From: Mr Peter Oakford, Cabinet Member for Strategic Commissioning and Public Health

Andrew Scott-Clark, Director of Public Health

To: Health Reform and Public Health Cabinet Committee - 1st May 2018

Subject: Air Quality

Classification: Unrestricted

Summary: This report details some of the work KCC Public Health is undertaking with partners to address the health effects of poor air quality in Kent.

Recommendation(s):
The Cabinet Committee is asked to **comment on and endorse** the approach taken by KCC Public Health and Partners to tackling Air Quality issues in Kent.

1. Introduction

1.1 This paper is to inform members of the work undertaken by Public Health and partners to tackle poor air quality in Kent. The report contains information on the relevant and history background to the control of air quality, on local actions in place to improve air quality and reduce poor health due to air quality issues.

2. Relevant History/background

2.1 Poor air quality is the largest environmental risk to public health in the UK and there is strong evidence associating air pollution with increased mortality and ill health. Older people, children and those with pre-existing illness are more vulnerable to the adverse health effects of air pollution. Studies have also suggested that the most deprived areas of Britain are more likely to experience poor air quality, which is supported by the Kent picture. Consequently, improving air quality will support reduction in health inequalities.

2.2 In 2010 the Department of Health's (DH) Committee on the Medical Effects of Air Pollutants (COMEAP) estimated the burden of particulate air pollution in the UK in 2008 to be equivalent to nearly 29,000 deaths and an associated loss of population life of 340,000 life years lost.

2.3 Air quality is increasingly an area of concern for the public and public authorities with over 1,000 early deaths across Kent and Medway attributed to poor air quality in 2013. A Kent-wide approach is needed if future growth is not to have unacceptable impacts on air quality and health.

2.4 Whilst KCC as a Public Health authority, has the responsibility for protecting and improving the health of residents, the responsibility for improving air quality lies with the District and Borough councils. Since December 1997, local authorities in the UK have been assessing air quality in their respective areas to ensure compliance with

national air quality objectives and EU ambient air quality directives. Where a district authority identifies an area or areas exceeding air quality targets and there is relevant public exposure, it is required to declare an Air Quality Management Area (AQMA) and to draw up an action plan to address the problem.

2.5 In April 2016, Department for Environment Food & Rural Affairs (DEFRA) re-issued its Local Air Quality Management (LAQM) Guidance and both the Policy (PG16) and Technical (TG16) guidance highlight the link between air quality and public health and encourage engagement between local authorities, public health teams, planning departments and other stakeholders, in order to improve air quality.

2.6 KCC Public Health are working in partnership with Districts to address air quality issues and work with colleagues in the KCC Growth, Environment and Transport Directorate on Kent-wide measures and strategies.

2.7 The most important primary air pollutants, in terms of evidence of detrimental health effects, are particulate matter (PM), nitrogen dioxide (NO2) and ozone (O3). There is now an indicator on mortality attributed to particulate matter (PM) air pollution in the Public Health Outcomes Framework. PM2.5 has the highest epidemiological link to health outcomes as at this size the particles can be inhaled deep into the lungs.

2.8 Common sources of air pollution include construction sites, aircraft emissions, industrial processes and road transport. In addition, farming, bonfires and fireworks, home and commercial heating and shipping contribute to air pollution/reduced air quality.

2.9 The UK has signed up to a legally binding target for emissions of five major pollutants with the goal of halving the number of deaths from poor air quality by 2030. Reducing Particulate Matter (PM) by 10 µg/m3 would extend lifespan in the UK by five times more than eliminating casualties on the roads, or three times more than eliminating passive smoking.

2.10 The technical expertise in preparing a range of air quality reports, including action plans and annual status reports lies with the district local authority (LA) air quality specialists, technical officers or Environmental Health Officers who undertake this role. DEFRA provides additional support to such staff through a dedicated helpdesk to ensure reports are of a suitable technical standard and quality. Appendix A has more information on particulate matter and nitrogen dioxide.

3. Local Picture

3.1 There are unprecedented levels of housing growth in Kent, with knock-on impacts on congestion, increasing energy prices and changes in the way energy is generated. These, together with growing concern about the impact of air quality on health, make energy and air pollution key priorities for KCC in 2018/19.

