



Air Quality Action Plan: Warwick District Council

June 2015



Experts in air quality
management & assessment

Document Control

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Executive Summary

This Air Quality Action Plan sets out seven broad actions and for each of them, specific measures have been included. The actions are as follows:

- Action 1: Promote Smarter Travel Choices;
- Action 2: Actively promote low emission vehicles and supporting infrastructure;
- Action 3: Use the procurement system to ensure that air quality is a consideration within contracts for Warwick District Council;
- Action 4: Use the planning system to ensure that air quality is fully considered for new development;
- Action 5: Use traffic management to reduce emissions in locations with AQMAs;
- Action 6: Work with Public Health colleagues to inform the public about health impacts of Air Pollution and how they can change behaviour to reduce emissions and reduce exposure; and
- Action 7: Continue to monitor and assess air quality in line with Government guidance on Local Air Quality Management.

The Actions are evaluated in terms of their impacts on:

- air quality;
- cost;
- feasibility or practicability; and
- timescale for implementation.

An implementation plan is outlined, which includes targets for each measure and a time scale for implementation. Ultimately the delivery of this action plan is dependent on adequate levels of resourcing, both for capital costs and staffing and suggestions of funding sources for specific measures have been included in the evaluation.

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1 Introduction and Aims of the Plan

- 1.1 It is now well documented that air pollution adversely affects human health. Poor air quality has both long- and short-term health impacts, particularly for respiratory and cardiovascular health, including increased hospital admissions and premature death. The impacts are not distributed equally, with the effect on life expectancy being greatest for the elderly and those with pre-existing heart and lung conditions¹. The World Health Organisation estimates that some 80% of outdoor air pollution-related premature deaths worldwide are due to heart disease and strokes, while 14% of deaths are due to chronic obstructive pulmonary disease or acute lower respiratory infections and 6% of deaths are due to lung cancer. The majority of health evidence relates to particulate matter (PM), but evidence associating nitrogen dioxide (NO₂) with health effects has strengthened substantially in recent years (Committee on the Medical Effects of Air Pollution, 2015).
- 1.2 Within Warwick District air quality is generally good. However, there are locations where pollutant levels are high, with the highest levels of pollution being experienced along the narrow congested street canyons (i.e. roads with properties close to the road on either side of the street) in Warwick and Leamington Spa. Kenilworth has lower levels of pollution but has still experienced exceedences of relevant objectives in recent years.
- 1.3 This Action Plan aims to reduce nitrogen dioxide concentrations, as this is the pollutant for which Warwick District Council is not currently achieving relevant air quality objectives. There is a growing body of evidence of the health effects of both nitrogen dioxide and particulate matter and it is important that measures that reduce nitrogen dioxide do not inadvertently increase emissions of particulate matter, as there is no threshold for health effects of particulate matter.
- 1.4 This Action Plan is published in response to both local and national calls for action on air pollution. Locally, there has been recent political pressure to ensure that improvements in air quality are forthcoming. At a national level, the Environmental Audit Committee published its third report on Air Quality in December 2014, which concluded that recommendations from the previous two reports had not been implemented. It concluded that the Government must act urgently to:

Meet EU nitrogen dioxide targets as soon as possible;

Engage with local authorities to establish best practice in tackling air pollution across the UK;

Adjust planning guidance to protect air quality in local planning and development; and

Examine fiscal and other measures to gradually encourage a move away from diesel vehicles towards low emission option.

¹ Within Warwick District it is estimated to account for up to 64 premature deaths per annum attributable to particulate matter PM_{2.5}
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRCE_010.pdf

- 1.5 Road transport is the main source of emissions in relation to nitrogen dioxide, and to a lesser extent for particulate matter, with diesel cars having the highest sector of emissions within the AQMAs. In particular stop-start traffic (i.e. acceleration and deceleration) results in higher emissions.

- 1.6 This revised Air Quality Action Plan aims to reduce air pollution across Warwick District Council, focussing on the AQMAs, in order to reduce the health impacts of current concentrations. It sets out how Warwick District Council, and its partners will act to reduce emissions of relevant pollutants. As such, not only will it address nitrogen dioxide concentrations but also acknowledge health risks from particulates. Even though particulate concentrations are below the national objectives, all actions will help in securing further improvements.

2 Context of Air Quality and Transport within Warwick District Council

Air Quality

- 2.1 Under Part IV of the Environment Act 1995, Local Authorities are required to review and assess air quality in their areas and to report against objectives for specified pollutants of concern, to the Department for Environment, Food and Rural Affairs (Defra). For each air quality objective in the Regulations, local authorities have to consider whether the objective is likely to be achieved. Where it appears likely that the air quality objectives are not being met, the authority must declare an Air Quality Management Area (AQMA). Following the declaration of an AQMA, the authority must then develop an Air Quality Action Plan (AQAP) which sets out the local measures to be implemented in pursuit of the air quality objectives. Prompted by the Review and Assessment process, Air Quality Management Areas have been declared in Warwick, Leamington Spa and Kenilworth and an Air Quality Action Plan published in 2008 outlining 16 measures to improve air quality within the AQMAs.
- 2.2 The Council currently has 5 Air Quality Management Areas (AQMAs) declared for nitrogen dioxide (NO₂). These are described below and shown in Figure 1 to Figure 5.
- AQMA No. 2: Warwick centre including properties on Jury Street, High Street, Bowling Green Street, Theatre Street, Northgate, The Butts, Smith Street, St Nicholas Church Street and Saltisford
 - AQMA No. 7: Warwick, Coventry Road near junction with Coten End
 - AQMA No. 1: Leamington Spa. South Town centred on High Street, Clements Street and Bath Street
 - AQMA No. 4: Kenilworth, part of Warwick Road
 - AQMA No.5: Kenilworth, part of New Street
- 2.3 All of the AQMAs have been declared for nitrogen dioxide, with the main source of emissions being from road traffic (particularly where congested), often exacerbated by a lack of dispersion due to surrounding buildings.

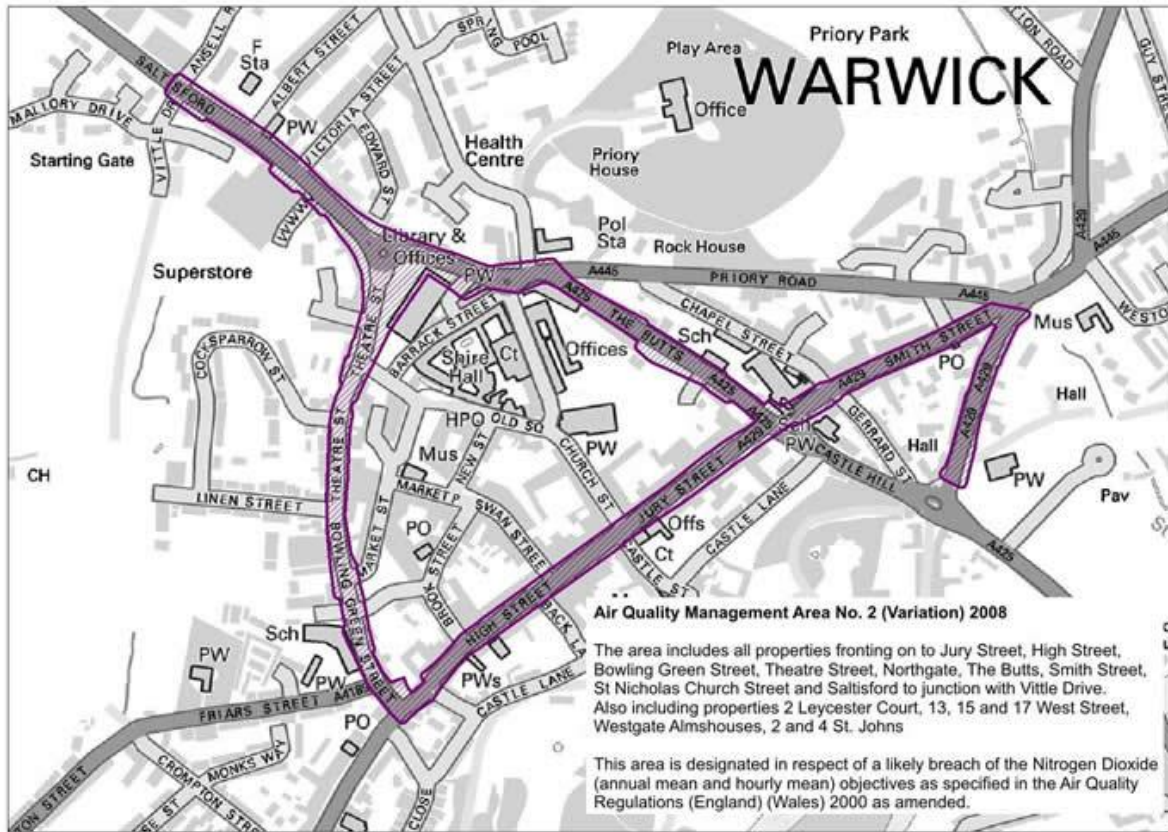


Figure 1: AQMA declared in Warwick

2.4 The Warwick AQMA (AQMA No.2) experiences the highest concentrations of nitrogen dioxide of all the AQMAs, particularly along Jury Street, where a real time analyser is situated. There is no strong evidence for nitrogen dioxide concentrations having reduced at this monitoring location over the last 5 years, although diffusion tube data do suggest that there has been a reduction in concentrations in Warwick. Data are published annually as part of the Review and Assessment process (Warwick District Council, 2014), (Warwick District Council, 2013), (Warwick District Council, 2012).

