



Telford & Wrekin
Co-operative Council

Protect, care and invest
to create a better borough

Building Safer, Stronger & Healthier Communities Through Better Air Quality

January 2024

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Glossary

Air Quality Action Plan (AQAP)	A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values.
Air Quality Management Area (AQMA)	If a Local Authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an Air Quality Management Area (AQMA). The area may encompass just one or two streets, or it could be much bigger. The Local Authority is subsequently required to put together a plan to improve air quality in that area - a Local Air Quality Action Plan (AQAP).
Air Quality Objectives	The Air Quality Objectives are policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances, within a specified timescale. The Objectives are set out in the UK Government's Air Quality Strategy for the key air pollutants.
Ambient Air	The air (or concentration of a pollutant) that occurs at a particular time and place outside of built structures. Often used interchangeably with "outdoor air".
Annual Mean	The annual mean is the average concentration of a pollutant measured over one year. This is normally for a calendar year.
Annual Status Report (ASR)	An annual review and assessment procedure on the status of Air Quality in a local authority area over the previous calendar year.
Bus Service Improvement Plan (BSIP)	Bus Service Improvement Plans (BSIPs) are developed by Local Transport Authorities, working closely with their local bus operators and local communities, to define how bus services will be improved.
Department for Environment, Food and Rural Affairs (Defra)	Government Department for Environment, Food and Rural Affairs
Department for Transport (DfT)	Government Department for Transport
Diffusion Tube Samplers	Passive diffusion tube samplers collect nitrogen dioxide and other pollutants by molecular diffusion along an inert tube to an efficient chemical absorbent. After exposure for a known time, the absorbent material is chemically analysed and the concentration calculated.
Electric Vehicle (EV)	Any vehicle that uses electric motors as propulsion.

Eutrophication	A process of pollution that occurs when a lake or stream becomes over-rich in plant nutrient; as a consequence it becomes overgrown in algae and other aquatic plants. The plants die and decompose. In decomposing the plants rob the water of oxygen and the lake, river or stream becomes lifeless.
Exceedance	An exceedance is defined as whether a measured pollutant concentration is above the air quality criteria
Greenhouse Gases	Greenhouse gases are atmospheric gases such as carbon dioxide, methane, chlorofluorocarbons, nitrous oxide, ozone, and water vapour that slow the passage of re-radiated heat through the Earth's atmosphere.
Limit Values	Air quality limit values are legally binding criteria for air pollutants, set for specific air pollutants over a specific period of time and were originally set in EU Directives
Local Air Quality Management (LAQM)	The Local Air Quality Management (LAQM) process requires Local Authorities to periodically review and assess the current and future quality of air in their areas. A Local Authority must designate an Air Quality Management Area (AQMA) if any of the Air Quality Objectives set out in the regulations are not likely to be met over a relevant time period.
Local Transport Plan (LTP)	A Local Transport Plan (LTP) assesses an area's transport needs and challenges and sets out different ways in which these challenges will be addressed.
Lower Super Output Areas (LSOA)	Lower Super Output Area (LSOA) were originally created for Census data, specifically for the output of census estimates. The Lower Super Output Area is the second lowest geographical level at which census estimates are provided, the lowest being Output Areas.
Microgrammes per cubic metre ($\mu\text{g}/\text{m}^3$)	A measure of concentration in terms of mass per unit volume. A concentration of $1 \mu\text{g}/\text{m}^3$ means that one cubic metre of air contains one microgram (10^{-6} grams) of pollutant.
National Atmospheric Emissions Inventory (NAEI)	The NAEI compiles annual estimates of UK emissions to the atmosphere from sources such as road transport, power stations and industrial plants. These emissions are estimated to inform policy, and to help to identify ways of reducing the impact of human activities on the environment and our health.
National Planning Policy Framework (NPPF)	The National Planning Policy Framework (NPPF) sets out government planning policy for England.

Oxides of Nitrogen (NO _x)	Combustion processes emit a mixture of nitrogen oxides (NO _x), primarily nitric oxide (NO) which is quickly oxidised in the atmosphere to nitrogen dioxide (NO ₂). Nitrogen dioxide has a variety of environmental and health impacts. It is a respiratory irritant which may exacerbate asthma and possibly increase susceptibility to infections.
Particulate matter (PM)	Airborne PM includes a wide range of particle sizes and different chemical constituents. It consists of both primary components, which are emitted directly into the atmosphere, and secondary components, which are formed within the atmosphere as a result of chemical reactions. Of greatest concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Air Quality Objectives are in place for the protection of human health for PM ₁₀ and PM _{2.5} – particles of less than 10 and 2.5 micrometres in diameter, respectively.
Planning Practice Guidance (PPG)	Written documents that set out the government's policies on different aspects of planning policy.
Pollution Climate Mapping (PCM)	The Pollution Climate Mapping (PCM) model is a collection of models designed to fulfil part of the UK's requirements to report on the concentrations of particular pollutants in the atmosphere.
Public Health England (PHE)	An executive agency of the Department of Health and Social Care, established on 1 April 2013. Now replaced by UK Health Security Agency (UKHSA) and the Office for Health Improvement and Disparities (OHID).
Sulphur Dioxide (SO ₂)	Sulphur dioxide is a corrosive, acidic gas which combines with water vapour in the atmosphere to produce acid rain. Both wet and dry deposition have been implicated in the damage and destruction of vegetation and in the degradation of soils, building materials and watercourses. SO ₂ in ambient air is also associated with asthma and chronic bronchitis.
Ultra low emission vehicles (ULEV)	Ultra-low emission vehicle (ULEV) is the term used to describe any vehicle that uses low carbon technologies and emits less than 75g of CO ₂ /km from the tailpipe. ULEVs range from pure electric vehicles and fuel cell electric vehicles, to plug-in hybrids and extended range electric vehicles.
United Nations Economic Commission for Europe (UNECE)	The United Nations Economic Commission for Europe (UNECE) was set up in 1947. It is one of five regional commissions of the United Nations. UNECE's major aim is to promote pan-European economic integration.

Volatile organic compounds (VOCs)	Organic chemical compounds that under normal conditions are gaseous or can vaporise and enter the atmosphere. VOCs include such compounds as methane, benzene, xylene, propane and butane. Methane is primarily emitted from agriculture (from ruminants and cultivation), whereas non-methane VOCs (or NMVOCs) are mainly emitted from transportation, industrial processes and use of organic solvents.
World Health Organisation (WHO)	The WHO is the United Nations agency that connects nations, partners and people to promote health, keep the world safe and serve the vulnerable – so everyone, everywhere can attain the highest level of health.

Foreword

Poor air quality is everybody's business. This is primarily due to health risks that it can bring. Whilst improving health and health inequalities is the primary motivation for improving the air quality within the borough, most measures that will follow from this strategy will also promote sustainable development and transport, while complementing our carbon neutral agenda.

Air pollution can be difficult to address because of the increasing dependence we all have upon motor vehicles, whether for personal, business use and/or transportation of goods.

More and more, Telford & Wrekin seen as a desirable place to live and work, and this is demonstrated by continued residential and commercial development. Protecting the environment while supporting and encouraging growth is paramount.

This strategy supports part of our Council vision:

- every child, young person and adult lives well in their community
- all neighbourhoods are a great place to live
- our natural environment is protected, and the Council is taking a leading role in tackling the climate emergency

By recognising that no single agency, department or community has all the answers; improvements to air quality can only be achieved by taking an integrated, collaborative approach. It acknowledges that economic growth and improving the local environment are not independent of each other.

There is no doubt that by building on the environmental work already being carried out and taking a realistic, flexible approach, bringing closer integration of air quality and the environment into wider agendas such as health, transport and planning, we will contribute to improvements in the quality of the air within the borough.



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Our Vision

Compared to other parts of the West Midlands, and other towns and cities across the UK, air quality in Telford & Wrekin is relatively good. In fact, it is identified as one of the benefits of living here, alongside its green and natural environment. We want to ensure that it stays that way, as we welcome new residents and workers through planned growth over the next 20 years. We are driven by three overarching aims:

- As recent research has identified health impacts at concentrations significantly lower than UK national air quality objectives, our aim is to make further improvements in air quality, and to safeguard a healthy environment for the future. Grounded in the latest health impact research, it is intentionally ambitious.
- Telford & Wrekin Council are particularly focussed on benefits for disadvantaged and vulnerable groups, who are often most affected by poor air quality, despite being those least responsible for causing it.
- Telford & Wrekin Council also recognise the links between air quality and the Council's carbon agenda. By directly linking their outcomes, we will better identify co-benefits and understand any trade-offs.

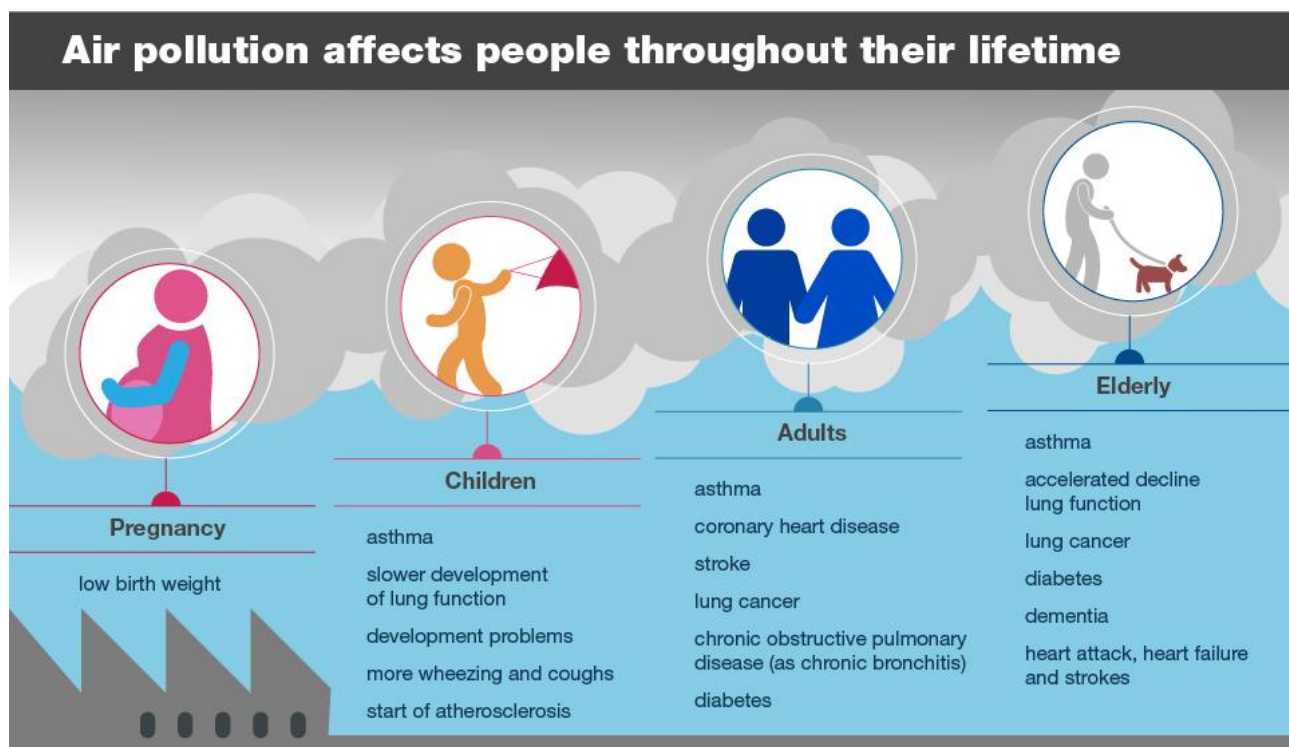
Air quality has multiple sources and impacts. It touches many aspects of our lives. Our Air Quality Strategy needs to be similarly cross-cutting. At the local level, many different strategies and policies have a bearing on, or are affected by, air quality. The Air Quality Strategy provides a central point from which to track progress, both from new measures, as well as those implemented by other initiatives. The Air Quality Strategy is not simply a document. It is an active process, intended to facilitate collaboration across key stakeholders within the region. It provides way of managing relationships, action and information to affect the change that we want to see.

Air Quality Impacts and Sources

The impacts of air pollution

Poor air quality is the largest environmental risk to public health in the UK. Air pollution can cause chronic conditions such as cardiovascular and respiratory diseases as well as lung cancer, leading to reduced life expectancy (Figure 1)^{1,2}. It is estimated that in the UK each year, between 28,000 and 36,000 premature deaths are linked to air pollution³, the economic cost of which is over £20 billion per year⁴.

Figure 1: Health impacts of air pollution over a lifetime⁵



¹ Public Health England (2018), Guidance on health matters: air pollution. Available at:

<https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>. Accessed April 2022

² Public Health England (2019) Review of interventions to improve outdoor air quality and public health. Available online at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938623/Review_of_interventions_to_improve_air_quality_March-2019-2018572.pdf. Accessed April 2022.

³ Committee on the Medical Effects of Air Pollutants (COMEAP) (2018) Associations of long-term average concentrations of nitrogen dioxide with mortality. <https://www.gov.uk/government/publications/nitrogen-dioxide-effects-on-mortality>. Accessed Apr 2022.