3.2 Most of the levers to affect air quality are to be found in borough and district Councils. These include planning permissions and building regulations. District and Borough councils monitor air quality and can declare of Air Quality Management Areas (AQMA).

3.3 Carbon dioxide emissions in Kent continue to fall, largely driven by the closure of a small number of energy intensive industrial sites and a national reduction in the use of coal in electricity generation. We are on course to reach our target of a 34% reduction in emissions by 2020 (2005 baseline). However, transport emissions remain stubbornly static and are currently the same as they were in 2009. Emerging digital technologies and the growth in the use of electric vehicles present Kent with an exciting opportunity to lead the shift to smart, flexible and low emission transport.

3.4 In July 2017, DEFRA and Department for Transport published the 'Air Quality Plan for nitrogen dioxide (NO_2) in the UK 2017'. This plan was focussed on bringing NO_2 air pollution levels within statutory limits in the shortest possible time. It expanded the number of Local Authorities required to take action from the initial five mandated Clean Air Zones (Leeds, Southampton, Birmingham, Nottingham and Derby) to include an additional 23 LAs plus London (now known as Air Quality Zones). On 21 February 2018 the High Court found that the approach taken in a further 45 LAs to reduce NO_2 by 2021 was not sufficiently robust. Mr Justice Garnham ruled that each of these local authorities had to have a plan to achieve compliance as soon as possible.

3.5 Dartford Borough Council was included in the 45 LAs required to produce draft plans to reduce nitrogen dioxide by 2021.

National Strategies and Plans

The focus on NO_2 in the 2017 plan is part of a wider approach to improve air quality across the UK. The following plans and strategies are of relevance:

- The Clean Growth Strategy published on 12 October 2017 by the Department for Business, Energy and Industrial Strategy (BEIS) outlines the Government's aspiration to accelerate the pace of 'clean growth' by nurturing low carbon technologies and setting efficiency targets for industry, low carbon home heating, low carbon transport, developing more sustainable and flexible sources of power and emphasising the responsibilities of the public sector in supporting these aspirations.

- 25 Year Environmental Plan published by DEFRA which provides an over-arching framework for the care of the natural environment.

- In 2018, DEFRA will consult on a Clean Air Strategy which will set out how the UK will meet international commitments to reduce emissions of five damaging air pollutants by 2020 and 2030 (nitrogen oxides, particulate matter, sulphur dioxide, non-methane volatile organic compounds and ammonia). It will have a broader scope than the Air Quality Plan for nitrogen dioxide (NO_2) and will cover emissions from domestic, industrial, farming and building activities. It will also outline a pathway to achieving zero emissions transport for all road vehicles and will be followed in 2019 by a draft detailed action plan on how this can be achieved.

- The Climate Change Act (2008) requires that the UK Government undertake a Climate Change Risk Assessment (CCRA) every 5 years, and that each assessment is followed by a cross-government National Adaptation Programme (NAP) designed to address these risks, one of which is the

potential risk of increased exposure to air pollution. The second NAP (NAP2) is currently under development and must be published by July 2018.

4. Local Actions

4.1 To address current priorities and to ensure a consistent and uniform approach to air quality and energy issues in Kent, an Energy and Low Emissions Strategy and Action Plan for Kent and Medway is being developed. Public Health consultants are collaborating with colleagues in Growth, Environment and Transport on this strategy. A Kent and Medway Low Emissions Strategy Working Group has been set up to develop the strategy, which aims to have a draft available for consultation in summer 2018. KCC Members will be involved through a Member Task Group and a Kent-wide Steering Group. The proposed strategy will identify priorities for targeted partnership action across the county, building upon existing and planned energy, transport, travel and air quality activities.

4.2 Kent County Council and its local partners also have an Active Travel Strategy that was launched by the cabinet member in 2016/17.

4.3 The Kent Public Health Observatory are currently working with Maidstone Borough Council to map and rank local mortality attributed to air pollution against local mortality due to other sources of disease. This analysis will cover Kent and will inform a Local Authority led strategic response to air pollution across the County. An additional piece of work is being undertaken with colleagues from University College London and Dartford Borough Council, using the Kent Integrated Dataset (KID), to explore air quality in Dartford and any detrimental effects on health. Additionally, both KCC's Growth, Environment & Transport and Public Health directorates have supported an application for research funding by the University of Kent also looking at air quality.

