

DERBYSHIRE HEALTH PROTECTION BOARD

18th October 2017

Air Quality Trends and Health; Medium Term Update

1. Purpose of the report

At the request of the Health and Wellbeing Board, to provide an overview to the Health Protection Board of performance and trends in the key work stream area of air quality.

2. Background

The key airborne pollutants which have an adverse impact on health are respirable particulate (PM₁₀), fine particulate (PM_{2.5}) and nitrogen dioxide (NO₂). Road transport is estimated to be responsible for up to 70% of the harm associated with air pollution.

The local mortality burden attributed to particulate matter (PM) air pollution in Derbyshire is calculated as being equivalent to 533 deaths and an associated loss to the population of 5466 life-years. The local mortality burden attributed to NO₂ has not yet been calculated, but is considered likely to be approximately the same again.

Indicator 3.01 of the Public Health Outcomes Framework measures "*Fraction of mortality attributable to particulate air pollution*". Predicted mortality fractions equal or exceed the England rate of 5.6% in four of the nine Derbyshire unitary and District Council areas (Derby, Bolsover, Erewash and North East Derbyshire).

3. Performance

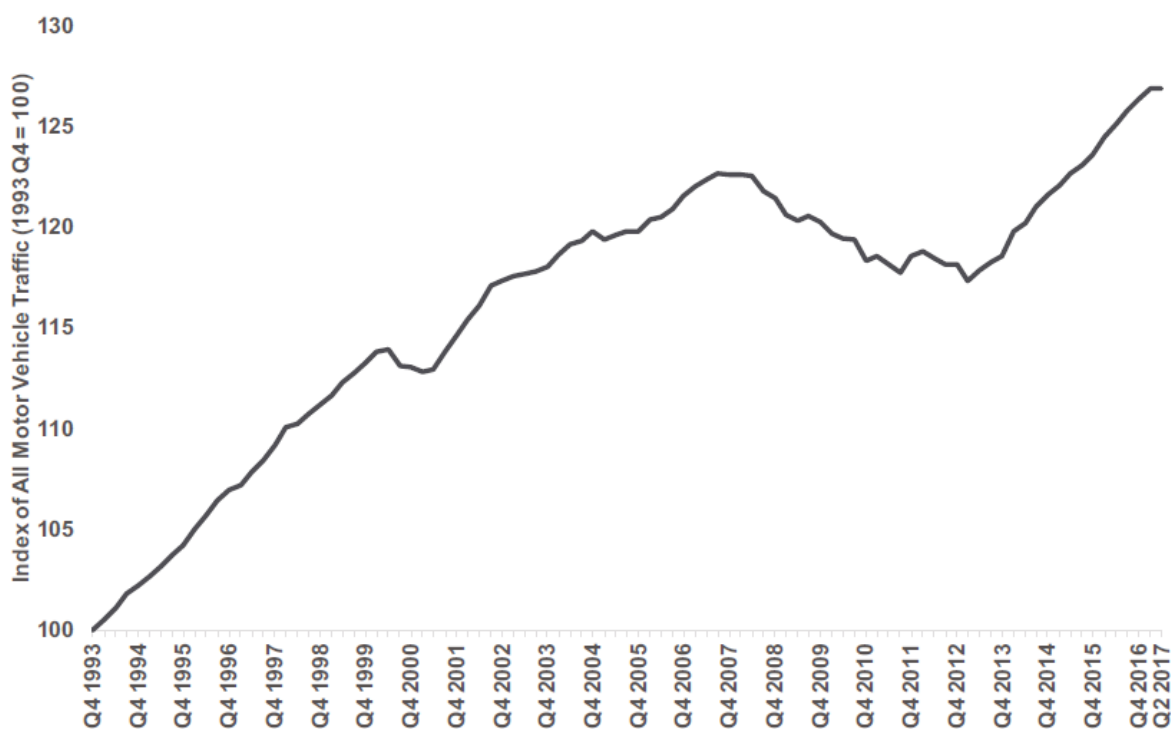
NO₂ is the most widely measured air pollutant across Derbyshire. NO₂ has been monitored by local authority environmental health teams for a number of years over a large number of sites throughout Derbyshire where small monitoring devices measure the average monthly NO₂ levels. Measured levels can vary quite considerably due to changes in traffic flows and meteorological conditions. We have therefore looked at medium term (3 year) and longer term (6 year) trends at each of these monitoring locations to understand the direction of travel with air quality across the County.

