

Somerset Air Quality Strategy

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Produced by the
Somerset Air Quality Steering Group

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Executive Summary

Air Quality in Somerset is generally good, but there are some urban areas where traffic-related pollution exceeds legal limits in Taunton and Yeovil. There are other urban locations where future development has the potential to lead to increased pollution, potentially breaching limits.

Air pollution has a significant impact on health at the population level. 244 deaths annually in Somerset are attributable to small particles (PM_{2.5}), with additional deaths attributable to nitrogen dioxides. This is comparable to deaths from alcohol. The number of life years lost was estimated at 2356, which is almost 10 years for each attributable death.

District Councils monitor air quality and are responsible for drawing up action plans to address poor air quality, in particular in Air Quality Management Areas. There are three such areas in Somerset;

- Yeovil (whole town)
- Taunton East Reach
- Taunton Henlade

Many of the policy levers available to address air quality in these areas, and in urban areas in general lie with national government, such as vehicle and fuel taxation policies. Measures are available at local level that can address air quality which require co-operation between county and district councils, businesses, fleet operators and the wider public. The Somerset Air Quality Steering Group has identified several measures it recommends are pursued locally, recognising the limited capacity and resources available at present.

1. Develop a Somerset Air Quality website as a high quality resource providing information and guidance to all interested parties on addressing air quality, including the public, fleet operators, employers, public authorities, developers, transport operators and the media.
2. Application of EPUK guidance "Land Use and Development Control: Planning for Air Quality" consistently in relation to large developments and cumulative impact.
3. Consider using financial, procurement, and regulatory mechanisms to encourage and enable transition to less polluting vehicle types across all fleets and for employees.
4. Bring forward proposals for monitoring PM_{2.5} particle pollution, in order to gain an understanding of where this is problematic in the county.

The overriding priority must be to reduce nitrogen dioxide pollution in the AQMAs to below the statutory limits, as required by EU law. The following indicators will be used to measure progress.

- Air pollution concentrations - more specifically the reduction in overall concentrations in those locations designated as Air Quality Management Areas, and any areas at risk of such designation.
- Vehicle trips - reductions or otherwise across the County, focusing on those locations where air quality concentrations are elevated
- Congestion levels

1. Introduction

- 1.1 It is estimated that the effects of nitrogen dioxide (NO₂) on mortality are equivalent to 23,000 deaths in the UK annually¹, and the effects of particulate matter (PM_{2.5}) are estimated to have an effect on mortality equivalent to nearly 29,000 deaths in the UK annually². At the local level, it is estimated that 244 deaths annually³ in Somerset are attributable to PM_{2.5}. The combined impact of these two pollutants represents a significant public health challenge.
- 1.2 Domestic wood burning is now the single largest contributor to harmful particulate matter emissions, comprising approximately 37% in 2015 (as compared to 8% from diesel vehicles). Trends associated with PM_{2.5} emissions from biomass burning are also being reported by Defra as increasing⁴. Motor traffic is an important source of both NO₂ and PM_{2.5} in towns.
- 1.3 In 2008 all six councils that form the administrative region of Somerset (Somerset County Council; Mendip District Council; Sedgemoor District Council; South Somerset District Council; Taunton Deane Borough Council and West Somerset District Council) worked together to produce an Air Quality Strategy for Somerset with the aim of working with a variety of stakeholders across Somerset to improve local air quality.
- 1.4 Since the 2008 Air Quality Strategy there have been large scale changes in stakeholders with many of those identified in 2008 now no longer in existence. In addition to this the European Court has ruled that the UK has failed to comply with limits for NO₂ and must take action to do so. It is uncertain as to whether Brexit will affect the UK's commitment to air quality.
- 1.5 Local air quality is influenced by many factors, with emissions from transport, industry and agriculture all having an impact on local concentrations of air pollutants. This strategy aims to identify the various processes and organisations that affect and influence air quality, with a view to facilitating future improvements and protecting areas where good air quality currently exists.
- 1.6 The report begins with an overview of the aims and objectives of an Air Quality Strategy. Following an introduction to the current and proposed Local Air Quality Management (LAQM) regime, an overview of the current air quality climate across the county is provided. Relevant policy areas are considered in detail, including development and spatial planning; transport planning; climate change and health. Consideration is also given to relevant international, national, regional and local policies, and an overview of air quality information provision across the county is provided.

1

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411756/COMEAP_The_evidence_for_the_effects_of_nitrogen_dioxide.pdf

2

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304641/COMEAP_mortality_effects_of_long_term_exposure.pdf

3

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRCE_010.pdf

⁴ <http://naei.beis.gov.uk/>

- 1.7 Following an evaluation of the opportunities and constraints for improving local air quality, recommendations are made in the context of the different policy areas that need to work together. Some consideration is then given to evaluation of the Air Quality Strategy, before conclusions are drawn. A summary of Somerset's Air Quality Strategy, consolidates all the policy areas and levels of government that contribute to a strategic approach in managing air quality.
- 1.8 The intention of this Strategy is to consolidate activity underway or necessary for managing outdoor air quality, and in lieu of this, any stated action may simply take the format of continued dialogue or information provision between colleagues, departments or organisations.
- 1.9 This Strategy will be reviewed and updated as required by the Somerset Air Quality Steering Group.