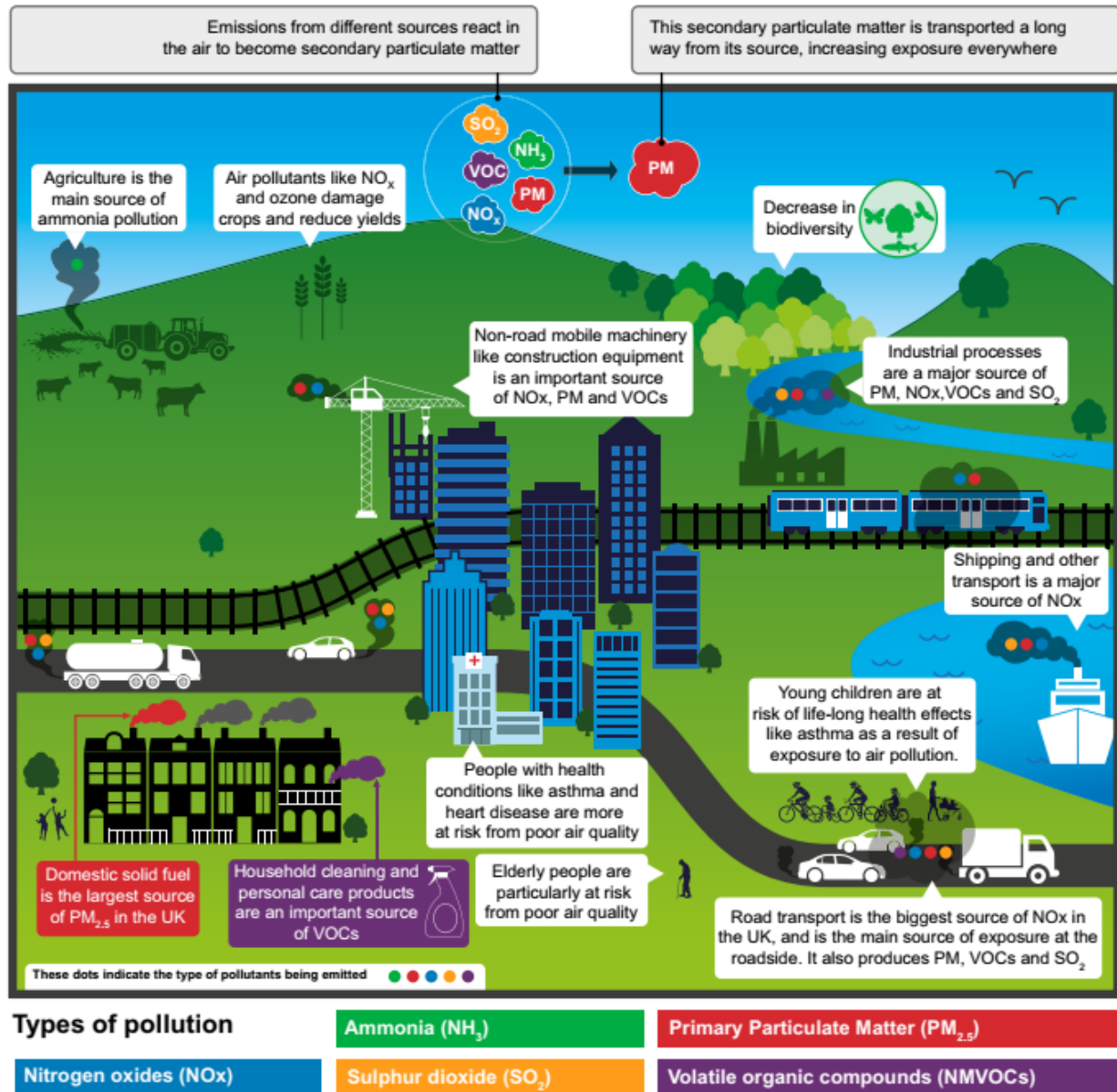
⁴ Royal College of Physicians (2016) Every breath we take: the lifelong impact of air pollution. Available online:

<https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution>. Accessed April 2022.

⁵ Public Health England (2018) Health matters: air pollution. Available online: <https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>. Accessed September 2022. Content reproduced under the Open Government licence v3.0 <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Air pollution particularly affects the most vulnerable in society: children, older people and those with pre-existing heart and lung conditions. It also exacerbates inequalities, as less affluent areas are often those with poorer air quality^{6,7}. Air pollution also has ecological impacts, affecting crops and biodiversity due to impacts on vegetation growth and the chemical balance of soils. Air pollutants are emitted from a range of human and natural sources (Figure 2).

Figure 2: The sources of air pollution and their impacts⁸



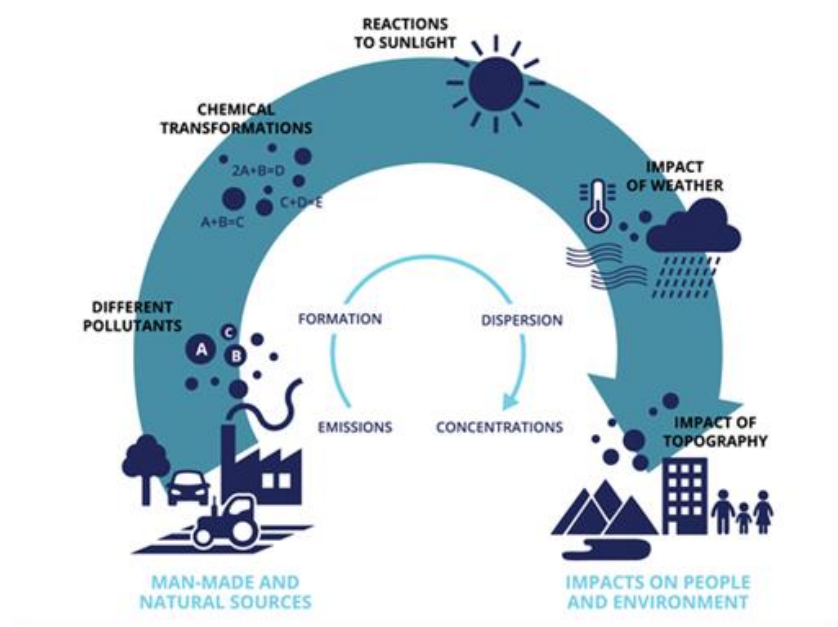
⁶ Public Health England (2017) Air Quality: A briefing for directors of public health. Available online: <https://www.local.gov.uk/publications/air-quality-briefing-directors-public-health?msckid=3f00dae9c47511ecad28c1de37434545>. Accessed April 2022.

⁷ Barnes, J. H., Chatterton, T. J., Longhurst, J. W. S. (2019) Emissions vs exposure: Increasing injustice from road traffic-related air pollution in the United Kingdom. Transportation Research Part D: Transport and Environment. Vol. 73, August 2019, pp56-66. Available online at: <https://www.sciencedirect.com/science/article/pii/S1361920919300392>. Accessed April 2022.

⁸ Department for Environment Food & Rural Affairs (Defra) (2019), Clean Air Strategy 2019. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf. Accessed April 2022 © Crown Copyright 2019. Public sector information reproduced under the Open Government licence v3.0 <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

The extent to which the population and environment are exposed to harmful levels of air pollution is a complex issue, affected by how pollutants travel in the atmosphere, their mixing and how they react under different meteorological conditions (Figure 3). The main pollutants of concern for local authorities are nitrogen dioxide (NO₂) and particulate matter (PM).

Figure 3: Air pollution impact pathway⁹



Nitrogen Dioxide

NO₂ is generally produced by the oxidation of nitric oxide (NO) in ambient air (i.e. it is not formed directly and as such is known as a secondary pollutant). The pollutants NO and NO₂ are collectively termed oxides of nitrogen (NO_x). A third of the UK's NO_x emissions are from road transport, with non-road transport, industry, agriculture, and residential combustion making up the remainder (Figure 4).

Long term exposure to NO₂ is associated with reduced lung development, childhood respiratory infection and effects on lung function. Short term exposure acts as a respiratory irritant that can cause inflammation of the airways. Notably, NO₂ has been associated with adverse health effects at concentrations lower than current UK Air Quality Objectives, in some studies^{10,11} potentially as low as 5 µg/m³.

NO_x also has ecological impacts through nitrogen deposition (eutrophication) which can affect sensitive ecosystems, as well as acidification of vegetation, soils and watercourses.

⁹ European Environment Agency (EEA). Air pollution: from emissions to exposure. Available online at: <https://www.eea.europa.eu/media/infographics/air-pollution-from-emissions-to-exposure/view>. Accessed April 2022. © European Environment Agency <https://www.eea.europa.eu/legal/copyright>

¹⁰ WHO air quality guideline values: global update 2021 available at: [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health). Accessed March 2022.

¹¹ COMEAP (2018) *Op. cit.*

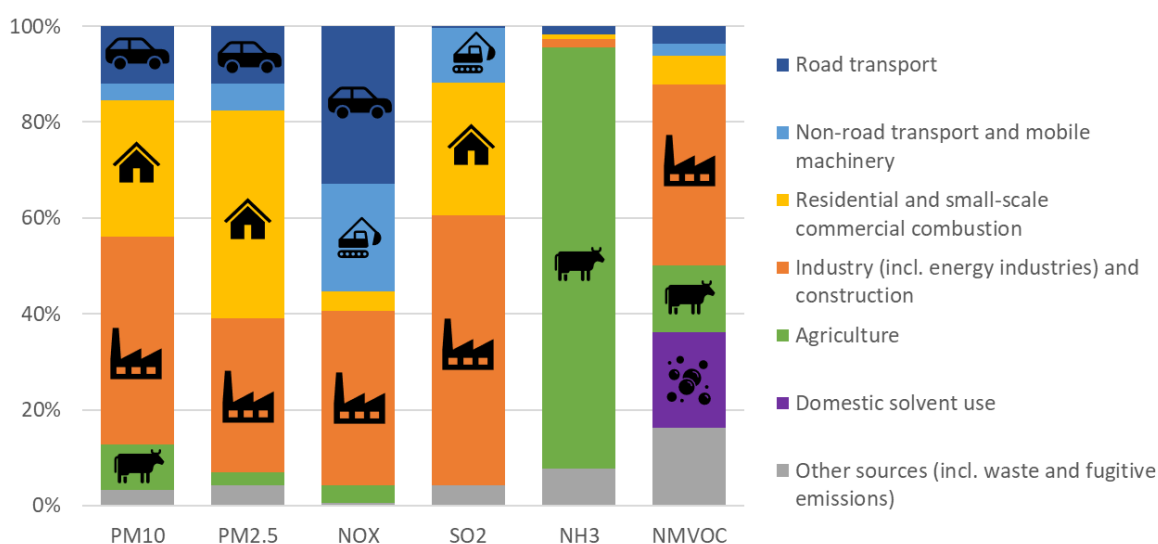
Particulate Matter

PM is a generic term used to describe a complex mixture of solid and liquid particles of varying size, shape, and composition. Some particles are emitted directly (primary PM); others are formed in the atmosphere through complex chemical reactions (secondary PM). Fine particles are those with a diameter of less than 10 micrometers (μm) (PM_{10}), less than $2.5 \mu\text{m}$ ($\text{PM}_{2.5}$), and ultrafine particles, less than $0.1 \mu\text{m}$ ($\text{PM}_{0.1}$).

Primary PM_{10} emissions are particles emitted directly from combustion sources, transport¹², quarrying and construction activities, and from wind-blown dust. Residential, commercial, and industrial combustion account for the majority of PM_{10} and $\text{PM}_{2.5}$ emissions in the UK, with residential domestic solid fuel burning accounting for over 40% of $\text{PM}_{2.5}$ emissions (Figure 4).

Other pollutants can also contribute to PM concentrations. Secondary particulates are formed in the atmosphere through chemical reactions of precursor pollutants, including NO_x , sulphur dioxide (SO_2), ammonia (NH_3) and non-methane volatile organic compounds (NMVOCs). Industry and agriculture are significant contributors to these pollutants. Particulate matter is associated with a range of health impacts. Small particles penetrate and lodge inside lungs. The smaller the particle, the deeper into the body they can penetrate. The strongest evidence for effects on health are associated with $\text{PM}_{2.5}$, as at this size the particles can be inhaled deep into the lungs. The very smallest ultrafine particles ($\text{PM}_{0.1}$) are thought, once inhaled, to be able to pass directly into the bloodstream and become embedded in organs such as the brain and heart. Importantly, there is **no evidence of a 'safe' level of exposure to PM**, or a threshold below which no adverse health effects would occur.

Figure 4: Source emission contributions by sector in the UK in 2019¹³



¹² In the case of road transport, the majority of PM emissions are 'non-exhaust' (brake, tyre wear and resuspension). As such, a switch to electric vehicles will not solve transport's PM problems.

¹³ Derived from figures within Defra (2021) Emissions of air pollutants in the UK. National Statistics Tables. Available online at: <https://www.gov.uk/government/statistics/emissions-of-air-pollutants>. Accessed April 2022.

KEY POINTS

- Air pollution is a serious risk to human health and the environment.
- The main pollutants of concern are nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}).
- Health effects can potentially occur at very low concentrations of NO₂. For PM₁₀ and PM_{2.5}, there is no 'safe' level.
- To reduce NO₂, the target sectors are transport (road and non-road) and industry.
- Reducing PM is more complicated as it is affected by multiple sources, including direct 'primary' combustion emissions, as well as secondary pollutants that go on to form particulates in the atmosphere.