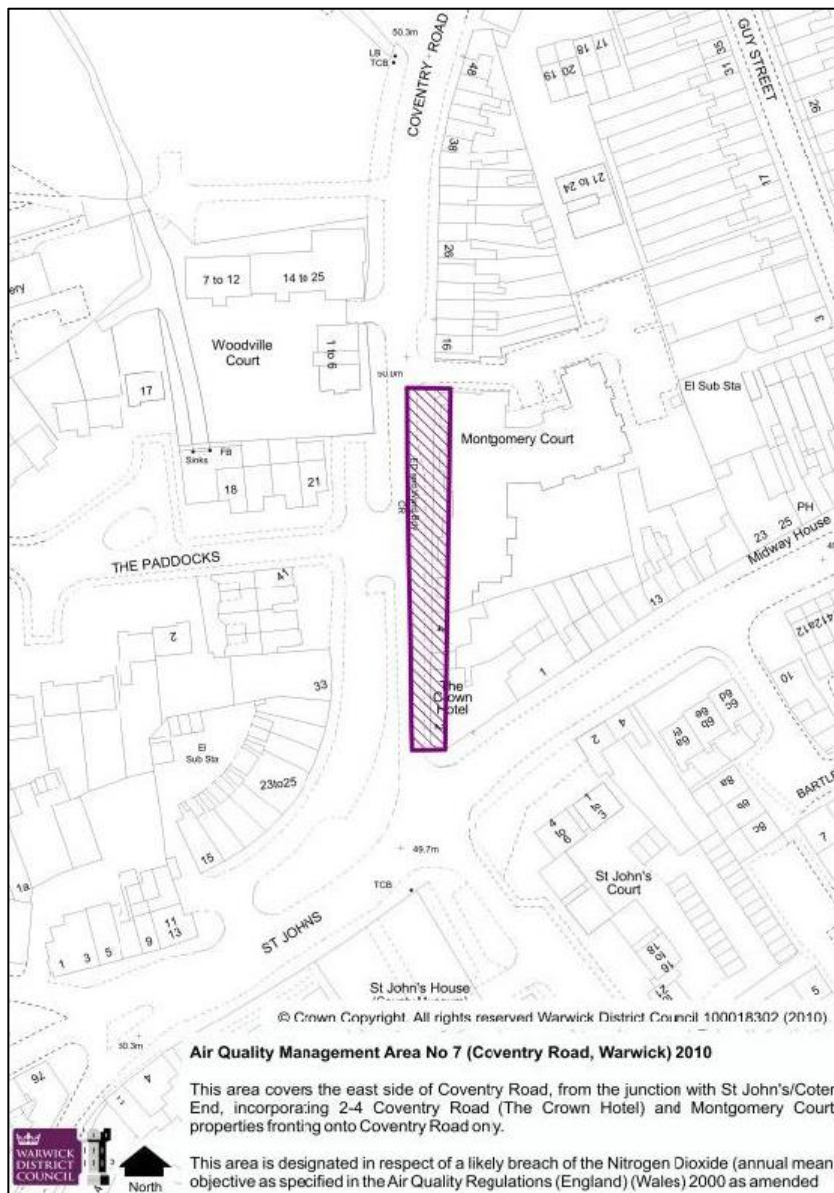


Figure 2: AQMA declared in Coventry Road, Warwick

2.5 Coventry Road in Warwick was declared in 2010 (AQMA No.7), following a Detailed Assessment based on monitoring along Coventry Road. Exceedences are apparent where properties lie close to the carriageway such as Montgomery Court and Woodville Court. There are 6 diffusion tubes along Coventry Road, with 2 of them having had exceedences over many years (Crown Hotel and Montgomery Court). There is evidence that concentrations have reduced over the last 5 years.

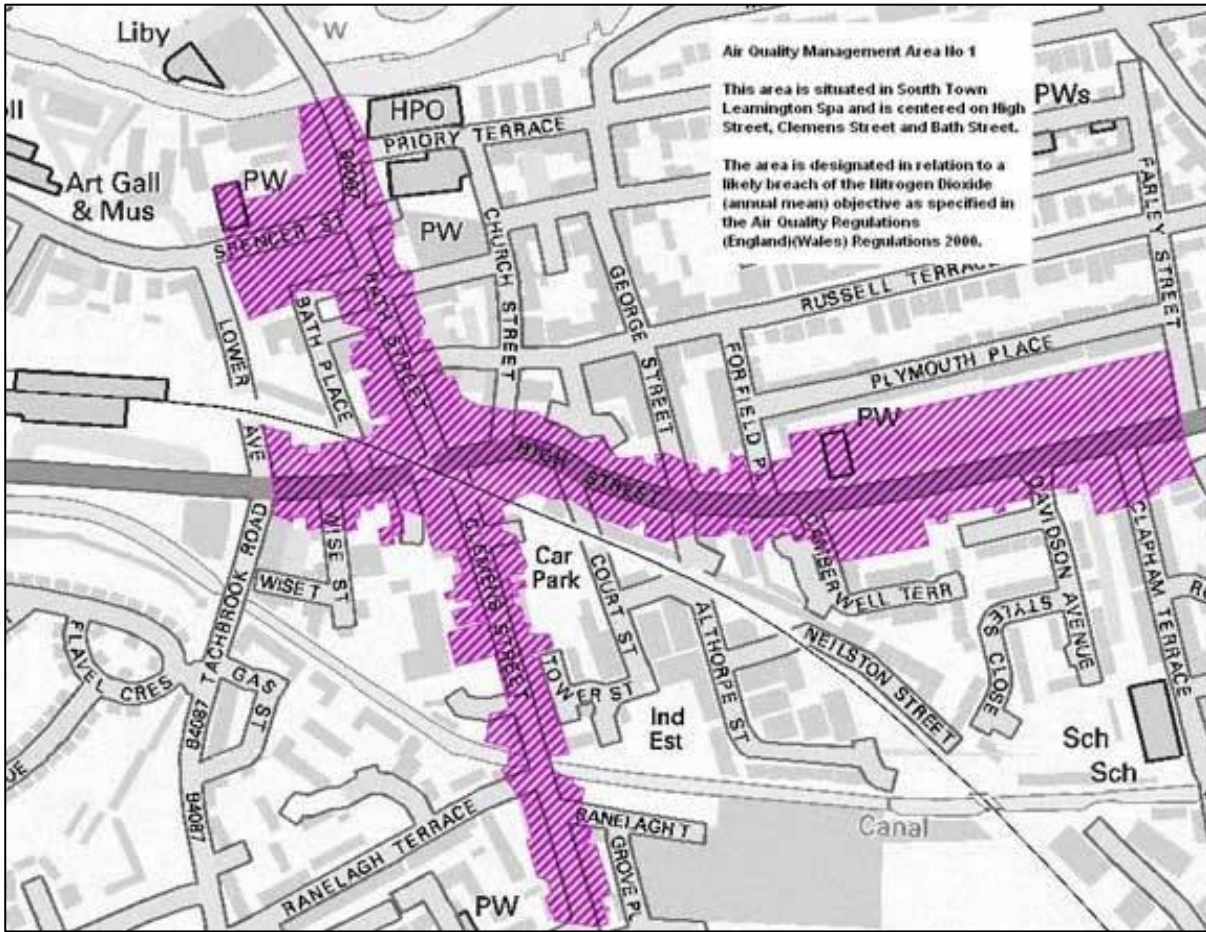


Figure 3: AQMA declared in Leamington Spa

2.6 The Leamington Spa AQMA (AQMA No.1) is geographically smaller than in Warwick with exceedences of the objectives along Wise Street, Tachbrook Road, Old Warwick Road and Bath Street. As in Warwick, road traffic is the main source of local emissions giving rise to the exceedences. There is some evidence for concentrations reducing over the last 5 years in Leamington Spa.