2. The Purpose of this Air Quality Strategy

- 2.1 Local authorities across the UK are required to manage local air quality, through a structured process of annual assessments, as discussed in the next Chapter on the LAQM process. The Government has recommended that all local authorities, irrespective of their statutory air quality work, consider developing a local air quality strategy. The principal purpose of a strategy is to maintain good air quality and where appropriate improve air quality locally. This is often best achieved by working collaboratively in regional or County-wide groups.
- 2.2 The aim of this County-wide Air Quality Strategy is to complement the LAQM process by working collectively, thereby affording better use of resources and information available than would be the case in a single authority. This forms the remit of the Somerset Air Quality Steering Group.
- 2.3 Policies and initiatives can be introduced to engage and encourage local communities and businesses to do their bit in improving air quality. Moreover, a Strategy allows local authorities, in conjunction with partners and the community, to take a holistic approach to the problems of air quality and not just to target the local hot-spots.
- 2.4 This Strategy has therefore been developed to support the achievement of air quality objectives across the County and to raise air quality as an issue for consideration within a wide range of local government, regional planning and economic development frameworks. This is important because working towards achieving air quality objectives will help reduce the risk of the most serious health effects related to pollution, as for some pollutants there are currently no known safe levels for exposure (i.e. particles and benzene). By including air quality considerations within council policies and procedures, a local authority is well placed to maintain good air quality and secure improvements in air quality.
- 2.5 Key strategic objectives for the development of the Strategy are to:
 - Work towards achieving European and national air quality objectives throughout Somerset;
 - Maintaining good air quality where it exists;
 - Identify key actions and initiatives to encourage and enable local authority departments, other organisations and the general public to take action to minimise as far as practicable their impact on air quality
 - Provide guidance and input on air quality issues for use in development and transport planning processes and policy development;
 - Ensure consistent implementation and the consideration of air quality issues in the Local Authority Pollution Prevention and Control (LAPPC) and Integrated Pollution Prevention and Control (IPPC) permitting regimes;
 - Highlight links between air quality, climate change and sustainability;
 - Where appropriate identify opportunities for local authority partnership working and coordinate the use of local authority review and assessment resources to this end.
 - Promote alternative travel as a means of reducing traffic congestion; improving local air quality and encouraging increased physical activity levels among residents
- 2.6 The key benefits of developing a Strategy at a County-wide level can be summarised as follows:

- It provides greater consistency across a range of policy areas for the achievement of improved local air quality, including development and spatial planning, transport planning, health and well-being, industry, housing and environmental protection, and ensures air quality is addressed in a multi-disciplinary way within different departments of a local authority and across Somerset;
- It provides the framework for a consistent approach to addressing local air quality consideration in development control processes;
- It is a vehicle for developing a coherent air quality policy across Somerset for local planning processes;
- It provides a link to wider initiatives across both the County and local authorities (e.g. Local Transport Plans, Climate Change programmes, Community and Neighbourhood Plans and energy efficiency programmes), and
- It provides the platform for local air quality considerations in local transport planning

2.7 Other advantages may include the following:

- It maintains the profile of air quality across the County and ensures that air quality remains on political agendas;
- It highlights the link between air quality and the risks to human health;
- It raises the profile of air quality amongst the local communities across the County;
- It encourages greater co-operation and collaboration between neighbouring local authorities and the County Council;
- It encourages partnerships between local business, industry and the community, and
- It can be the first point of contact and information relating to local air quality policy for regional bodies and others (e.g. Highways Agency and Environment Agency).

3. Managing Local Air Quality

Background

- 3.1 Historically, the control of air pollution has been undertaken by controlling major industrial processes, and prior to the 1990s, air pollution legislation was generally reactive to specific pollution episodes. The Clean Air Acts of 1956 and 1968 (consolidated into the Clean Air Act 1993 (OPSI 1993)) addressed smoke emissions from domestic coal burning and smoke from industrial stacks. The passing of the Environment Protection Act 1990 (HM Government 1990) introduced a more integrated approach to environmental protection and pollution control in the UK. With increased scientific understanding of emission sources, fuel advancements and technologies, air pollution policy and legislation evolved quickly over the 1990s, with a radical new regime for the management of local air quality unfolding towards the end of the 1990s.
- 3.2 The Government's White Paper *This Common Inheritance* (DoE 1990) introduced a new direction for air quality control. This was to build upon the existing technology-based controls by adding an effects-based, risk management approach through the formulation of a series of air quality standards. The new framework led to the formulation of the Environment Act 1995 (OPSI 1995) (Part IV, Air Quality), the primary legislation for the process of air quality management.
- 3.3 Following the transposition of the European Directive 96/62/EC (Europa 1996) into UK law, it is the responsibility of Central Government and devolved administrations to meet the EU air quality standards, discussed further on.

National Air Quality Strategy

- 3.4 The first National Air Quality Strategy was published in 1997 (DoE 1997). The Strategy was last updated in 2007 (Defra 2007a), and continues to provide the framework for local authorities to assess ambient air quality in their localities against specific health-based standards for nine pollutants (nitrogen dioxide, PM₁₀, sulphur dioxide, benzene, lead, 1,3-butadiene, carbon monoxide, PAH and ozone). Seven of which (excluding ozone and PAH) are regulated through the Air Quality Regulations 2000 (HM Government 2000), and Air Quality (Standards) Regulations 2010.

Local Air Quality Management in Practice

- 3.5 Under the Environment Act 1995, local authorities have a duty, in consultation with the County Council, to review; assess and take action on air quality within their areas. This involves monitoring and modelling for a number of pollutants against national objectives and standards, as described in Annex 1. Technical guidance for conducting LAQM is provided by central government. Where any exceedances of the objectives are found and there is public exposure the local authorities are then required to declare Air Quality Management Areas (AQMAs; under Section 83, Part IV of the Environment Act 1995) and to prepare Air Quality Action Plans setting out measures to reduce concentrations of air pollutants in pursuit of the objective levels. Government and non-government guidance is available for local authorities to assist with action planning.

- 3.6 The focus of air quality review and assessments remains those locations where members of the public might reasonably be expected to be exposed over the averaging period of concern. Compliance with the air quality objectives is thereby determined by reference to the quality of air at any non-occupational, outdoor locations such as residential properties, schools, hospitals and public open spaces.

Changes to Local Air Quality Management

- 3.7 Local air quality management technical guidance document (LAQM TG16) addresses many of the perceived problems with previous guidance that placed too high an onus on reporting, and not enough on action. The changes are as detailed below:
- Annual Status Reports (ASRs) will replace Progress Reports and Updating and Screening Assessments. These will provide clearer information for the public whilst retaining the detailed reporting contained within the old regime.
 - The ability to fast track AQMAs where it is clear that there is an exceedance or risk of exceedance of air quality limits, rather than the need to carry out a Detailed Assessment first.
 - Action planning template to increase consistency and also speed up the process.
 - It will no longer be necessary to report on carbon monoxide; 1-3 Butadiene; lead or benzene as these are now under control.
 - A flexible role in monitoring and modelling PM_{2.5}

4. Air Quality Status Across Somerset

- 4.1 Somerset is a largely rural county with a handful of major towns, a number of smaller towns, major coastal holiday locations but no major city. There is one motorway (M5) and one significant length of major trunk road (A303) passing through the area.