Policy and legislative context

Managing Concentrations

Legacy of EU Directives

The UK Government has a responsibility to meet legally binding limit values for concentrations in outdoor air for major air pollutants that impact public health. The limit values are as set out within the European Union's Ambient Air Quality Directive (2008/50/EC) and implemented in the UK through the EU (Withdrawal Agreement) Act 2020^{14,15}. Where air quality limit values are not met, measures to achieve them are required to be put in place, either nationally or locally.

National Air Quality Objectives

The 2023 Air Quality Strategy: Framework for Local Authority Delivery includes national air quality standards and objectives for a number of local air pollutants. The objectives are policy targets, to be achieved without exception or with a permitted number of exceedances, and by a specified timescale. The air quality objectives applicable in England are defined within the Air Quality (England) Regulations 2000 (as amended 2002)¹⁶. Two new legally binding long-term targets to reduce concentration of fine particulate matter (PM_{2.5}) were introduced by the Environmental Act 2021. In England, the objectives for NO₂ and PM concentrations are summarised below (Table 1).

Table 1 - Air Quality Objectives for NO₂ and PM in England

Pollutant	Concentration	Measured as
NO ₂	200 µg/m ³ not to be exceeded more than 18 times per year	1-hour mean
	40 µg/m ³	Annual mean
PM ₁₀	50 µg/m ³ not to be exceeded more than 35 times per year	24-hour mean
	40 µg/m ³	Annual mean
PM _{2.5}	10 µg/m ³ (by 2040)	Annual mean
	35% reduction in exposure compared to 2018 (by 2040)	Annual mean

Local Air Quality Management (LAQM)

Under Part IV of the Environment Act 1995 as amended by the Environment Act 2021, local authorities have a duty to review and assess local air quality within their areas, against the national air quality objectives. Where an exceedance is considered likely, the

¹⁴ The Air Quality Standards Regulations 2010. Available online at: <http://www.legislation.gov.uk/uksi/2010/1001/contents/made>. Accessed April 2022.

¹⁵ The Air Quality Standards (Amendment) Regulations 2016. Available online at: <https://www.legislation.gov.uk/uksi/2016/1184/contents/made>. Accessed April 2022.

¹⁶ The Air Quality (England) Regulations 2000. Available online: <http://www.legislation.gov.uk/uksi/2000/928/contents/made>. Accessed April 2022. The Air Quality (England) (Amendment) Regulations 2002. Available online: <http://www.legislation.gov.uk/uksi/2002/3043/regulation/2/made>. Accessed April 2022.

local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out measure it intends to put in place in pursuit of these objectives.

Each year, every local authority submits an Annual Status Report (ASR) to Defra reporting concentrations recorded through the monitoring network and listing strategies employed by the local authority to improve air quality. In addition, local authorities are also encouraged to draft and implement a local air quality strategy.

Recent Legislative Changes

In January 2019, the UK Government published a Clean Air Strategy¹⁷, which sets out actions to improve air quality by reducing pollution from a wide range of sources. The aim of the strategy is to drive down the national emissions of pollutants, reducing background pollution and minimising human exposure to harmful concentrations of pollution.

The Environment Act 2021 places the following new requirements on the Government and local authorities on air quality.

- Requirement on the Government to bring forward at least two new air quality targets in secondary legislation by 31 Oct 2022.
 - 10 $\mu\text{g}/\text{m}^3$ as an annual mean to be met across England by 2040; and
 - a 35% reduction in population exposure by 2040 from a 2018 baseline.
- Strengthening of the LAQM framework by sharing responsibility for tackling local air pollution between designated relevant public authorities, all tiers of local government and neighbouring authorities. The intent is to enable greater cooperation at local level and broaden the range of organisations that play a role in improving air quality.
- Amendments to the Clean Air Act 1993 to allow local authorities to impose financial penalties in smoke control areas.

World Health Organisation Air Quality Guidelines

The World Health Organisation (WHO) sets Air Quality Guidelines as global targets for national, regional and local governments to work towards¹⁸. The Guidelines are informed by scientific evidence on health impacts of air pollution. They are aimed at an international audience and have been adopted by national, and unions of, Governments and international organisations. They are health-based targets, acknowledging that for some pollutants, namely $\text{PM}_{10}/\text{PM}_{2.5}$, there are not safe concentration thresholds. Guideline levels are accompanied by less stringent, interim targets, which are proposed to encourage a constant reduction in public exposure. The previous WHO Guidelines and evidence base, published in 1987 and 2005, informed the development of current EU Limit Values and UK Air Quality Objectives. Of note, in the WHO's 2021 update, annual average Guideline Levels for NO_2 and $\text{PM}_{2.5}$ have been revised to 10 and 5 $\mu\text{g}/\text{m}^3$ respectively (the full table is presented in Appendix A). These are significantly lower than current UK

¹⁷ Defra (2019) *Op. cit.*

¹⁸ WHO air quality guideline values: global update 2021. *Op. cit.*

national air quality objectives, and reflect short- and long-term studies that have identified adverse health impacts at low concentrations.

National Planning Guidance

National Planning Guidance helps to provide context and will form the basis for any new local planning guidance. The National Planning Policy Framework (NPPF)¹⁹ helps local authorities to incorporate air quality considerations into planning decisions and aims to protect the environment and to promote sustainable growth. Extracts are included in Appendix A. Planning Practice Guidance (PPG) for Air Quality²⁰ is intended to support the NPPF and provide further detail to its policies (see Appendix A).

Local Policy Context

Telford & Wrekin Council has not declared any AQMAs, and as such no AQAPs are in place. We make annual returns to Defra through ASR submissions²¹, which include reporting of monitored concentrations and progress on measures to improve air quality, e.g. through actions managed within the local transport plan. The previous Air Quality Strategy was published as part of the 2016 ASR, and focussed on ensuring adequate provision for air quality monitoring.

Air quality has multiple sources and impacts. At the local level, many different strategies and policies have a bearing on, or are affected by air quality. Key documents are listed below, some of which are under review at the time of writing.

- Planning
 - Local Plan²² [under review]
- Housing, Employment and Infrastructure
 - Invest Telford Economic Development Strategy
- Transport
 - Local Transport Plan²³ [under review]
 - Public Electric Vehicle Infrastructure Strategy (formerly the Ultra-Low Emission Vehicle Strategy)
 - Bus Service Improvement Plan (BSIP)²⁴
 - Cycling and Walking Strategy²⁵ [under review]
 - Local Cycling and Walking Investment Plan

¹⁹ Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework. Updated 20 July 2021. Available online at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>. Accessed April 2022.

²⁰ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2019) Planning Practice Guidance: Air Quality. Available online at: <https://www.gov.uk/guidance/air-quality--3>. Accessed April 2022.

²¹ Telford & Wrekin Council. Air Quality – reviews and assessments. Available online at:

https://www.telford.gov.uk/info/20358/pollution/803/air_quality_-_reviews_and_assessments. Accessed April 2022.

²² TWC Local Plan 2011-2031: www.telford.gov.uk/localplandocuments. Accessed April 2022

²³ TWC Local Transport Plan 2011-2026: www.telford.gov.uk/info/1019/roadworks_transport_and_streets/497/local_transport_plan. Accessed April 2022.

²⁴ TWC Bus Service Improvement Plan (BSIP): www.telford.gov.uk/downloads/file/19890/bus_service_improvement_plan. Accessed April 2022.

²⁵ TWC Cycling and Walking Strategy: www.telford.gov.uk/downloads/file/7995/cycling_and_walking_strategy. Accessed April 2022.

- Transport Growth Strategy²⁶
- Licensing strategy for taxis and private hire vehicles
- Ironbridge Access Strategy [under review]
- Carbon and climate change
 - Becoming Carbon Neutral Action Plan²⁷
- Health Protection
 - Health and Wellbeing Strategy²⁸
 - Social Value Policy

KEY POINTS

- The Government must meet legally binding limit values for outdoor air.
- Local Authorities must review and assess local air quality in their areas against national objectives. Where exceedances are considered likely, the local authority must set out measures it intends to take in pursuit of the objectives. Regardless of monitored concentrations, local authorities are encouraged to draft and implement an Air Quality Strategy.
- The Government has announced two new air quality targets. These focus on PM_{2.5} and include (i) a more stringent concentration objective; and (ii) a population exposure reduction target, both to be met by 2040.
- The World Health Organisation published Air Quality Guidelines in 2021, with significantly more stringent Guideline Levels for NO₂ and PM_{2.5}, reflecting new evidence of health impacts at very low concentrations.

²⁶ TWC Transport Growth Strategy: www.telford.gov.uk/downloads/download/695/transport_growth_strategy. Accessed April 2022.

²⁷ TWC Becoming Carbon Neutral Action Plan: www.sustainabletelfordandwrekin.com/what-the-council-is-doing/becoming-carbon-neutral. Accessed April 2022.

²⁸ TWC Health & Wellbeing Strategy: www.telford.gov.uk/downloads/download/259/health_and_wellbeing_board. Accessed April 2022.

Air Quality in Telford and Wrekin

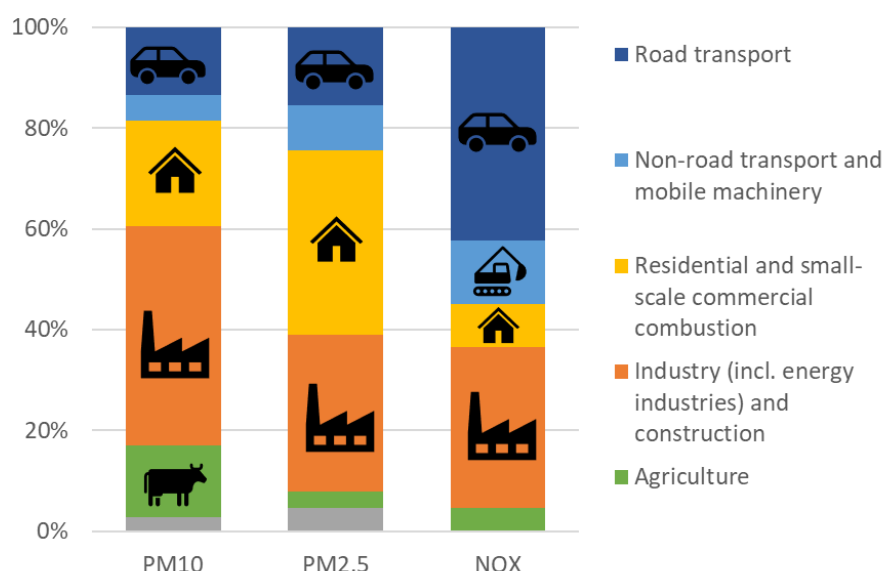
Local health impacts

Public Health England estimates the impact of particulate air pollution on mortality in local authority areas. In Telford and Wrekin, it is estimated that long term exposure to anthropogenic particulate pollution has been responsible for 4-5% of all deaths of people aged 25 and over between 2010 and 2019²⁹. Centre for Cities estimated that this equated to 62 deaths in Telford & Wrekin in 2017 alone³⁰.

Local emission sources

Emissions sources for selected pollutants (NO_x as NO₂, PM₁₀, PM_{2.5}) from the National Atmospheric Emissions Inventory³¹ (NAEI) show that emissions within the borough reflect the national breakdown (Figure 5).

Figure 5: Emissions breakdown for Telford & Wrekin in 2019³²



More detailed information on the source apportionment of emissions is presented in Appendix B. The sectors within the borough with the largest pollutant contributions are as follows:

- **Road transport** – accounts for 42% of the total NO_x emissions, but only 13% / 15% of the total PM₁₀ and PM_{2.5} emissions respectively;

²⁹ Public Health England. Public Health Outcomes Framework. Available online at: <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/1/qid/1000043/pat/6/ati/102/are/E06000020/iid/30101/age/230/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1>. Accessed April 2022.

³⁰ Centre for Cities (2020) Cities Outlook 2020: Holding our breath. Available online at: <https://www.centreforcities.org/publication/cities-outlook-2020/>. Accessed April 2022.

³¹ NAEI, UK National Atmospheric Emissions Inventory for 2019 Interactive Map. Available online at: <https://naei.beis.gov.uk/emissionsapp/>. Accessed April 2022

³² Derived from data from the NAEI, UK National Atmospheric Emissions Inventory for 2019 Interactive Map. *Op. cit.*

- **Domestic / commercial solid fuel burning** – accounts for only 9% of NO_x emissions, but 21% / 37% of the total PM₁₀ and PM_{2.5} emissions respectively;
- **Industry** – combustion and manufacturing industry accounts for 22% of the total NO_x emissions. Production processes account for 32% of the total PM₁₀ emissions and 15% of the total PM_{2.5} emissions; and
- **Other mobile sources and machinery** – accounts for 13% of total NO_x emissions.

Local pollutant concentrations

Air quality monitoring is an essential component of air quality management and fulfils the following functions:

- to check compliance against air quality criteria;
- to assess long term trends and the effectiveness of policies and interventions to improve air quality; and
- to raise awareness.