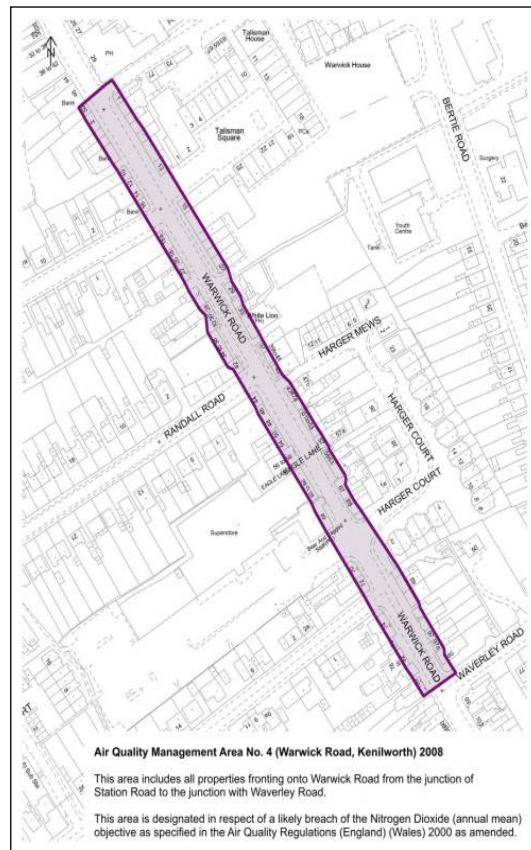


Figure 4: AQMA declared in Warwick Road, Kenilworth

- 2.7 The AQMA in Warwick Road, Kenilworth (AQMA No.4) currently has 5 diffusion tubes in place along its length. There have been no exceedences of the objectives since 2010 and there is evidence that concentrations are reducing. For this reason, the AQMA has not been included explicitly within this action plan, although the measures proposed should also contribute to reductions of emissions in Kenilworth.

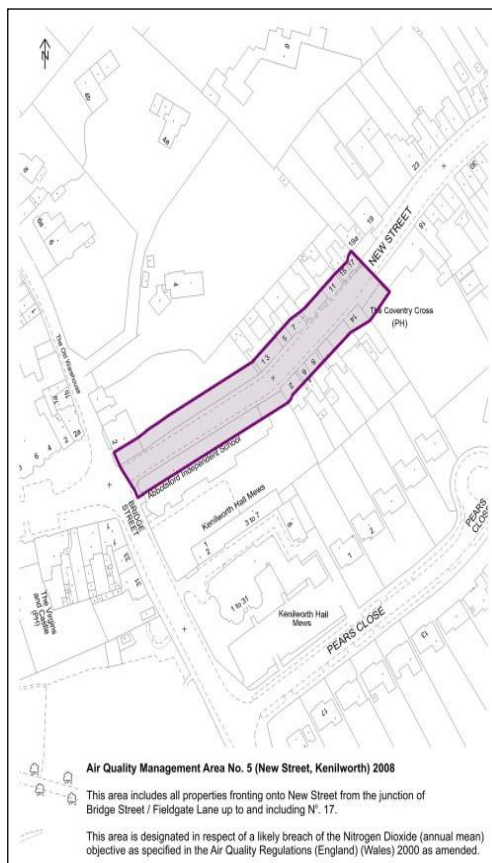


Figure 5: AQMA declared in New Street, Kenilworth

- 2.8 The AQMA declared in New Street Kenilworth (AQMA No.5) has 4 diffusion tubes along its length. Two of these sites are comfortably within the objectives, with the other 2 very close to the objective and above in 2010.

Source apportionment

- 2.9 The overall contribution made by emissions of nitrogen oxides from motor vehicles, which includes both nitric oxide and nitrogen dioxide, to measured nitrogen dioxide concentrations depends on a number of factors, including how the emissions react in the atmosphere; in particular the reaction of nitric oxide with ozone, and the amount that is emitted directly as nitrogen dioxide (primary NO₂). Figure 6 shows the contribution from different vehicle types to total predicted annual mean nitrogen dioxide concentrations at each of the diffusion tube monitoring locations where the air quality objective was being exceeded within the Warwick AQMA in 2011. Diesel cars and diesel light goods vehicles make the largest contribution from traffic.

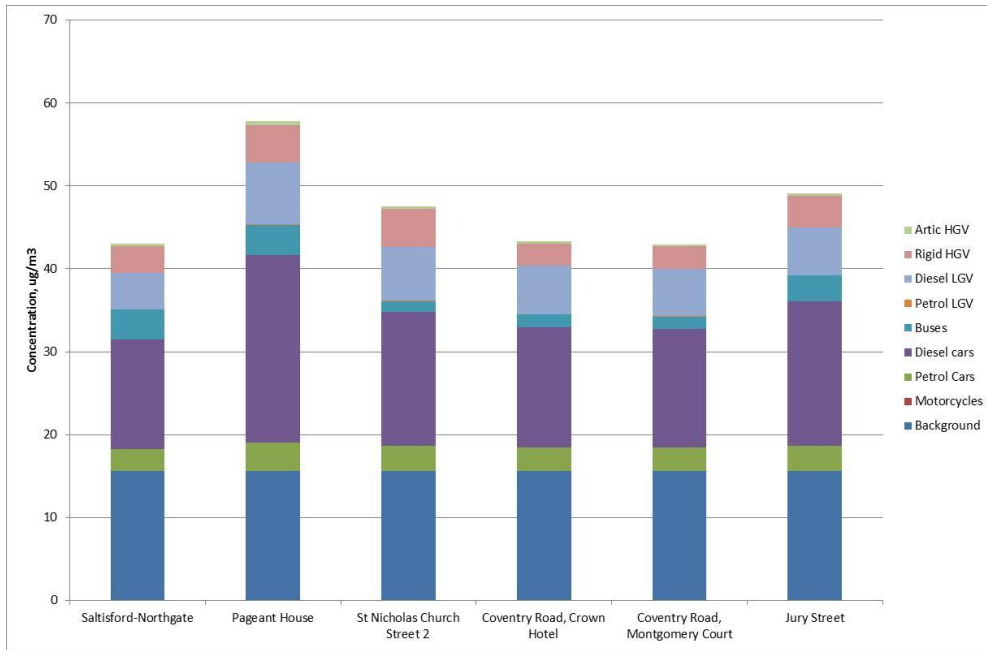


Figure 6: Source Apportionment at of Nitrogen Dioxide at Diffusion Tubes in Warwick (Ricardo-AEA, 2013)

2.10 Figure 7 shows the contribution from different vehicle types to total predicted annual mean nitrogen dioxide concentrations at each of the diffusion tube monitoring locations which are exceeding the air quality objective within the Leamington Spa AQMA in 2011. Diesel cars make the largest contribution from traffic at the High Street, Wise Street and Tachbrook Road monitoring sites. Buses make the largest contribution at the Bath Street and Spencer Street sites

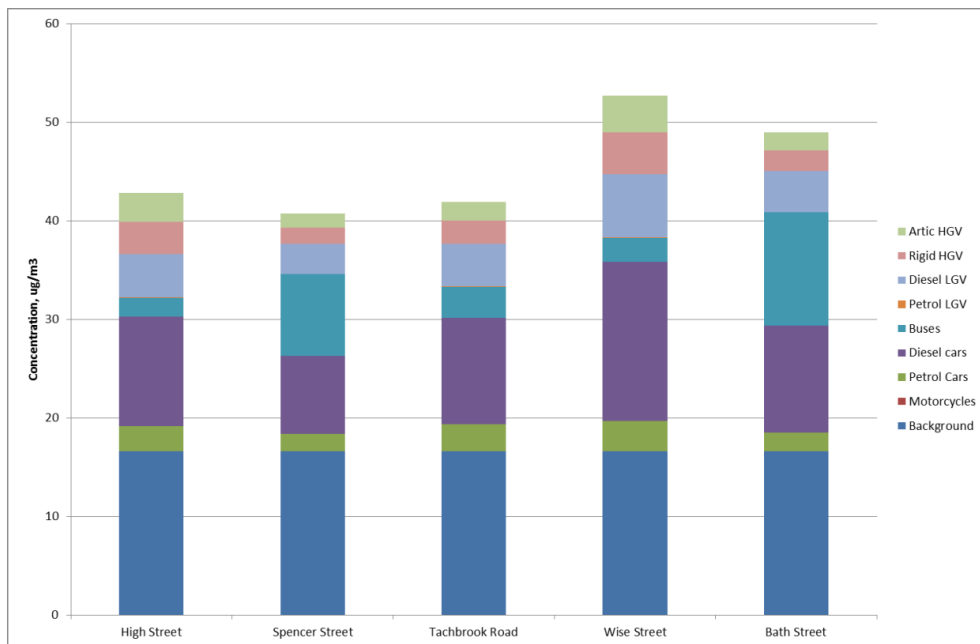


Figure 7: Source Apportionment of Nitrogen Dioxide at Diffusion Tubes in Leamington Spa (Ricardo-AEA, 2013)

Air Quality Action Plan 2008

- 2.11 The 2008 Air Quality Action Plan (Warwick DC, 2008) sets out 16 actions grouped in the following themes:
- specific proposals related to the AQMAs;
 - non-specific proposals for improving air quality throughout the district;
 - vehicle emission reduction;
 - improvement in alternative transport/ public transport; and
 - other non-transport related measures.
- 2.12 The actions include large scale measures such as improvements to junctions 13, 14 and 15 of the M40, development of Intelligent Transport Systems (ITS) in Warwick and Leamington Spa, implementation of various elements of the LTP (to which the Action Plan was appended), as well as more indirect measures such as encouragement of School Travel Plans and the implementation of the Sustainable Freight Distribution Strategy etc..