The topography of the County ranges from low-lying wetland and moor areas, through undulating landscape to upland moors and hills. There is the Bristol Channel coastline for most of the northern boundary of the County, but there are no major ports, dockyards or rivers. There are no major civil airports, but two well used military airstations, RNAS Yeovilton and RNAS Merryfield. There are two sections of mainline railway.

Much of the County is agricultural or light industry, although there are a few larger industrial sites and significant quarrying and peat extraction activities. Tourism is a significant factor to the economy of Somerset. The greater part of Exmoor National Park is in the west of the County and Somerset has a number of Areas of Outstanding Natural Beauty and Sites of Special Scientific Interest.

The largely rural nature of the County has resulted in a high level of car ownership, however the number of households without access to a car or van is highest in West Somerset (<http://informsomerset.org.uk/dataviews/view?viewId=72>) which has the highest proportion of people over 65 years old (<http://www.somersetintelligence.org.uk/census2011/>).

- 4.2 Broadly speaking, air quality across the County is good. Industrial processes within the districts do not pose a threat to air quality, and the major source of emissions is from traffic. As a result of traffic emissions, AQMAs have been declared in two local authorities; within Taunton Deane BC (East Reach and Henlade areas in Taunton) http://uk-air.defra.gov.uk/aqma/local-authorities?la_id=273 and in South Somerset DC (Yeovil) http://uk-air.defra.gov.uk/aqma/details?aqma_id=116. An AQMA existed in Sedgemoor DC (Bridgwater) for sulphur dioxide, but has since been revoked as a result of the closure of an industrial process. The existing AQMAs are declared for nitrogen dioxide only.
- 4.3 No other pollutants pose a problem across the districts. Over recent years, the district authorities have indicated, through their air quality management work, that all other air quality pollutants (i.e. carbon monoxide, lead, benzene, 1,3-butadiene, sulphur dioxide and particulate matter) do not exceed relevant objectives and standards. However, there are locations elsewhere in the County where concentrations of nitrogen dioxide are close to the annual mean objective. It is important that such locations are carefully considered in air quality management work undertaken and in local planning decision-making. These may include locations across the County where, for example:
- large-scale housing development is proposed with subsequent traffic generation;
 - locations where annual mean nitrogen dioxide concentrations are close to exceeding the objectives, and
 - locations where additional traffic generation may lead to standing traffic in close proximity to relevant exposure.

4.4 Further details of the status of air quality within each individual local authority area can be found on the relevant websites.

5. International, National, Regional and Local Policy Frameworks that impact upon Local Air Quality

- 5.1 Policies and programmes for action across various policy areas and at all levels of government (international, national, regional or local level) can impact on efforts to improve air quality at specific localised hot spots or indeed reduce concentrations more generally across an area. This Chapter identifies the key policy frameworks that have a direct impact on the County-wide and local air quality landscape. Detailed information on the policy areas is provided as Annexes (Part 2). The relevant policy frameworks are considered in turn below.

Air Quality Policy

- 5.2 As explained in Chapter 3 a regime exists for the management of air quality ranging from the National Air Quality Strategy to the Local Review and Assessment Reports.

Planning Policy

- 5.3 The planning system remains plan-led in its approach. Planning Policy Statements have now been replaced by the National Planning Policy Framework. The NPPF has a 'golden thread' of sustainable development running through it and includes chapters on Promoting Sustainable Transport; Promoting Healthy Communities; Meeting the Challenge of Climate Change; Conserving and Enhancing the Natural Environment. Local authorities are required to take air quality considerations into account in both strategic planning and in development control decision-making. Local planning authorities now prepare Local Plans comprising documents for delivering the spatial planning strategy for the area.
- 5.4 Air quality will be a material consideration where certain circumstances apply, for example where a development would lead to an increase in pollutant concentrations, causing members of the public to be exposed to levels in excess of national standards. In order to assess the impact of a development on air quality, there is a need to consider air quality as early as possible in the planning process.
- 5.5 Local economic development and regeneration has a role to play in determining the location of business and industry, which in turn has an influence on local transport policy, transportation needs and, to some extent, the potential for industrial emissions.
- 5.6 The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 require a developer to prepare an environmental statement (Environmental Impact Assessment) for larger developments, describing the likely environmental effects of the project, including air quality. This ensures that these possible effects (both direct and indirect) are understood and considered before a development is given final approval.
- 5.7 The Strategic Environmental Assessment Regulations (Environmental Assessment of Plans and Programmes Regulations Statutory Instrument 2004 No. 1633) extend the assessment of environmental impacts from individual development projects to the broader perspective of plans and programmes, including Local Transport Plans (LTPs). SEA is a tool to ensure the integration of environmental considerations, including air quality into the planning and

decision making processes. To achieve this, SEA is an iterative process informing each stage of plan development (Somerset 2006).

Transport Policy

- 5.8 Transport is responsible for a significant and growing amount of pollution contributing to health problems and with estimates of road transport accounting for a quarter of the UK's domestic transport greenhouse gas emissions. The Government recently published their report 'Road Investment Strategy: for the 2015/16-2019/20 Road Period' (DfT 2015) in which it details how it will address economic growth and climate change. The aspiration is that in 2040, the strategic road network will be a sustainable, decarbonised, environmentally and locally sensitive network.
- 5.9 The Government's White paper 'Creating Growth, Cutting Carbon. Making Sustainable Local Transport Happen' (2011) recognises that in many urban areas, road transport is still a major contributor to excessive levels of nitrogen dioxide, and particulate matter remains a health concern, even in areas compliant with European limits. The paper sets out a vision for a transport system that is greener and safer and improves quality of life.
- 5.10 Regional and local transport planning processes are crucial in seeking air quality improvements across Somerset.
- 5.11 Through its location the County is an important transit corridor for tourists and visitors to some of the UK's most favoured destinations of Devon and Cornwall. Key transport routes through the County include the M5 motorway, A303, A37, A38 and the A39. The County is well connected by rail services and Bristol and Exeter International Airports provide national and international air services.
- 5.12 The Local Transport Planning process is the most important strategic process for supporting improvements in local air quality across individual local authorities in Somerset. Somerset's Future Transport Plan sets out the County Council's strategy, vision, and implementation programme for all forms of transport for the period 2011 - 2026.