5. Conclusions

5.1 The Director of Public Health has duties to improve and protect the public's health and work on improving air quality is one area of this work. This can be enacted by ensuring that local plans are in place to address air quality in Districts and boroughs and this will also address health inequalities in the County.

5.2 KCC Public Health are working in partnership with many of the Districts and Boroughs and with colleagues in the KCC Growth, Environment and Transport Directorate on Kent-wide measures and strategies to improve air quality in Kent.

6. Recommendation

Recommendation
The Cabinet Committee is asked to **comment on and endorse** the approach taken by KCC Public Health and Partners to tackling Air Quality issues in Kent.

Background Document –

Environment and Transport Cabinet Committee report: Kent Environment Strategy progress, Energy and Air Quality.
https://democracy.kent.gov.uk/documents/g7548/Public%20reports%20pack%2031st-Jan-2018%2010.00%20Environment%20Transport%20Cabinet%20Committee.pdf?T=10

Appendix:

Appendix A – Particulate Matter and nitrogen dioxide

Report Author:

Dr Allison Duggal (Deputy Director of Public Health/Public Health Consultant)

Allison.Duggal@kent.gov.uk

03000413173

Appendix A – Details of common air pollutants

Particulate matter

Particulate matter (PM) is a complex mixture of very small solid particles and liquid droplets. The main source of PM is the combustion of fuels (vehicle, industry and domestic) and other human activities such as mining, quarrying, industrial processes and tyre and brake wear. Natural sources include wind-blown soil and dust, sea spray particles, volcanos and seismic events, and fires involving burning vegetation. Some particles are emitted directly (primary PM); others are formed in the atmosphere through complex chemical reactions (secondary PM).

PM is classified according to their diameter in micrometres:

Particles	Diameter
Nanoparticles/ultrafine particles	<0.1 µm
Fine particles $PM_{2.5}$	2.5 µm or less
PM_{10}	10 µm or less
Coarse particles	2.5-10 µm
Dust	75 µm or less

There is no evidence for a safe level of exposure to PM, suggesting that even very low concentrations may have a detrimental effect on health.

The size of particles and the duration of exposure are key determinants of potential adverse effects on health. Particles with a diameter of 10 µm or less (PM_{10}) pose a risk to health as they are able to lodge inside the lungs. There is some evidence that ultrafine particles (PM of 0.1 µm or less) can reach alveoli (small air sacs in the lung) and enter the bloodstream and therefore pose a greater risk.

Nitrogen dioxide

Nitrogen dioxide ($NO_{2)}$ is a gas that is produced with nitric oxide (NO) by combustion. Together they are often referred to as oxides of nitrogen (NO_x).

Local road traffic contributes substantially to outdoor air pollution, particularly in busy towns and cities. DEFRA estimates that 80% of NO_x emissions in areas where the UK is exceeding NO_2 limits are due to transport, with the largest source being emissions from diesel light duty vehicles (cars and vans).

A number of studies have reported associations with long-term exposure to NO_2 and adverse effects on health, including reduced life expectancy. Previously it was unclear whether these effects are caused by NO_2 itself or by other pollutants emitted by the same sources (such as road traffic). Evidence associating NO_2 with health effects has strengthened substantially in recent years and it is now thought that, on the balance of probability, NO_2 itself is responsible for some of the adverse health impacts reported in epidemiological studies.

Several factors are relevant when considering the impacts of air pollution on health:

- emissions of pollutants

- environmental concentrations of pollutants
- public exposures to pollutants (and associated health outcomes).

These are related but may operate independently; no one factor can fully predict the others. Emissions, concentrations and exposures all vary temporally and spatially. Improving air quality requires a dual focus: addressing ‘hotspots’ (areas of high concentration) and addressing population-level exposure. A high spatial resolution is required to detect local-scale effects. Health-effect thresholds differ depending on the exposure period (short or long-term). A high temporal resolution is required to account for short-term effects.

This report focusses on the impact of human exposure to air pollution. However, it also recognises that emissions of pollutants can also cause cumulative environmental degradation. Any action taken to mitigate a single issue (such as reducing NO_2) needs to take this into account to avoid creating additional longer term unintended consequences.