Transport

- 2.13 Work undertaken for the Warwick and Leamington Spa Transport Strategy has identified a number of contributory factors which affect the existing and future performance of transport networks in the urban areas of Warwick and Leamington Spa. These factors are equally important for this Action Plan.
- 2.14 Census data show 61% and 57% of travel-to-work trips are undertaken by car as single passenger trips in Warwick and Leamington Spa respectively (54% average in England and Wales). In addition, the proportion of households in both Leamington Spa and Warwick owning one or more cars exceeds 75% and 81% respectively, compared to 74% nationally.
- 2.15 Bluetooth data extracted from mobile phones and satnav technology have been used and show that approximately 69% to 74% of car trips in the peak periods are generated from within the Warwick and Leamington Spa urban areas. Influencing local travel behaviours will therefore need to be a key priority. A very high proportion of these trips are short distance local trips. One in four journeys to work are less than 2 km, with a further one in five being in the 2 km to 5 km range (Census 2011 Journey to Work data). A key challenge is therefore to encourage local residents to consider use of sustainable modes for short distance trips. Providing cycling and walking infrastructure, together with the associated promotional activities to encourage greater uptake of active travel modes, will be a key challenge looking forward. Ensuring cycle and walking routes are safe and well connected for users will be fundamental in achieving mode shift from car for shorter journeys.

- 2.16 Around 30% of pupils attending local authority schools in Warwick and Leamington Spa do so by car. Car use increases in the private schools to around 60%. Traffic counts have shown that traffic during the school holidays was 23% lower in the AM peak period (7-10 am). The differences are most evident on Banbury Road, Myton and Hampton Road where three large schools are located in close proximity. It is evident from historic traffic surveys comparing school term-time and non-term-time traffic levels that school traffic is a contributor to local peak hour congestion during term times.
- 2.17 Various sources of evidence suggest that key deterrents to greater use of public transport, cycling and walking are:
- perceived and actual safety concerns associated with alternative modes (particularly walking and cycling);
 - perceived high costs of bus travel;
 - lack of journey time competitiveness against the car;
 - alignment with life style/ household travel requirements;
 - lack of information about what realistic alternatives exist; and
 - poor quality infrastructure to make travel by these modes attractive.
- 2.18 There is a plentiful supply of relatively low cost or free private and public long-stay parking within Warwick and Leamington Spa. This combined with a plentiful supply of free parking provided by local employers (conservative estimate of 13,000 spaces) provides ideal conditions for high car dependency. Achieving modal shift will require both trip attractors and generators to implement effective sustainable travel behaviours. Encouraging more businesses to promote sustainable travel behaviours will be a key challenge.

3 Existing Policies and Strategies

Warwickshire Local Transport Plan

3.1 The third Warwickshire Local Transport Plan (LTP3) came into effect on 1st April 2011. LTP3 sets out the transport policies and strategies for the County for period 2011-2026. The objectives of the LTP are as follows:

1. To promote greater equality of opportunity for all citizens in order to promote a fairer, more inclusive society;
2. To seek reliable and efficient transport networks which will help promote full employment and a strong, sustainable local and sub-regional economy;
3. To reduce the impact of transport on people and the [built and natural] environment and improve the journey experience of transport users;
4. To improve the safety, security and health of people by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health;
5. To encourage integration of transport, both in terms of policy planning and the physical interchange of modes; and
6. To reduce transport's emissions of carbon dioxide and other greenhouse gases, and address the need to adapt to climate change.

3.2 The LTP contains an Air Quality Strategy which focuses on road transport as the main contributor of polluting emissions in Warwickshire, and presents an Air Quality Action Plan for reducing these emissions which includes actions such as improving air quality through partnership working, and using information and education to promote the use of public transport, walking and cycling as alternative methods of transport to the private car, in parallel with changing travel behaviour initiatives such as travel plans for schools and workplaces. Many of the schemes and initiatives outlined in the Action Plan have common, interlinked approaches, which complement the wider objectives of the LTP. The vision of the County Council's Air Quality Strategy is: *'To take a proactive approach to maintaining and improving air quality within the County where transport is causing unacceptable levels of air pollution, in order to improve health and quality of life for all.'*

3.3 The 2008 Air Quality Action Plan also forms part of the LTP (Appendix C contains Action Plans for Warwickshire).

Warwick and Leamington Spa Transport Strategy

- 3.4 The evidence and the option assessment, including feedback from stakeholders, suggests that the future transport strategy for Warwick and Leamington Spa should consist of:

Comprehensive area wide improvements to walking and cycling infrastructure and way-finding information;

Targeted road space re-allocation to prioritise movement of pedestrians, cyclists, car share and public transport users;

Local authority led Smarter Choices and Travel Planning programme;

Targeted bus stop infrastructure upgrades on key public transport corridors to improve passenger experience, including provision of real time information;

Introduction of Park and Ride north and south of Warwick and Leamington Spa as previously identified by WCC;

Consideration of other complementary measures which improve the local environment for pedestrians and cyclists which could include lower speed limits and regulated parking; and

Medium-term consideration of harder demand management measures such as Workplace Parking Levy.

Warwick Local Plan

- 3.5 Warwick District Council is preparing a new Local Plan for Warwick District, which will guide the area's future development up to 2029. The Local Plan was submitted on 30 January 2015 for examination and the outcomes of this initial examination are currently being considered. The draft Plan includes policies on Transport including TR2 Traffic Generation which states:

“All large scale developments (both residential and non-residential) which result in the generation of significant traffic movements, should be supported by a Transport Assessment and where necessary a Travel Plan, to demonstrate practical and effective measures to be taken to avoid the adverse impacts of traffic. Any development that results in significant negative impacts on health and wellbeing of people in the area as a result of pollution, noise or vibration caused by traffic generation will not be permitted unless effective mitigation can be achieved.

Development will not be approved that results in a significant increase in traffic and results in associated measures to facilitate this increase in traffic which harms the significance of the heritage assets, unless appropriate mitigation can be achieved, or be justified in accordance with national planning policy. Any development that results in significant negative impacts on air quality within identified Air Quality Management Areas or on the health and wellbeing of people in the area as a result of pollution should be supported an

air quality assessment and, where necessary, a mitigation plan to demonstrate practical and effective measures to be taken to avoid the adverse impacts".

- 3.6 The Plan also seeks to ensure that investment is made into Low Emission Vehicle Infrastructure. Furthermore, *“Unless it can be demonstrated that it would undermine the viability of development, recharging points should be provided in line with the Low Emission Strategy Guidance for Developers (April 2014) or subsequent revisions of this.”*
- 3.7 As part of the evidence base for the Local Plan, an air quality assessment was undertaken which used the transport modelling undertaken to investigate the impacts of the proposals, which had already been undertaken using the S-Paramics model. The work used the outputs of the S-Paramics traffic model, to assess air quality impacts (in terms of concentrations) on the AQMAs in Warwick and Leamington Spa. Two scenarios, the ‘Revised Allocation’ and the ‘Revised Allocation Without Warwick Town Centre Improvements’, were compared with the ‘Reference’ scenario.

Warwick Town Centre Area Action Plan

- 3.8 Warwick District Council in partnership with Warwickshire County Council, Warwick Town Council, Warwick Chamber of Trade and Warwick Society, are preparing a Town Centre Plan for Warwick. The first stage of the process was to identify the issues that need to be addressed within the Town Centre. The next stage of the process has been to consider a 'vision' for the town and how the issues identified can be addressed. The Partnership will commence work on a Draft Plan once the Warwick District Local Plan has been adopted². Many of its emerging proposals have been subsumed into the Local Plan.

LEZ Feasibility Study

- 3.9 A study was undertaken which focuses specifically on the potential for Low Emission Zones that might address the most polluted ‘hotspots’ that have been identified in Warwick, Leamington Spa and Kenilworth. The study examined LEZ designs that could be implemented (there are many types of low emission zones and low emission schemes) and developed the evidence base necessary to assist policy and decision makers in their consideration of the adoption of LEZs. Implementation of an LEZ in Warwick would mean that most of the owners of non-compliant vehicles would be required to replace them with vehicles meeting the required standards if they wish to gain access to the LEZ. The cost (net present value at 2014 base year prices) of replacing Warwick residents’ non-compliant diesel cars and light goods vehicles was estimated to be approximately £4.1 million. The implementation of the LEZ was expected to result in health benefits for the inhabitants of the LEZ, reducing the number of life-years lost over 100 years from chronic mortality effects by 1.3 years. For Leamington Spa the equivalent cost of replacing

² <http://www.warwicktowncentreplan.org/>

Leamington Spa residents' non-compliant diesel cars and non-compliant buses within the scheduled bus fleet was estimated to be approximately £4.6 million. The implementation of the LEZ was expected to result in health benefits for the inhabitants of the LEZ, reducing the number of life-years lost over 100 years from chronic mortality effects by 1.0 year.