Environmental Protection and Local Industrial Regulation

- 5.13 Under Part 1 of the Environmental Protection Act (EPA) 1990 (HM Government 1990), local government is given power to control air pollution from a range of industrial sources. These permitted installations are legally obliged to comply with specified conditions in order to prevent or minimise emissions to air. Each Council authorises a significant number of processes ranging from unloading petrol at service stations to vehicle re-spraying businesses and concrete batching plants. More recently small waste incineration processes have been added to the permitting scheme and medium combustion plant will join the scheme in the next few years.
- 5.14 Local government is also empowered by the Clean Air Act 1993 to control smoke emissions from industrial or trade premises which fall outside the provisions of the Environmental Protection Act or Pollution Prevention and Control Acts.

5.15 Many practices can lead to increased levels of dust, smoke, or odour which can affect air quality. Further powers are given in the 1990 Environmental Protection Act to control these types of nuisance.

6. Climate Change

- 6.1 Adapting to climate change and mitigating against the effects of climate change requires the involvement of everyone: governments, voluntary organisations, the private sector, industry and communities alike.

National data shows that in 2015 in Somerset 1.44m tonnes of CO₂ were emitted in Somerset from transport, out of total emissions of 3.59m tonnes. These figures have fallen over the last decade from 1.51m tonnes and 4.88m tonnes respectively. This means that while overall emissions of CO₂ have fallen by 26%, they have only fallen by 5% in the transport sector. Consequently the proportion of CO₂ emissions in Somerset attributable to transport has risen from 31% to 40%.

Per capita emissions in Somerset are 17% higher than the SW region.

<https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2015>

- 6.2 The Low Carbon Transition Plan of 2009, contains the ambitious goal of reducing the UK's greenhouse gas emissions by 80% by 2050, through promoting energy efficiency and the increased use of renewable energy.

The current government position on greenhouse gas emissions can be found at:

<https://www.gov.uk/government/publications/greenhouse-gas-emissions/greenhouse-gas-emissions>

- 6.3 Various Government-funded programmes are underway to reduce emissions and to enable adaptation to climate change. <https://www.gov.uk/guidance/climate-change-explained#uk-government-action>

Integrating Climate Change and Air Quality Policy

- 6.4 Any Strategy or indeed Action Plan to maintain or improve local air quality needs to take account of climate change. Guidance issued to local government (LAQM TG16) states that policies aimed at improving air quality should be considered with those designed to reduce greenhouse gases and furthermore, these policies may be included in an air quality strategy (https://consult.defra.gov.uk/communications/laqm_changes/supporting_documents/LAQM%20Technical%0Guidance%202016.pdf.)

- 6.5 This strategy recognises that climate change and air quality should be integrated into local authority policy and air quality management and meets the expectation placed by Government on dealing with environmental issues, such as climate change and air quality.

- 6.6 With many of the sources of air pollutants being the same as the sources of greenhouse gases, and in particular carbon dioxide, seeking reductions in carbon dioxide emissions from the transport sector will help minimise the pollutants responsible for the AQMAs declared across Somerset. Similarly, actions to reduce carbon dioxide and greenhouse emissions from the industrial and domestic sectors should, in most cases, have a beneficial effect on air quality concentrations. However, it is also important to note that some specific mitigation measures against climate change may compromise efforts to reduce specific air quality concentrations, and vice versa. In particular biomass plants should be carefully considered in the planning stage.

- 6.8 A National adaptation programme was published in 2013
<https://www.gov.uk/government/publications/adapting-to-climate-change-national-adaptation-programme>
Within the programme was a recognition that increased summertime temperatures may lead to higher mortality due to raised ozone levels and photochemical smog. DEFRA is to work with councils to encourage action and to support co-benefits between climate change and air quality and to encourage climate change to be taken into account when taking local action to improve air quality. DEFRA is to produce better-targeted air pollution information and advice for people most susceptible to health impacts of air pollution. DEFRA is also to work with UK and international partners to reduce trans-boundary air pollution. In 2017 the Government produced the UK Climate Change Risk Assessment. The report endorses the six priority risk areas identified in the [independent evidence report by the Adaptation Sub-Committee](https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017)
<https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017>
- 6.9 In 2011, DEFRA published Air pollution: action in a changing climate, summarising the main issues concerning air pollution and how to benefit from the interconnections between measures to address air pollution and climate change.
<https://www.gov.uk/government/publications/air-pollution-action-in-a-changing-climate>
- 6.10 To date, many climate change strategies have tended to concentrate on individual measures or actions, such as adaptation, rather than holistic and mitigating actions aimed at seeking a reduction both in terms of the traditional pollutants and also, of greenhouse gases. It is important that all stakeholders have a role to play. Whilst Environmental Health departments may have some capacity to assist with defining baseline emissions, each and every department has a role to consider how its activities and function impacts on traffic emissions and use of resources etc.
- 6.11 Local planning, transport planning, and community strategy planning are the more relevant policy areas with the greatest potential influence on reducing greenhouse gases. It is important in the policy making processes associated with these policy areas that any proposals for reducing greenhouse gas emissions are considered for their likely impact on local air quality. For this reason, it is important that colleagues across these policy areas in local government communicate with Environmental Health departments within the County.
- 6.12 The linkage between climate change and air quality is a key issue for large planning proposals under the European Directive on Strategic Environmental Assessment (SEA Directive). An assessment into the likely significant effects on air quality and climate change is required, including the 'short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects.' It is therefore important that air quality practitioners within local government across Somerset are part of SEA processes across the County.

