivering improvements to local air quality within the current delivery model and legislative framework. In particular, we would like to identify how outcomes can be improved by collaborative working between local authorities.	●	●	
We will legislate to prohibit the use and sale of the most polluting fuels throughout Wales.	●	●	
We will ensure only the most efficient and least polluting appliances are available for sale by 2022.	●	●	
We will change smoke control legislation to make it easier for local authorities to proactively and effectively enforce and modernise the approach it takes to ensure it deals with the problems as they now stand.	●	●	
We will work with industry and other devolved administrations to identify appropriate test standards for new solid fuels entering the market.	●	●	
We will consider whether outdoor solid fuel burning appliances and the fuels they use should be subject to regulation if purchased for use within a SCA or throughout Wales. (E.g. barbecues, chimineas, pizza ovens, outdoor fireplaces and firepits).	●	●	

Integration of area-specific policies			
Build on our Clean Air Zone Framework for Wales, LAQM policy, and Smoke Control Area provisions, to develop, by the end of this Assembly term, a single comprehensive framework for the efficient targeting of air quality interventions where most needed.	●	●	
Work with local authorities, Public Health Wales and other stakeholders to build on our existing LAQM guidance in relation to schools and other sensitive receptor locations, to further deliver pollution reductions for these groups.	●	●	
We will amend legislation to allow Welsh Ministers to publish an online list of fuels and appliances, moving away from the method of updating through Statutory Instruments.	●	●	
Indoor air pollution			
We will continue to work with academia, public health organisations and other partners to develop and respond to new evidence on indoor air pollution as it emerges. We will raise people's awareness of indoor air pollution in future communication interventions, including ways to reduce exposure risks.	●	●	
A Clean Air Act for Wales			
We will consult on and publish a White Paper before the end of this Assembly Term on legislative proposals to improve air quality through a Clean Air Act for Wales.	●		
Manage air quality in the event of a pollution incident			
Welsh Government and NRW will work together to ensure continued improvements in response capabilities of the Cell by updating monitoring equipment and building on the existing services to ensure arrangements are in place to respond quickly and efficiently 24/7, 365 days of the year, anywhere in Wales.	●	●	●

We will deliver behavioural change communications to enable people to understand the causes of air pollution, effects pollution could have on their health and how they can help to reduce air pollution and encourage others to do the same			
Develop an air quality behavioural change communications programme through three streams: Information Provision, Increasing Awareness and Promoting and supporting local initiatives.	●	●	
Enhance the existing Air Quality in Wales website to develop a communications and information hub.	●	●	
Continue to participate in Clean Air Day and support organisations to deliver local Clean Air Day activities and engagement.	●	●	
Develop air quality citizen science projects and establish the best methods of delivery.	●	●	
Work with education partners to promote and develop educational resources and opportunities that support the Curriculum for Wales and lead to greater understanding of air quality, pollutants, evidence and interpretation, and developing personal awareness and responsibility.	●	●	●
During 2020, we will review the joint Welsh Government and Public Health Wales 'Advice for NHS Wales staff - Working together to reduce outdoor air pollution, risks and inequalities' with NHS and wider partners (including Public Health Wales, health boards, local authorities and Natural Resources Wales) to see how it can be adapted to give the guidance broader appeal and maximise its reach and impact. We intend to complete this work by spring 2021.	●	●	

Questions

22. Do the proposed commitments and actions address the issues described in the health and well-being section of the Plan?
23. Do you agree the actions will help to reduce the impact of air pollution on health and well-being in Wales?
24. What additional commitments or actions would you propose?

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

Summary

One of the greatest challenges we face is to find a way to secure a healthy, resilient and productive environment for the future while continuing to create jobs, housing and infrastructure.

The natural environment provides our essential resources - the air we breathe, the water we drink and much of the food we eat. Demands on natural resources are increasing. We recognise poor air quality and the decline in biological diversity is a key challenge facing our natural resources. Biological diversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being.

For Wales to develop sustainably, we have changed the law to put in place key elements which enable it to happen.

The Well-being of Future Generations (Wales) Act 2015 is about improving the social, economic, environmental and cultural well-being of Wales. It makes the public bodies listed in the Act think more about the long-term, work better with people, communities and each other, looking to prevent problems and take a more joined-up approach. Part 1 of the Environment (Wales) Act 2016 sets out the 'sustainable management of natural resources' – an approach to managing Wales' natural resources and ecosystems to ensure that the benefits they provide for our social, economic, environmental and cultural well-being are available now and for future generations.

The Environment (Wales) Act 2016

Part 1 of the Environment (Wales) Act 2016 sets out the legislative framework to ensure natural resources and ecosystems are resilient and able to provide benefits now, and for the future, through the 'sustainable management of natural resources' (SMNR). The legislation is based on international best practice, the Ecosystem Approach, drawing on the 12 principles established by the UN Convention of Biological Diversity (CBD)³⁴.

This is the process of improving the economic, social, environmental and cultural well-being of Wales in accordance with the sustainable development principle by ensuring the long term provision of high quality natural resources and healthy, resilient ecosystems, which underpin well-being.

Sections 8, 9 and 11 of this Act defines the adaptive delivery framework for embedding the ecosystem approach through SMNR across government.

³⁴ The UN Convention of Biological Diversity (CBD) describes the ecosystem approach as 'a strategy on the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way' and is widely recognised as international best practice for addressing the decline in biodiversity.

The State of Natural Resources Report produced by our environmental body Natural Resources Wales (NRW) sets out the national evidence base for the sustainable management of natural resources. It shows that no ecosystem in Wales is currently showing all the attributes of resilience, which is impacting on the ability of our ecosystems to provide benefits for our well-being. It also sets out how Wales' natural resources contribute to our well-being³⁵.

The Welsh Minister's **Natural Resources Policy**³⁶ sets out the national priorities for the sustainable management of natural resources drawing from the national evidence base in the State of Natural Resources Report. The national priorities are the key ways in which Wales' natural resources contribute across all the well-being goals. They have been developed to both address the challenges to our natural resources and realise the opportunities from them. The national priorities are:

- Delivering nature-based solutions.
- Increasing resource efficiency and renewable energy.
- Taking a place based approach.

Natural Resources Wales' **Area Statements** contribute to implementing the Natural Resources Policy in a local context, taking a place based approach. There will be seven Area Statements across Wales – six terrestrial and one marine. Taking a place based approach focuses on collaborative working to deliver better results at a local level. Communities are best placed to shape local priorities and opportunities linked to the national priorities and find practical solutions which bring the widest possible benefits, ensuring local people benefit fully from the natural resources in their locality.

Area statements will enable resilient ecological networks which are an important nature based solution to halting and reversing biodiversity loss. These are spatially defined areas linking protected sites and other biodiversity hotspots across the wider landscape with good existing or potential functional connectivity. Such networks have existing or potential for healthy resilient ecosystems which provide a range of important ecosystem services as well as allowing the movement of species across landscapes in response to climate change. These networks will underpin Wales' ecosystem restoration approach to support biodiversity and the provision of ecosystem services – linked to well-being.

Natural Resources Wales will use their leadership role in encouraging others to take action. The area statements will be in use from April 2020. The evidence base includes opportunity and constraint mapping to show where there are opportunities to take collaborative action. Actions identified to reduce air pollution will be developed in the context of wider proposals highlighted in this Plan.

³⁵The State of Natural Resources Report - <https://naturalresources.wales/evidence-and-data/research-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en>

³⁶Natural Resources Policy - <https://gov.wales/docs/desh/publications/170821-natural-resources-policy-en.PDF>

Natural Resources Wales Area Statements - <https://naturalresources.wales/about-us/area-statements/?lang=enA>

Area Statements will inform *what* we do, *how* we do it, *who* we do it with, and *how* we plan our work in different areas of Wales. They will enable place based working as well as more strategic delivery at a landscape scale. We are also developing a more rapid approach to assess the condition of the protected site network and put in place appropriate restoration management measures, as identified in our Nature Recovery Action Plan (NRAP).

Nested within our Natural Resources Policy is our biodiversity strategy which forms part of our delivery against international commitments to the Convention on Biological Diversity and the Aichi targets.

Our Nature Recovery Action Plan (NRAP) for Wales³⁷, published in 2015, seeks to:

- Engage and support participation and understanding to embed biodiversity throughout decision making at all levels;
- Safeguard species and habitats of principal importance and improve their management. Including the requirement on Welsh Ministers to prepare and publish a list of the living organisms and types of habitat which are of principal importance for the purpose of maintaining and enhancing biodiversity in Wales;
- Increase the resilience of our natural environment by restoring degraded habitats and habitat creation;
- Tackle key pressures on species and habitats;
- Improve our evidence, understanding and monitoring; and
- Put in place a framework of governance and support for delivery.

Integration across Welsh Government

Our Natural Resources Policy highlights the need to align our policies to the deliver the national priorities identified in it and sets out how we will do this in our key policy areas.

This process is ongoing and can be illustrated by for example the approach to our land use planning policy **Planning Policy Wales** consultation, work on the 20-year land use framework for Wales the **National Development Framework** and the consultation on our new policy for land management: which proposes support to deliver more public goods from the land. In return, it will provide a new income stream for land managers and make a significant contribution to addressing some of our most pressing challenges such as climate change, biodiversity decline, adverse air quality and poor water quality.

Integration across the public sector

Natural Resources Wales' area statements will support place based approaches linked to the challenges, opportunities and national priorities in the Natural Resources Policy.

³⁷ Our Nature Recovery Action Plan (NRAP) for Wales - <https://gov.wales/topics/environmentcountryside/consmanagement/conservationbiodiversity/?lang=en>

They set out a local evidence base for the sustainable management of natural resources and identify the opportunities where working together can help us deliver the national priorities, build ecosystem resilience and make the most of the benefits Wales' natural resources and ecosystems provide for Well-being. These are linked to wider public services delivery through the Well-being

The **section 6 duty**³⁸ aims to ensure that the consideration of biodiversity becomes an integral part of the decision making and actions that public authorities take in relation to Wales. Public authorities can take action to reverse the decline in biodiversity by thinking about biodiversity in decision making and how they carry out their functions. Public authorities include public bodies listed within the Well-being of Future Generations Act. Complying with the section 6 duty requires those public bodies to maintain and enhance biodiversity, which in turn supports the sustainable management of natural resources and the well-being goals. The section 6 plan, required under the Act, can be a key means of demonstrating and reporting on the steps being taken by a public body or public service board to meet well-being objectives and plans. Natural Resources Wales' State of Natural Resources Report and Area Statements provide national and local evidence bases on biodiversity and ecosystem resilience, for public authorities to draw from when discharging the section 6 duty.

Poor air quality can adversely affect the natural environment. Ecological damage may occur when air pollutants come into direct contact with vegetation or when animals inhale them. Pollutants can also settle out of the air onto land and water bodies. From the soil, they can wash into waterways, or be taken up by plants and animals. Poor air quality can also affect our climate with some pollutants having a warming effect while others contribute to cooling³⁹.

Air pollution has caused widespread changes to species distribution and to the quality of natural and semi-natural habitats in the UK⁴⁰, and is a threat to the Conservation Status of many habitats listed under the Habitats Directive.