Telford & Wrekin Council has been monitoring NO₂ using diffusion tubes for many years at 27 locations across the borough (Appendix C). Over the period 2016-2020, monitored concentrations ranged from 8-42 µg/m³ as an annual average. However, concentrations at the nearest exposure location were all estimated to be below national air quality objectives. As such, there are no Air Quality Management Areas (AQMAs) within the borough. This has been supported by Defra's Pollution Climate Mapping (PCM) model, which estimates concentrations on key road links. Whilst NO₂ concentrations in the borough are within national objectives, they like all Local authorities within the UK, across urban sites exceed the WHO 2021 Guideline Level for NO₂ (10 µg/m³ as an annual mean).

Telford & Wrekin Council, common with other Local Authorities does not currently undertake any PM₁₀ monitoring. Defra estimates of average background PM₁₀ and PM_{2.5} concentrations in 2018 were 12.5 µg/m³ and 7.4 µg/m³ respectively (Appendix D), within UK national air quality objectives, but exceeding the WHO's 2021 Air Quality Guideline Level for PM_{2.5} (5 µg/m³ as an annual mean).

Defra also uses the background maps to calculate a 'population-weighted' annual mean PM_{2.5} concentration, by local authority area³³. This figure forms the basis of public health calculations in relation to particulate mortality. In 2018, the population-weighted annual mean PM_{2.5} concentration for Telford & Wrekin was 7.7 µg/m³; again, exceeding the WHO's 2021 Air Quality Guideline Level.

Source apportionment of Defra's background concentrations is included in Appendix D. This shows that concentrations of NO_x, PM₁₀ and PM_{2.5} are affected both by emissions that are produced within the borough itself (see above), as well as more regional sources

³³ Defra. Population-weighted annual mean PM_{2.5} data. Available online at: <https://uk-air.defra.gov.uk/data/pcm-data>. Accessed April 2022.

from beyond the borough's administrative boundaries. These regional sources are particularly important for PM₁₀ and PM_{2.5}, and highlight the need for collective regional, national and international action on air quality.

A further complication for PM₁₀ and PM_{2.5} concentrations, is that they are affected by both 'direct' primary emissions, as well as secondary particulates, formed through chemical reactions of precursor pollutants. For example, there is increasing recognition of the role of emissions of ammonia (primarily from agriculture) in the formation of secondary particulate matter in the atmosphere. Reducing PM₁₀ and PM_{2.5} concentrations will therefore require action across a number of sectors.

Air quality inequalities

Groups that are more vulnerable to air quality include children, older people, and those with pre-existing cardio-respiratory illnesses. It is also clear that lower socioeconomic groups are often exposed to higher concentrations of air pollution as a result of where they live and/or work^{34,35}. In identifying key target areas, the Council will review data sources including:

- locations of schools and nurseries, care homes, health care facilities; and
- Lower Super Output Areas (LSOA) Indices of Multiple Deprivation.

Within its 2019 review, the Office for Health Improvement and Disparities (OHID) (at the time, known as Public Health England (PHE))³⁶ recommends a focus on children, as they are particularly vulnerable due to the impacts of exposure to air pollution in early life. The same document recommends a range of interventions for local authorities, including no-idling zones outside schools, sustainable travel and raising public awareness.

Future changes

The existing Local Plan³⁷ makes provision for 17,280 new dwellings across the Borough by 2031. The draft Local Plan confirms that Telford & Wrekin Council has 55% of its identified housing requirements of 20,200 with a further 8,822 to be built by 2040. New development can bring increased emissions from road transport (exhaust emissions from combustion engines, as well as brake and tyre wear from all vehicles, including electric), as well as energy used for heat and power, affecting local air pollutants, as well as greenhouse gas emissions. The Local Plan Review can mitigate these impacts by specific

³⁴ European Environment Agency (2018) Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe. Available online at: <https://www.eea.europa.eu/publications/unequal-exposure-and-unequal-impacts/>. Accessed April 2022.

³⁵ Greater London Authority (2021) Air Pollution and Inequalities in London: 2019 Update. Available online: https://www.london.gov.uk/sites/default/files/air_pollution_and_inequalities_in_london_2019_update_0.pdf. Accessed April 2022.

³⁶ PHE (2019) Review of interventions to improve outdoor air quality and public health. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938623/Review_of_interventions_to_improve_air_quality_March-2019-2018572.pdf. Accessed March 2022.

³⁷ TWC Local Plan 2011-2031 *Op. cit.*

reference to air quality within local policy and planning guidance, as well as policies to reduce pollution such as designing new communities with key services integrated into the development.

Our ongoing commitment to reducing carbon emissions will likely have positive impacts on air quality, as the emission sources are often shared. Measures to reduce carbon emissions usually result in air quality benefits, but not in every case. For example, biomass burners are considered 'low carbon' but can emit high levels of PM₁₀ and PM_{2.5}. Likewise, whilst a switch to electric vehicles reduces emissions of carbon and air pollutants from the tailpipe, there will still be non-exhaust PM₁₀ and PM_{2.5} emissions associated with brake and tyre wear³⁸. As such, switching to active travel (cycling and walking) instead of travelling by car provides more air quality benefits. It is therefore important that air quality considerations are integrated into the local carbon agenda, to ensure that carbon reductions also result in positive air quality outcomes.

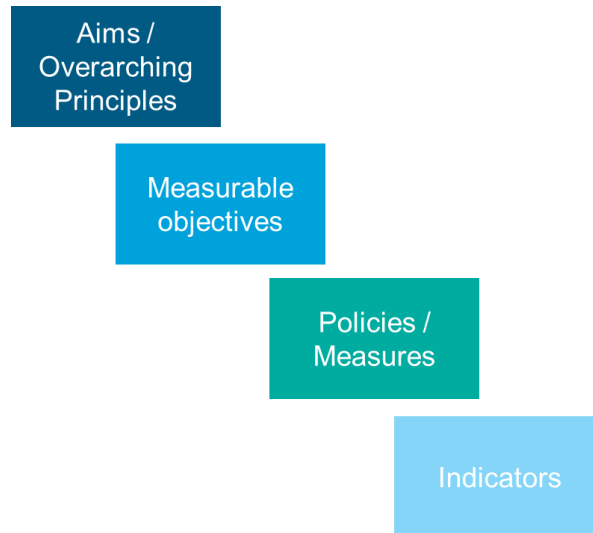
KEY POINTS

- Particulate air pollution alone is estimated to be responsible for 4-5% of deaths of people aged 25 and over in Telford and Wrekin.
- Local emissions sources reflect national trends:
 - road transport and industry are key contributors to NO₂ concentrations; and
 - PM₁₀ and PM_{2.5} are affected by a wider range of primary and secondary sources, including road transport, domestic/commercial combustion, industry and agriculture.
- Air quality in Telford & Wrekin is within UK national air quality objectives, but exceeds the WHO's Air Quality Guidelines for NO₂ and PM_{2.5}.
- Plans for future growth have the potential to negatively impact on local air quality – the Local Plan Review can help mitigate these impacts.
- Commitments to reduce carbon emissions are likely to benefit air quality, although some negative trade-offs do exist. It is important to integrate the two, to ensure that carbon reductions also result in positive air quality outcomes.

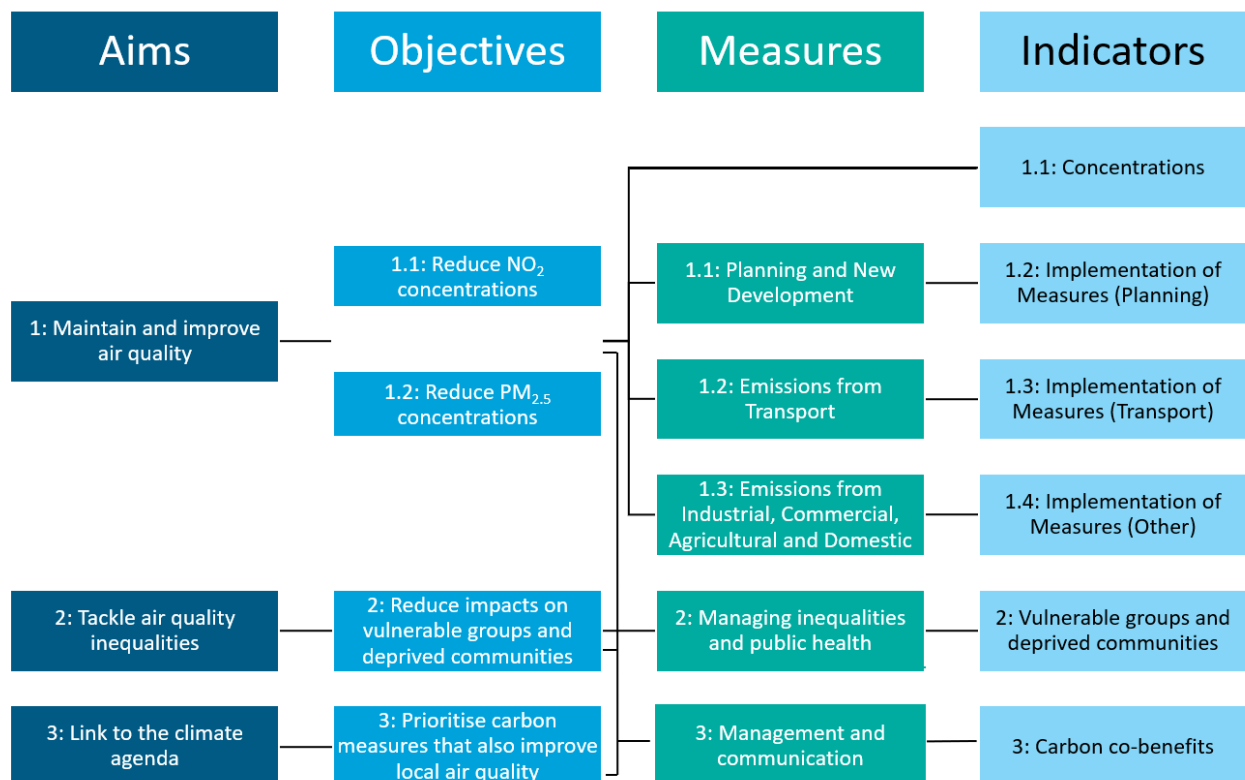
³⁸ Further examples of win-wins and challenges for aligning air quality and carbon measures are provided in: Bristow, S., Dowson, F. and Barrass, K. (2022) Yes we CANZ! Local leaders delivering Clean Air and Net Zero. Available online at: <https://www.uk100.org/sites/default/files/2022-06/YES%20WE%20CANZ%20%7C%20Clean%20Air%20Net%20Zero%20%7C%20UK100.pdf>. Accessed June 2022.

Key aspects of the strategy

The Air Quality Strategy is made up of four key components. **Aims**, or overarching principles guide **measurable objectives**, which in turn are linked to **policies and measures** that can be implemented to achieve the desired level of change. Definition of **indicators** allows monitoring of the direction and speed of change.



The links between these four components are shown in the schematic below. Details are presented in the following sections.



Aims

The Air Quality Strategy is centred around three key aims.

1. Maintain and improve air quality in the context of area wide growth

In recent years, concentrations of air pollutants in Telford & Wrekin have been below national objectives. Indeed, the relatively clean air is one of the attractions for new residents and businesses. The Local Plan makes provision for new growth within the borough. It is important that this new growth does not result in the deterioration of air quality within the area. Further, in recognition that there are health impacts at very low pollutant concentrations, improved air quality within the borough would lead to improvements in public health and wellbeing outcomes for residents.

The Government³⁹ promotes adoption of a 'net health gain' approach, whereby any new development or proposal for change to existing developments should deliver an overall benefit to public health, reducing pollution, supporting walking, cycling and clean public transport, as well as providing infrastructure for low emission vehicles.

2. Tackle air quality inequalities by prioritising action to benefit vulnerable groups and communities

Communities and vulnerable groups (children, pregnant women, the elderly and those with underlying health conditions) generally contribute the least to air pollution but are often those most exposed and affected. In implementing the Air Quality Strategy, the council will seek to tackle these inequalities by prioritising action to benefit vulnerable groups and communities across urban and rural settings. In accordance with Government guidance, we will particularly focus on reducing the impact of air pollution on children, by monitoring air pollution close to schools to identify whether there are any local issues. We will also help people to understand what they can do to improve their health and local air quality. Examples of actions that individuals can take are provided in Appendix E.

3. Link air quality to the climate agenda with a focus on emission reductions, for carbon as well as air pollutants: a Low Emission Strategy

Air quality and carbon are often treated separately. Carbon dioxide and other greenhouse gas emissions cause global heating and catastrophic climate change. Air quality effects are usually more localised, although their sources can be regional. Ultimately both are defined by the same problem: combustion of fossil fuels, causing too much of the wrong substance in the air. Meaningful action on air quality requires addressing the sources: avoiding or reducing emissions. Whilst pollutants causing poor air quality are not necessarily classed as greenhouse gases, the sources and indeed the solutions often overlap, e.g. sustainable transport, cleaner fuels, electrification. By focussing on emission reductions, the Air Quality Strategy can also track relevant carbon indicators, identifying co-benefits and any tensions or trade-offs where relevant.

³⁹ PHE (2019) *Op. cit.*

Examples of win-wins and challenges for aligning improvements in air quality and carbon reductions are provided in Appendix F.

Objectives

The following objectives seek to meet the three aims.

1.1 Reduce annual average NO₂ concentrations across the borough, such that:

- (i) all monitored concentrations are less than 30 µg/m³ as an annual average by 2030; and
- (ii) rolling three-year local area averages reduce year on year.