- 3.10 Nitrogen dioxide concentrations at monitoring locations in the Kenilworth AQMA have exceeded the annual limit value of $40 \mu\text{g m}^{-3}$ in recent years. However, concentrations were less than the limit value throughout the AQMA in 2011 and are expected to decrease in future years as older, more polluting vehicles are replaced. It was concluded that an LEZ would not be necessary to achieve the objective.

Low Emission Guidance for Developers

- 3.11 The Low Emission Strategy Guidance for Developers (April 2014) forms part of Warwick District Council's Air Quality Action Plan. It provides a template for integrating air quality considerations into land use planning and development management policies, providing a protocol for development scheme assessment, mitigation and compensation. Essentially it states when an air quality assessment is required, and what mitigation would be considered acceptable. In addition to mitigation set out, electric vehicle recharging provision is expected at a rate set out in the guidance. For residential developments this constitutes 1 charging point per unit for a property with dedicated parking or 1 charging point per 10 spaces for unallocated parking.

Warwickshire Health and Wellbeing Strategy

- 3.12 The Warwickshire Health and Wellbeing Board provides a countywide approach to improving local health and social care, public health and community services, so that individuals, service-users and the public experience more 'joined up' care. Looking after the health and wellbeing of the population of Warwickshire is not the responsibility of one single body. Statutory and non-statutory organisations, including the voluntary sector, across the county all play a part in impacting on our health and wellbeing and influencing our behaviour. The Health and Wellbeing Strategy provides Warwickshire residents and organisations with a picture of what the Health and Wellbeing Board, through its members and wider partners, will need to deliver over the next 5 years and how we will work together to achieve this. Air pollution is one cause of ill health to be considered.

The Arden Health Protection Strategy for Coventry and Warwickshire (2013-2015)

- 3.13 The Arden Health Protection Committee has agreed air quality as an environmental health priority for this strategy (Arden Health Committee, 2013). The strategy recognises that improvement in air quality is heavily dependent upon traffic management and increased collaboration between stakeholders is required to ensure improvement. The strategy aims to do this by raising the

importance of air quality in the decision making process of transport planning and providing increased understanding and health impacts of PM_{2.5} levels in each local authority area.

Climate Change

- 3.14 Warwick District Council is committed to taking a lead in dealing with the issues presented by the climate change agenda. The Council is a signatory to the LGA Climate Local Initiative and has an agreed climate change strategy in place. There are a number of energy efficiency schemes within Council properties, including solar and biomass schemes, and the Council works to promote energy efficiency amongst the community, including enhanced building insulation. In the 'Strategic Approach to Sustainability and Climate Change for Warwick District Council' (Warwick DC, 2015), three strategic aims and objectives are set out, which are followed by specific actions to be implemented to achieve these aims. Actions include raising staff awareness, making housing stock more energy efficient, providing more energy from renewable and low carbon sources, reducing transport-related carbon dioxide emissions and ensuring sustainability is fully integrated into procurement activities. Most of the actions included are complementary to those within this action plan. There are, though, potential conflicts around biomass burning which can reduce our reliance on fossil fuels, hence reducing greenhouse gas emissions, but conversely have an adverse effect on air quality and public health, particularly in densely populated urban areas.

4 Actions for Improving Air Quality

4.1 Some of the following actions are already underway, but within this Action Plan they will continue to be improved upon. Others are in the early planning stages, or do not have funding associated with them yet. The actions therefore have different likely implementation times. There are 7 broad actions and for each of them, specific measures have been included. The actions are evaluated in relation to their expected impact on:

- air quality (i.e. reduction in emissions or concentrations);
- cost;
- feasibility or practicability of option (including the wider non-air quality impacts); and
- timescale for implementation.

Air Quality Impact

4.2 Air quality impacts have been classified using a score of 1 to 3 to represent 'low' to 'high' impact. The higher the score, the greater the improvement in air quality, i.e. the greater the reduction in NO₂ concentrations. For each action, the expected reduction in annual mean NO₂ concentrations has been determined based on professional judgement, drawing, wherever possible, on experience gained from other studies. It should be noted that the impacts on air quality are judged in relation to the impacts within the AQMA(s). So, for example, an action may have wide reaching benefits, but only be slightly beneficial within the AQMA(s). The following classification scheme has been used:

Low: *imperceptible* (a step in the right direction). Improvements unlikely to be detected within the uncertainties of monitoring and modelling;

Medium: *perceptible* (a demonstrable improvement in air quality). An improvement of up to 2µg/m³ NO₂, which could be shown by a modelling scenario. Improvement is not likely to be shown by monitoring due to confounding factors of the weather; and

High: *significant*. Improvement of more than 2µg/m³ NO₂. Can be clearly demonstrated by modelling or monitoring (a significant improvement is likely to be delivered by a package of options rather than by a single intervention).

Cost

4.3 The implementation of the measures set out in this draft Action Plan are dependent on securing a sufficient and consistent level of funding both to support any additional staff that may be required, and to deliver the programme. In line with current Government guidance, it is not necessary to

carry out a detailed cost-benefit analysis. Rather the aim is to provide a broad indication of costs so that the proposed measures can be ranked according to the cost and the expected improvement to air quality. A score of 1 to 5 represents “very high” to “very low” costs, as follows:

‘Very Low’ cost is taken to be £10K and under;

‘Low’ cost is taken to be £10 - £50K;

‘Medium’ cost is £50 - 500K;

‘High’ cost is £500K - £2 million; and

‘Very High’ cost is over £2 million.

Feasibility

4.4 The feasibility of individual measures is not straightforward to quantify. The following factors have been taken into consideration:

- Alignment / synergies with other WDC Council initiatives, strategic initiatives such as the Warwick and Leamington Transport Strategy, The Local Plan or Local Transport Plans;
- Wider non-air quality impacts (social, environmental or economic);
- Stakeholder acceptance / “political” feasibility; and
- Source of funding available or possible.

The Feasibility has been scored as 1 to 3, representing “low” to “high” feasibility:

Low feasibility;

Medium feasibility;

High feasibility.

Timescale

4.5 The timescale for the implementation of measures has also been considered. The following classifications have been used: **Short-term** relates to those measures that can be implemented within the 2015/16 financial year; **Medium-term** relates to those implemented within 3-5 years; **Long-term** options are those which are 6+ years.

Action 1: Promote Smarter Travel Choices

4.6 This action will have a number of strands, some of which are ongoing already, largely in partnership with Warwickshire County Council. The Warwick and Leamington Spa Transport Strategy has already evaluated a range of sustainable transport options to address transport

issues in the area, and identified a package of improvements which will best address the identified transport issues. These include comprehensive area- wide improvements to walking and cycling infrastructure, targeted re-allocation of road space to prioritise and facilitate movement of pedestrians, cyclists, public transport and car share users, a smarter choices and Travel Planning Programme and targeted bus-stop infrastructure upgrades on key public transport corridors. In addition there is to be further consideration of the introduction of Park and Ride sites north and south of the urban areas using existing bus services. Recent modelling suggests there would be a considerable level of demand for both sites and discussions with stagecoach indicate that the sites could be served by existing bus services operating at 10 minute frequency during peak periods.

4.7 Specific actions will therefore include;

- area wide improvements to walking and cycling infrastructure;
- a smarter choices and Travel Planning Programme, including continued liaison with bus companies regarding business and schools liaison;
- targeted bus stop infrastructure upgrades on key public transport corridors (including real time bus information were appropriate);
- improving infrastructure to improve walking and cycling signage;
- Hearts and Minds campaign to encourage modal shift away from private car use;
- further consideration of Park and Ride (north and south of urban areas);
- consideration of a car club; and
- Publicising CarShare Coventry and Warwickshire (<https://carsharewarwickshire.liftshare.com>)

Table 1: Evaluation of Action 1

ACTION 1	Promote Smarter Travel Choices
Air Quality Impact	Emissions from transport form the biggest single contributor to NO ₂ concentrations in Warwick and Leamington Spa. Increasing the use of public transport and active travel, such as walking and cycling, should reduce single occupancy car use and hence improve air quality, as well as mitigate against climate change. It is judged that initially benefits to air quality would be Low , but should progressively increase over time depending on the level of investment. Medium impact should be achievable.
Cost	The cost of implementing smarter choices options as an overall package would be High to Very High , although the costs of individual options would be Low to Medium .
Feasibility	High feasibility as politically acceptable. Aligns with Warwick District Council and Warwickshire County Council policies etc. Positive impacts for health, climate change gas emissions and potentially noise.