At present in Wales, 88% of the area of sensitive habitat exceeds critical loads for nitrogen deposition (eutrophication), a 10% improvement since 1996. Acidification of soils and freshwaters continues, with 70% of acid-sensitive habitat area exceeding acidity critical loads, a 20% improvement since 1996⁴¹. Acid deposition critical load exceedances are driven mainly by nitrogen deposition. The figures below show maps of average accumulated exceedance of critical loads for all ecosystems for both acidification and eutrophication in 2016.

³⁸ The Section 6 Duty - <https://gov.wales/reporting-section-6-biodiversity-and-resilience-ecosystems-duty-frequently-asked-questions>

³⁹ Climate change and air, European Environment Agency article, <https://www.eea.europa.eu/signals/signals-2013/articles/climate-change-and-air> Accessed 29 November 2019

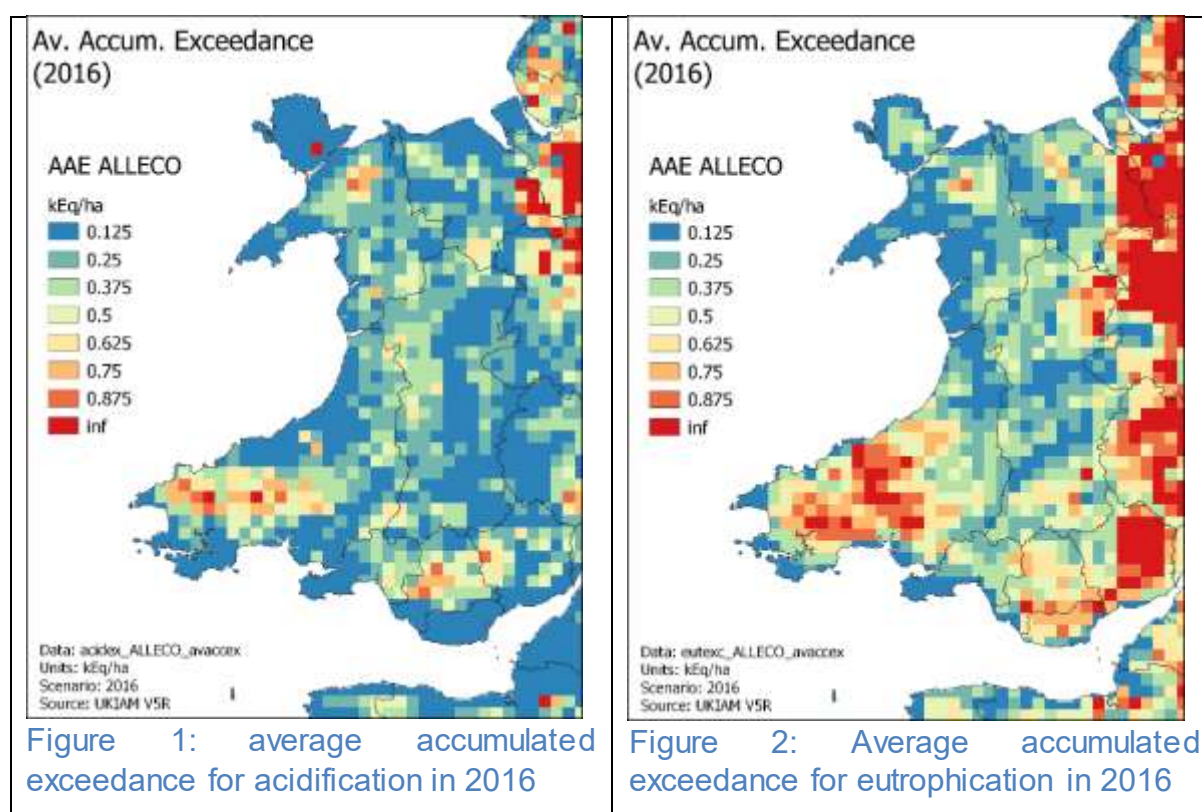
⁴⁰ EMMETT, B.A., ROWE, E.C., STEVENS, C.J., GOWING, D.J., HENRYS, P.A., MASKELL, L.C. & SMART, S.M. 2011. Interpretation of evidence of nitrogen impacts on vegetation in relation to UK. JNCC Report 449. Peterborough, UK. Available from: <http://jncc.defra.gov.uk/page-5895>

⁴¹ Trends Report 2019: Trends in critical load and critical level exceedances in the UK, Defra 2019. https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1908280952_Trends_Report_2019.pdf

As we achieve a notional Welsh share of UK statutory emission reduction targets (under NECD), the natural ecosystem area in Wales exceeding acidity and eutrophication critical loads is expected to reduce. The degree of reduction is subject to uncertainty, but it is clear in the case of eutrophication a much larger proportion of the improvement comes from the reduction of ammonia from agricultural sources in Wales. This indicates the importance of reducing ammonia emission from agriculture in Wales.

Nature conservation is driven by a wide range of policies, legislation and agreements, and delivered by a range of bodies, from the statutory, voluntary, academic and business sectors. Although obligations arising from international treaties and conventions are the responsibility of the UK Government, the Welsh Government is responsible for implementing obligations that concern devolved matters in Wales.

Our overall commitment to biodiversity is set out in our Nature Recovery Action Plan (NRAP)⁴², which states our ambition to reverse the decline in biodiversity, and our commitment to halting the loss of biodiversity. The action to deliver NRAP will include reference to the Clean Air Programme for Wales and our work on tackling ammonia emissions by 2020.



⁴² Nature Recovery Plan, Welsh Government 2015.
<https://gov.wales/sites/default/files/publications/2019-05/nature-recovery-action-plan-2015.pdf>
 accessed 26/09/2019

Supporting a Greener Wales and Environmental Growth

Welsh Government will develop its first Environmental Growth Plan by autumn 2020. Our Environmental Growth Plan will coherently coordinate and articulate Welsh Government's overall approach to achieving a greener Wales in the context of our wider responsibilities under the Well-being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016. The plan will manage expectations on what is possible, the effort required for real change and the impact.

Action to reduce air pollution has a key role in collective cross-Government and sector action to halt and reverse the decline in nature and to grow the environment for the benefit of future generations.

We will adopt a culture of 'Stop, Grow, Change for Environmental Growth' to help individuals, communities, businesses and public bodies understand what they can do to achieve a Greener Wales:

- **Stop** the decline in nature: This could include a range of activities including reducing air pollution, reducing pesticides and fertilizers, reducing litter and reducing single use plastic.
- **Grow** nature: this could include growing a National Forest, increasing renewable energy, greening public sector estates, growing the circular economy, creating allotments/community gardens, restoring Natura 2000 sites and increasing urban green spaces.
- **Change** by removing barriers to, and encouraging an ethos of 'doing the right thing'. This could include redefining outcomes for economic contracts, promoting a move from the car to active travel and use of public transport, future farming policy, planning policy, procurement practices and grant conditions. Behaviour change communications are essential to support new approaches to delivering environmental growth.

Intelligent tree and hedge planting supporting air quality improvements

Woodlands are known to contribute to improving overall air quality, not just in urban areas but in the wider rural environment, but the wrong type of vegetation in the wrong place (e.g. trees placed where they will prevent pollution from effectively dispersing) can make matters worse, and in some contexts roadside hedges will be preferable to trees from an air pollution exposure standpoint. Although urban vegetation can have wider benefits for well-being, overall, the Air Quality Expert Group⁴³ 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 scale⁴⁴.

⁴³ The Air Quality Expert Group provides expert and independent scientific advice on air quality to the UK and devolved governments.

⁴⁴ Air Quality Expert Group (AQEG) Report: Impacts of Vegetation on Urban Air Pollution, 2018, https://uk-air.defra.gov.uk/library/reports.php?report_id=966

The report “Developing Estimates for the Valuation of Air Pollution Removal in Ecosystem Accounts” by the Office for National Statistics (2017), indicated the annual value of air quality regulation from woodland in the UK was £759 million in 2015⁴⁵.

Increasing woodland cover in Wales can bring benefits of improved air quality, particularly where woodland is adjacent to agricultural or industrial buildings, urban or transport corridors (provided the planting is designed so as to deliver a reduction in public exposure and takes care not to worsen it). An increase in woodland cover is essential to enable Wales to achieve various international and domestic climate change targets and is in line with the Welsh Government Natural Resources Policy when considered with the wider benefits that woodlands provide. Our Woodlands for Wales Strategy, refreshed in 2018, sets out targets for increasing woodland cover, as well as the diverse range of benefits offered by both conifer and broadleaved woodland towards multiple environmental, social and economic outcomes. The ‘right tree in the right place’ is an important consideration to ensure all the ecosystem services that woodland provides (including, but not limited to carbon capture) are maximised. It is envisaged the First Minister’s vision for a National Forest Programme in Wales will accelerate tree planting and unlock major economic, social and environmental benefits for the people of Wales.

Forestry is known to affect the acidification of waters, mainly due to the ability of forest canopies to capture more acid sulphur and nitrogen pollutants from the atmosphere than shorter types of vegetation. Emission control policies introduced in the 1980s have improved air quality and has led to evidence of recovery in acid sensitive catchments⁴⁶. Guidance has been introduced as part of the UK Forest Standard, the government’s standard for sustainable woodland management, in order to ensure that new planting or felling operations do not exacerbate issues in vulnerable areas. However continuing to decrease the level of pollutants in the atmosphere remains important.

Evaluating progress with actions under the Natural Resources Policy

Reducing levels of air pollution is a national challenge for Wales identified in the Natural Resources Policy, and improved evidence in relation to air quality would provide strong support for the wider implementation of the sustainable management of natural resources (SMNR) and natural resources policy in Wales.

The Environment & Rural Affairs Monitoring and Modelling Programme (ERAMMP) is a Welsh Government initiative being delivered by a diverse consortium of partners led by the Centre for Ecology & Hydrology at Bangor University⁴⁷. The aim of the programme is to design, implement and deliver a programme of monitoring and modelling which collects data across key environmental parameters and undertakes analysis informing on the health and resilience of Wales’ land-based natural resources (including areas of interface with the freshwater and marine environments) and associated flows of ecosystems services. ERAMMP provides evidence to evaluate the progress of actions delivering the Natural Resources Policy. The programme will be a

⁴⁵ This updated methodology used in the UK Environmental Accounts, 2016, also by the ONS.

⁴⁶ Forestry and surface water acidification, Forestry Commission research note, 2014

⁴⁷ Environment & Rural Affairs Monitoring and Modelling Programme <https://erammp.wales/en>

key source of data for future editions of the State of Natural Resources Report (SoNaRR).

Predicting the impact and effect of change is part of its work to create new approaches to supporting the land-based economy. Improved air quality evidence in Wales will complement and enhance the ERAMMP evidence base and vice versa, providing mutual benefit.

Questions

25. What sorts of nature based solutions could be promoted to help to reduce human exposure to air pollution?
26. How can we speed up the recovery of our biodiversity and ecosystems alongside emission reduction?
27. What activities can we emphasise in our environmental growth plan to help tackle air pollution and its impact on ecosystems in Wales?