The National Air Quality Objective for NO₂ is 40 µg/m³ as an annual average. However, it is well documented that health effects occur at much lower concentrations. It is estimated that over the next 100 years, a 1 µg/m³ reduction in NO₂ across the UK, could save between 420,000-903,000 years of life across the population, with an increase in average life expectancy of around 2-5 days⁴⁰. Reductions in NO₂ concentrations could therefore have significant health benefits to the local population.

The WHO Guideline for NO₂ is 10 µg/m³ as an annual average. In moving towards this target, the Air Quality Strategy will aim to ensure that by 2030, all monitored concentrations within the borough are less than 30 µg/m³ as an annual mean (equivalent to the WHO's second interim target, and as a step towards achieving the third interim target of 20 µg/m³ and eventually the Guideline Level of 10 µg/m³).

The Council already monitor NO₂ concentrations across the borough. Rolling three-year local area averages provide simple measures of trends, whilst taking account of fluctuations in meteorology from one year to another. Annual trends can be graphed to record the direction of change. Air quality monitoring locations are being reviewed to ensure coverage in priority areas, e.g. near to schools and within more vulnerable parts of the borough to help tackle inequalities – see Objective 2.

1.2 Work with regional and national partners to reduce emissions of PM_{2.5} such that the population weighted annual mean concentration for Telford & Wrekin is less than 5 µg/m³ by 2030

Exposure to fine particulate matter (PM_{2.5}) can cause cardiovascular and respiratory diseases, affect children's development and lead to psychological and behavioural problems. There is no 'safe' level at which health effects do not occur. In recognition of this, our Air Quality Strategy seeks to align with the WHO Guidelines. In the absence of local monitoring for PM_{2.5} or PM₁₀, Defra background concentrations and population weighted annual averages can provide reference points.

The council recognises that PM_{2.5} concentrations are affected by a wide range of local and regional emission sources (including transport, industrial, commercial and domestic combustion and agriculture). Action is required not only within the borough, but also regionally and

⁴⁰ COMEAP (2018) *Op. cit.*

nationally. A target of reducing the borough-wide population weighted annual mean below $5 \mu\text{g}/\text{m}^3$ by 2030 (equivalent to a 35% reduction on 2018 levels), will help to drive local action, at the same time as promoting regional and national collaboration.

2 Reduce air quality impacts on vulnerable groups and communities

The council will identify priority areas by mapping the locations of schools, nurseries, care homes and health facilities, alongside LSOA Indices of Multiple Deprivation. These priority areas will be reviewed against air quality monitoring locations, to identify any local issues. The implementation of measures will also be reviewed alongside the maps of priority areas, to ensure vulnerable groups and communities benefit from the measures applied. At the same time, the council will seek to reduce the personal exposure of individuals through targeted communications.

3 Work with internal and external partners to prioritise carbon reduction measures that also improve local air quality

Telford & Wrekin Council declared a Climate Emergency on 25 July 2019. As part of the response to this, the council has committed to ensuring that our operations and activities are carbon neutral by 2030. The Local Plan Review proposes 'Tackling climate change and achieving carbon neutrality' as its first Strategic Priority. Actions and progress on carbon emission reductions are monitored and separately⁴¹. Many of the measures have significant co-benefits for air quality. However, some actions provide more benefit to local air quality than others, and can be implemented within shorter time frames. In our communications with internal and external partners, we will highlight the importance of prioritising those measures which will reduce emissions of both air pollutants and carbon in the short to medium term.

Policies / Measures / Actions

Air quality can be improved through a combination of measures delivered by different parts of the Council as well as by external organisations. The Air Quality Strategy can be a central point, from which to track progress both from new measures as well as those implemented via other actions, plans and policies (Figure 6).

⁴¹ TWC Becoming Carbon Neutral Action Plan. *Op. cit.*

Figure 6 – Central role for the Air Quality Strategy in relation to other Council initiatives (dark blue) and external stakeholders (light blue)



In accordance with the OHID's air pollution intervention hierarchy, measures will be prioritised to first prevent or reduce emissions to air, before mitigating ambient concentrations and finally avoiding personal exposure. Broad actions are listed below, including new measures, and those being implemented through other Council Plans and Strategies. These actions are live and will continue to be updated as new data, funding, best practice and local/regional/national policy develops.

1.1 Minimise emissions from planning and new development

<i>Existing measures</i>	<i>Planning advice for developers on provision of electric vehicle charging points</i>	<i>Public Electric Vehicle Infrastructure Strategy</i>
	<i>Building control requirements for electric vehicle charging points for new developments</i>	<i>Approved Document S: infrastructure for charging electric vehicles</i>
<i>New measure</i>	<p>Incorporating Air Quality into the Local Plan either as a new policy, or clearly integrated into relevant policies covering areas such as transport and development design.</p> <p>Guidance on air quality to be incorporated into supplementary planning guidance on development design to minimise emissions and air quality impacts of new development where this comes forward.</p>	

1.2 Reduce emissions from Transport

<i>Existing measures</i>	<i>Education and promotion of sustainable travel choices, e.g. walking, cycling, public transport</i>	<i>Local Transport Plan, Cycling & Walking Strategy, Bus Service Improvement Plan, Road Safety & Active Travel Team activities</i>
	<i>Public transport incentives, including real time bus service information</i>	<i>Local Transport Plan, Bus Service Improvement Plan</i>
	<i>Council staff initiatives, incl. travel plans, driver efficiency training, car sharing</i>	<i>Staff travel plan</i>
	<i>Procurement of a multi-partner electric vehicle framework</i>	<i>Public Electric Vehicle Infrastructure Strategy</i>
	<i>Replacement of Council Fleet with low emission vehicles</i>	<i>Public Electric Vehicle Infrastructure Strategy</i>
	<i>Encouraging uptake of electric vehicles</i>	<i>Public Electric Vehicle Infrastructure Strategy</i>
	<i>Facilitate provision of electric vehicle charging points</i>	<i>Public Electric Vehicle Infrastructure Strategy</i>
	<i>Traffic management, incl. expansion of urban traffic control (UTC) system</i>	<i>Local Transport Plan</i>
	<i>Parking enforcement</i>	<i>Operational guidance</i>

1.2 Reduce emissions from Transport (ctd)

New measures	<p>Develop an Action Plan / Strategy for improving air quality in and around schools (incl. monitoring, engagement, anti-idling, travel planning)⁴²</p> <p>Review taxi licensing policies to encourage low emission vehicles</p> <p>Review the parking strategies for towns/local centres.</p> <p>Review options for Council Low Emission Procurement Strategy⁴³</p> <p>Consider options for promotion of a Low Emission Fleet Recognition Scheme</p> <p>Review options for encouraging/promoting employer travel plans.</p> <p>Consider anti idling enforcement policy</p>
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1.3 Reduce emissions from Industrial, Commercial, Agricultural and Domestic

Existing measures	<p><i>Ensure through regulation, inspection and enforcement action that industrial, commercial and agricultural activities comply with Environmental Permits applicable to emissions to air.</i></p> <p><i>Enforcing existing smoke control orders to minimise emissions from commercial and domestic solid fuel burning</i></p>	<p><i>Env Health core activities</i></p> <p><i>Env Health core activities</i></p>
New measures	<p>Review smoke control areas and enforcement processes for emissions from domestic solid fuel burning</p> <p>Education / awareness raising campaign on domestic solid fuel burning</p> <p>Education / awareness raising of emissions from agriculture and mitigation options</p>	

2. Managing inequalities and public health

New measures	<p>Develop a Monitoring and Implementation Strategy to prioritise vulnerable groups and communities. To include mapping of priority areas, review of air quality monitoring, as well as prioritisation of vulnerable groups and communities across urban and rural settings through implementation of measures.</p> <p>Raise awareness amongst higher risk groups on how to reduce the exposure and the impact of air pollution on their health, including provision of information to health and care workers that come into regular contact with high risk groups.</p> <p>Provision of clear coordinated messages on the risk of air pollution and what individuals and organisation can do to reduce their contribution to local air pollution</p> <p>Aligning air quality messaging with other programmes which have co-benefits, such as behavioural change campaigns for sustainable transport and linking active travel</p>
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⁴² Note, the Carbon Neutral Action Plan will develop and deliver an engagement programme on carbon and climate change. This can either be extended to include emissions of air pollutants, or materials and contacts shared.

⁴³ Note, the Carbon Neutral Action Plan requires major environment and cleansing contractors to produce ambitious Carbon Reduction Action Plans. This can be extended to include emissions of air pollutants.

choices with cost saving benefits.

3. Management and Communication

New measures	<p>Establish an Air Quality and Low Emissions Steering Group to collaborate on management of air quality within the borough, and to facilitate exchange of information on actions and indicators.</p> <p>Establish regular communications with external stakeholders to review regional air quality and share best practice.</p> <p>Establish regular communications with carbon leaders to discuss co-benefits and any potential negative air quality impacts resulting from carbon reduction measures.</p>
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Indicators

The following indicators will be monitored and reported on an annual basis. This will coordinate with the submission of the Air Quality ASR submitted to Defra in June of each year. As with the actions, this list of indicators is live, and will be updated with new data or in response to changes to actions/measures. Progress on measures and indicators will be monitored on a regular basis for input to Air Quality Steering Group Meetings. Identification and tracking of appropriate indicators will provide links to other parts of the Council, external organisations and public actions. Conversations around, and regular monitoring of these indicators will help to develop and maintain relationships between these groups as well as providing information on progress and the direction of travel.

1.1 CONCENTRATIONS

NO ₂	Rolling three-year annual average NO ₂ concentrations across the borough and in priority locations (e.g. schools, vulnerable areas).	<i>Collated as part of the ASR Defra Return</i>
	Number and location of annual average NO ₂ monitored concentrations within the following bounds: greater than 40 µg/m ³ , 30-40 µg/m ³ ; 20-30 µg/m ³ ; 10-20 µg/m ³ ; and 0-10 µg/m ³ .	<i>Collated as part of the ASR Defra Return</i>
PM _{2.5}	Borough-wide annual population weighted mean concentration of PM _{2.5}	<i>Data calculated by Defra</i>

1.2 IMPLEMENTATION OF MEASURES (PLANNING)

Planning	Inclusion of air quality within the Local Plan Review, either as a new policy or new addition to an existing policy, with accompanying guidance	<i>Local Plan Review</i>
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1.3 IMPLEMENTATION OF MEASURES (TRANSPORT)		
Activity data	Change in area wide vehicle kilometres travelled (non-trunk roads).	<i>Local Transport Plan – data collected by the Department for Transport (DfT)</i>
Mode of travel	Annualised index of cycle trips	<i>Local Transport Plan</i>
	Number of adults trained under the Bikeability cycle training scheme	<i>Local Transport Plan</i>
	Number of children receiving Bikeability training, learn to ride training, scooter training, pedestrian skills	<i>Local Transport Plan</i>
	Data collected through pedestrian/cycle counters installed throughout the borough	<i>Local Transport Plan</i>
	Population travelling to work by public transport	<i>Local Plan – data collected on a 10-year basis via the Census</i>
	Mode share of journeys to school	<i>Local Transport Plan</i>
	Number of school travel plans	<i>Data available via Local Transport Plan</i>
	Railway station footfall	<i>Local Transport Plan – data collected by the Office of Road and Rail</i>
	Bus patronage as measured by the number of passengers boarding buses in Telford, using figures provided by operators	<i>Local Transport Plan and Bus Service Improvement Plan</i>
	Bus passenger satisfaction and perceptions, using results of a rolling survey administered by the Council	<i>Local Transport Plan and Bus Service Improvement Plan</i>
Low emission vehicles	Population travelling to work by car or van	<i>Local Plan – data collected on a 10-year basis via the Census</i>
	Proportion of buses that are Euro 5/V, Euro 6/VI, and ultra low emission vehicles (ULEV) ⁴⁴	<i>Data to be collected from bus operators where available</i>
	Proportion of Council fleet vehicles that are Euro 5/V, Euro 6/VI, and ultra low emission vehicles (ULEV) ⁴⁵	<i>Data to be collected from Council fleet where available</i>
Infrastructure	Ownership of electric vehicles	<i>Public Electric Vehicle Infrastructure Strategy – data obtained from DfT Vehicle Licensing</i>
	Number of publicly accessible EV charging points	<i>Public Electric Vehicle Infrastructure Strategy – data from Zap Map and National Charge Point Registry</i>

⁴⁴ A definition of ULEVs is provided here: <https://www.vehicle-certification-agency.gov.uk/fuel-consumption-co2/fuel-consumption-guide/zero-and-ultra-low-emission-vehicles-ulevs/#topic-title>

⁴⁵ A definition of ULEVs is provided here: <https://www.vehicle-certification-agency.gov.uk/fuel-consumption-co2/fuel-consumption-guide/zero-and-ultra-low-emission-vehicles-ulevs/#topic-title>

1.4 IMPLEMENTATION OF MEASURES (OTHER)

Education / awareness raising	Number of awareness raising messages provided by emissions source type	<i>To be recorded as implementation is rolled out</i>
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2 VULNERABLE GROUPS AND COMMUNITIES

Vulnerable groups and communities	Number and proportion of air quality monitoring locations within priority areas for vulnerable groups and communities	<i>Monitoring locations collated as part of ASR Defra Return. Tallied against map of priority areas.</i>
	Number of air quality measures implemented within priority areas for vulnerable groups and communities	<i>To be recorded as implementation is rolled out</i>
	Number of awareness raising messages provided to vulnerable groups and communities via public and targeted messaging	<i>To be recorded as implementation is rolled out.</i>

3 CARBON CO-BENEFITS

Carbon co-benefits	Inclusion of air quality and carbon co-benefits within council documents and communications, e.g. Local Plan, Local Transport Plan, Carbon Neutral Plan, as well as the number of measures that are implemented throughout the borough to reduce emissions of both air pollutants and carbon across rural and urban settings.	<i>To be logged as work on the Plans progresses</i>
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APPENDICES

Appendix A: Policy and Legislation

WHO Guidelines

Table 2: WHO Recommended Air Quality Guidance levels and interim targets⁴⁶

Pollutant	Averaging time	Interim target				AQG level
		1	2	3	4	
PM_{2.5}, µg/m³	Annual	35	25	15	10	5
	24-hour ^a	75	50	37.5	25	15
PM₁₀, µg/m³	Annual	70	50	30	20	15
	24-hour ^a	150	100	75	50	45
O₃, µg/m³	Peak season ^b	100	70	–	–	60
	8-hour ^a	160	120	–	–	100
NO₂, µg/m³	Annual	40	30	20	–	10
	24-hour ^a	120	50	–	–	25
SO₂, µg/m³	24-hour ^a	125	50	–	–	40
CO, mg/m³	24-hour ^a	7	–	–	–	4

^a 99th percentile (i.e. 3–4 exceedance days per year).