7. Health and Air Quality

- 7.1 Air pollution can have a serious effect on health, particularly among people over 65 and children aged 14 and under. Long-term exposure can cause breathing problems such as asthma and other conditions, mainly affecting the heart and lungs. Cars and other motor vehicles are a major cause of air pollution. Some groups are more susceptible to short-term exposure, but long-term exposure causes the most health problems. Air pollution is estimated to reduce the life expectancy of every person in the UK by an average of 7-8 months with estimated equivalent health costs of up to £20 billion each year.

In 2014, Public Health England published estimates of the number of deaths attributable to man-made particulate air pollution in Somerset. PHE estimated that of the 5558 deaths in Somerset in those aged 25+, 4.4% were attributable to particulate air pollution, amounting to the equivalent of 244 deaths. This is similar to the number of deaths attributable to alcohol. The number of life years lost was estimated at 2356, which is almost 10 years for each attributable death. These estimates do not include the impact of other pollutants such as nitrogen dioxide (NO₂) on public health or mortality.

In terms of actions, it is recognised by Defra and PHE (2017⁵) that if the annual average concentration of particulate matter (measured as PM_{2.5}) were to be reduced by just 1 microgram per cubic metre, there would be an increase in life expectancy from birth of about 20 days for that community exposed.

Indicator in PHOF	Mortality rate, per 100,000
Preventable mortality (4.03)	157.3
Preventable cancer <75(4.05ii)	67.6
Preventable CVD <75 (4.04ii)	62.0
Preventable Respiratory disease <75(4.07ii)	15.8
Mortality attributable to PM2.5 <75 (3.01)	12.4
Preventable Liver disease <75 (4.06ii)	11.4
Suicide rate Persons (4.10)	10.7
Communicable diseases (4.08)	8.3

- 7.2 The air quality management process is underpinned by health-based objectives, as discussed in previous chapters. Links between poor air quality and poor health have become increasingly evident over recent years. Annex 2 provides an account of the health risk posed from elevated concentrations of each of the regulated local air quality pollutants. For completeness, reference is also made to ozone and PAH, which as discussed elsewhere are pollutants included in the UK Air Quality Strategy, but which are not regulated.

Public Health England

- 7.3 Public Health England is an executive body of the Department of Health charged with protecting and improving health and reducing inequalities in the population at large. PHE does not monitor air quality, but it does provide specific advice on harm reduction in

⁵ Defra, PHE, Air Quality – [A Briefing for Directors of Public Health](#)

polluted environments. Public Health England has also published estimates of local mortality due to PM_{2.5}. Through its knowledge and intelligence services it also collects, monitors and analyses data, producing evidence to inform decision-making on health issues at local, regional and national levels.

- 7.4 The role of these services is also to improve our understanding of health and the factors that influence health within the region and to identify any gaps in health information. On this basis, it is important that health practitioners are made aware of those locations where public health is potentially compromised as a result of elevated pollution concentrations.

Health and Wellbeing Board

- 7.5 The Somerset Health and Wellbeing Board was created by statute in 2013, bringing together county and district councillors and officers, and officials from the NHS, as well as public representation through Healthwatch. The Board has a remit to protect and improve the health of the population of Somerset. It looks at people's health and social care needs together, as well as taking into account the bigger picture - things like transport, housing, jobs and leisure - so that services truly help people stay healthy and independent. The Somerset Health & Wellbeing Board has developed a Health and Wellbeing Strategy for Somerset, which has been agreed by both Somerset County Council and the Somerset Clinical Commissioning Group.

Somerset Health Protection Forum

The Director of Public Health has the responsibility to be satisfied that the health of the population is protected. The Forum is the mechanism by which this is achieved. The Forum is a multi-agency body, reporting to the Health and Wellbeing Board. One of the current (2015-17) key priorities for the Forum is air quality.

8. Provision of Information across Somerset

- 8.1 Effective dissemination of air quality information to the public can enable people to make informed choices relating to their travel behaviour and options. Other lifestyle choices can be made based upon relevant air quality information, which is particularly important for those members of the public with health problems exacerbated by poor air quality.
- 8.2 Local authorities are well placed to provide information on air quality, including warnings for poor air quality episodes that can affect the more vulnerable and sensitive members of the community. Air quality information can be provided on local authority websites, social media, at public information points such as libraries and health centres and provided to the local media. Information might include real-time monitoring data, historical and archived data, local air quality reports and information on the links between poor air quality and health impacts.
- 8.3 The regular provision of such information should be part of the air quality management process underway across individual local authorities. Where air quality action planning is

underway, dissemination of relevant information is most important in order to illustrate the measures and actions necessary by all concerned to reduce air pollution.

8.4 The Somerset Air Quality Steering Group is developing a shared website for the County, <https://somerseairquality.wordpress.com>, providing access to relevant information on air quality. Other mechanisms might include targeted information leaflets, selective briefings, press releases, awareness campaigns, seminar presentations, publicity events and annual reporting on air quality across the County. Part of any such proposals should include ensuring this County Air Quality Strategy is made available to local authority colleagues, external agencies, organisations, education establishments and the general public.

8.5 Air quality information currently available on individual Council websites varies enormously across the County. Links to the available websites are provided below.

<http://www.mendip.gov.uk/airquality>

<https://www.sedgemoor.gov.uk/article/1012/Air-Quality>

<http://www.southsomerset.gov.uk/environment/environmental-health/environmental-protection/air-quality/>

<http://www.tauntondeane.gov.uk/irj/public/services/directory/service?rid=wpccontent/Sites/TDBC/Web%20Pages/Services/Services/Air%20quality%20monitoring>

<http://www.westsomersetonline.gov.uk/Environment/Pollution/AirQuality>

8.6 Daily air quality forecasts are produced and published by a number of agencies. DEFRA has a postcode search facility that ranks predicted pollution levels (known as the Daily Air Quality Index DAQI) from 1 (low) to 10 (very high). <http://uk-air.defra.gov.uk/forecasting>. The site provides general health guidance for at risk individuals and the general population.

Daily forecast tweets of the DAQI are tweeted by @DefraUKAir, and are included on a live feed at <https://somerseairquality.wordpress.com/>. Recorded information is also provided on 0800 55 66 77

8.7 It may be possible to provide a proactive messaging service for vulnerable users across Somerset, via GP surgeries, individual council websites and social media.