Agriculture and Land Use

Intensive farming and cumulative impacts of agricultural activities

Larger-scale installations in the intensive farming sector are regulated under the industrial pollution control regime. Intensive pigs and poultry units with more than 40,000 places for poultry; 2,000 places for production pigs (over 30kg) and/or 750 places for sows require a bespoke permit to operate. The regulations require these units to be managed according to strict requirements regulated by NRW. We have seen significant expansion below the regulatory threshold and this has raised concerns over environmental impacts, particularly where a number of installations are located in close proximity. A technical advice note on intensive agriculture is being prepared to ensure joined up approaches can be taken with regard to the potential impacts of this sector

Action: We will work with NRW to explore the scale of the environmental challenge in the intensive farming sector and the opportunity for strengthening the control of ammonia emissions from these installations.

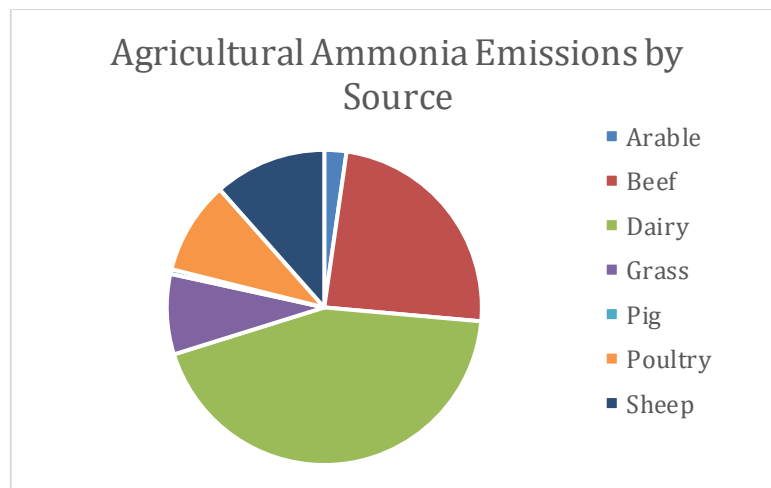
Ammonia (NH₃) emissions from Agriculture in Wales

NH₃ is the predominant air pollutant derived from agricultural activity. The main focus for agriculture in this plan is on reducing NH₃ emissions. NH₃ emissions can have a direct impact on the environment and our natural resources and the secondary impact of NH₃ reacting with other pollutant to form particulate matter.

NH₃ is one of the five air pollutants identified in the National Emission Ceiling Directive. In low concentrations on its own, NH₃ has no direct impact to human health but combined with other industry pollutants e.g. CO₂ and SO₂, the particulate matter created can cause major cardiovascular and respiratory diseases of the body. This particulate matter can travel afar, contributing to air pollution background levels in urban areas. A reduction in emissions of 8% from 2005 levels will be required for the UK to meet the NECD and UNECE target for 2020 and a further reduction of 16% by 2030.

When deposited on land, NH₃ can acidify soils and freshwaters, 'over-fertilising' natural plant communities. The extra nitrogen can increase the growth of some species such as rough grasses and nettles, which out-compete other species such as herb species which have lower nitrogen requirements. NH₃ also has a direct phytotoxic impact particularly on lower plants such as lichens. Long-term damage from NH₃ and excessive nitrogen into the environment can be permanent or costly to restore. The location of NH₃ sources can be very important for reducing the risk of effects on plants and people.

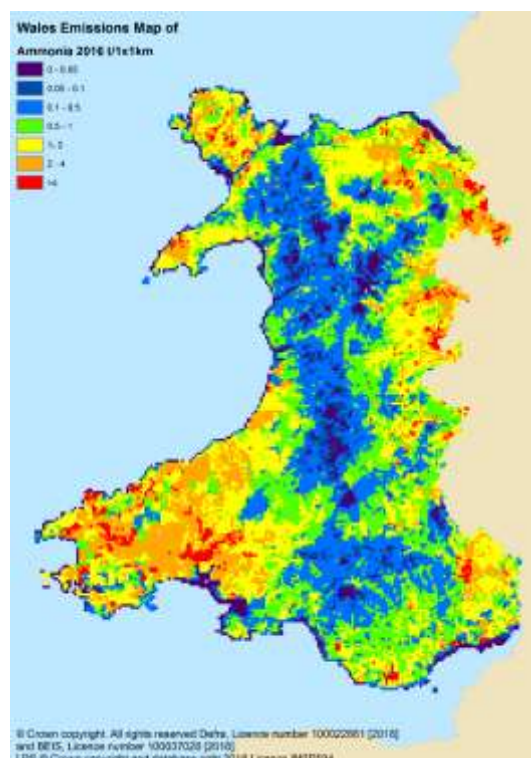
Emissions of NH₃ were estimated to be 24kt (kilotons) in 2016 and account for 8% of the UK total in 2016. Agriculture accounts for 82% of NH₃ emissions in Wales. Waste management is accountable for 3.1% of NH₃ emissions with transport and industrial processes accountable for 0.9% and 0.2% respectively.



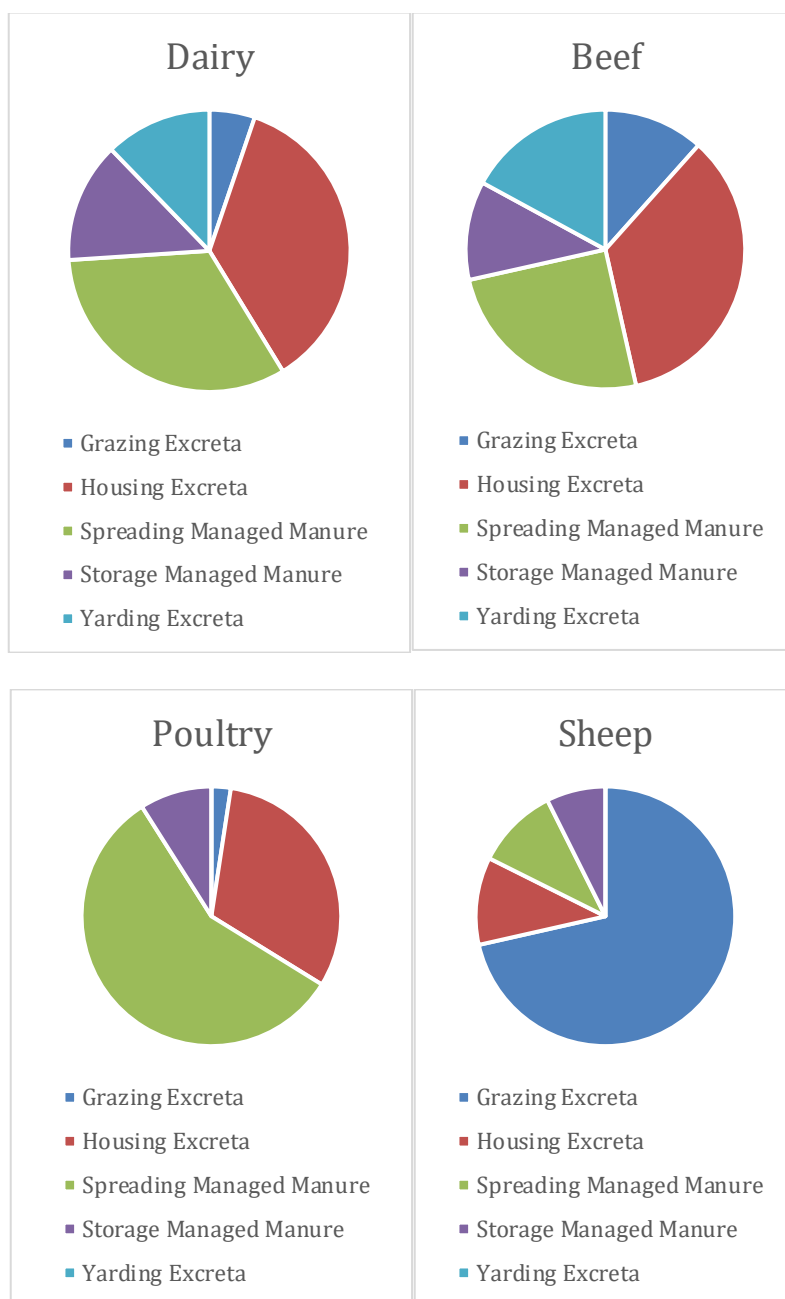
Dairy and beef farming dominates the source of NH_3 emissions from agriculture in Wales with 43% and 24% respectively of the emissions. The sheep sector contributes 12% of the agricultural emissions in Wales. While poultry only accounts for 10% of the NH_3 emissions in Wales, it tends to originate from solitary units which the emissions are concentrated.

The main source of emissions comes from the management of manure; from housing, storage and application to land. It is vital to appreciate that abatement in one area can be undone by mismanagement in another. Measures need to be considered as a package, rather than individually. It is also important to appreciate upstream and downstream impacts too. The high concentrations of NH_3 emissions can have a detrimental impact on nitrogen sensitive sites and to sensitive lower plants.

Map of NH_3 emissions 2016



NH₃ Emissions: Sector breakdown



Better dietary efficiency, improving protein conversion, will reduce the amount of nitrogen in the manure which will lead to less nitrogen volatilisation throughout the manure management process. Improved manure management efficiency will increase the available nitrogen to crops which will in turn reduce the need for supplementary inorganic fertiliser application, further reducing NH₃ emissions from grasslands.

Sheep account for 12% of the NH₃ emissions. However, as sheep are predominantly kept outdoors, grazing and manure management only account for 28% of the emissions. Efficiencies for sheep farming should concentrate on improved pasture management and reducing bought-in feed.

Poultry litter has a high Nitrogen content which is reflected in Nitrate Vulnerable Zones (NVZ) regulations. Effective use of poultry manure can substitute inorganic fertiliser. The high concentration of NH_3 from point source has been identified as an issue, if located near to nitrogen-sensitive sites or in close proximity to other poultry units, causing a cumulative effect on local environment.

The Code of Good Agricultural Practice (CoGAP)

We recently published supplementary guidance to the Code of Good Agricultural Practice to give up-to-date advice on how to reduce ammonia emissions. It explains the practical steps farmers, growers, land managers, advisors and contractors can all take. The supplement looks at the actions across the whole farm Nitrogen cycle, which need to be used together to lower emissions.

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

The Welsh Government Rural Development Programme for Wales through the investment funding is supporting improved manure management which addresses multiple benefits of improved water quality, reduced GHG emissions as well as for Air Quality.

The Sustainable Production Grant funds investment in large infrastructure improvements which satisfies both the economic and environmental need to improve efficiencies.

The Farm Business Grant provides funding for individual equipment which can improve farm efficiency with items such as trailing shoe attachments, reducing additional fertiliser costs and reducing NH_3 emissions.

Farming Connect provides the industry with the latest development in technologies and provides support to farmers on a one-two-one basis and in larger groups. There are 18 demonstration farms which are geared to demonstrate to the wider industry the benefits of:

- the integration of new technology and/or new approaches to management
- raising standards of on-farm efficiency
- decreasing inputs, increasing outputs
- profitability

Glastir provides multi-annual payment for land management commitments and non-productive investment payment for capital works which supports the outcomes of the scheme. Air quality is not specifically addressed in the scheme, however, interventions to improve water quality will have direct impact on air quality too. Low-input grassland will also contribute to reducing the area receiving manure and fertiliser and reducing livestock numbers thus reducing NH_3 emissions.