^b Average of daily maximum 8-hour mean O₃ concentration in the six consecutive months with the highest six-month running-average O₃ concentration.

National Planning Policy Framework⁴⁷

Paragraph 109 refers to sustainable transport:

“The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”

⁴⁶ WHO (2021) Air Quality Guideline Values: Global Update 2021. Available online at: <https://apps.who.int/iris/handle/10665/345329>. Accessed April 2022.

⁴⁷ Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework. Updated 20 July 2021. Available online at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>. Accessed April 2022.

Paragraph 186 considers impacts on local air quality:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”

Planning Practice Guidance: Air Quality⁴⁸

Planning Practice Guidance (PPG) indicates at paragraph 005 that information relating to air quality could be important to decision makers, and when there are concerns about air quality, the local planning authority may want to know about:

- *“the ‘baseline’ local air quality;*
- *whether the proposed scheme could significantly change air quality during the construction and operational phases; and*
- *whether occupiers or users of the development could experience poor living conditions or health due to poor air quality.”*

Paragraph 005 of this guidance also provides information on early engagement with the local planning and environmental health departments to establish the scope of any assessment. Guidance is also given on the level of detail required in an air quality assessment, and measures which could be employed to mitigate adverse effects.

⁴⁸ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2019) *Op. cit.*

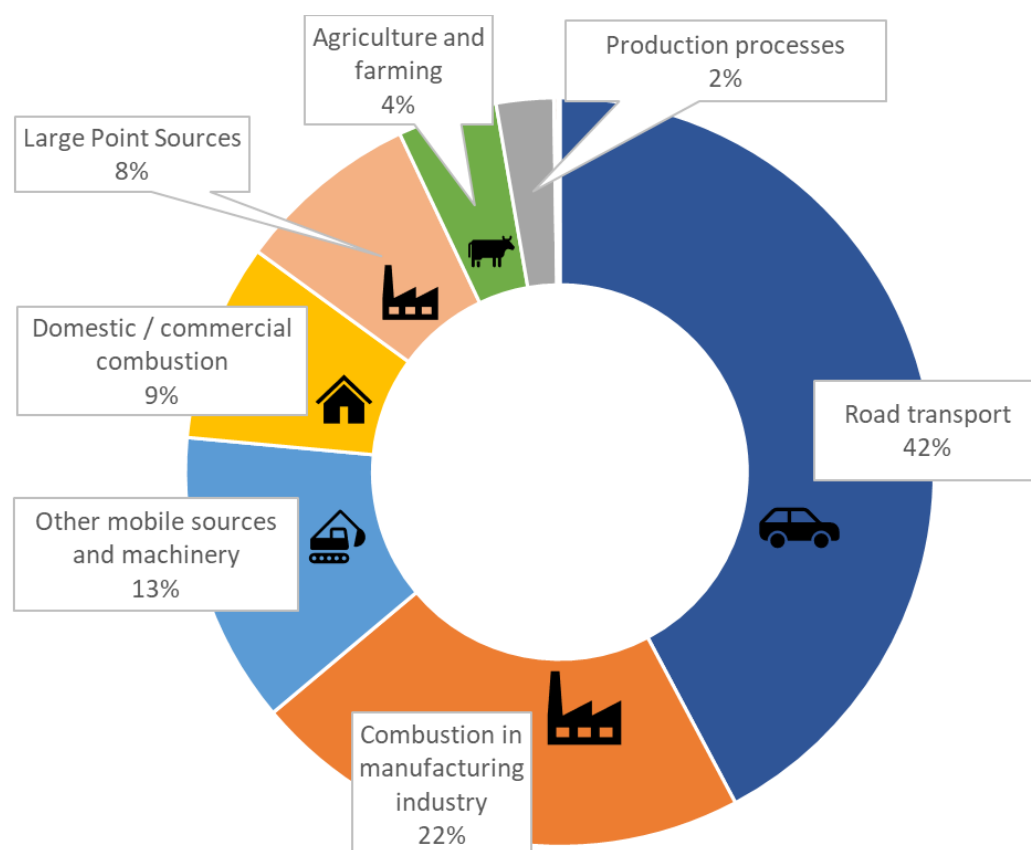
Appendix B: Emissions Sources for Telford and Wrekin

Emissions sources for selected pollutants (NO_x (as NO₂), PM₁₀, PM_{2.5}) from the most recent year (2019) from the National Atmospheric Emissions Inventory⁴⁹ (NAEI) are summarised below. Emissions have been downloaded for the Telford & Wrekin local authority area and are categorised by the United Nations Economic Commission for Europe (UNECE) Emissions Sectors Classification.

In 2019 the total emissions of NO_x as NO₂ within Telford & Wrekin was 1803 t. The breakdown in emissions is presented in Figure 7. The sectors with the highest emissions were:

- Road transport (42%);
- Combustion in manufacturing industry (burning of fossil fuels as part of manufacturing) (22%); and
- Other mobile sources and machinery (13%).

Figure 7: NO_x as NO₂ Emissions within Telford & Wrekin 2019 (NAEI)

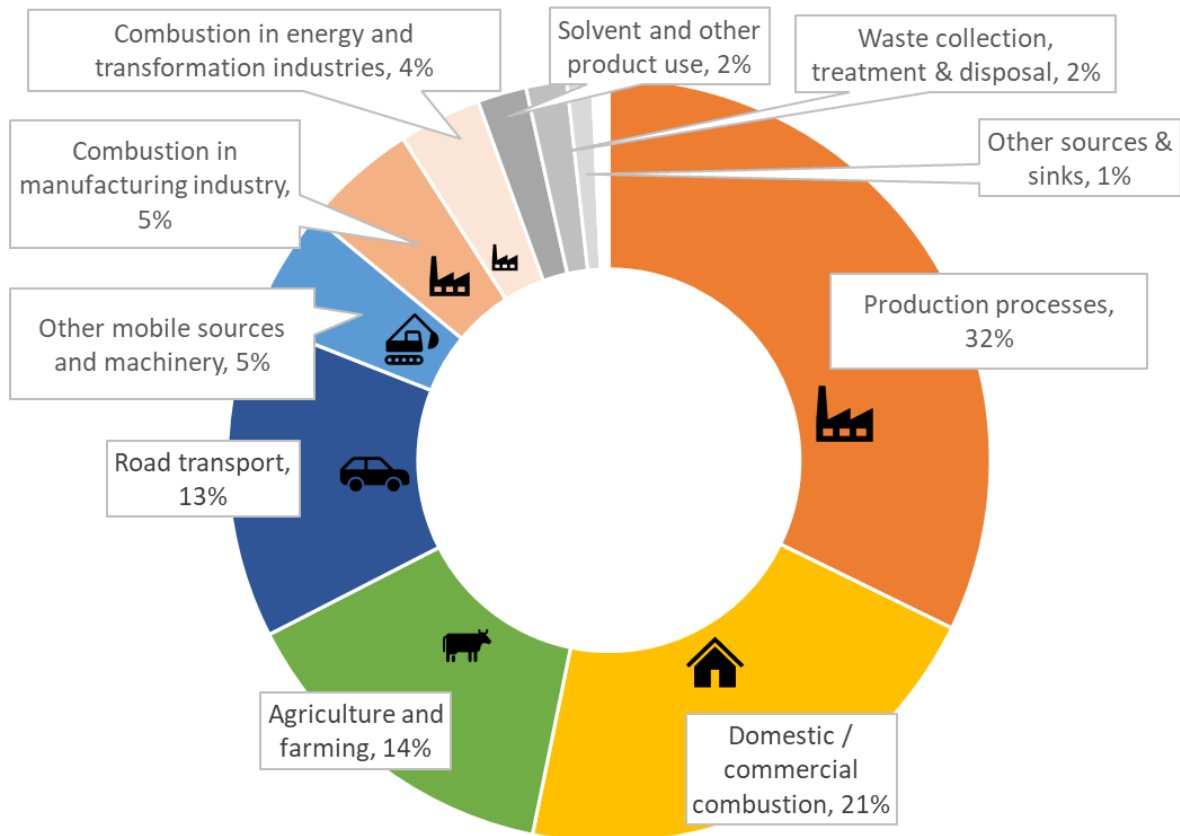


⁴⁹ NAEI, UK National Atmospheric Emissions Inventory for 2019 Interactive Map. *Op cit.*

In 2019 the total emissions of PM₁₀ within Telford & Wrekin was 439 t. The breakdown in emissions is presented in Figure 8. The sectors with the highest emissions were:

- Production processes (industrial) (32%);
- Domestic / commercial combustion (21%); and
- Agriculture and farming (14%).

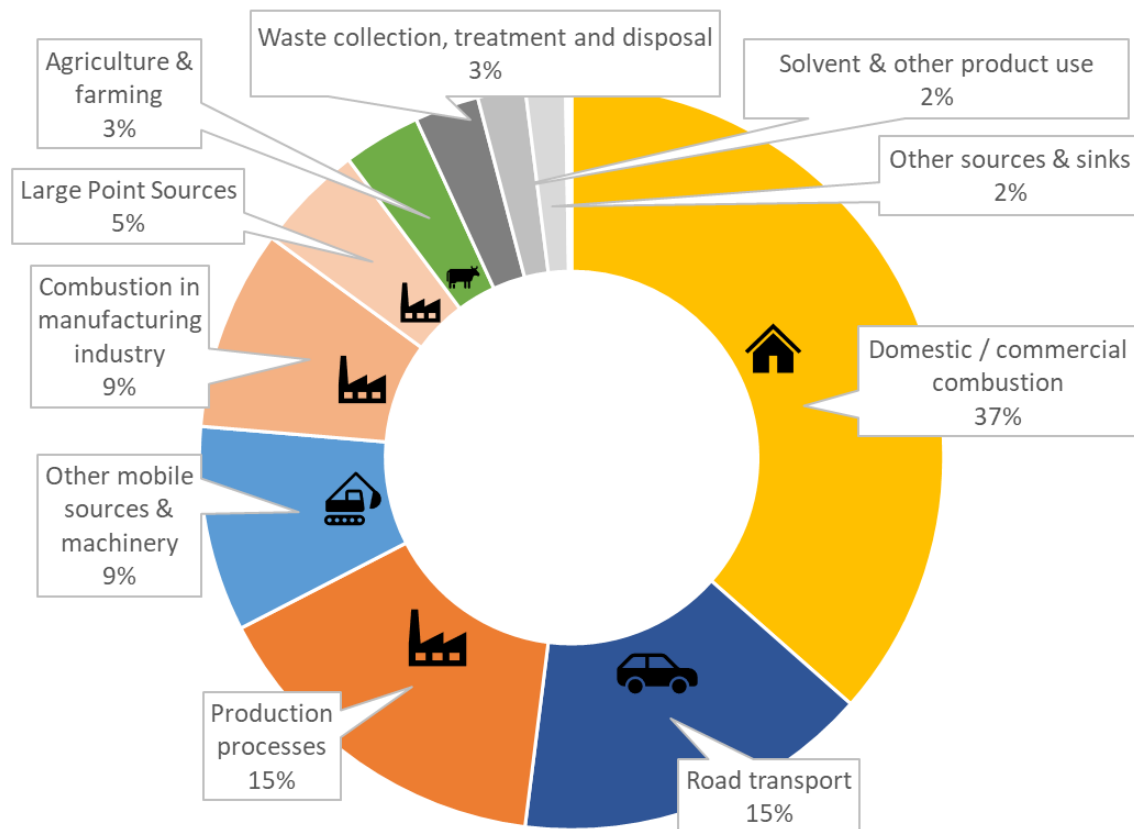
Figure 8: PM₁₀ Emissions within Telford & Wrekin 2019 (NAEI)



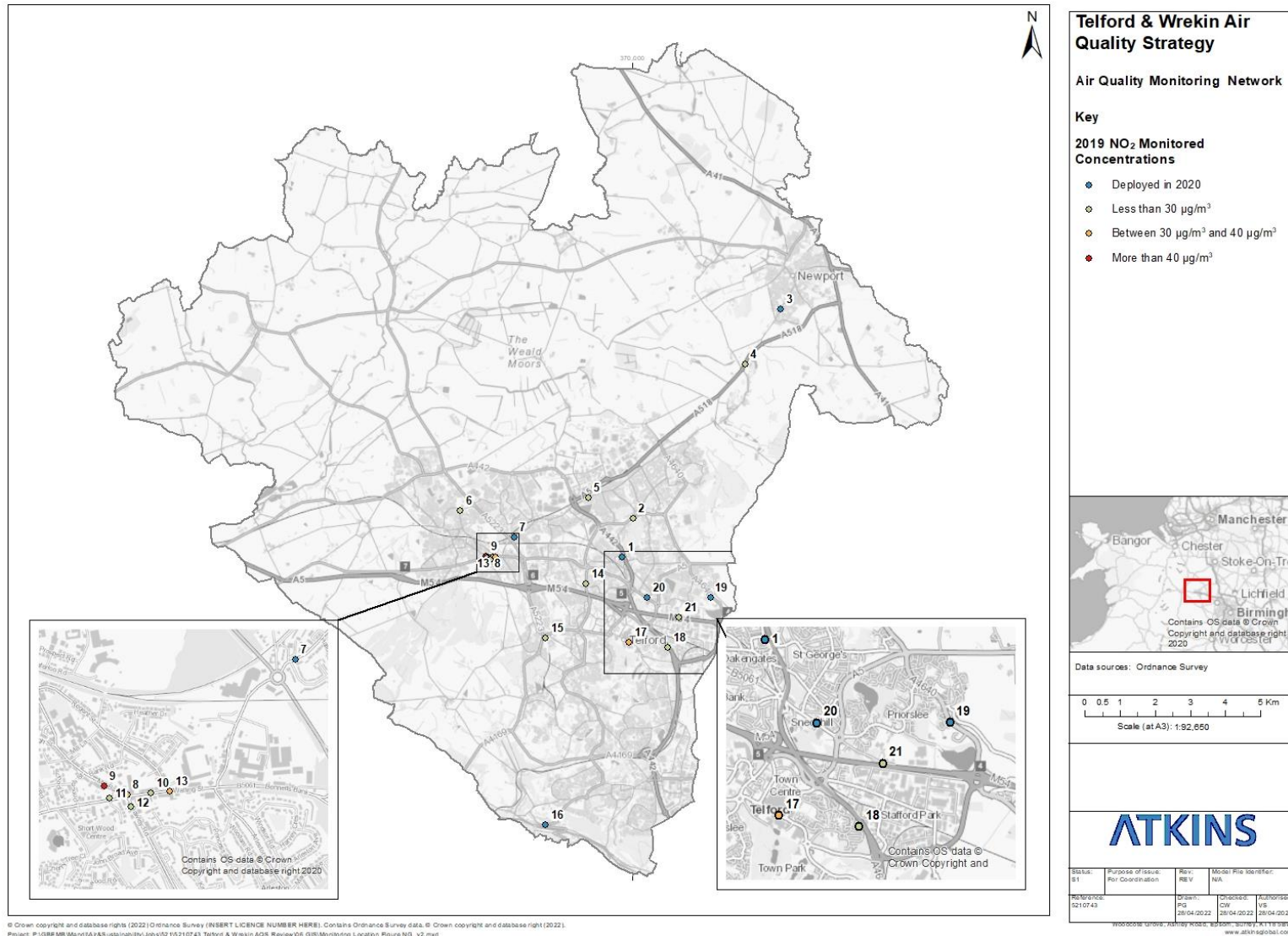
In 2019 the total emissions of PM_{2.5} within Telford & Wrekin was 247 t. The breakdown in emissions is presented in Figure 9. The sectors with the highest emissions were:

- Non-industrial combustion plants (burning of fossil fuels in the domestic / commercial sector) (37%);
- Road transport (15%); and
- Production processes (15%).

Figure 9: PM_{2.5} Emissions within Telford & Wrekin 2019 (NAEI)



Appendix C: Air Quality Monitoring



Appendix D: Defra Background Concentrations

Defra⁵⁰ provides maps of background concentrations, which are a combination of measured and modelled data, for each one-kilometre grid square throughout the UK for a reference year of 2018 and future year estimates up to 2030. A summary of background concentrations for selected pollutants (NO_x, NO₂, PM₁₀, PM_{2.5}) within Telford & Wrekin is provided in Table 3. Total concentrations of NO₂ and PM₁₀ across Telford & Wrekin are presented in Figure 10 and Figure 11.

Concentrations are provided for sources both within the grid square as well as those which enter the grid square from outside. The categories include road transport, industry, domestic, aircraft, rail, other, point sources and a *rural* component comprising of regional sources for each one-kilometre grid square. For particulate matter, the additional sources include secondary aerosols, regional primary particles, dust from re-suspension of soils, sea salt and a residual component.

Background concentrations of NO_x range between 6.1 – 22.0 µg/m³ within Telford & Wrekin and their source apportionment is presented in Figure 12. The highest sources are Rural, i.e. regional sources (44%), Road (26%), and Industry (11%).

Background concentrations of PM₁₀ range between 10.9 – 14.7 µg/m³ within Telford & Wrekin and their source apportionment is presented in Figure 13. The highest sources are for Residual & salt (50%) and PM secondary (41%).

Background concentrations of PM_{2.5} range between 6.9 – 9.5 µg/m³ within Telford & Wrekin and their source apportionment is presented in Figure 14. The highest sources are for PM secondary (60%) and Residual & salt (31%).

Table 3: Defra mapped background concentrations (µg/m³)

Telford & Wrekin Local Authority	2018 (µg/m ³)			
	NO ₂	NO _x	PM ₁₀	PM _{2.5}
Max	15.9	22.0	14.7	9.5
Min	4.8	6.1	10.9	6.9
Average	7.1	9.1	12.5	7.4

⁵⁰ Defra Background Mapping data for local authorities. Available online: <https://uk-air.defra.gov.uk/data/laqm-background-home?msclid=e626b778c61711ec91018edb043d4aa4>. Accessed April 2022.

Figure 10: 2018 Defra NO₂ Background Concentrations (µg/m³)

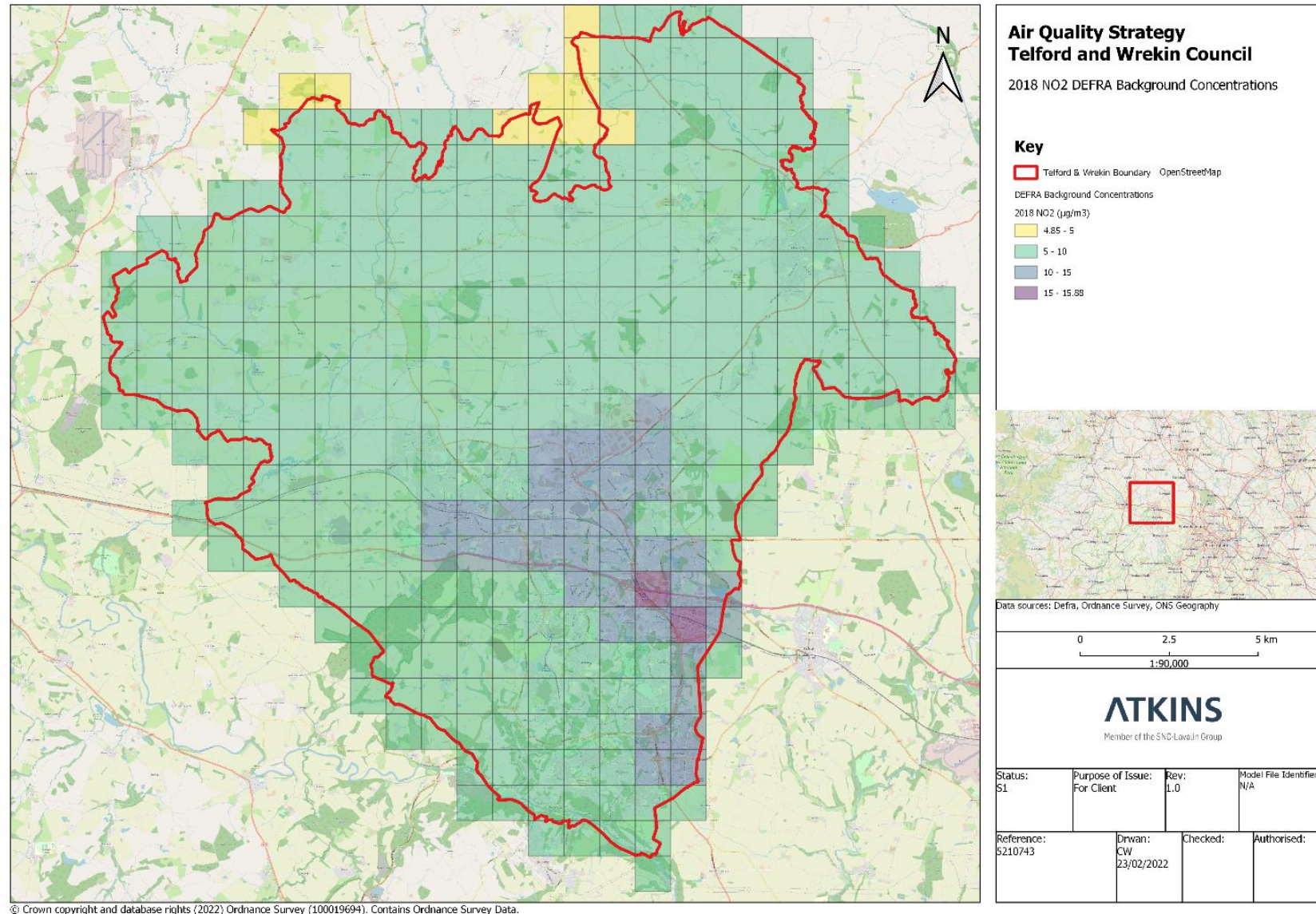


Figure 11: 2018 Defra PM₁₀ Background Concentrations (µg/m³)

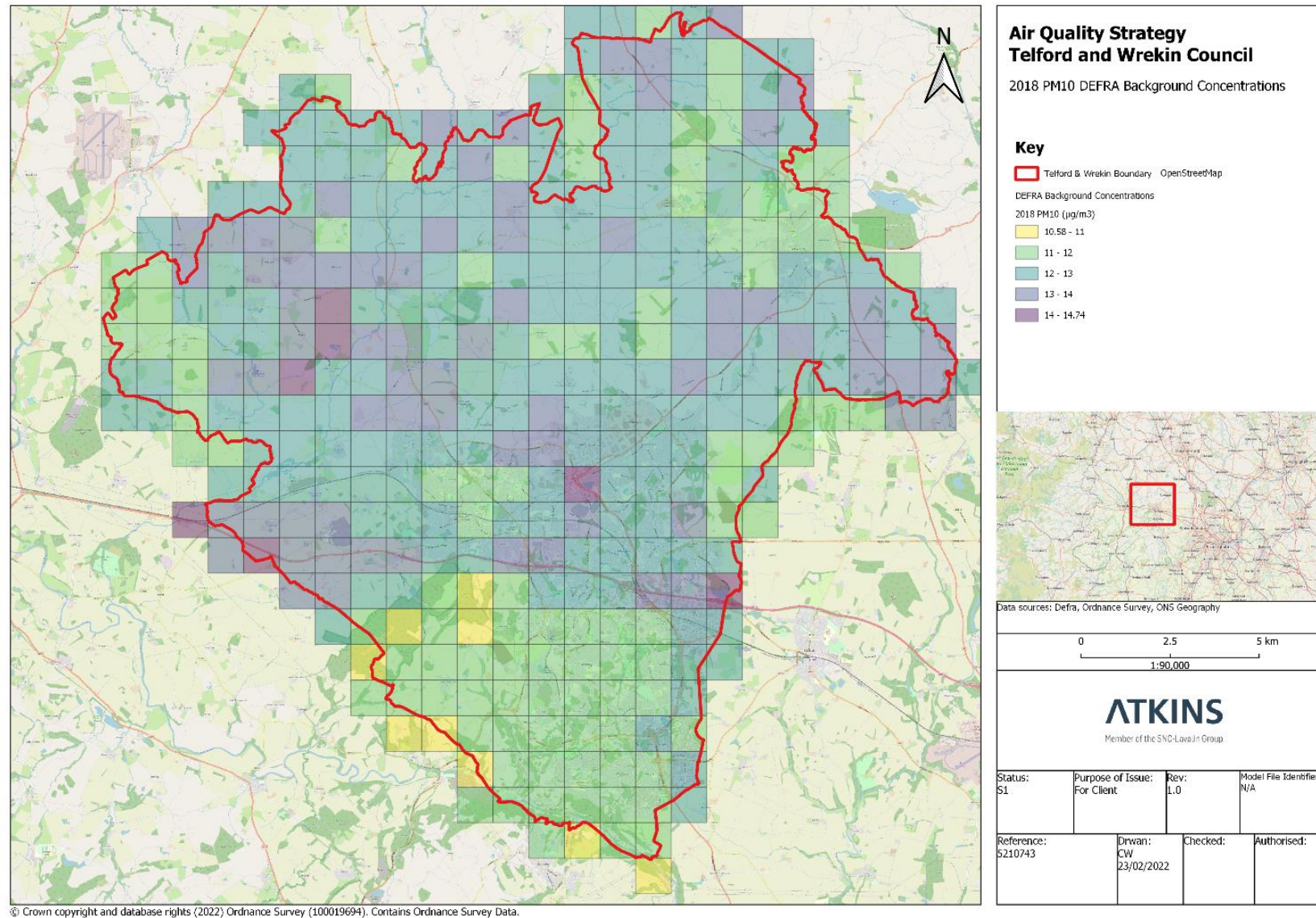


Figure 12: Source Apportionment of NO_x Background Concentrations within Telford & Wrekin2018 (Defra)