ACTION 1	Promote Smarter Travel Choices
Ownership	Mainly implemented by Warwickshire County Council, through the Warwick and Leamington Transport Strategy
Partners	Public Health; Public Transport Operators; employers; Cycling Forum.
Funding	CIL and Section 106
Timescale	Short to Long term.

Action 2: Actively promote low emission vehicles and supporting infrastructure

4.8 Warwick District Council, in partnership with Warwickshire County Council is already promoting Electric Vehicles, in part through its “Low Emission Strategy Guidance for Developers” which sets out requirements for developers for electric vehicle recharging provision, but also through the installation of electric charging points in two of the car parks in Leamington Spa, where drivers can recharge at no cost. This Action Plan will enhance the promotion of Electric Vehicles in particular, and Low Emission Vehicles more widely.

4.9 Specific actions will include:

- supporting future opportunities for funding for Low Emission Vehicles, in particular for vehicle charging infrastructure;
- use of the planning system to ensure a more widespread infrastructure for low emission vehicles;
- moving the Warwick DC fleet to electric vehicles where practicable;
- working to set up an Ecostars scheme in Warwick District Council whereby fleet operators can join for free and work to reduce their environmental impacts;
- working with Warwickshire County Council and bus operators to encourage lower emission buses (either retrofitting existing buses, or use of alternative fuels);
- ensuring that the electric taxi within Warwick District Council is utilised to promote Low Emission Vehicles to commercial operators and the public;
- promotion of electric vehicles through the Warwickshire Drive Electric Website³;

³ <http://www.warwickshire.gov.uk/driveelectric>

- use the Hackney carriage (taxis) and private hire licensing system to try and reduce emissions from taxis and private hire vehicles. Currently taxis must be new and of a type approved by the Council with wheelchair access. There are no restrictions on emissions from private hire vehicles.

Table 2: Evaluation of Action 2

ACTION 2	Actively promote low emission vehicles and supporting infrastructure
Air Quality Impact	As the proportion of Ultra Low Emission Vehicles such as electric vehicles increases, emissions of NO _x and PM ₁₀ will decrease and concentrations will reduce. There will need to be a large swing towards electric vehicles before improvements are measurable. Therefore initially benefits to air quality would be Low , but should progressively increase over time depending on the level of investment.
Cost	Costs will largely be dependent on the level of investment gained. In order to make a difference to the vehicle parc, it is considered that the overall investment would be High or Very High . As for the previous action, the costs of individual options would be Low to Medium .
Feasibility	Medium feasibility. Some measures are very feasible (such as including infrastructure for electric vehicles within the planning system and promotion of the electric taxi), with others being less feasible and dependent on achieving funding (such as Ecostars and expansion of electric vehicle charging network).
Ownership	Warwick District Council
Partners	Warwickshire District Council, developers, public transport operators, taxi operators.
Funding	Section 106, CIL, Air Quality Grants.
Timescale	Short to Long term.

Action 3: Using the procurement system to ensure that air quality is a consideration within contracts for Warwick District Council

- 4.10 The impact to carbon emissions of the supply chain is well documented, but the resulting emissions of NO_x and PM₁₀ are often not considered in procurement policy decisions. The public sector is a major consumer and procures, indirectly, a significant number of road transport vehicles. There is considerable scope to drive down emissions through the adoption of fit for purpose procurement strategies. The public sector can play a leading role in improving the emissions arising from the vehicle parc by specifying vehicles that have lower emissions, based on life cycle information, through the potential for cost reduction of low emission technologies associated with volume purchasing power and adopting an innovative approach to vehicle purchasing, including the development of partnerships with the private sector.

4.11 There are various guidance documents available on sustainable procurement, including that published by the Low Emission Strategy Partnership. In the main guidance is aimed at fleet purchase (Warwick District Council has a very restricted fleet, so this would not be applicable) but also covers procurement policy in general. Appendix 1 includes some useful weblinks for procurement policy. The Low Emission Strategy Partnership has published a toolkit for sustainable procurement (which can be downloaded from the website: http://www.lowemissionstrategies.org/downloads/Sefton_Procurement_Toolkit.zip), which covers different areas of procurement. It is suggested that Warwick District Council initially use this as basis on which to proceed.

4.12 Specific Actions will include:

- Investigation with procurement colleagues within Warwick District Council to produce a sustainable procurement guide, specifying particular clauses within contracts to ensure transport emissions are as low as possible.

Table 3: Evaluation of Action 3

ACTION 3	Using the procurement system to ensure that air quality is a consideration within contracts for WDC
Air Quality Impact	Low air quality impact within Warwick and Leamington Spa AQMAs.
Cost	Very Low to Low for Warwick District Council. May be some cost to contractors and suppliers of Warwick District Council.
Feasibility	High Feasibility as long as there is political and management support.
Ownership	Warwick District Council
Partners	Contractors and suppliers to Warwick District Council
Funding	Unlikely to need external funding. Could potentially apply for Defra Air Quality Grant.
Timescale	Investigation to take place 2015-2016 financial year, with implementation in the Medium to Long term.

Action 4: Using the planning system to ensure that air quality is fully considered for new development

4.13 This action will enhance work which is ongoing both through the Local Plan process and through development control. There is a specific policy on traffic generation which includes air quality, as well as on Healthy Safe and Inclusive Communities.

4.14 Policy TR2 on Traffic Generation, sets out that “*Any development that results in significant negative impacts on air quality within identified Air Quality Management Areas or on the health and wellbeing of people in the area as a result of pollution should be supported an air quality*”

assessment and, where necessary, a mitigation plan to demonstrate practical and effective measures to be taken to avoid the adverse impacts.”

- 4.15 Policy HS1 on Healthy, Safe and Inclusive Communities, sets out that *“The potential for creating healthy, safe and inclusive communities will be taken into account when considering all development proposals. Support will be given to proposals which: d) contribute to the development of a high quality, safe and convenient walking and cycling network.”* This policy is reinforced by Policy HS6 on Creating Healthy Communities.
- 4.16 Large Scale developments to the south of Warwick are already coming through the planning system and transport improvements / infrastructure will be funded through this process (both via Section 106 agreements and the Community Infrastructure Levy (CIL)).
- 4.17 Specific Actions will include:
- ensuring that the Warwick Low Emission Strategy Guidance for Developers is kept up to date, and implemented (particularly in relation to updates of national guidance etc);
 - working with planning policy colleagues to ensure that the Local Plan fully addresses air quality issues with appropriate policies included;
 - working with planning colleagues and developers to ensure that new developments are based around the ‘five-minute walkable neighbourhood’, thereby encouraging active travel as the preferred methods of transport to access local facilities;
 - ensure that green infrastructure is integrated into all residential and commercial developments, in line with the National Planning Policy Framework (NPPF);
 - ensuring that planning applications with potential air quality impacts are fully assessed for their impacts, at relevant locations using appropriate methodologies (as specified in the Low Emission Strategy Guidance);
 - ensuring that where possible, cumulative impacts are taken into account. Any committed developments should be included within a given air quality assessment; and
 - ensuring that appropriate mitigation is implemented where any relevant impacts are identified.

Table 4: Evaluation of Action 4

ACTION 4	Using the planning system to ensure that air quality is fully considered for new development
Air Quality Impact	In the longer term, the air quality impact of siting new development in the locations which take air quality into consideration is likely to have a High impact on air quality, particularly in locations which are most sensitive. In the shorter term the impact will be Low .
Cost	Low cost for Warwick District Council.
Feasibility	High feasibility assuming political will.
Ownership	Warwick District Council
Partners	Warwickshire County Council, developers.
Funding	Section 106 Agreements and CIL
Timescale	Ongoing over the timescale of the Local Plan (and beyond)

Action 5: Traffic management to reduce emissions in locations within AQMAs

4.18 Traffic management was explored within the previous Action Plan and also to some extent within the Warwick and Leamington Spa Transport Strategy work. Since the last Action Plan was published, Intelligent Transport Systems have been implemented in Warwick and Leamington Spa. The Warwick and Leamington Spa Transport Strategy has considered the role of 20mph zones, traffic calming, re-routing, vehicle restrictions (movements or vehicle types), turning restrictions, reallocation of road space to public transport, cyclists and pedestrians, and signage and information improvements. Specific Actions will include:

- junction improvements on key travel corridors in Warwick and Leamington Spa AQMAs are proposed which include junction/ highway modifications, improvements for walking and cycling and bus priority measures. Where these coincide with the AQMA, these are likely to provide significant improvements to air quality.
- an investigation of 20 mph zones as part of the wider transport strategy, where this will smooth traffic flow;
- targeted re-allocation of road space to prioritise and facilitate movement of pedestrians, cyclists, public transport and car share users; and
- managing deliveries across Warwick District to ensure that no additional congestion is caused by stationary delivery vehicles in busy locations.