Sustainable Farming and our Land Consultation

In our recent consultation “Sustainable Farming and Our Land” we propose future farm support which is designed around the principle of sustainability – economic, environmental and social. We are proposing a new payment scheme, which will reward farmers for delivering Sustainable Land Management (SLM) outcomes. Payments will be conditional on appropriate actions being carried out, where there is a direct link to the SLM outcomes and in return for actions delivered, which are beyond the requirements of regulation. Air quality is an important SLM outcome, which is not rewarded by the market. For example:

- there is not a market for air quality improvement
- there is a market for food
- there are ways to improve farming practice to produce food and improve air quality – we would pay for the positive impact on air quality.

By taking an outcome-based approach, the scheme can be less prescriptive. We are identifying what actions can be included in the future scheme to achieve the clean air outcome. This plan includes a mix of actions which can be delivered by the scheme and by legislation.

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

Commitments & Actions	Short term (to 2021)	Medium Term (2021-26)	Longer Term (post 2026)
Enhance the natural environment through air and soundscape quality improvement, and emissions reduction			
Establish biodiversity baseline indicators and data sets for Wales.	●	●	
Develop an Environmental Growth Plan by autumn 2020. The Plan will coherently coordinate and articulate our overall approach to achieving a greener Wales in the context of our wider responsibilities under the Well-being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016.	●		
NRW's Area Statements will contribute to implementing the Natural Resources Policy in a local context. NRW will use their leadership role in encouraging others to take action.	●	●	
Address the environmental challenge of the farming sector and strengthen the control of emissions			
Solid manure and digestate spread to bare land is incorporated within 24 hours at the latest.	●		
Require an appropriate storage capacity for slurry.	●		
Ensure spreading of manure is not carried out at inappropriate times and in high risk areas.	●		
Establish a Welsh Government agricultural pollution group to co-ordinate all agricultural pollution actions.	●		
Reduce airborne emissions from urea-based fertilisers.	●	●	
Design future farm support around the principle of sustainability, rewarding farmers for actions carried out which will deliver an improvement in air quality.	●	●	
Ensure air quality requirements are not detrimentally impacted through the implementation of the EU Nitrates Directive and ensure that any post EU Nitrates Directive maintains or exceeds EU benchmarks.	●	●	

Work with Natural Resources Wales to explore the scale of the environmental challenge in the intensive farming sector and the opportunity for strengthening the control of ammonia emissions and subsequent manure use.	●	●	
Reduce emission from all slurry tanks and lagoons.	●	●	
Reduce in-field nutrient levels and volatilisation through Nutrient Management Planning to make sure applications meet but do not exceed soil and crop requirements, with no unnecessary loss of nutrients.	●	●	
Explore how low emission flooring can be made a requirement for all new build slurry based dairy and pig housing.		●	
Reduce ammonia emissions from slurry spreading.		●	
Reduce airborne emission from all slurry tanks and lagoons.		●	●
Expand woodland cover as set out in our Woodlands for Wales Strategy			
Encourage 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.	●	●	
Reverse the decline in biodiversity, as set out in our Nature Recovery Action Plan (NRAP)			
Commission research into the relationship between air pollution and pollinator health and behaviour and, where possible, implement the best action to protect pollinators.	●	●	

Questions

28. Do the proposed commitments and actions address the issues described in natural environment, ecosystems and biodiversity section of the Plan?
29. Do you agree the actions will help to reduce the impact of air pollution on natural environment, ecosystems and biodiversity in Wales?
30. What additional commitments or actions would you propose?

Improving air quality to support a prosperous Wales

Wales has a proud industrial heritage and has negotiated many cyclical changes. Industry in Wales has changed over time, moving away from the traditional heavy industries to a more diverse range of businesses that continue to grow and adapt in response to the demands of the modern economy.

A prosperous Wales is one of the goals of the Well-being of Future Generations (Wales) Act 2015. We want to be an innovative, productive and low carbon society which recognises the limits of the global environment and uses resources efficiently and proportionately. This must go hand in hand with a skilled and well-educated population in an economy which generates wealth and provides employment opportunities.

Industry provides goods, services and employment to the people of Wales and is therefore a key element in the goal of a prosperous Wales, in terms of sustainable development and use of resources and in contributing to our aims to reduce air pollution. Thriving businesses are important to a successful Welsh economy and we need to deliver our ambitions for economic growth alongside our commitments to clean air and a healthy environment.

Industrial Air Pollution

Driven by a combination of regulation, investment and technical advances, significant progress has already been made to reduce air pollution from industry. We recognise the level of investment many companies have already made in their businesses to reduce pollution and we want to work with stakeholders to achieve further improvements. We will have a geographical focus on regions of Wales facing particular industrial air quality challenges.

Action: Through engagement with key stakeholders, we will undertake a review of our Short Term Action Plan (STAP) for air quality in Port Talbot during 2020 to ensure it remains fit for purpose, informed by the findings of a review by the University of the West of England. This will help to identify any evidence gaps, which we will address with further, targeted evidence gathering to inform future action.

Action: Informed by the Port Talbot Data Team, in consultation with Kings College London, we will investigate the merits of repeating a high time resolution monitoring study over a longer period fully define the source contributions in the area.

Action: We will continue to review and act on the evidence in relation to concentrations of benzo[a]pyrene in Port Talbot, to bring about compliance with the Target Value.

Action: We will work with stakeholders to examine new opportunities for addressing concentrations of nickel in the Swansea Valley in order to deliver compliance with the Target Value as soon as practicable.

Action: We will work to address industrial emissions across the whole of Wales in a range of sectors, focusing where the best opportunities exist for reducing those emissions. It will be important to ensure we seize the opportunities to take action which both decarbonise our industrial base and simultaneously reduce the emission of pollutants which diminish air quality.

Action: We will encourage further research, industrial collaboration and investment by industry in reducing emissions implicated in poor air quality, especially where these also deliver reductions in greenhouse gas emissions.

Action: In addition, we will:

- review existing industrial pollution control guidance;
- consider the case for strengthening existing controls on emissions from small-scale flexible electricity generation plant;
- review the case for new regulatory controls on combustion plant in the 500kW to 1MW thermal input range.
- review the current regulatory position in relation to emission controls for generators used for research and development purposes

In 1996 the EU adopted a set of common rules for permitting and controlling industrial installations in the Integrated Pollution Prevention Control (IPPC) Directive. The IPPC Directive aims to minimise pollution from various industrial sources by requiring industrial installations operating activities covered by Annex I of the IPPC Directive to obtain an environmental permit. The IPPC Directive has been replaced by the Industrial Emissions Directive (the IED). The IED is the main EU instrument regulating pollutant emissions from industrial installations. The IED aims to achieve a high level of protection of human health and the environment by reducing harmful industrial emissions, in particular through better application of Best Available Techniques (BAT).

Action: We will maintain the existing integrated industrial pollution prevention and control regulatory regime, which seeks to achieve a high standard of protection of the environment as a whole by applying a range of technical requirements. Central to that regime is the development and application of Best Available Techniques (BAT) for pollution control. In anticipation of the UK leaving the EU we have made preparations to ensure a process will be in place for determining and continually improving BAT across the existing range of regulated industrial sectors.

Questions

31. On which sectors, processes or areas should we focus our action to reduce public exposure to industrial emissions to air pollution?
32. Are there any specific legislative changes you think we should consider in order to tackle industrial emissions to air?
33. Are there any specific actions or measures with which we can encourage investment by industry to reduce air pollution?

34. Are there any novel or emerging approaches to reducing emissions to air from industry that you think we should consider?
35. Do you think generators used for research and development should be treated differently in terms of emission controls?

Economic Development

The Welsh Government's approach to business and the economy is set out in our Economic Action Plan (EAP) published in 2017. This outlines the range of actions we are taking to drive inclusive growth and future-proof the economy. Decarbonisation is a clear and consistent thread throughout the EAP and features strongly in our prism for delivering direct support for businesses. This is centred on the Economic Contract, Calls to Action and the Economy Futures Fund.

To access direct financial support through the Economy Futures Fund, businesses must demonstrate that they share our values (the Economic Contract) and that they are delivering investment designed to future proof the Welsh economy (the Calls to Action). As part of the Economic Contract, we test a business' attitude to managing and lowering its carbon footprint (amongst other positive behaviours), whilst decarbonisation forms one of five Calls to Action designed to target future proofing investment.

Innovation and Research and Development (R&D) feature within other calls to action and are highly relevant given that decarbonisation will in part be shaped by technological advances, driven by innovation and R&D.

Waste

There is an absolute legal requirement under the EU Waste Framework Directive for member states to take the necessary measures to ensure that waste management is carried out without endangering human health, without harming the environment and, in particular: (a) without risk to water, air, soil, plants or animals; (b) without causing a nuisance through noise or odours; and (c) without adversely affecting the countryside or places of special interest. This is reflected in the way that waste facilities are permitted and regulated in Wales.

The Industrial Emissions Directive (IED) integrated prevention and control of pollution regime also covers waste activities, including waste incineration plants and landfills. Measures to reduce emissions to air, water and land from waste activities are achieved through environmental permitting. As part of ongoing regulatory work NRW have worked with operators to help deliver improvements in the collection and use of landfill gas where possible. Ensuring landfill gas is properly contained and managed appropriately is a key requirement under the Landfill Directive, and is one of NRW's regulatory priorities in the landfill sector. Regulatory effort has resulted in improvements in infrastructure and operating techniques on a number of sites in Wales. NRW continues to work with operators to ensure they manage landfill gas appropriately, and ensure that gas management forms part of the compliance plan for each site.

Further contributions to improved air quality from the sector will be achieved through reduction of biodegradable waste to landfill. The Welsh Government has introduced a range of measures, including work on waste prevention, landfill disposals tax, statutory targets for local authorities to reduce the landfilling of biodegradable municipal waste, statutory recycling targets for Local Authorities and separate food waste collection to reduce biodegradable waste being landfilled. Our target is for less than 5% of all wastes to be landfilled by 2025.

Moving towards a Circular Economy reduces the use of resources and keeps them in productive use for as long as possible. Less waste will reduce emissions to air from waste facilities. A Circular Economy also reduces landfill and incineration, thus further reducing emissions to air.

Action: We will ensure a change in waste collection vehicles to run on electricity/hydrogen. This action will support a reduction in airborne pollution.

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

Commitments & Actions	Short term (to 2021)	Medium Term (2021-26)	Longer Term (post 2026)
Achieve sustainable, continual reduction in the emission of airborne pollutants from industry by exploring opportunities to work with key sectors to secure further emission reductions			
We will undertake a review of our Short Term Action Plan (STAP) for air quality in Port Talbot during 2020 to ensure it remains fit for purpose, informed by the findings of a review by the University of the West of England.	●		
We will investigate the merits of repeating a high time resolution monitoring study over a longer period fully define the source contributions in the area.	●	●	●
We will continue to review and act on the evidence in relation to concentrations of benzo[a]pyrene in Port Talbot, to bring about compliance with the Target Value.	●	●	●
We will work with stakeholders to examine new opportunities for addressing concentrations of nickel in the Swansea Valley in order to deliver compliance with the Target Value as soon as practicable.	●	●	
Address industrial emissions of greenhouse gases and air pollutants together across the whole of Wales, in a range of sectors, focusing where the best opportunities exist for reducing those emissions.	●	●	●
Encourage further research, industrial collaboration and investment by industry in reducing emissions implicated in poor air quality, especially where these also deliver reductions in greenhouse gas emissions.	●	●	●
Review and update existing industrial pollution control guidance.	●	●	
Consider the case for strengthening existing controls on emissions from	●	●	

(small-scale) flexible electricity generation plant.			
Review the current regulatory position for generators used for research and development purposes.	●	●	
Maintain the integrated pollution prevention and control regulatory regime post-EU exit, including a process for reviewing and updating Best Available Techniques			
Ensure there is a clear process for determining and adopting future UK Best Available Techniques for industrial pollution control.	●	●	●
Waste Management			
We will ensure a change in waste collection vehicles to run on electricity/hydrogen.	●	●	

Question

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

Improving air quality to support sustainable places

Reducing airborne pollution and its effects in public places is essential to support future well-being. This requires all relevant parties to take a multifaceted approach to the planning, design and management of public places to ensure air quality and soundscapes are not compromised.