9. Opportunities and Constraints in Delivering Clean Air Across Somerset

- 9.1 Key future challenges for the South West region, as identified by the Somerset County Plan and the South West Local Economic Plan are the need for more affordable housing, improved transport infrastructure and better health.
- 9.2 The key issues facing local authorities within Somerset, and of relevance to the improvement of local air quality, are the required housing development needs and the impacts on transport provision across the County. Housing provision is a direct result of both projected population increases and changes in social trends. An increase in single occupancy households and a growing population (resulting from net inward migration) is applying pressure on the need for increased allocation of land for residential property. Even if policies aimed at achieving high modal shift are effective, there will inevitably still be significant increases in motor traffic from new developments, potentially impacting on air quality management areas.
- 9.3 Other key issues for the County are the tourism-related pressures of access to services and transport provision, employment opportunities across the County and generally meeting the working and living aspirations of residents.
- 9.4 Key large-scale, long-term developments either underway or proposed at various strategic locations across the County have the potential for affording real opportunity for socio-economic and local and regional environmental improvement, if all necessary considerations (including air quality) are taken in to account.
- 9.5 For all those involved in air quality management, and all those involved in the implementation of policy which exerts an influence on local air quality, it is important to recognise the opportunities for, and the constraints on, improving air quality at the local and regional level. Some of the key opportunities and constraints in managing local air quality, in relation to some of the key issues identified above, are outlined below.

Opportunities

- The most effective opportunity for improving local air quality is the integration of air quality into the local transport and spatial planning processes. A large proportion of local car journeys in urban areas are of less than two miles. Action to make walking and cycling, in combination with public transport, more attractive by the provision of high quality infrastructure in new developments and in the connections to schools, shops, employment etc, can assist with reducing motorised travel and congestion.
- An important opportunity exists to improve local air quality in the local development control process if an effective framework for ensuring air quality is given adequate consideration at the earliest stage of all proposed development.
- Regional Transport Planning frameworks offer long-term opportunities to increase the proportion of goods, services and people transported by public transport. Somerset currently supports housing development within the existing urban areas of the County, although not all the demand for housing provision is restricted to urban areas. Opportunity therefore exists for development to be concentrated such that need for travel is reduced.

- Spatial planning (as opposed to land use planning) provides an opportunity to combine transport and planning policy to promote sustainable development. At all levels of policy planning, the outcome will be to reduce the need to travel and promote alternatives to road transport.

Constraints

- Funding mechanisms for transport projects tend to favour high capital cost road schemes, with funding for lower cost walking and cycling infrastructure more difficult to obtain.
- The relatively short timetable for identifying air quality issues in the air quality management regime is not reflected in other planning timetables operating within other sections of local government and agencies (i.e. County Council, Highways Agency and Environmental Agency, which operate on a twenty year cycle, and LTP, operating over a 5 year cycle. It may be difficult, therefore, to ensure that the most appropriate information is fed into wider planning frameworks and processes at appropriate opportunities, or to put in place specific actions where air quality problems are identified.
- The tourism industry is a particularly important economic sector in Somerset. However, although tourism is a major employment sector, the influx of largely seasonal visitors places pressures and constraints on the transport infrastructure across the County. With many attractive market towns across the County, the pressure for improving transport provision and access is great, with future demand on the trunk road and local road networks and rail networks likely to increase.
- With an aging population in some areas of the County (for example in Wells, there is a very high proportion of people aged over 65, making up 25% of the population compared with 16% nationally), this places huge demands on services, access to services, housing and health care needs for the County. Travel provision in particular needs to be tailored to suit the needs of the elderly sector of the population, so as to reduce the risk of rural isolation, which is a real issue for some parts of the County.
- Both outward and inward commuting is an issue for a number of the local authorities in Somerset. West Somerset, for example, has a large proportion of its resident population that commutes to other districts within and beyond the County. This is, in part, due to the largely rural nature of the district, whereby the need to travel is more evident and needs to be planned for. This highlights a potential constraint in efforts to reduce car mileage and distance travelled within the County.
- The distance travelled for retail purposes by the local population in some parts of the County is also a constraint in reducing car mileage. For example, Frome is the largest settlement in Mendip, having the greatest number and diversity of shops. However, the retention rates in Frome are low with only 26% of the local population shopping in the district for their non-food items.
- Social deprivation, where wages are low in relation to house prices, exists in a number of areas of the County. Although some districts appear to have increasing employment rates and expanding local economies, many of the industries have a low wage and skill-base. Proposals for reducing social deprivation and increasing opportunities for employment and socio-economic improvements should be undertaken with due consideration for the quality of the urban and rural environments across the County.

9.6 Many of the opportunities and constraints identified in this Chapter translate into recommendations for action, which are considered in the next chapter, Chapter 10.

10. Recommendations for Action

- 10.1 Following consideration of the key local policy areas that contribute to improving local air quality, this Chapter provides a number of recommendations for actions on the part of various local authority departments and stakeholders. Both broader strategic recommendations and more specific recommendations are identified. Some of the recommendations relate to work and action already underway across Somerset, and these are listed because of their fundamental importance to improving air quality or maintaining good air quality across the County.

Strategic Recommendations for Action

- 10.2 A number of key strategic recommendations for various stakeholders are listed below.
- District and Borough Councils continue to undertake LAQM reporting duties, in consultation with the County Council, guided by the government's policy and technical guidance available to them. In the event of any individual local authority designating any additional AQMAs across the County in future, a consistent approach to the designation process is recommended, with advice being sought from those local authorities across the County currently with AQMAs.
 - Ensure local air quality maintains a high profile through the appropriate communication of information across the County. This should be aimed at Members (Councillors), the general public, key departments within the local authorities and wider stakeholders.

Specific Recommendations for Action

- 10.3 A number of more specific recommendations for the District and County Councils and other stakeholders are listed below. These recommendations have been grouped into particular themes or stakeholder groups.

Communication

- Develop the fledgling Somerset Air Quality website into a high quality, comprehensive single point of access for all on air quality in Somerset
- Investigate options for consistent communication of the links between health, transport and air quality. Mechanisms for this may be articles in the local press, and social media campaigns linked to external websites providing educational and other resources to assist businesses, schools etc to play their part in improving air quality.

