



To: Scrutiny Co-ordination Committee

Date: 5 November 2014

Subject: Air Quality

1 Purpose of the Note

- 1.1 Local authorities are required to put in place an Air Quality Action Plan to address areas of poor air quality. Coventry's current Plan was introduced in 2009 and requires updating to reflect national and local changes. This note sets the context in which the Plan will be reviewed and provides the opportunity for the Scrutiny Co-ordination Committee to identify any issues which officers and Cabinet Members should consider in developing the revised Plan.

2 Recommendations

It is recommended that the Scrutiny Coordination Committee:

- (i) Review the current position in relation to air quality in Coventry and the national framework within which it is regulated;
- (ii) Makes recommendations to officers and the Cabinet Members about the issues and priorities that should be addressed in the revision of the Plan.

3 Information/Background

- 3.1 The Environment Act 1995 introduced a national framework for managing air quality, requiring all local authorities to review air quality within their boundary. They must then assess the air quality against specified objectives for the pollutants concerned. In Coventry, the monitoring role is led by the Environmental Protection team in Regulatory Services.
- 3.2 The Act requires local authorities to put in place an Action Plan to address where monitoring shows that the national Air Quality Objectives (see Appendix 1) have been exceeded. Air quality is compromised through the burning of fossil fuels to generate heat or electricity and to power vehicles. Poor air quality is generated by transport vehicles, agriculture, from domestic sources and through industrial processes. The government set the Air Quality Objectives to reflect the importance they attach to public health and the environment, while balancing these objectives have been balanced against economic goals including growth.
- 3.3 There are considerable health and environmental impacts of poor air quality. In addition there is a detrimental financial impact where EU air quality standards are breached, as the EU is imposing a fine on the UK government (£400m). This fine may be passed to the respective local authorities, including Coventry, via provisions in part 2 of the Localism Act 2011.

- 3.4 Collectively these impacts demand that Coventry works with local partners to improve air quality through a comprehensive range of measures. Officers within the Environmental Protection team in Regulatory Services carry out air quality monitoring duties under the Environment Act 1995. It has been known for some time that there are several areas of the city that exceed the national and European limits for air quality, primarily but not exclusively due to excess traffic pollution.
- 3.5 Coventry City Council last implemented an Air Quality Action Plan in 2009 and much has changed since then. At a national level the planning policy framework has changed significantly, placing a high level of importance on sustainable development. At a local level the last five years has seen physical changes to the city's environment and infrastructure as well changes to both the Council, such as taking on responsibility for Public Health, and its partners, such as the role being taken by the Local Enterprise Partnership.
- 3.6 As a result, Coventry City Council needs to update its Air Quality Action Plan to make it fit for purpose. It also needs to take into account various other issues that are linked to good air quality, such as public health impacts and sustainable transport requirements.
- 3.7 This note provides the Scrutiny Co-ordination Committee with the opportunity to identify any issues which it feels should be considered in developing the revised Plan, particularly in how the Plan can support the delivery of a range of Council priorities which include public health, reducing health inequalities, improving the environment, promoting sustainable transport and achieving economic growth.

4 Impact of Poor Air Quality on Health

- 4.1 Poor air quality puts people's health at risk, damages the environment and places a burden on local health service providers. In 2009 the Committee on the Medical Effects of Air Pollution (COMEAP) estimated that air pollution in the UK caused 29,000 premature deaths. The Environmental Audit Commission (EAC) estimated that the cost to health from poor air quality in the UK ranges from £8.5 to £20 billion per annum which is equivalent to the economic cost of obesity. Recent research shows that vehicle emissions account for more deaths in the UK than road traffic accidents and passive smoking combined.
- 4.2 The young and old, and those with respiratory and circulatory problems are particularly at risk from poor air quality. Several studies in cities have shown that those living in close proximity to busy roads have higher risks than the rest of the population of suffering the symptoms of asthma and cardiovascular diseases. The Marmot report makes reference to the role poor air quality plays in compounding health inequalities. Furthermore, recent evidence suggests poor air quality can increase the risk of hypertension and pre-eclampsia in pregnancy.
- 4.3 Public Health England have more recently estimated the impact of poor air quality on mortality rates at a local authority level. For Coventry, there were an estimated 168 deaths in over 25 year olds in 2010 based on modelled estimates of PM_{2.5} concentrations. For comparative purposes Appendix 2 shows mortality rates in Coventry and Warwickshire (as compared to England) attributed to poor air quality as they compare to mortality from alcohol related-illnesses, smoking and obesity. Although not directly comparable, these figures are indicative of the public health importance of air quality as a cause of mortality. Smoking and alcohol mortality data refers to estimates for 2010-2012, and obesity-related mortality is based on the best available estimate. 6% of deaths in the UK in 1998 were attributable to obesity. It can be seen that air quality is associated with higher mortality estimates than obesity and alcohol-related conditions.