The planning system is a key mechanism for delivering sustainable places. Planning Policy Wales recognises the importance of air quality and appropriate soundscapes to the health and well-being of people and the environment, placing the issues on an equal footing with other objectives such as housing, transport and economic development.

A joined up approach between national transport and planning policy is recognised as an effective way of supporting an increase in public transport use and active travel and reducing emissions from existing vehicles over time⁴⁸. Spatial planning can be used to reduce the need for vehicle use by design, and has a wider role in reducing emissions from buildings through energy-efficiency measures and use of renewable energy technologies.

Action: We will have integration between the Clean Air Plan, Planning Policy for Wales and the forthcoming Wales Transport Strategy to ensure infrastructure and service investment across Wales supports reduction in air pollution.

Planning policy supporting air quality improvements

The planning system is a key mechanism for delivering sustainable places. Planning Policy Wales (PPW) was refreshed in 2018. PPW underpins all future planning decisions, puts an emphasis on people and places and ensures developments built today leave a legacy of well-designed, sustainable places which improve lives.

Air quality and soundscape are addressed in the new PPW as a key component of the natural and built environment, placing the issues on an equal footing with other objectives such as housing, transport and economic development. Planning policy in relation to air quality, soundscape and noise emphasises the requirement to secure opportunities as part of the planning process, rather than just avoiding the worst negative impacts. It is no longer acceptable to merely regard air quality and noise as technical matters to be mitigated at the end of a process; rather, they are integral to the design, functioning, health, amenity and well-being of places. PPW ensures long-term approaches are taken to prevent the creation of new problems or worsening of existing issues. It also encourages integrated solutions which aim to reduce average levels of airborne pollution.

Development plans, strategies, policies and proposals should be formulated and designed to protect and enhance the special characteristics and intrinsic environmental qualities of places because they contribute to the attractiveness,

⁴⁸ Review of interventions to improve outdoor air quality and public health - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/795185/Review_of_interventions_to_improve_air_quality.pdf

vibrancy, liveability, resilience, functioning, economic prosperity and ultimately health, amenity and well-being of places. Air quality and soundscape are key components and the framework in PPW, supported by detailed considerations, seeks to ensure that all

those participating in the planning process, consider the effects proposed developments have on air or soundscape quality and the effects existing air or soundscape quality may have on proposed development. Doing so requires detailed consideration, of the relationship between pollution sources and receptors, identifying the choices available in existing problematic areas, and more generally seeking the incorporation of measures to reduce overall exposure to airborne pollution and the maintenance or creation of appropriate soundscapes.

Other key changes to Wales' planning policy which are designed to help Wales lower its carbon emissions at the same time as creating places people can live well include:

- Promotion of Active Travel (walking and cycling) to create good places and support health and well-being. Services will need to be easily accessible by active travel and a new transport hierarchy is being introduced for planners to consider;
- A new policy on Ultra-Low Emission Vehicles (ULEVs) which requires new non-residential developments to have charging points in at least 10% of the spaces available. This is the first national policy of its kind in the UK;
- Promoting renewable energy developments (wind, solar and other renewables). It will require planning authorities to define areas where wind and solar developments will be permitted and set renewable energy targets;
- Restricting extraction and use of fossil fuels (including fracking) by placing them at the bottom of the energy hierarchy. It states proposals for opencast or deep-mine development should not be permitted and oil and gas (including fracking) should be avoided. It will be supported by a new Notification Direction which will state Welsh Government must be notified of any planning applications which local planning authorities intend to approve for new coal and petroleum developments; and
- The agent of change principle has been incorporated into national planning policy and will require that a business or person responsible for introducing a change is responsible for managing that change. For example, a developer constructing new homes near an existing music venue will be responsible for ensuring that appropriate mitigation is put in place so that the noise generating use is not curtailed in the future by complaints from the new residents. This is the first policy document in the UK to introduce the concepts of soundscapes in protecting the acoustic environment.

Action: PPW is supplemented by Technical Advice Notes (TANs). Welsh Government has committed to producing further guidance and support for local planning authorities and developers in Wales, specifically on air quality and soundscape, to replace the existing TAN 11: Noise within this Assembly term. Work to deliver the evidence base underpinning the new guidance is already well underway.

The National Infrastructure Commission for Wales

The National Infrastructure Commission for Wales (NICW)⁴⁹ was established in 2018 as a non-statutory, advisory body to provide advice and recommendations to the Welsh Ministers on the economic and environmental infrastructure needs of Wales over five to thirty years. Its remit includes energy, transport, water and sewerage, drainage solutions, waste, digital communications, flood and coastal erosion management. NICW's remit extends to devolved, cross-border and non-devolved infrastructure and will evolve in line with the devolution settlement. The advice provided by NICW will be impartial, strategic and forward looking in nature. The NICW long term aim is for Wales to be a place of clean air and water, cohesive communities, energy security and good jobs. Infrastructure is key to achieving this. Within this aim, air quality is a threat to health and NICW will seek opportunities to contribute to air quality improvement.

NICW will carry out studies into Wales' most pressing infrastructure challenges and make recommendations to Welsh Government. NICW needs to be able to take into account current and upcoming infrastructure projects when identifying future needs. However, its remit does not include reviewing programmes and work that have already been decided or are near decision.

NICW may consider cross-cutting delivery issues, such as governance, costs, financing and programme/project management, if it considers them a barrier to delivering infrastructure needs. NICW will not override statutory processes but may advise and recommend improvements to such processes should significant barriers to delivery be found.

Question

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

Transport

Transport is responsible for a significant proportion of air pollution particularly in urban areas and areas of high traffic and congestion. The primary air pollutants from transport are NO₂ and particulate matter (PM₁₀ and PM_{2.5}). Road transport, rail, aviation and domestic shipping are responsible for 50% of NO_x and 16% of PM_{2.5} emissions in the UK⁵⁰.

Road transport is responsible for approximately 80% of NO_x concentrations at roadside (Defra figure for UK average in 2017), with diesel vehicles the largest source, affecting local air quality. .

Evidence suggests harmful emissions from transport are reducing, largely driven by international legislation on standards for new vehicles, but poor air quality remains a significant concern.

⁴⁹ NICW remit letter – <https://gov.wales/national-infrastructure-commission-wales>

⁵⁰ Defra, 'UK Emissions inventory submission under NECD and CLRTAP' (2018),

A range of actions to tackle emissions from all forms of transport are being developed and implemented across Wales at both a national and local level. Many of these actions also contribute towards the aims of Prosperity for All: A Low Carbon Wales.

Wales Transport Strategy

Action: Welsh Government will develop a new Wales Transport Strategy, which will set out our policy framework to achieve our decarbonisation targets and required air pollution reduction. .

The new Wales Transport Strategy will sit under our National Strategy: Prosperity for All and the Economic Action Plan. It is intended the Wales Transport Strategy provides the strategic framework within which future decisions on investment options will need to be made.

The updated Transport Strategy is due to be published in December 2020. Our goal is to move away from the overreliance on the private motor vehicle and for people of all ages and abilities to be confident they can make every day journeys by walking and cycling, or by public transport, and do so safely. This will empower people in Wales to move around affordably and conveniently, enabling positive impacts on their health and environment.

The Strategy will also highlight action being taken to meet current and future air quality legal obligations, clean air intentions, carbon budgets and targets and wider environmental growth. This will encompass all transport modes, and will include measures to help promote the uptake of low emission vehicles in Wales, particularly in rural areas with limited public transport services. The Strategy will also look at the role of freight and logistics.

In 2018 the UK Government's Department for Transport (DfT) published Road to Zero: Next steps to cleaner road transport. Welsh Government and DfT policy will align where appropriate to ensure cross-border transport arrangements and contractual specifics about emissions standards are similar.

Welsh Government will investigate successful UK and international city and regional examples of air quality improvement, impact and benefit. In doing so we will draw from the existing knowledge within Government teams and seek mutually beneficial solutions.

Promoting the shift from the private motor vehicle to active travel and public transport

Welsh Government is investing in a number of schemes to promote a 'modal shift' from over-reliance on the private car to more sustainable modes of transport such as walking, cycling and public transport and support safer, healthier and attractive options for citizens. The usual method of travel to work in Wales is currently 81% car, 2% bike, 4% bus or coach, 4% rail and 8% walk⁵¹; working from home has an impact on both travel and domestic combustion. We recognise the challenges involved in challenging personal convenience, reconsidering habitual behaviour and adapting to change.

Action: We will work with partners to ensure improved provision of public transport.

Active Travel

For shorter journeys, we want walking and cycling to become the preferred choice. Beyond improved air quality, active travel modes offer many benefits, both for the individual and for society. Most notably these modes improve mental and physical health, are emission free and reduce congestion and peak time demand on public transport.

Our Active Travel Act came into force in 2014 and one of its key elements is the need for local authorities to plan and develop integrated walking and cycling networks which connect where people live with where they need and want to go. Planned networks must meet community needs, increasing the likelihood people are motivated to use them. There is an emphasis on effective consultation and engagement in all stages of the process, from initial planning through to scheme design.

Action: The Active Travel Act is complemented by statutory Delivery and Design Guidance, setting out planning and consultation approaches and requirements and the design specifications for walking and cycling infrastructure. We will be consulting on updated Guidance in winter /spring 2019/20.

Action: We are supporting the creation of Active Travel networks with significant capital investment. The Active Travel Fund was established in 2018 to accelerate delivery of the networks in 2019/20. We have allocated over £40 million to local authorities to develop new walking and cycling routes and facilities, and make improvements to their existing infrastructure. Funded schemes include major new links, packages of measures to tackle multiple smaller gaps and barriers on a whole town basis, as well as public bike share schemes, including the first electric public bike share scheme in Wales. Electric bikes have great potential to attract new user groups to cycling for transport, including those whose journeys are longer or include steep inclines, and older people.

Providing the right infrastructure is an important part of achieving modal shift, but not necessarily sufficient on its own.

⁵¹ Source: DfT TSGB0109 <https://www.gov.uk/government/statistical-data-sets/tsgb01-modal-comparisons> (accessed 08/07/2019)

Action: We have contracted Sustrans to run ‘Active Journeys’, which promotes walking and cycling to school in close collaboration with schools, for the last four years and are currently procuring its successor programme. The future budget has been boosted by over 50%.