Planning and air quality recommendations

- Local Authorities will use EPUK "Land Use and Development Control: Planning for Air Quality" as the default guidance in relation to assessing the impacts of large developments on local air quality. This guidance gives a scope of where such assessments are required, the scale of impact and subsequent mitigation recommended (if required).

- Local authorities will agree that the EPUK document will be used and promoted through the development control process within the local planning policy framework for all Somerset Authorities. This will ensure a consistent approach to planning and air quality across the county.

Transport

- District councils should consider using their licensing powers, and/or incentives, to enable the taxi and private hire fleets to move more rapidly to hybrid and other less polluting vehicles.
- Providers and commissioners of transport fleets such as buses, community and patient transport, and business vans and cars should work together to consider how to enable cleaner vehicles to be introduced to the fleets at an accelerated pace, particularly in urban areas, including the use of shortly to be published Government Procurement Standards for new vehicles.
- Employers whose staff use their own vehicles on work business should consider measures to encourage and enable staff to source less polluting vehicles.

Monitoring of particle pollution

- Particulate pollution monitoring for PM2.5 is not currently undertaken in the county. It is recommended that the group considers making a limited investment in portable monitoring equipment so that a comparative screening exercise can be undertaken to identify any areas in the county with relevant receptors where additional resources may be required to reduce particulate PM2.5 concentrations.

Recommendations for Stakeholders

- Maintain dialogue and liaison between the Environment Agency, County Council and local authorities across Somerset in respect of any necessary data and information required for the purpose of local air quality management reporting requirements or assessment work. This is particularly important in the event of any specific industrial process contributing to elevated air quality concentrations in particular locations across the County.
- Forge better links with Public Health England, so as to enable relevant information on air quality and health outcomes to be circulated as necessary. Such information may include statistics on air quality and health initiative promotional information.
- Encourage Business and Commerce to support projects which help increase access of the business community and wider community to information on the environment and environmental issues (which in turn helps support increasing trends of home-working and reduced travel needs etc.). It is also recommended that the Business and Commerce sectors of the County explore the development of an award scheme, in conjunction with local authorities, for innovations that seek to improve air quality across the County.

11. Evaluation, implementation and monitoring of the Strategy

- 11.1 The effectiveness of any strategy, programme or plan should be monitored periodically to ensure that the aims and objectives are being met. Indicators can be used to monitor the effectiveness of a strategy, and indicators must be easy to use and transparent in their use.

The focus should be those locations of the County where air quality hot spots are identified or where air quality is likely to be compromised in future.

- 11.2 Air quality management and actions to improve local air quality need to be implemented by a range of stakeholders. The implementation of any air quality strategy should therefore be dependent on meeting the needs of the community to which it relates. As recognised throughout the strategy, communication is the key to ensuring any necessary measures and policy are implemented.
- 11.3 The continued work of the Somerset Air Quality Steering Group is central to facilitating the implementation of this strategy, and the Group will require input from the wider stakeholders identified in this report to ensure that implementation of the Strategy remains an active and ongoing process.
- 11.6 Actions and targets should reflect local and national priorities, and other key strategies. The local area decides how to achieve the outcomes, for example by more flexible use of existing funding streams and making best use of available resources across partners.

Air Quality Targets and Indicators

- 11.9 We will use the following three key indicators
- Air pollution concentrations - more specifically the reduction in overall concentrations in those locations designated as Air Quality Management Areas, and any areas at risk of such designation.
 - Vehicle trips - reductions or otherwise across the County, focusing on those locations where air quality concentrations are elevated
 - Congestion levels

12. Conclusions

- 12.1 The development of this Air Quality Strategy for Somerset signifies a clear recognition that improving local air quality is the responsibility of a wide range of stakeholders and professions. Although Environmental Health professionals are tasked with monitoring and assessment of air quality, the responsibility for actions and measures necessary to reduce pollution lies with a wide range of stakeholders.
- 12.2 Local authority stakeholders face challenges ahead in respect of addressing climate change and ever-increasing congestion. Changes in the way we manage local air quality, through attempting to reduce exposure to high concentrations of pollutants via technological fixes, planning and transport policy, will bring new challenges for all concerned.
- 12.3 Although future improvements in local air quality are heralded as a result of technological advances in vehicle engines and improved fuels, there is still a need to reduce the increasing reliance on private motor vehicle use and to provide access to improved public transport services and alternatives to private motor vehicles. Traffic accounts for the main source of emissions across the County, and accounts for both Taunton Deane's and South Somerset's AQMAs. As such, the implementation of the County Local Transport Plan is fundamental to the improvement of local air quality, or maintenance of good air quality, across the County.
- 12.4 Population growth, increased commuting, the demand for housing and associated services and facilities are all issues placing pressures on the environment across the County. The need to reduce traffic growth, congestion and travel demand is being reflected in policy at local, regional and national level.
- 12.5 In recent years, the evolution of regional spatial planning and local planning has heralded a new holistic approach to determining where development is to be focused. Community planning is leading to a more integrated and involved approach to improving the quality of life and well-being of communities. Air quality is pertinent to the planning processes and needs integration into the system.
- 12.6 To summarise, this Air Quality Strategy is a consolidation of all the necessary policy frameworks that need to take account of the air quality across the County, and a mechanism and structure in which all relevant stakeholders need to operate to deliver the very necessary improvements in local air quality across the County of Somerset.

Annex 1 - National Air Quality Objectives and Standards

A1.1 Table A1.1 sets out the UK air quality objectives that have been included in Regulations for the purpose of Local Air Quality Management.