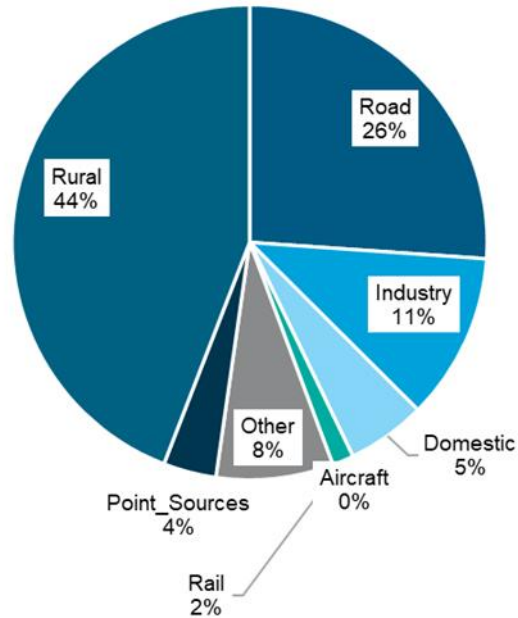


Figure 13: Source Apportionment of PM₁₀ Background Concentrations within Telford & Wrekin2018 (Defra)

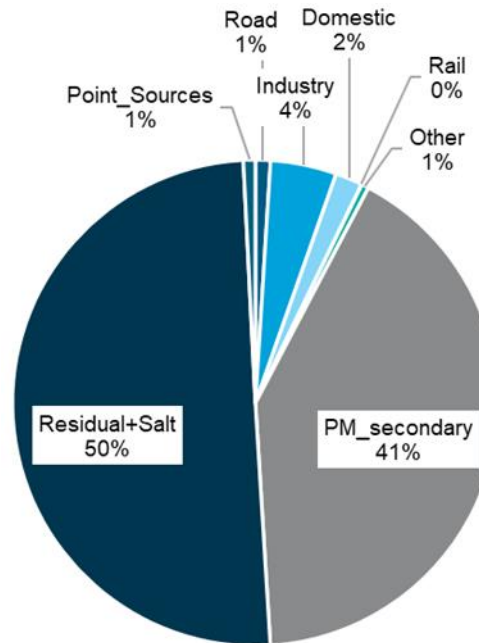
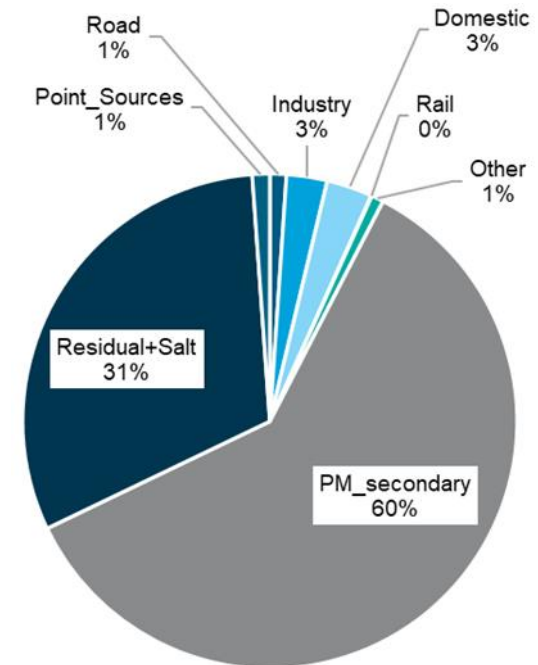


Figure 14: Source Apportionment of PM_{2.5} Background Concentrations within Telford & Wrekin2018 (Defra)



Appendix E: How to get involved

Individuals can take simple measures both to help to improve air quality, as well as reduce their exposure to pollutants. Any reduction in levels of exposure to particulate matter will lead to improvements in health benefits. There are simple and cost-effective things we can do now to improve air quality.

Walk or cycle:

Research suggests that car drivers and passengers are exposed to significantly higher levels of air pollution compared to pedestrians and cyclists. Replacing a car journey by walking or cycling helps reduce traffic and traffic emissions and has health and mental health benefits. For example, walking, scooting, or cycling on school journeys could save money, improve your health and wellbeing whilst helping to reduce congestion and pollution in the local area. Try to choose routes which are not as heavily trafficked (e.g. through parks and lesser used streets) to reduce the pollution that you are exposed to.

Walking routes are provided here: www.telford.gov.uk/info/20465/walking.

General cycling information is available here:

<https://www.telford.gov.uk/info/20464/cycling>

The national cycling charity Sustrans also provides cycling information at:

www.sustrans.org.uk/.

Take public transport or car share:

For longer journeys, try using public transport or car share. It can save money and reduce the impact on the environment.

Travel Telford provides information on travel choices:

www.telford.gov.uk/info/20461/Travel_telford.

Information on public transport is available here:

www.telford.gov.uk/info/20462/public_transport.

Local bus and rail information is available at: www.telfordpublictransport.co.uk/ and www.telford.gov.uk/info/20174/public_transport/134/bus_services_and_timetables.

Information on the Ironbridge Park and Ride service is available at:

www.telford.gov.uk/info/20174/public_transport/129/ironbridge_park_and_ride.

You can also find national journey options at: www.nationalrail.co.uk/; and www.traveline.info/.

When using a car:

- Drive smoothly. You'll save fuel and reduce emissions. Slow down as you approach traffic jams and take your foot off the accelerator. Don't rev your engine unnecessarily.
- Stick to the speed limit. Very high speeds produce more emissions. At 70 mph a driver could be using up to 15% more fuel than at 50 mph.
- Turn off the engine when your car is stationary.
- Maintain your car. Ensure tyre pressures are correct – lower tyre pressure increases fuel use and emissions.
- Consider whether you need to use air conditioning – using it increases fuel consumption by up to 30%.
- Remove unnecessary clutter from your boot to reduce engine workload.
- Further tips are available at: <https://energysavingtrust.org.uk/advice/efficient-driving/>.

Go electric

If you need to buy a car, consider its fuel economy and emissions – ultra-low emission vehicles (hybrid and electric vehicles) consume less fuel and produce fewer emissions. Whilst initial purchase costs for electric and hybrid cars may be higher, the running costs are lower. Government grants are available to help with the purchase of some low emission vehicles: www.gov.uk/plug-in-car-van-grants/eligibility.

Maps of charging points are available at various websites, including: www.zap-map.com/ and www.carwow.co.uk/electric-cars/charging-points.

Think about how you heat your home:

If you have an open fire, or wood-burning stove, consider how you are using it, and whether you can take steps to reduce emissions. Appliances should be kept in good working order to ensure that they are working efficiently.

Parts of Telford & Wrekin are within 'smoke control areas', where you cannot emit smoke from a chimney unless you are burning an authorised fuel or using an exempt appliance. Check whether you are in a smoke control zone here: www.telford.gov.uk/info/20358/pollution/1038/smoke_control_zones.

Further information on suitable fuels and exempt appliances can be found at www.gov.uk/smoke-control-area-rules.

Defra has produced a wood-burning guide providing advice on how to reduce emissions whilst saving money on fuel and maintenance costs: https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1901291307_Ready_to_Burn_Web.pdf.

Ensure that boilers are serviced regularly and kept in good working order. If a boiler needs to be replaced then purchase one that has a low nitrogen oxide emission rating, or consider an electric boiler or heat pump instead. Consider insulation and make your house more energy efficient so that you need to use your boiler less to heat your home.

Outdoor burning

Do not have garden bonfires. Compost all garden waste and recycle rubbish rather than burn it. Information on Garden Waste Collection is available at:

www.telford.gov.uk/directory_record/1662/garden_waste

Be aware of your own exposure

Daily national air quality updates, pollution forecasts and advice about how to protect yourself from the impacts of poor air quality can be found at: <https://uk-air.defra.gov.uk/>.

- Particulate levels vary over very short distances: in general, the closer you are to the sources, the more you breathe in.
- Walk on the inside of the pavement. The further you are from the traffic, the lower the pollution levels are.
- If you're walking or cycling you can easily avoid the worst pollution by travelling along quieter streets.
- The health benefits of physical activity (walking or cycling) outweigh the risks from air pollution. If you're in a vehicle, you are still exposed to air pollution.
- If you are burning wood in an open fire, make sure it's well seasoned (less than 20% moisture content) quality fuel as this will reduce the particulate emissions, or use a smokeless fuel.
- If the air quality forecast is poor, where possible, avoid the affected areas. If this is too difficult, stay indoors and keep your windows closed.
- Avoid strenuous activity when pollution is high.
- If you have respiratory conditions and need to travel on high pollution days, try to travel outside of rush hours, avoid congested areas, where you may get stuck in traffic jams, and keep your windows closed.

Appendix F: Interactions between Carbon and Air Quality

As local authorities work to reduce carbon, in line with Net Zero ambitions, there are opportunities to capitalise on co-benefits for air quality at the same time⁵¹. Key interactions are listed in Table 4 below for those measures which result in a positive outcome for both air quality and carbon (win wins), as well as those measures which although positive for carbon, may result in a negative outcome for air quality (challenges).

Table 4: Key interactions between air quality and carbon – win-wins and challenges

Emissions source	Win-wins (positive air quality and carbon outcomes)	Challenges (positive carbon outcomes, but potentially negative air quality impacts)
Transport	<p>Transport modal shift: Promoting a shift away from private cars towards public transport, walking and cycling and reducing freight mileage as part of wider sustainable transport planning delivers reductions in greenhouse gases as well as primary air pollutants. It also delivers health benefits associated with more active lifestyles, and economic benefits with increased footfall for local businesses.</p> <p>Electrification of public transport, although noting continued impact on fine particulates due to emissions from tyre and brake wear. Modifications from vehicle manufacturers could help to address this, e.g. research into low emission tyres⁵².</p> <p>Street design changes to encourage smoother driving and encourage more walking and cycling.</p>	<p>Road vehicle choices: Switching to electric vehicles is beneficial for carbon (depending on energy sources for the national grid). It also removes tailpipe emissions of local air pollutants. However, electric vehicles continue to produce particulates through brake and tyre wear, often in higher quantities than petrol/diesel vehicles due to their weight and the use of regenerative braking. Transport electrification also fails to optimise health and economic benefits.</p>
Energy and buildings	<p>Heat demand reduction and decarbonisation with renewable energy: Measures to reduce demand</p>	<p>Indoor air quality: Improving 'air tightness' saves energy and therefore reduces greenhouse gas emissions. However, it can exacerbate poor</p>

⁵¹ Bristow, S., Dowson, F. and Barrass, K. (2022) Yes we CANZ! Local leaders delivering Clean Air and Net Zero. Available online at: <https://www.uk100.org/sites/default/files/2022-06/YES%20WE%20CANZ%20%7C%20Clean%20Air%20Net%20Zero%20%7C%20UK100.pdf>. Accessed June 2022.

⁵² ENSO, Sustainable low emission tyres for improved air quality. Available online at: <https://gtr.ukri.org/projects?ref=971646>. Accessed June 2022.

Emissions source	Win-wins (positive air quality and carbon outcomes)	Challenges (positive carbon outcomes, but potentially negative air quality impacts)
	for heating through insulation and energy efficiency, as well as use of renewable energy systems delivers reductions in greenhouse gases, improvements in air quality. They would also deliver co-benefits such as reduced fuel poverty and green jobs.	indoor air quality. Conversely, ventilation systems to improve air quality can increase energy use. Combustion of 'low carbon fuels': Burning biomass in stoves, boilers and district heating systems, and hydrogen in boilers can be positive in terms of carbon (depending on how the fuel is produced and distributed) but potential negative impacts on air quality.
Agriculture	Better management of nitrogen in agricultural systems: Changes to agricultural management practices can result in reduced emissions of ammonia (a major precursor of particulate pollutants) and greenhouse gases (particularly nitrous oxide).	
Data provision	Providing better data: For air quality, this helps to empower local communities to make personal choices to reduce their exposure to air pollution. Data and information on greenhouse gas emissions can also increase community awareness and support for carbon reduction measures.	

More aligned action on air quality and carbon reductions can also bring the following overarching benefits:

- **Health and wellbeing improvements:** clean air, active travel, well insulated homes and improved public spaces;
- **Economic benefits:** reduced local authority and healthcare costs, improved workplace productivity and employment;
- **'Levelling-up' contributions:** reducing health inequalities and increased green job opportunities;
- **Outreach and communications:** engaging communities on health and economic benefits.

It is also important to note the impact of the timing of implementation of measures that have positive outcomes for both carbon and air quality. Actions taken in the short term have greater health benefits, as well as reducing the overall carbon load of the atmosphere.