Action: To ensure people can take up walking and cycling safely, we are funding cycle training for children and adults and child pedestrian training at a cost of around £1.5m annually. In 2020, we will review how this training can be optimised to go beyond acquisition of skills to include behaviour change elements.

Action: We will work with external partners to develop and align behaviour change programmes to encourage uptake of healthy and active travel modes.

As part of our ambition to put place making at the top of our agenda for our towns, villages and cities, we are working on a programme to change the default speed limit from 30mph to 20mph in built up areas. This will reduce traffic related injuries and fatalities and also help create places where conditions for walking and cycling are improved.

Public Transport

The transformational change in public transport management to Transport for Wales (TfW), has provided the opportunity to review, improve and integrate all elements of the services. Greater use of public transport has the potential to reduce traffic and improve air quality. Coupled with innovations in active road network management there is considerable potential for optimising public transport reliability and efficiency and achieving reductions in congestion and air pollution.

Better integrated public transport can bring enhanced employment opportunities and increased wealth into Wales. The greater the shift to public transport achieved, the more justification there is to develop and adapt services.

Bus and Taxi

The Welsh Government has a strong commitment to bus services in Wales, spending over £220 million each year. We launched a White Paper consultation in December 2018 on proposals to legislate to improve the effectiveness of bus services. Welsh Government has set out proposals to put in place the legislative tools to provide improved bus services tailored to different circumstances and challenges.

Action: We have set out a bold ambition for all buses to have zero exhaust emissions by 2028, which will bring about significant improvements to air quality in urban areas. Retrofitting buses with filters may allow the continued use of the existing (diesel) fleet while improving its environmental performance but this does have a detrimental impact on fuel consumption and CO₂ emissions.

This action will integrate with new approaches to urban planning to encourage greater use of public transport, safer and healthier school transport, discouraging private vehicles whilst preserving access to work, community, and health and retail services.

Action: We are developing a vision document, delivery plan and governance structures to progress the work of reforming the provision of Taxi and Private Hire Vehicles. This will include the key themes of how we achieve air quality improvements as well as the decarbonisation of the fleet to meet our bold aim for a zero tailpipe emission taxi fleet by 2028.

Rail

Our vision of 'A Railway for Wales' demonstrates the expansion of rail services can help us to address some of the underlying causes of the climate emergency we face by making it possible for far more of us to access affordable, efficient, and attractive public transport services and so reduce road congestion, carbon emissions and air quality impacts.

Our new Wales and Borders rail service will bring about a 65% increase in capacity, reduce emissions and greatly increase the attractiveness of rail travel.

Action: We will increase capacity through the delivery of new and innovative Metro systems. The South Wales Metro will bring about a step change in the integration and frequency of public transport services to offer a compelling alternative to car journeys by 2023. New Metro schemes will be developed taking account of how air quality improvements can most successfully be achieved. We are also developing plans for other Metro schemes in North East and South West Wales. The North Wales Metro is a priority identified in Prosperity for All as a key contributor to delivering modern and connected infrastructure. The projects will facilitate modal shift, and deliver our objectives of improving air quality and reducing carbon emissions across North Wales.

From 2022 onwards electrification will see bi-mode and tri-mode trains introduced on the Cardiff Central Metro, where they will operate entirely from overhead electric power, supplemented by batteries on the Core Valley Lines, replacing the diesel trains.

Transport for Wales is introducing the first hybrid trains in the UK, on the Wrexham to Bidston service. These combine the use of modern batteries with lightweight diesel engines which comply with latest European emission standards.

From 2023, the majority of long-distance services will be powered by diesel engines which will meet the latest Euro Stage V emissions regulations with greatly improved fuel consumption.

Transport for Wales is committed to trialling future technology during their contract. The rolling stock which has been ordered have adaptable power units, so the diesel engine could eventually be swapped for hydrogen (or other alternative) if trials are successful and funding is available.

Ultra-low emission vehicles

Promoting a switch from petrol and diesel road vehicles to electric and other ultra-low emission power is an essential element of our approach to tackle transport CO₂ emissions and reducing air pollutants.

Electric vehicles produce no exhaust emissions, reducing air pollutants such as NO₂ and some particulates as well as CO₂ emissions which contribute to global warming. However, electric vehicles still contribute some non-exhaust emissions from brake, tyre and road surface breakdown.

Since 2009, EU legislation has set mandatory emission reduction targets for new cars. Targets for vans were introduced from 2011 and CO₂ emission standards for heavy-duty vehicles entered into force in August 2019.

From 2021, phased in from 2020, the EU fleet-wide average emission target for new cars will be 95 g CO₂/km. EU legislation, passed in April 2019, mandates that, by 2030, there will be a 37.5% cut in corporate average CO₂ emissions which effectively means an average CO₂ figure of about 60g/km. The UK Government has pledged to pursue a future approach that is at least as ambitious as the current arrangements for vehicle emissions regulation following an exit from the EU.

This has driven vehicle manufacturers to launch new battery electric models and hybrid vehicles in order to meet the CO₂ regulations.

In 2018 the UK Government's Department for Transport (DfT) published Road to Zero: next steps to cleaner road transport. This sets out UK plans to end the sale of new conventional petrol and diesel cars and vans by 2040.

Action: Welsh Government is committed to promoting the transition to ultra-low emission vehicles. We are working with UK Government, local authorities, the energy sector and business to plan for and implement the roll out of electric vehicle (EV) charging infrastructure. By investing £2m by 2020 we will help create a network of rapid charging points to enable longer distance travel by electric vehicles throughout Wales, and we are developing an electric vehicle charging strategy to inform wider investment.

Action: We are also working on a proposal for all new cars and light goods vehicles in the Public Sector fleet to be ultra-low emission by 2025 and where practicably possible, all heavy goods to be ultra-low emission by 2030.

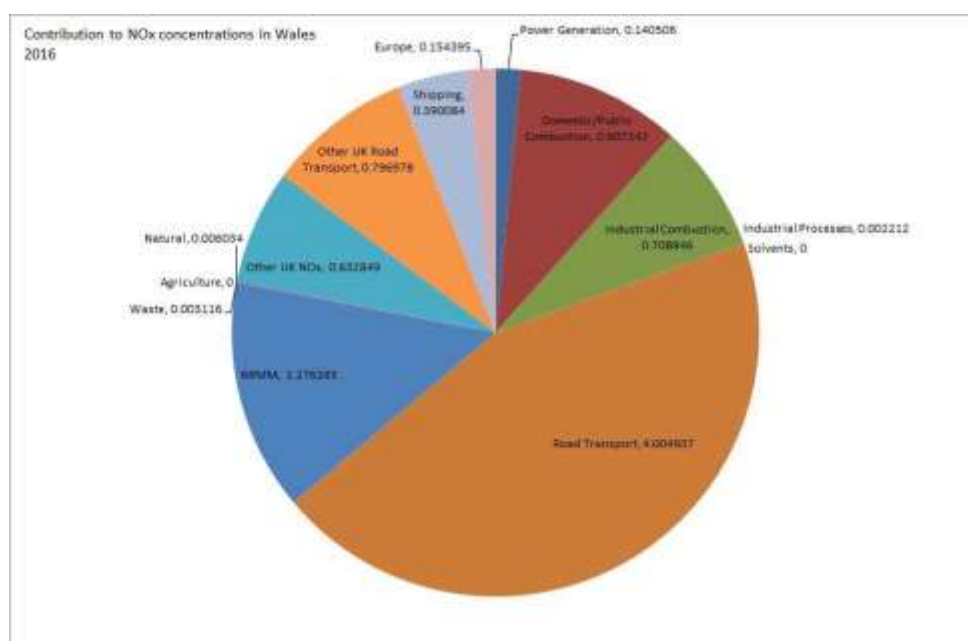
Action: Welsh Government will explore the potential to align the opportunities presented by Low Emission Zones and Clean Air Zones with wider transport policy initiatives in Wales. Consideration of opportunities and measures includes the introduction of clean air zones with potential access restrictions for certain vehicles in urban areas, toll roads, reviewing the feasibility of schemes to incentivise the scrappage of the most polluting vehicles with credits for public transport, and a review of the effectiveness of anti-idling legislation to protect those most vulnerable from harmful transport emissions.

Tackling roadside nitrogen dioxide concentrations in Wales

Reducing concentrations of NO₂ around roads where levels are above legal limits in Wales continues to be our most immediate air quality challenge. NO₂ is another pollutant of concern for human health.

This has put emphasis on a relatively small number of hot-spot areas, almost entirely coinciding with road-side locations in heavy traffic. However, there is also clear evidence of health effects from exposure to NO₂ at lower concentrations, although there are difficulties in distinguishing these effects from simultaneous exposure to other pollutants including particulate matter⁵². NO₂ is much more dominated by local emissions than fine particulate matter (PM_{2.5}), and higher concentrations are correlated with the more populated urban areas, and lower in remote rural areas. We estimate the population weighted mean concentration of NO₂ for 2016 is 10 (range 7 to 12) µg/m³.

The chart below shows the proportion of Welsh emissions to NO_x population weighted mean exposure in Wales in 2016. This illustrates the dominance of road traffic emissions in Wales, and the relatively small contribution imported from sources outside Wales.



Source apportionment of population weighted mean concentration of NO_x in Wales in 2016

In November 2018 Welsh Government published a plan entitled **Tackling roadside nitrogen dioxide concentrations in Wales**⁵³. This plan focuses on actions

⁵² COMEAP (2018), Association of long-term average concentrations of nitrogen dioxide with mortality <https://www.gov.uk/government/publications/nitrogen-dioxide-effects-on-mortality/associations-of-long-term-average-concentrations-of-nitrogen-dioxide-with-mortality-2018-comeap-summary>

⁵³ Tackling roadside nitrogen dioxide concentrations in Wales: Welsh Government supplemental plan to the UK plan for tackling roadside nitrogen dioxide concentrations November 2018 <https://gweddill.gov.wales/docs/desh/policy/181129-final-supplemental-air-quality-plan-en.pdf> (accessed 08/07/2019)

necessary to reduce concentrations of NO₂ around roads in Wales where levels are above legal limits ⁵⁴within the shortest possible time, in a way which reduces exposure as quickly as possible and by taking steps which mean meeting the limit values is not just possible but likely.

The plan focuses on action being taken by Welsh Government at five sites on the Welsh Government Managed Road Network and in two Welsh local authority areas (Cardiff and Caerphilly).

The five locations are:

- A494 Deeside
- A483 Wrexham
- A470 Upper Boat to Pontypridd
- M4 J41 – J42, Port Talbot
- M4 J25 – J26, Newport

Welsh Government has imposed speed limits on these sections of motorway and trunk roads in order to reduce concentrations of nitrogen dioxide.

Monitoring data published in October 2019⁵⁵ indicating that NO₂ levels have reduced following implementation of the 50mph speed limits on an initial trial basis in June 2018. We are developing the further Precautionary Retained Measures included in the plan, as NO₂ concentrations recorded at the roadside remain higher than those modelled nationally.

Ministerial Directions have been placed on Caerphilly and Cardiff Council to undertake feasibility studies to identify the options that will deliver compliance in the shortest possible time. Both authorities submitted final plans in June 2019 and further Directions were subsequently issued requiring additional action to be taken. Welsh Government has allocated over £20 million for an Air Quality Fund through to 2021 to support this work and fund the necessary measures to achieve compliance with legal limits for nitrogen dioxide.