Of the 149 monitoring locations which have been in operation since 2010, there has been an improvement in air quality at 63.1% over this 6 year period based on simple linear regression analysis and no significant change at a further 8.7%.

Of the 176 monitoring locations which have been in operation since 2013, there has been an improvement in air quality at 44.9% over this 3 year period and no significant change at a further 7.4%

Given the significant contribution of traffic emissions to air quality, it is useful to compare these trends with the national growth in road traffic over the same period (Chart 1). This shows that nationally there was very little change in traffic flows between 2010 and 2013, but then significant growth between 2013 and 2016.

Chart 1: Rolling Annual Indices of Road Traffic in Great Britain, from 1993



Overall the DfT have determined that there has been a 7.1% growth in traffic over the last 5 years. Our long term data suggests that this has not led to an equivalent overall deterioration in air quality. Clearly every monitoring location has its own unique local circumstances which dictate performance, however the macro level data gives some cause for cautious optimism that air quality interventions are having a mitigating effect against traffic growth.

There are currently 7 Air Quality Management Areas (AQMAs) in Derbyshire which are geographic locations next to busy roads where the annual average concentration of NO₂ has been established to exceed health based Air Quality Objectives set within the EU Air Quality Directive. These AQMAs are currently in;

- Derby, along part of the ring road;

- Chesterfield, on Church Street, Brimington;
- Erewash, two AQMAs next to the M1;
- Bolsover, two AQMAs next to the M1 and one on Chesterfield Road;

Of the 38 monitoring locations which have been in operation within the AQMAs since 2010, there has been an improvement in air quality at 34.2% over this 6 year period and no significant change at a further 2.6%.

4. Action

The Derbyshire Air Quality Forum was established in 2016 with the brief of “*agreeing strategic priorities, receiving assurance on progress, enabling strategic relationships between stakeholders and driving progress around air quality.*”

Over the past 12 months the Forum has developed a comprehensive Action Plan with multi-agency and private sector support. The Action Plan is based around six key themes:

- Strategic vision and cross organisational working;
- Improve access and promote usage of sustainable travel;
- Increase awareness of air quality issues amongst the population and strategic leaders;
- Reduce exposure and harm for those with existing health conditions and vulnerable groups;
- Planning and Development Control;
- Monitoring.

Specific actions have included extensive work in Derby around the development of a Clean Air Zone; work on the development of a county low emissions strategy; the production of an air quality evidence database; the production of air quality heat maps; promotion of the first Clean Air Day in June 2017 across hospitals, schools and businesses in Derbyshire; a climate change network day and the development of supplementary planning guidance for local planning authorities.

5. Conclusions

Over the last six years there have been measured improvements in air quality at the majority of monitoring sites across the county. However these improvements are patchy and the improvements haven’t been as strong in areas already known to have the poorest air quality. This illustrates the importance of continuing to deliver local measures to address poor air quality as well as through national policy.

The government published its [Plan for Tackling Roadside Nitrogen Dioxide Concentrations](#) in June 2017 and further announcements are expected in 2018. However the Air Quality Forum is aware of the importance of using local intelligence to direct local interventions in order to sharpen the impact of national initiative and to

ensure that the consequences of any national initiatives on NO₂ do not lead to an unintended increase in emissions or exposure to PM.

6. Risks

Exposure to relatively elevated levels of air pollution is persisting. Adverse health impacts on existing high risk populations are therefore not significantly reducing.

Local authorities are likely to progressively reduce empirical air quality monitoring. The evidence base against which to determine air quality changes is progressively being reduced.

As national planning policy has been revised to promote economic development, the consideration of air quality in the development control process has been watered down.

7. Work areas

- Derby City is currently working with DEFRA and DfT on the creation of a Clean Air Zone.
- Derby City, Chesterfield, Bolsover and Erewash Councils all continue to deliver Air Quality Action Plans aimed at reducing exposure to exceedences of the nitrogen dioxide Air Quality Objective.
- A multi-agency Air Quality Forum has been created for Derbyshire hosted by the Director of Public Health. The Forum is working towards the delivery of a workplan containing strategic support to improve air quality and help drive progress across member organisations and stakeholders.
- Supplementary Planning Guidance on air quality has been published by PHE at a regional level for potential adoption by Local Planning Authorities in order to enable air quality sustainability to be given due consideration within the planning and development control process.

Recommendation

That the update report be noted and that Board Members be requested to support the delivery of the Derbyshire Air Quality Forum Action Plan outlined above.