Pollutant	Objective	Averaging Period	Obligation
Nitrogen dioxide (NO ₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	All local authorities
	40µg/m ³	Annual mean	All local authorities
Particulate matter (PM ₁₀)	50µg/m ³ not to be exceeded more than 35 times a year	24-hour mean	All local authorities
	50µg/m ³ not to be exceeded more than 7 times a year	24-hour mean	Scotland only
	40µg/m ³	Annual mean	All local authorities
	18µg/m ³	Annual mean	Scotland only
Particulate matter (PM _{2.5})	Work towards reducing emissions / concentrations of fine particulate matter (PM _{2.5})	Annual mean	England only
	10µg/m ³	Annual mean	Scotland only
Sulphur dioxide (SO ₂)	266µg/m ³ not to be exceeded more than 35 times a year	15-minute mean	All local authorities
	350µg/m ³ not to be exceeded more than 24 times a year	1-hour mean	All local authorities
	125µg/m ³ not to be exceeded more than 3 times a year	24-hour mean	All local authorities
Benzene (C ₆ H ₆)	16.25µg/m ³	Running annual mean	All local authorities
	5µg/m ³	Annual mean	England and Wales only
	3.25µg/m ³	Running annual mean	Scotland and Northern Ireland only
1,3-Butadiene (C ₄ H ₆)	2.25µg/m ³	Running annual mean	All local authorities
Carbon monoxide (CO)	10mg/m ³	Maximum daily running 8-hour mean	England and Wales and Northern Ireland only
	10mg/m ³	Running 8-hour mean	Scotland only
Lead (Pb)	0.5µg/m ³	Annual mean	All local authorities
	0.25µg/m ³	Annual mean	All local authorities

Annex 2 – Health Impacts From Air Pollutants

A2.1 The table below summarises the main health and some environmental impacts of high concentrations of outdoor ambient air quality pollutants. Ozone is included in the table, although ozone is not regulated in the UK. Further details relating to impacts on ecosystems from elevated pollutant concentrations is not provided in this County-wide Air Quality Strategy, as a duty is not placed on local government to meet specific targets relating to vegetation and ecosystems.

Specific Pollutant	Potential effect on health and the environment
Particulate Matter (PM ₁₀ and PM _{2.5})	<p>Short-term and long-term exposure to ambient levels of particulate matter are consistently associated with respiratory and cardiovascular illness and mortality, as well as other ill-health effects. The associations are believed to be causal. It is currently not possible to discern a threshold concentration below which there are no effects on the whole population's health.</p> <p>PM₁₀ roughly equates to the mass of particles less than 10 micrometres in diameter that are likely to be inhaled into the thoracic region of the respiratory tract. Recent reviews by the World Health Organisation (WHO) and Committee on the Medical Effects of Air Pollutants (COMEAP) have suggested exposure to a finer particles (PM_{2.5}), which typically make up around two-thirds of PM₁₀ emissions and concentrations) give a stronger association with the observed ill-health effects, but also warn that there is evidence that the coarse fraction between (PM₁₀-PM_{2.5}) also has some effects on health.</p>
Nitrogen oxides (NO _x including NO ₂)	<p>Nitrogen dioxide (NO₂) is associated with adverse effects on human health. At high levels, NO₂ causes inflammation of the airways. Long-term exposure may affect lung function and respiratory symptoms. NO₂ also enhances the response to allergens in sensitive individuals.</p> <p>High levels of NO_x can have an adverse effect on vegetation, including leaf or needle damage and reduced growth. Deposition of pollutants derived from NO_x emissions contribute to acidification and/or eutrophication of sensitive habitats leading to loss of biodiversity, often at locations far removed from the original emissions. NO_x also contributes to the formation of secondary particles and ground level ozone, both of which are associated with ill-health effects.</p>
Ozone (O ₃)	<p>Exposure to high concentrations may cause irritation to eyes and nose. Very high levels can damage airways leading to inflammatory reactions. Ozone reduces lung function and increases incidence of respiratory symptoms, respiratory hospital admissions and mortality.</p> <p>Ground level ozone can also cause damage to many plant species leading to loss of yield and quality of crops, damage to forests and impacts on biodiversity.</p>
Sulphur dioxide (SO ₂)	Causes constriction of the airways of the lung. This effect is

	<p>particularly likely to occur in people suffering from asthma and chronic lung disease. Precursor to secondary PM and therefore contributes to the ill-health effects caused by PM₁₀ and PM_{2.5}. Potential damage to ecosystems at high levels, including degradation of chlorophyll, reduced photosynthesis, raised respiration rates and changes in protein metabolism.</p> <p>Deposition of pollution derived from SO₂ emissions contribute to acidification of soils and waters and subsequent loss of biodiversity, often at locations far removed from the original emission.</p>
Benzene	<p>Benzene is a recognised human carcinogen which attacks the genetic material and, as such, no absolutely safe level can be specified in ambient air. Studies in workers exposed to high levels have shown an excessive risk of leukaemia.</p>
1,3-butadiene	<p>1,3-butadiene is also a recognised genotoxic human carcinogen, as such, no absolutely safe level can be specified in ambient air. The health effect of most concern is the induction of cancer of the lymphoid system and blood-forming tissues, lymphoma and leukaemia.</p>
Lead (Pb)	<p>Exposure to high levels in air may result in toxic biochemical effects which have adverse effects on the kidneys, gastrointestinal tract, the joints and reproductive systems, and acute or chronic damage to the nervous system.</p> <p>Affects intellectual development in young children.</p>
Polycyclic aromatic hydrocarbons (PAHs)	<p>Studies of occupational exposure to PAHs have shown an increased incidence of tumours of the lung, skin and possibly bladder and other sites. Lung cancer is most obviously linked to exposure to PAHs through inhaled air. Individual PAHs vary in their ability to induce tumours in animals or humans. The carcinogenic potency of some PAHs is unknown or uncertain. Individual PAHs have been classified by the International Agency for Research on Cancer, with three classified as “probably carcinogenic to humans”, including B[a]P, and three classified as “possibly carcinogenic to humans”.</p>

Annex 3 - Air Quality Management Areas

Yeovil - https://uk-air.defra.gov.uk/aqma/details?aqma_ref=168

Taunton – East Reach https://uk-air.defra.gov.uk/aqma/details?aqma_ref=189

Taunton – Henlade https://uk-air.defra.gov.uk/aqma/details?aqma_ref=198

Annex 4 – Useful Contacts and Links

<https://somerseairquality.wordpress.com/>

An up-to-date list of local authority contacts and links to national and local resources is maintained on the Somerset Air Quality website.