Action: We will ensure remedial measures to achieve compliance with EU limit values for nitrogen dioxide are based on sound evidence and are likely to ensure continued emissions reductions to achieve compliance in the soonest time possible. To support this, we will expand the remit of our independent expert review panel to advise on activity to achieve and maintain compliance, including our work to develop further supporting measures on our strategic road network.

⁵⁴ Ambient Air Quality Directive and the Air Quality Standards (Wales) Regulations 2010

⁵⁵ See: <https://gov.wales/interim-data-no2-concentrations-motorway-and-trunk-road>

Aviation

We support international efforts and will be working to assess and develop measures to reduce emissions from aviation and shipping.

Cardiff Airport introduced measures in 2016 which ensure operating aircraft use the shortest route to and along their final approach to the runway. This significantly reduces track miles covered by the aircraft. Cardiff Airport also encourages airlines to operate continuous descent approaches, which significantly reduce fuel usage, and require aircraft taxiing from stand to runway operate at minimum power to reduce noise and fuel use. In September, Cardiff Airport launched its 'Environmental Flight Path'⁵⁶, which provides a timeline of immediate and short-term environmental goals. These milestones will be delivered in line with the organisation's vision to become a 'Carbon Neutral Airport' and are key considerations for the Airport's Masterplan development over the next two decades.

Welsh National Marine Plan

The Welsh Government commitment to supporting the sustainable development of our seas and to supporting our coastal communities is presented in the Welsh National Marine Plan (WNMP) published in 2019. The plan includes policy on the cross-cutting issues of climate change, air and water quality.

The vision of the WNMP is for clean, safe, productive and biologically diverse seas, with the Welsh marine area making a strong contribution to energy security and climate change emissions targets through the responsible deployment of low carbon technologies.

We recognise our ports and shipping sector is critical to the effective movement of cargo and people, both as part of networks and supply chains within the UK and as part of the global economy. The activities of the sector support a wide range of other sectors and depend upon and support a diverse range of associated activities. Many ports have become the location for industrial clusters of private companies that may compete with one another or complement each other as customers and suppliers in specialised areas of production and distribution.

We believe the sector has significant potential for sustainable growth, and it has therefore been identified as a strategic priority within our Welsh National Marine Plan. However, we must recognise the impacts of shipping and related activities on both greenhouse gas emissions and air quality.

We have identified a number of measures which would significantly reduce the impact of shipping on GHG and air quality. We will be engaging with the sector, including the Welsh Ports Group, to better understand the implications of these measures, how to incentivise the transition towards low-emission shipping, and to explore the role of alternative technological solutions in enabling more efficient and effective interventions.

⁵⁶ Cardiff Airport Environmental Flight Path. <https://www.cardiff-airport.com/news/2019/09/20/cardiff-airport-unveils-its-environmental-flight-path/>

The WNMP contains policies to help guide marine management. Some policies are related to cross-cutting issues such as nature conservation, minimising emission of greenhouse gases, air and water quality. Other policies are specifically related to the different sectors that operate in our seas, including shipping, renewable energy and fisheries. These policies combine to form an enabling framework for sustainable development, supporting those who wish to use the marine environment and providing confidence to do so in terms of what activity is likely to be appropriate, thereby ensuring the resilience of our marine ecosystems is protected and enhanced for future generations. We must also recognise shipping operates within local, regional and international regulatory frameworks, and therefore a consistent approach is needed to ensure movements towards zero-emissions shipping are financially sustainable. We will work closely with the UK Government to ensure that policy interventions are complementary and mutually supportive.

The WNMP policies apply in addition to (and do not supersede or replace) legislative and regulatory provisions such as the merchant Shipping (Prevention of Air Pollution from Ships) regulations 2008, International Maritime organisation (IMO) regulations on low carbon shipping and air pollution controls.

The WNMP includes policy relating to ports and shipping. These sectors are identified as an essential part of the UK economy, providing a major conduit for the country's imports and exports and key transportation infrastructure between land and sea, with the sector being critical to the effective movement of cargo and people as part of networks or supply chains within the UK and as part of the global economy. They are also identified as playing a crucial role in supporting other sectors, such as tourism and recreation and offshore marine renewable energy.

To minimise climate change, all proposals should demonstrate how they (in order of preference) avoid, minimise or mitigate emission of greenhouse gases. Where significant emission of greenhouse gases cannot be avoided, minimised or mitigated, proposals for regulating activities must present a clear and convincing case for proceeding. We aim to ensure proposals consider all emissions directly related to the proposed development or activity (including greenhouse gases associated with construction and operation) as well as emissions indirectly related to the development or activity (such as increased journey lengths for vessels, arising from a development).

All proposals should demonstrate how they have considered their potential air and water quality impacts and should (in order of preference) avoid, minimise or mitigate impacts. Where significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. The WNMP recognises sources of air pollution include emissions, including particulate matter and gases, from shipping and fishing vessels and dust from construction activities, and that air pollution can have an adverse effect on people's well-being, on biodiversity and also contribute to climate change.

Question

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

Improving air quality to support sustainable places – commitments and actions

Commitments & Actions	Short term (to 2021)	Medium Term (2021-26)	Longer Term (post 2026)
We will have integration between the Clean Air Plan, Planning Policy for Wales and the forthcoming Wales Transport Strategy to ensure infrastructure and service investment across Wales supports reduction in air pollution.	●	●	
Planning policy supporting air quality improvements			
Planning Policy Wales is supplemented by Technical Advice Notes (TANs). Welsh Government will produce further guidance and support for local planning authorities and developers in Wales, specifically on air quality and soundscape, to replace the existing TAN 11: Noise within this Assembly term.	●		
Wales Transport Strategy			
Welsh Government will develop a new Wales Transport Strategy, which will set out our policy framework to achieve our decarbonisation targets and required air pollution reduction.	●		
Promoting the shift from the private motor vehicle to active travel and public transport			
We will work with partners to ensure improved provision of public transport	●	●	●
Active Travel			
The Active Travel Act is complemented by statutory Delivery and Design Guidance, setting out planning and consultation approaches and requirements and the design specifications for walking and cycling infrastructure. We will be consulting on updated Guidance in winter /spring 2019/20.	●		
We are supporting the creation of Active Travel networks with significant capital investment.	●	●	●
We have contracted Sustrans to run 'Active Journeys', which promotes walking and cycling to school in close collaboration with schools, for the last four years and are currently procuring its successor programme. The future budget has been boosted by over 50%.	●	●	
We are funding cycle training for children and adults and child pedestrian training at a cost of around £1.5m annually. In 2020, we will review how this training can be optimised to go	●		

beyond acquisition of skills to include behaviour change elements.			
Bus and taxi			
We have set out a bold ambition for all buses to have zero exhaust emissions by 2028. We will consider the retrofit of buses with filters to allow the continued use of the existing (diesel) fleet while improving its environmental performance, whilst recognising any detrimental impact on fuel consumption and CO ₂ emissions.	●	●	
We are developing a vision document, delivery plan and governance structures to progress the work of reforming the provision of Taxi and Private Hire Vehicles. This will include the key themes of how we achieve air quality improvements as well as the decarbonisation of the fleet to meet our bold aim for a zero tailpipe emission taxi fleet by 2028.	●		
Rail			
We will increase capacity through the delivery of new and innovative Metro systems. The South Wales Metro will bring about a step change in the integration and frequency of public transport services to offer a compelling alternative to car journeys by 2023. New Metro schemes will be developed taking account of how air quality improvements can most successfully be achieved. We are also developing plans for other Metro schemes in North East and South West Wales. The North Wales Metro is a priority identified in Prosperity for All as a key contributor to delivering modern and connected infrastructure. The projects will facilitate modal shift, and deliver our objectives of improving air quality and reducing carbon emissions across North Wales.	●	●	●
Ultra-low emission vehicles			
We will promote the transition to ultra-low emission vehicles.	●	●	●
We will develop a proposal for all new cars and light goods vehicles in the Public Sector fleet to be ultra-low emission by 2025 and where practicably possible, all heavy goods to be ultra-low emission by 2030.	●	●	●
We will explore the potential to align the opportunities presented by Low Emission Zones and Clean Air Zones with wider transport policy initiatives in Wales. Consideration of opportunities and measures includes the introduction of clean air zones with potential	●	●	

access restrictions for certain vehicles in urban areas, toll roads, reviewing the feasibility of schemes to incentivise the scrappage of the most polluting vehicles with credits for public transport, and a review of the effectiveness of anti-idling legislation to protect those most vulnerable from harmful transport emissions.			
Tackling roadside nitrogen dioxide concentrations in Wales			
We will ensure remedial measures to achieve compliance with EU limit values for nitrogen dioxide are based on sound evidence and are likely to ensure continued emissions reductions to achieve compliance in the soonest time possible. To support this, we will expand the remit of our independent expert review panel to advise on activity to achieve and maintain compliance, including our work to develop further supporting measures on our strategic road network.	●	●	

Questions

39. Do the proposed commitments and actions address the issues described in the Plan?
40. Do you agree the actions will help to reduce the impact of air pollution to support sustainable places in Wales?
41. What additional commitments or actions would you propose?

Annex A: The national air quality monitoring networks operating in Wales

There are several national air quality monitoring networks operating across Wales. These report air pollution levels in Wales that can be assessed against regulatory requirements and to provide information for air quality researchers, the medical community and members of the public⁵⁷.

Automatic Urban and Rural Network

There are 11 air quality monitoring sites in Wales that are part of the UK Automatic Urban and Rural Network (AURN). The techniques used for monitoring the gaseous pollutants in the AURN are the reference methods of measurement defined in the relevant EU directives. For particulate matter, the AURN uses methods that have demonstrated equivalence to the reference method, but which (unlike the reference method) allow continuous monitoring and provision of this information in 'real time'.

Heavy Metals Network

There are six monitoring sites in Wales for heavy metals and they belong to the UK Heavy Metals Network. Airborne particulate matter is sampled and analysed for metal concentrations in PM₁₀. The metal concentration data are then combined with the local meteorological data (such as rainfall) to calculate values for wet deposition (from precipitation), dry deposition (such as dust settling) and cloud deposition (condensation of cloud droplets).

PAH Network

Wales has four polycyclic aromatic hydrocarbon (PAH) network sites. These monitor compliance with Directive 2005/107/EC (the 4th daughter directive), which includes a target value of 1 ng m⁻³ for the annual mean concentration of benzo[a]pyrene (C₂₀H₁₂) as a representative PAH, not to be exceeded after 31 December 2012. This network uses the PM₁₀ 'DigitelTM' sampler. Ambient air is sampled through glass fibre filters and polyurethane foam pads, which capture the PAH compounds for later analysis in a laboratory.

Black Carbon Network

Black carbon is fine, dark carbonaceous particulate matter produced from the incomplete combustion of materials containing carbon (for example coal, oil and biomass (such as wood)). It is of concern due to possible health impacts and as a suspected contributor to climate change. There is one monitoring site in Wales that measures this parameter. The site, in Cardiff, is part of the Black Carbon Network. This uses an automatic instrument called an aethalometer that measures black carbon directly using a real-time optical transmission technique.