- 4.19 In terms of this action plan it is recommended that 20 mph zones are investigated as part of the wider transport strategy. 20 mph zones may impact positively on emissions where they smooth traffic flow and reduce congestion.

Table 5: Evaluation of Action 5

ACTION 5	Traffic management to reduce emissions in locations within AQMAs
Air Quality Impact	As a package, traffic management measures as a whole may have a High impact on air quality. Individual measures are likely to have a Low impact.
Cost	As a package traffic management measures as a whole are likely to have a High to Very High cost, with individual measures costing varying amounts.
Feasibility	Very feasible
Ownership	Warwickshire County Council.
Partners	Warwick District Council
Funding	LTP, CIL and Section 106. DfT if any relevant funding streams.
Timescale	Short to Long term.

Action 6: Work with Public Health colleagues to inform the public about health impacts of air pollution and how they can change behaviour to reduce emissions and reduce exposure

- 4.20 Air quality is a key issue for Public Health as exposure to high levels of air pollution can have adverse effects on the health of the population. This is because pollutants can exacerbate conditions such as asthma, and contribute to the risk of developing respiratory and cardiovascular disease, as well as lung cancer. These conditions are more likely to be present in people living in areas of deprivation, and nationally, evidence highlights linkages between the most deprived areas experiencing the worst air quality, thereby exacerbating health inequalities.
- 4.21 Active travel would lessen these health inequalities, as well as improve the health and wellbeing of people and achieve positive public health outcomes. For example, if people choose to walk and cycle more there would be a reduction in transport pollution as well as an increase in physical activity. Not only will this increased activity lead to a reduction in obesity levels, and health conditions associated with obesity, evidence shows that exercise improves mental wellbeing, leading to greater feelings of revitalisation and a reduction in depression and anxiety.
- 4.22 Funding streams are currently being investigated to develop a website with the specific objective to influence behaviours that will have a measureable impact on air quality, increase the use of public and sustainable transport and decrease reliance

on private motor vehicles, especially diesel. The approach proposed uses innovative communication and educational activities to deliver the above objectives and would reflect the understanding of the different user groups on the website and wider district community.

4.23 Specific Actions will include:

- re-investigate funding for a website to engage with the public on air quality, the health impacts of poor air quality, sustainable transport and strategies to improve air quality;
- working with planners and developers to embed Public Health's Evidence for Planning guidance, thereby encouraging any new developments to support access to active travel, both improving air quality and residents' health and wellbeing; and
- investigating the implementation of a campaign aimed at vulnerable members of the public (i.e. those with existing respiratory or cardio vascular conditions) in order that they could change behaviour to reduce exposure when pollution levels are high.

Table 6: Evaluation of Action 6

ACTION 6	Work with Public Health colleagues to inform the public about health impacts of Air Pollution and how they can change behaviour to reduce emissions and reduce exposure
Air Quality Impact	Low over the AQMAs as a whole, but required as a complimentary measure to traffic management, Smarter Travel and Low Emission Vehicles.
Cost	Low cost for each of the elements of this measure. As a whole the action is likely to be Medium cost.
Feasibility	Highly feasible option as fits well with Warwick District Council policy and Warwickshire Health and Wellbeing Strategy.
Ownership	Warwick District Council
Partners	Warwickshire County Council Public Health Team
Funding	Defra Air Quality Grants and through bidding for Public Health funding against countywide strategies.
Timescale	Medium term.

Action 7: Continue to monitor and assess air quality in line with Government guidance on Local Air Quality Management

4.24 The Government is currently consulting on changes to Local Air Quality Management with changes to the reporting process likely to simplify procedures for local authorities. It is also likely that some objectives will be dropped from LAQM, with PM_{2.5} potentially being included within the process. Warwick District Council currently monitors extensively for nitrogen dioxide and this action will

retain this commitment. The monitoring will assist in assessing the impacts of this Air Quality Action Plan as well as ensuring that new development does not cause exceedences of the air quality objectives.

4.25 Specific Actions will include:

- continuation of monitoring within Warwick District Council, focussed on AQMAs, but also in other strategic locations;
- regular assessment of air quality against air quality objectives as specified by the LAQM process with reports to Defra and the public;
- review of measures set out in this Air Quality Action Plan on a regular basis to ensure they are up to date and being implemented.

Table 7: Evaluation of Action 7

ACTION 7	Continue to monitor and assess air quality in line with Government guidance on Local Air Quality Management
Air Quality Impact	None directly in relation to LAQM but acts as evidence base for measures.
Cost	Low cost (per annum) to Warwick District Council.
Feasibility	High Feasibility
Ownership	Warwick District Council
Partners	Warwickshire County Council (particularly in relation to reviewing measures in this Air Quality Action Plan).
Funding	Internal budget.
Timescale	Ongoing.

5 Consultation

5.1 Under Schedule 11 of the Environment Act, local authorities are required to consult on their draft Air Quality Action Plan. It is important to have involvement of all local stakeholders to ensure the success of the Action Plan. This updated Action Plan has been drafted through a partnership approach in particular with Warwickshire County Council (transport and public health), planners, sustainability officers and town centre managers.

5.2 The next stage will be to consult more widely on this document including both internal and external stakeholders. External stakeholders will include:

The Secretary of State

The Environment Agency

Highways England

Warwickshire County Council Public Health

WDC and WCC Councillors and Officers

Neighbouring local authorities

Local residents within and bordering the AQMAs

Relevant local businesses, community groups and forums.

6 Implementation Plan

- 6.1 To implement the Action Plan measures Warwick District Council will work jointly with all relevant partners, particularly planners and transport planners and operators. To secure the necessary air quality improvements, all local stakeholders and Warwick District Council must be involved.
- 6.2 Ultimately the delivery of this Action Plan is dependent on adequate levels of resourcing, both for capital costs and staffing. Funding sources have been highlighted in the evaluation tables.
- 6.3 The implementation and effectiveness of the AQAP will be carefully monitored through the monitoring of NO₂ concentrations at relevant locations within both Warwick and Leamington Spa. In addition, other indicators such as traffic flow, proportions of different categories of vehicles, use of public transport and levels of cycling will be incorporated. There will be regular reviews of the Action Planning proposals, which will be reported on an annual basis to Defra. These reviews will include both direct air quality monitoring information, as well as information on proxy measures for monitoring specific proposals. The following tables include a more refined timescale for implementation.

Table 2: Measures to be Included in the Air Quality Action Plan

Action	Proposed Measure	Timescale	Lead Agency	
1	Area Wide improvements to walking and cycling infrastructure	Ongoing	WCC	
	Smarter Choices and Travel Planning programme	By 2020	WCC	
	Targeted bus stop infrastructure upgrades on key public transport corridors	By 2020	WCC	
	Improving infrastructure to improve walking and cycling signage	By 2020	WCC	
	Hearts and Minds campaign to encourage modal shift away from private car use	By 2018	Public Health	
	Further consideration of Park and Ride	By 2020	WCC	
	Consideration of a car club	By 2017	WDC	
	Publicising CarShare Coventry and Warwickshire	On-going	WCC	
	2	Supporting future opportunities for funding for Low Emission Vehicles, in particular for vehicle charging infrastructure	On-going	WDC
Use of the planning system to ensure a more widespread infrastructure for low emission vehicles		Implemented	WDC	
Moving the Warwick DC fleet to electric vehicles where practicable		By 2016	WDC	
Strive to set up an Ecostars scheme in Warwick District Council whereby fleet operators can join for free and strive to reduce their environmental impacts.		By 2017	WDC	
Working with Warwickshire County Council and bus operators to encourage lower emission buses (either retrofitting existing buses, or use of alternative fuels).		On-going	WDC	
Ensuring that the electric taxi within Warwick District Council is utilised to promote Low Emission Vehicles to commercial operators and the public.		On-going	WDC	
Promotion of electric vehicles through the Warwickshire Drive Electric Website. http://www.warwickshire.gov.uk/driveelectric		On-going	WCC	
Use the taxi and private hire licensing system to try and reduce emissions from taxis and private hire vehicles.		By 2017	WDC	
3		Investigation with procurement colleagues to produce a sustainable procurement guide to ensure transport emissions are as low as possible.	By 2016	WDC
		4	Ensuring that the Warwick Low Emission Strategy Guidance for Developers is kept up to date, and implemented.	On-going
Working with planning policy colleagues to ensure that the Local Plan fully addresses air quality issues with appropriate policies included	On-going		WDC	
Working with planning colleagues and developers to ensure that new developments are based around the 'five-minute walkable neighbourhood', thereby encouraging active travel as the preferred methods of transport to access local facilities	On-going		Public Health	
Ensure that green infrastructure is integrated into all residential and commercial developments, in line with the National Planning Policy Framework (NPPF)	On-going		WDC	

Action	Proposed Measure	Timescale	Lead Agency
	Ensuring that planning applications with potential air quality impacts are fully assessed for their impacts, at relevant locations using appropriate methodologies (as specified in the Low Emission Strategy Guidance)	On-going	WDC
	Ensuring that where possible, cumulative impacts are taken into account. Any committed developments should be included within a given air quality assessment	On-going	WDC
	Ensuring that appropriate mitigation is implemented where any relevant impacts are identified	On-going	WDC
5	Junction improvements on key travel corridors in Warwick and Leamington Spa AQMAs are proposed which include junction/highway modifications, improvements for walking and cycling and bus priority measures. Where these coincide with the AQMA, these are likely to provide significant improvements to air quality concentrations.	By 2020	WCC
	An investigation of 20 mph zones as part of the wider transport strategy, where this will smooth traffic flow	By 2017	WCC
	Targeted re-allocation of road space to prioritise and facilitate movement of pedestrians, cyclists, public transport and car share users	By 2022	WCC
	Manage deliveries across Warwick District Council to ensure that no additional congestion is caused by stationary delivery vehicles in busy locations	By 2017	WCC
6	Re-investigate funding for a website to engage with the public on air quality, the health impacts of poor air quality, sustainable transport and strategies to improve air quality	On-going	WDC
	Working with planners and developers to embed Public Health's Evidence for Planning guidance, thereby encouraging any new developments to support access to active travel, both improving air quality and residents' health and wellbeing	On-going	Public Health
	Investigate implementing a campaign aimed at vulnerable members of the public (i.e. those with existing respiratory or cardio vascular conditions) in order that they could change behaviour to reduce exposure when pollution levels are high	By 2016	Public Health
7	Continuation of monitoring within Warwick District Council, focussed on AQMAs, but also in other strategic locations	On-going	WDC
	Regular assessment of air quality against air quality objectives as specified by the LAQM process with reports to DEFRA and the public	Annual	WDC
	Review of measures set out in this Air Quality Action Plan on a regular basis to ensure they are up to date and being implemented	Annual	WDC

6.4 To summarise, initial actions (in the 2015/16 financial year) will involve:

- Apply to Defra for a grant to implement the Ecostars scheme;
- Moving the Warwick DC fleet to include electric vehicles;

- Investigation of a sustainable procurement Guide;
- Investigation of a public health campaign (behaviour change)

On-going actions:

- Improvements to walking and cycling infrastructure;
- Publicising car share Coventry and Warwickshire;
- Supporting future opportunities for funding Low Emission Vehicles;
- Encouraging Lower Emission Buses;
- Utilising the electric taxi for promotional purposes;
- Promotion of electric vehicles;
- Ensuring that the Warwick Low Emission Strategy Guidance is implemented and up to date;
- Working with planning colleagues to ensure that the Local Plan fully addresses air quality issues, that new developments are based around the 'five-minute walkable neighbourhood, ensuring that planning applications are fully assessed for their impacts, including cumulative impacts where possible and that appropriate mitigation is implemented;
- Re-investigate funding for a website to engage the public on air quality;
- Working with planners to embed Public Health's Evidence for planning guidance;
- Continuation of air quality monitoring, assessment of air quality and reviewing measures within this Action Plan.

Longer term strategic measures include:

- Smarter choices and travel planning programme;
- Targeted bus stop infrastructure upgrades;
- Improving walking and cycling signage;
- Hearts and minds campaign to encourage modal shift from private car use;
- Further consideration of Park and Ride scheme;
- Consideration of a car club;
- Trying to reduce emissions from taxis and private hire vehicles;
- Junction improvements on key travel corridors in Warwick and Leamington Spa;
- An investigation of 20 mph zones as part of the wider transport strategy;

- Targeted re-allocation of road space to prioritise and facilitate movement of pedestrians, cyclists, public transport and car share users;
- Managing deliveries across Warwick District Council to ensure that no additional congestion is caused by stationary delivery vehicles in busy locations.

7 Summary and Conclusions

7.1 This Air Quality Action Plan sets 7 broad Actions on which some stakeholders have been consulted. For each action, specific measures have been included. The actions are as follows:

- Action 1: Promote Smarter Travel Choices.
- Action 2: Actively promote low emission vehicles and supporting infrastructure.
- Action 3: Using the procurement system to ensure that air quality is a consideration within contracts for Warwick District Council.
- Action 4: Using the planning system to ensure that air quality is fully considered for new development.
- Action 5: Traffic management to reduce emissions in locations with AQMAs.
- Action 6: Work with Public Health colleagues to inform the public about health impacts of Air Pollution and how they can change behaviour to reduce emissions and reduce exposure.
- Action 7: Continue to monitor and assess air quality in line with Government guidance on Local Air Quality Management.

7.2 At this stage, it has not been possible to quantify emissions reductions for specific actions. It is considered that the measure with the greatest potential impact on NO₂ concentrations within the AQMAs is Action 1 and in the longer term Action 4 and Action 2. The document has, where possible, included targets for particular measures. Based on professional judgement, and the improvements in air quality required at locations in Warwick and Leamington Spa it is considered that the air quality objectives will not be met until post 2020, although AQMAs should reduce in size.

7.3 The measures highlighted in this Air Quality Action Plan should reduce concentrations of NO₂ at the relevant sensitive receptors, although it is too early to say exactly what impact they will have on improving air quality. The Council is continuing to monitor air quality at several locations within the AQMAs. The results of the monitoring will be made available through the annual review and assessment reports along with proxy measures for quantifying improvements.

8 References

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9 Glossary

AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
DCLG	Department for Communities and Local Government
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EPUK	Environmental Protection UK
Exceedence	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LEZ	Low Emission Zone
µg/m³	Microgrammes per cubic metre
NO	Nitric oxide
NO₂	Nitrogen dioxide
NO_x	Nitrogen oxides (taken to be NO ₂ + NO)
NPPF	National Planning Policy Framework
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
PM₁₀	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
PM_{2.5}	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal

10 Appendices

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A1 Useful Procurement Websites

- A1.1 Low Emission Strategies Guidance. Using Public Procurement to Reduce Road Transport Emissions http://www.lowemissionstrategies.org/downloads/LES_Procurement_Guidance.pdf
- A1.2 Low Emission Strategy partnership. Sefton Procurement Tool. http://www.lowemissionstrategies.org/tools_and_resources.html
- A1.3 West Midlands Low Emissions Towns & Cities Programme. Good Practice Air Quality Procurement Guidance http://cms.walsall.gov.uk/low_emissions_towns_and_cities_programme
- A1.4 City of London 'A practical procurement guide to reduce the emission profile of the business' <http://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/improving-air-quality-city-of-london-practical-procurement-guide.pdf>
- A1.5 Forum for the Future Sustainable Procurement Toolkit <https://www.forumforthefuture.org/project/buying-better-world-sustainable-procurement-toolkit/overview>

A2 Professional Experience

Prof. Duncan Laxen, BSc (Hons) MSc PhD MIEEnvSc FIAQM

Prof Laxen is the Managing Director of Air Quality Consultants, a company which he founded in 1993. He has over forty years' experience in environmental sciences and has been a member of Defra's Air Quality Expert Group and the Department of Health's Committee on the Medical Effects of Air Pollution. He has been involved in major studies of air quality, including nitrogen dioxide, lead, dust, acid rain, PM₁₀, PM_{2.5} and ozone and was responsible for setting up the UK's urban air quality monitoring network. Prof Laxen has been responsible for appraisals of all local authorities' air quality Review & Assessment reports and for providing guidance and support to local authorities carrying out their local air quality management duties. He has carried out air quality assessments for power stations; road schemes; ports; airports; railways; mineral and landfill sites; and residential/commercial developments. He has also been involved in numerous investigations into industrial emissions; ambient air quality; indoor air quality; nuisance dust and transport emissions. Prof Laxen has prepared specialist reviews on air quality topics and contributed to the development of air quality management in the UK. He has been an expert witness at numerous Public Inquiries, published over 70 scientific papers and given numerous presentations at conferences. He is a Fellow of the Institute of Air Quality Management.

Dr Clare Beattie, BSc (Hons) MSc PhD CSci MIEEnvSc MIAQM

Dr Beattie is a Principal Consultant with AQC, with more than fourteen years' relevant experience. She has been involved in air quality management and assessment, and policy formulation in both an academic and consultancy environment. She has prepared air quality review and assessment reports, strategies and action plans for local authorities and has developed guidance documents on air quality management on behalf of central government, local government and NGOs. Dr Beattie has appraised local authority air quality assessments on behalf of the UK governments, and provided support to the Review and Assessment helpdesk. She has also provided support to the integration of air quality considerations into Local Transport Plans and planning policy processes. She has carried out numerous assessments for new residential and commercial developments, including the negotiation of mitigation measures where relevant. Clare also works closely with Defra and is currently managing the Defra Air Quality Grant Appraisal contract. She is the Secretary of the Institute of Air Quality Management.

Full CVs are available at www.aqconsultants.co.uk.