5 Air Quality Measurement in Coventry

- 5.1 In line with national requirements air quality is routinely measured in Coventry using a range of mechanisms. Areas of poor air quality are dealt with using local mechanisms implemented through the Local Air Quality Management (LAQM) regime. The role of the review and assessment process is to identify all those areas where Air Quality Objectives are being, or are likely to be exceeded. Where exceedances occur the Council is required to declare an Air Quality Management Area (AQMA). In Coventry, the national Air Quality Objectives for NO₂ were not met within the statutory timeframe and therefore a citywide AQMA was declared in 2009.
- 5.2 Further reporting in January of this year has included modeling using national, regional and local data to identify likely areas of poor air quality. The main transport corridors to the North and North East (linked to M6) are areas identified as being most likely to exceed the NO₂ standard. The report (brief extract included as appendix 3) provides some indication of worsening air quality in Coventry and confirms that the city-wide AQMA needs to remain in place. The Council are therefore required to produce an updated Air Quality Action Plan to demonstrate how we intend to work towards meeting the Air Quality Objectives in the city. Many of the actions identified to reduce the levels of Nitrogen Dioxide will relate to existing Council policies and strategies, particularly the Local Development Plan, which is undergoing public engagement in September and October 2014, and the Local Transport Plan, prepared in collaboration with Centro and other partners.

6 West Midlands Action to Improve Air Quality

- 6.1 Coventry City Council is a member of the West Midlands Air Pollution Group which acts as a strategic forum to identify best practice in the field of air quality management; to promote the co-ordination of Air Quality Action Plans and their delivery; and to work together to deliver the West Midlands Local Transport Plan air quality target.
- 6.2 Outside of London, the West Midlands suffers the most extensive exceedances of the EU limit for NO₂ in the UK.
- 6.3 Research demonstrates that emissions from road transport are the principal source of elevated concentrations of NO₂. Therefore seven West Midlands local authorities have formed a partnership, the Low Emissions Towns and Cities Programme (LETCP), to produce regional air improvement strategies, in part funded through DEFRA. Through the LETCP a range of initiatives have been taken forward over recent years. Within this Coventry has led on the development of best practice guidance on the use of public sector procurement to reduce vehicle emissions and good practice in planning and designing developments.

7 Local Action to Improve Air Quality

- 7.1 Coventry City Council is supporting the delivering of over £100m of transport schemes which will have a direct and positive impact on Air Quality Objectives. Some of the projects will help to improve reduce congestion and queuing traffic which will improve air quality.
- **Cycle Coventry** – The construction of new cycle routes, cycle parking and the offer of cycle training has encouraged more people to take up cycling which is a zero emission mode of travel.
 - **Pinch Point programme** – Two packages of junction improvements will reduce queuing traffic accessing major trip attractors such as the hospital, the University of Warwick and Westwood Business Park.

- **Investment in Urban Traffic Management Control (UTMC)** – The City Councils UTMC system uses hi-tech traffic management technologies to improve the efficiency of traffic flows to reduce road congestion which supports reductions in vehicle emissions.
- **Junction of A45 / Kenilworth Road.** This extremely busy junction has recently been upgraded which has reduced queuing traffic and significantly improved crossing facilities for pedestrians and cyclists.
- **Ring road junction 1** – The project will improve traffic flows at the junction of Foleshill Road and the ring road, and improve crossing facilities for pedestrians and cyclists between the city centre and canal basin.
- **Public Realm** – This on-going project has transformed parts of the city centre which has improved the environment for more sustainable travel such as walking and cycling.
- **NUCKLE** – The introduction of improved rail services on the busy Coventry – Nuneaton commuter corridor will help encourage a reduction in car use.
- **Whitley Bridge** - The construction of a new road bridge at Whitley will reduce queuing traffic exiting the Jaguar Land Rover site thereby reducing emissions from cars.
- **Friargate bridge** – The new bridge deck over the ring road will improve the environment for walking, cycling and public transport which are less damaging to the environment.
- **Coventry Station Access scheme** - This project will help encourage the take-up of rail travel, which is less polluting than cars use, by improving access to the station and the surrounding station area environment.
- **Electric Vehicles** – There is an on-going trial of Low emissions vehicles within the City Councils fleet such as electric cars and hybrid technology.
- **Park and Ride South** – This service helps to reduce overall car use by encouraging the use of buses for part of the journey. The service currently uses electric buses.
- **M6 Active Traffic Management** - The City Council is working with Highways Agency to promote active traffic management on the M6 which can have a major direct impact on air quality.
- **Tollbar Island** – The City Council is supporting the delivery of the Highways Agency's scheme. The junction previously suffered from high concentrations of poor air quality due to queuing traffic on the A46 and A45.

8 What More Can be Done to Improve Air Quality?

- 8.1 Air quality and the action needed to improve it are massive issues both UK and worldwide, however, rather than being seen as an insurmountable problem there are potentially huge development and new employment opportunities to be realised.
- 8.2 There is the need to scope for further improvements through the Air Quality Action Plan such as:
- It is important that planning processes consider the impact of developments on transport requirements for a population and on their exposure to fumes (e.g. proximity of houses to roads and provision of footpaths, cycle parks etc. for example). There is a reference to air quality in the draft Local Plan but greater recognition of the impact of the 'hidden killer' needs to be provided. This will be considered further as the Local Plan develops, along with the potential for supplementary planning documents.
 - The developing transport policy and strategy recognises the links between transport, air quality, health objectives, active travel and road congestion. Apart from measures to directly manage congestion and encourage use of sustainable modes of transport, the strategy is to pursue the uptake of low emission vehicles and alternative fuels such as electric, hydrogen and hybrid technologies. This will help to reduce pollution at the point of emission, thereby improving air quality at the local level.
 - Publicity campaigns aimed at raising awareness of poor air quality and the behaviour change required to improve it (such as walking, cycling and use of public transport)

- Further advances and adoption of clean vehicle technology, including cleaner fuel and low emission vehicles (including retrofitting abatement equipment on vehicles)
- The use of public and private sector procurement processes
- Provision of incentives for low emission vehicles and measures to penalise the use of high emission vehicles
- The designation of low emission zones and reducing traffic congestion hot-spots
- The City has a history of ingenuity stemming from the 1860s with James Starley inventing and manufacturing bicycles in Coventry. That inventiveness is being continued through Coventry pioneering itself as an “Electric City”, developing an industry for the development and use of smart transport technologies and low emission vehicles. A roadmap for the delivery of Electric City is being established including a funding strategy. The project is supported by a consortium of partners including CENTRO, MIRA, Coventry University and a number of Coventry and Warwickshire based OEMS and technical companies

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Air Quality Strategy Objectives

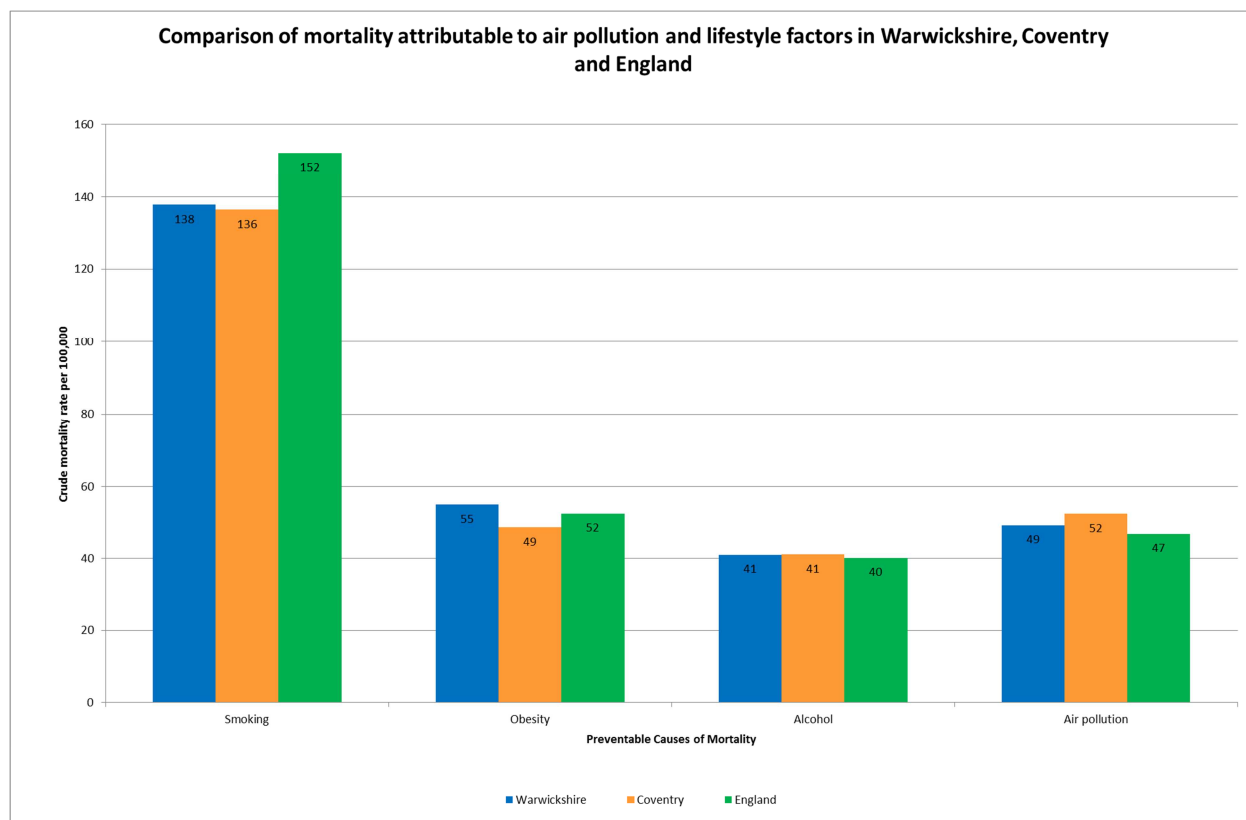
There are a range of pollutants that can impact on air quality including oxides of nitrogen (NO_x), and particulates (PM₁₀ and PM_{2.5}). The National Air Quality Objectives for NO_x and PM₁₀ which the UK must comply with are summarised below. These objectives are policy targets based on the effects of each pollutant on health. An exceedance occurs when the maximum concentration of the pollutant is greater than the required target, or when there are more than a permitted number of times a target is reached within a specific timescale. Although there is a limit specified for the EU in terms of particulates, the World Health Organisation (WHO) have determined that there is no actual safe level for particulates as any level could cause health issues.

Particulate matter is categorised on the basis of the size of the particles, e.g. PM₁₀ comprises particles of less than 10µm. The biggest source of particulates in the UK is transport. Particulates are thought to have the largest impact on mortality as they can penetrate deep into the lungs with smaller particulates (PM_{2.5}) having a stronger association with ill health.

Oxides of nitrogen (NO_x) are produced by the combustion process and road transport is the main source. Nitrogen dioxide (NO₂) irritates and causes inflammation of the airways meaning that long term exposure can affect lung function. NO₂ also enhances the response to allergens in some people.

| Pollutant | Objective | Measured as | Compliance Date |
|------------------------------------|---|--------------|-----------------|
| Nitrogen dioxide | 200 µg/m ³ Not to be exceeded more than 18 times per year | 1 Hour mean | 01-Jan-10 |
| | 40 µg/m ³ | Annual Mean | 01-Jan-10 |
| Particles (PM₁₀) | 50 µg/m ³ Not to be exceeded more than 35 times per year | 24 Hour Mean | 31-Dec-04 |
| | 40 µg/m ³ | Annual Mean | 31-Dec-04 |

Mortality Estimates



Sources:

Local Tobacco Control Profiles for England (2010-2012):

<http://www.tobaccoprofiles.info/>

Obesity and Mortality, Public Health England 2014 (estimates from 1998):

http://www.noo.org.uk/NOO_about_obesity/mortality

Local Alcohol Profiles for England (2010-2012)

<http://www.lape.org.uk/LAPprofile.aspx?reg=X25002AE>

Estimating local mortality burdens associated with particulate air pollution in 2010, Public Health England 2014

http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317141074607

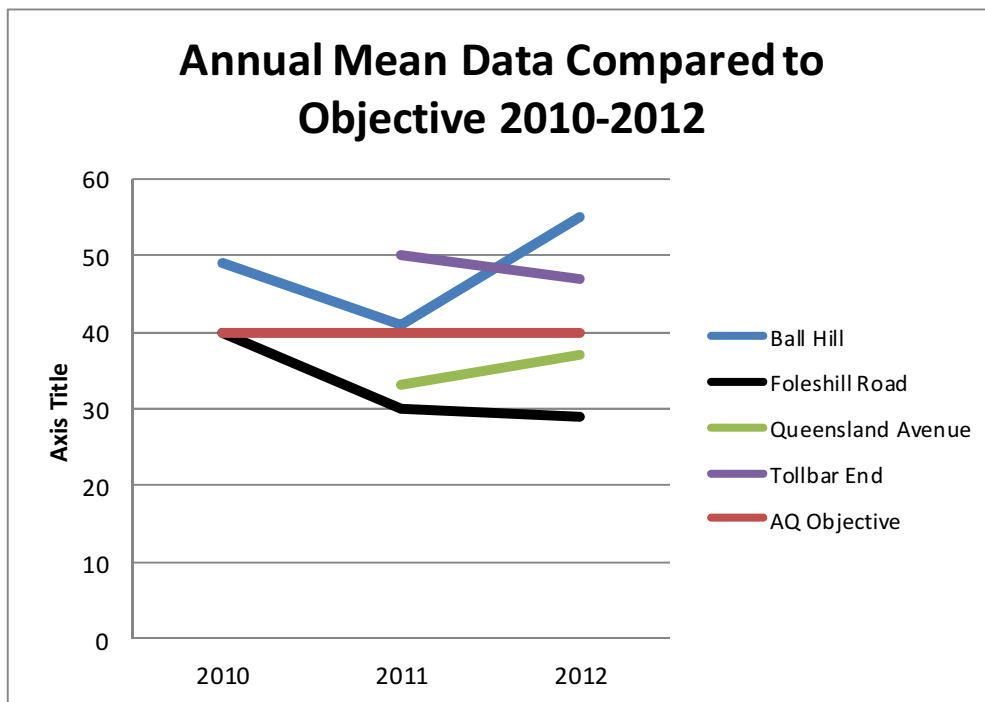
Extracts from Air Quality Monitoring Report (January 2014)

Automatic Monitoring

The city has 5 automatic monitoring units, all of which measure nitrogen dioxide. All 5 sites are located on roadsides and have remained unchanged since the declaration of the city wide AQMA in 2009. For some of the past 3 year period data capture rates have been below the 85% required by DEFRA due to a number of technical difficulties with the units. However it provides an indication of whether the air quality in the city is improving.

A summary of the annual mean data for each station in the past 3 years is given below. Where no data is reported (-) technical difficulties resulted in significant data losses. Hales Street was set up in 2012 but was not running in this period due to on-going power faults.

Annual Mean Nitrogen Dioxide at Automatic Units 2010-2012

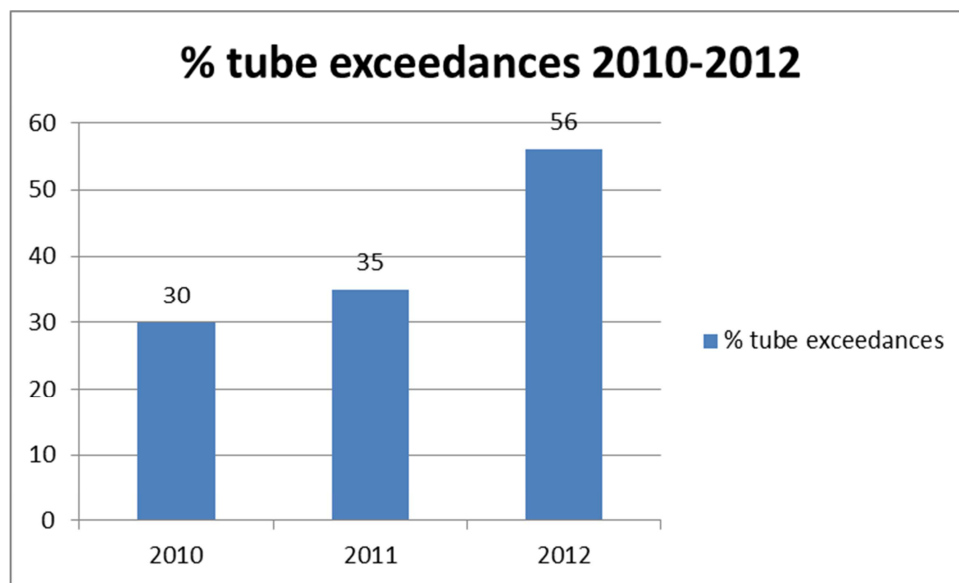


Non-Automatic Monitoring

The Council operates a network of diffusion tubes in the city: in 2010 80 tubes; in 2011 127 tubes; and in 2012 118 tubes.

In summary, the % of exceedances in the period of the total number of tubes with a data capture rate of equal to/greater than 25% are shown below.

Summary of Diffusion Tube Data in Period



Areas of exceedence

At the end of 2012 only 2 automatic unit locations exceeded the annual mean air quality objective – Ball Hill and Tollbar.

Tollbar is currently subject to a major Highways Agency scheme which will see a major change to the road network and the volume and flow of traffic. This has been considered by the Highways Agency as part of the scheme's approval. The monitoring unit was switched off in July 2013 and will be re-located once the scheme is complete depending on public exposure.

The diffusion tube data shows a different picture of increasing nitrogen dioxide levels across the city, with a larger percentage of tubes exceeding the air quality objective. It should be noted that in terms of accuracy the automatic units produce more accurate and valid data, whilst the diffusion tube results are purely indicative at an accuracy of +/- 25%. However, this aside the diffusion tube data does indicate a worsening picture of air quality in the city.

All areas represent main road transport corridors in the city and as such generate traffic related pollution.

It should be noted that in some locations the annual diffusion tube results exceed $60\mu\text{g}/\text{m}^3$. DEFRA indicate that where this is the case it is likely that the hourly mean NO_2 objective will be exceeded. As diffusion tubes measure data in terms of months and an annual mean, it is not possible to clarify this from the data available.

The monitoring data indicates that the city wide Air Quality Management area needs to remain in place.

Airviro Modelling

Figure 8 shows the results of this modelling. The main transport corridors to the North and North East of the city are highlighted as those most likely to exceed the annual mean nitrogen dioxide air quality objective. This is likely to be linked to the location of the M6 motorway to the North of the city, as vehicles use nearby routes to access the M6.

There are also areas of exceedance to the South of the city that correlate with access to the A45, though exceedance on the local adjoining roads is not as extensive.

Individual junctions are also highlighted such as Radford Road and Hall Green Road which highlight areas of local congestion.

The modelled results have been compared to the measured results in the period 2010-2012. The automatic unit results indicate that only at Tollbar and Ball Hill is the objective exceeded. Foleshill Road unit does not show an exceedance. However, the diffusion tubes located on the main transport corridors do correlate with the modelling results to a greater extent. The tubes do provide a more spatial indication of the areas of exceedance rather than a monitoring unit at a specific location.

Map showing modelled areas of NO₂ exceedance