⁵⁷ Air Pollution in Wales 2018; Ricardo Energy & Environment on behalf of the Welsh Government and WAQF.

UK Eutrophying and Acidifying Pollutants Network

The UK Eutrophying and Acidifying Atmospheric Pollutants (UKEAP) network⁵⁸ provides information on the deposition of eutrophying and acidifying compounds in the UK and assesses their potential impacts on ecosystems. There are 14 network sites across Wales. Other measurements – including acid gases and particulate composition – have also been made within the programme, to provide a more complete understanding of atmospheric chemistry in the UK.

⁵⁸ See: <https://www.ceh.ac.uk/our-science/projects/uk-eutrophying-acidifying-atmospheric-pollutants-ukeap> (accessed 17/10/2019)

Annex B: Legislation, Policies and Guidance

Existing legislation, policies, strategies and guidance create the context in which to identify opportunities for increasing the scope and pace of beneficial intervention, to prioritise the problems to address and determine our personal, family, community and collective roles in responding to them.

This plan integrates with and complements other Welsh Government policies including plans for planning, de-carbonisation, noise and soundscape management, environment, infrastructure, land use, transport and marine and fisheries. A number of these policies have been referenced throughout this document.

This plan also sets out additional measures and actions to improve air quality and where possible achieve multiple beneficial results. We have ensured our approach is consistent with existing policy positions or those under development.

Primary legislation	
Clean Air Act 1993	Environment Act 1995
Environment (Wales) Act 2016	Planning (Wales) Act 2015
Pollution Prevention and Control Act 1999	Well-being of Future Generations (Wales) Act 2015
Secondary legislation	
Air Quality Standards (Wales) Regulations 2010	
European Legislation	
4 th Air Quality Daughter Directive 2005/107/EC	Ambient Air Quality Directive 2008/50/EC
Habitats Directive 92/43/EEC	Industrial Emissions Directive 2010/75/EU
The Nitrates Directive (91/676/EEC)	Landfill Directive 2018/850/EU
National Emissions Ceiling Directive 2016/2284/EU	Waste Framework Directive 2008/98/EC
Policies and Strategies	
Welsh supplemental plan to the 'UK plan for tackling roadside nitrogen dioxide concentrations 2017': Tackling roadside nitrogen dioxide concentrations in Wales	Brexit and our land
Children's Rights in Wales	Clean Air for Port Talbot: Short Term Action Plan 2012
Creating an Active Wales	Curriculum for Wales 2022
Economic Growth Plan	Energy Efficiency Strategy
Energy Wales: A Low Carbon Transition	Food Strategy for Wales 2010 to 2020
Healthy Weight, Health Wales	Climate Change Adaptation Plan for Wales
Natural Resources Policy	Nature Recovery Action Plan (NRAP)

Noise and Soundscape Action Plan	North East Wales Metro: Moving North Wales Forward
Physical Activity Action Plan: Creating an active Wales	Planning Policy Wales
Prosperity for All - Low Carbon Wales	Resource Efficient Wales
South Wales Metro	Sport and physical activity strategy (Climbing Higher)
Strategic Action Plan for the Welsh Dairy Industry	Tourism Strategy (Partnership for Growth)
UK National Air Pollution Control Programme (NAPCP)	Wales Transport Strategy
Cymraeg 2050: Welsh language strategy	The Air Quality Strategy for England, Scotland, Wales and Northern Ireland
Guidance	
Clean Air Zone Framework for Wales	Code of Good Agricultural Practice
Environment (Wales) Act 2016 Part 1 Section 6 – The Biodiversity and Resilience of Ecosystems Duty: Reporting Guidance for public authorities	Environmental Permitting Guidance: Waste Incineration
Local Air Quality Management in Wales	Natural Resources Wales Guidance https://naturalresources.wales/guidance-and-advice/?lang=en
Technical Advice Notes https://gov.wales/technical-advice-notes	Transforming bus investment in Wales: Interventions toolkit
Welsh Transport Appraisal Guidance	
Other	
United Nations Convention on the Rights of the Child (1989)	

Annex C: Glossary

AAQD	Ambient Air Quality Directive
AQAP	Air Quality Action Plan
AQP	Air Quality Plan
AQMA	Air Quality Management Area
APR	Annual Progress Report
AURN	Automatic Urban and Rural Network
BAT	Best Available Techniques
BHF	British Heart Foundation
CAA	Clean Air Act
CAP	Common Agricultural Policy
CAZ	Clean Air Zone
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COGAP	Code of Good Agricultural Practice
COMEAP	Committee on the Medical Effects of Air Pollution
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EC	European Commission
ECA	Emissions Control Area
EEA	European Environment Agency
ERAMMP	Environment and Rural Affairs Monitoring and Modelling Programme
EU	European Union
EV	Electric Vehicle
GHG	Greenhouse Gas
HGV	Heavy Goods Vehicle
HIA	Health Impacts Assessment
HSE	Health and Safety Executive
IED	Industrial Emissions Directive
IMO	International Marine organisation
kt	Kilotonne
LAQM	Local Air Quality Management
LCVP	Low Carbon Vehicle Partnership
LEZ	Low Emission Zone
LGV	Light Goods Vehicle
MPMD	Multi-Pollutant Measures Database
NAEI	National Atmospheric Emissions Inventory
NDF	National Development Framework
NECD	National Emissions Ceilings Directive
NH ₃	Ammonia
NHS	National Health Service
NICW	National Infrastructure Commission for Wales
NMVOCs	Non-methane Volatile Organic Compounds
NO ₂	Nitrogen Dioxide
NO _x	Oxide of Nitrogen
NRAP	Natural Resources Action Plan

NRW	Natural Resources Wales
NVZ	Nitrate Vulnerable Zones
O3	Ozone
Pb	Lead
PHW	Public Health Wales
PM	Particulate Matter
PPW	Planning Policy Wales
PWMC	Population weighted mean concentration
SIA	Secondary inorganic aerosols
SMNR	Sustainable management of natural resources
SO ₂	Sulphur Dioxide
SoNaRR	State of Natural Resources Report
STAP	Short Term Action Plan
TAN	Technical Advice Note
TfW	Transport for Wales
UK	United Kingdom
ULEV	Ultra-Low Emissions Vehicle
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNECE	United Nations Economic Commission for Europe
WFGA	Well-being of Future Generations
WHO	World Health Organisation
WNMP	Welsh National Maritime Plan

Welsh Government Consultation Response Form

Clean Air Plan

Your name:

Organisation (if applicable):

email / telephone number:

Your address:

Section Title	Questions
The Clean Air Plan for Wales - Thematic Approach and Commitments	1. Does the thematic approach in the Clean Air Plan bring together the key air quality issues in a way that is clear and helpful way?
Air pollution and health	2. 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 where possible. 3. Do the commitments and actions for health and well-being address the most important factors for improving air quality and realising health benefits?
Local Air Quality Management (LAQM)	4. Are you satisfied the proposals for Local Air Quality Management will result in robust, effective air quality management arrangements?
Area-specific policies and the designation of air quality improvement areas/zones.	5. Are you satisfied with the proposed approach for Clean Air Zones/Low Emission Zones in Wales?
Domestic Combustion	6. Do you agree with the proposals for tackling air pollution from domestic combustion? 7. Which aspects of Smoke Control would you would like Welsh Government to consider or strengthen?
Integration of area specific policies	8. Are you satisfied with proposals to deliver a more integrated air quality management approach? If no, please provide evidence to support other alternatives.
Indoor Air Pollution	9. 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.
A Clean Air Act for Wales	<p>10. Do you support the proposals for a Clean Air Act for Wales?</p> <p>11. Are there additional issues a Clean Air Act should address?</p> <p>12. 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?</p>
Public awareness about airborne pollution	<p>13. 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?</p> <p>14. 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?</p> <p>15. Are there other approaches or opportunities to develop greater understanding of air quality issues that you think we should explore?</p> <p>16. Do the proposed communications work streams provide a suitable focus for air quality communications and behaviour change work?</p> <p>17. Are there features you would like as part of the Air Quality in Wales website?</p> <p>18. Are there specific communications and behaviour change campaigns you would support?</p> <p>19. Are there age groups or communities who could contribute to developing citizen science projects?</p> <p>20. Which age groups would benefit most from developing personal awareness, understanding and responsibility in terms of air quality and pollutants?</p> <p>21. Are there additional approaches or opportunities to develop greater understanding of air quality issues that should be explored?</p>

Improving air quality to protect the health and well-being of current and future generations - commitments and actions	<p>22. Do the proposed commitments and actions address the issues described in the health and well-being section of the Plan?</p> <p>23. Do you agree the actions will help to reduce the impact of air pollution on health and well-being in Wales?</p> <p>24. What additional commitments or actions would you propose?</p>
Improving air quality to support our natural environment, ecosystems and biodiversity	<p>25. What sorts of nature based solutions could be promoted to help to reduce human exposure to air pollution?</p> <p>26. How can we speed up the recovery of our biodiversity and ecosystems alongside emission reduction?</p> <p>27. What activities can we emphasise in our environmental growth plan to help tackle air pollution and its impact on ecosystems in Wales?</p> <p>28. Do the proposed commitments and actions address the issues described in natural environment, ecosystems and biodiversity section of the Plan?</p> <p>29. Do you agree the actions will help to reduce the impact of air pollution on natural environment, ecosystems and biodiversity in Wales?</p> <p>30. What additional commitments or actions would you propose?</p>
Industrial Air Pollution	<p>31. On which sectors, processes or areas should we focus our action to reduce public exposure to industrial emissions to air pollution?</p> <p>32. Are there any specific legislative changes you think we should consider in order to tackle industrial emissions to air?</p> <p>33. Are there any specific actions or measures with which we can encourage investment by industry to reduce air pollution?</p> <p>34. Are there any specific actions or measures with which we can encourage investment by industry to reduce air pollution?</p> <p>35. Do you think generators used for research and development should be treated differently in terms of emission controls?</p>
Improving air quality to support a prosperous Wales - commitments and actions	<p>36. Do the proposed commitments and actions address the issues described in the Prosperous Wales section of the Plan?</p>
The National Infrastructure Commission for Wales	<p>37. Should air quality issues be referenced in the remit of NICW?</p>

Transport	38. Are there other air quality matters relating to transport which Welsh Government should consider or review?
Improving air quality to support sustainable places – commitments and actions	39. Do the proposed commitments and actions address the issues described in the Plan? 40. Do you agree the actions will help to reduce the impact of air pollution to support sustainable places in Wales? 41. What additional commitments or actions would you propose?
Welsh language	42. We would like to know your views on the effects the <i>Clean Air Plan</i> will have on the Welsh language, specifically on: <ul style="list-style-type: none"> a. opportunities for people to use Welsh; and b. treating the Welsh language no less favourably than the English language. 43. What effects do you think there would be? How could the positive effects be increased, or negative effects be mitigated? 44. Please also explain how you believe the proposed Plan could be formulated or changed so as to have: <ul style="list-style-type: none"> 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.
General question	45. We have asked a number of specific questions. If you have any related issues that we have not specifically addressed, please use this space to report them.

Please enter here:

Responses to consultations are likely to be made public, on the internet or in a report. If you would prefer your response to remain anonymous, please tick here: