

Subject:	Real Time Air Quality Monitoring Network		
Date of Meeting:	18th January 2022		
Report of:	Executive Director Economy, Environment & Culture		
Contact Officer:	Name:	Samuel Rouse	Tel: N/A
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Ward(s) affected:	All		

FOR GENERAL RELEASE**1. PURPOSE OF REPORT AND POLICY CONTEXT**

- 1.1 This report has been prepared in response to a Notice of Motion [NoM] that was considered and approved by Full Council on 15 July 2021. The NoM stated that the Council noted that 'The city needs publicly available real-time data about pan-city air pollution (NO₂ [nitrogen dioxide] and PM [particulate matter]) to enable officers to assess how interventions, building configuration alterations or traffic flow changes affect air quality; and residents and visitors vulnerable to air pollution to plan their days when pollution levels are high'.
- 1.2 The NoM also specifically requested that this committee 'explores investing in a city-wide real-time air quality monitoring system with information available in real-time via a website for residents, councillors and officers'. A report was requested by the committee in September 2021. Another report will be considered by the council's Tourism, Equalities, Communities & Culture Committee on 13 January 2022 in response to the NoM which requested that the committee considers amending planning policy to ensure that residential and business developments that come to Planning Committee install and maintain an air quality monitor with data available to the Council.
- 1.3 The Environment Act 1995 sets out the local air quality management framework for Local Authorities. Part of these duties include reviewing and assessing air quality in the local area. The local air quality management framework will be amended by the Environment Act 2021 when the relevant provisions of that Act are in force.

2. RECOMMENDATIONS:

- 2.1 That the committee authorises officers to continue to progress the development of a real-time air quality monitoring system by upgrading the existing strategic monitoring network to enable the publication of real-time data;
- 2.2 That the committee welcomes the allocations of funding made by the council to invest in supporting and expanding the provision of strategic air quality monitoring stations and provide new local real-time sensors;

- 2.3 That the committee requests that officers continue to seek funding opportunities to enable the installation, expansion and maintenance of a real-time air quality monitoring system, including from council budgets, bids to the strategic Community Infrastructure Levy (CIL) pot and government grant funding.

3. CONTEXT/ BACKGROUND INFORMATION

- 3.1 Local Authorities have statutory duties set out under the Environment Act 1995, to review and assess air quality in their areas. Local Air Quality Management (LAQM) assessments help to inform where improvement needs to be prioritised, especially to ensure compliance with air quality health protections that are national standards or international guidelines.
- 3.2 Air quality monitoring can help inform residents, health professionals and others about travel and stay at home choices, and provide opportunities for community engagement, awareness and behavioural change relating to the travel and heating choices people make.

Current monitoring

- 3.3 Local Authority assessment of air quality is carried out with computer-based modelling and field monitoring. There are four automatic monitoring stations in the city which help monitor and compare against national air quality standards. The station in Preston Park represents urban background levels and is part of the national Automatic Urban Rural Network, operated by the government's Department for Environment, Food & Rural Affairs [DEFRA]. It detects similar air quality to the residential areas north of Preston Circus. There are also two roadside automatic analyser sites situated close to housing, operated by the Council. These monitor fine particles PM_{2.5} and nitrogen dioxide. Quality assured data is used to inform city air quality levels throughout the year.
- 3.4 The automatic sites are complemented with the Council's 60 diffusion tubes that monitor nitrogen dioxide on a monthly basis in accordance with DEFRA guidelines to compare with national air quality standards. Data from historic sites is used to track long term trends that are reported in the Annual Status Report of Air Quality. Since the second half of 2021, monitoring results have also been available for specific locations for particular projects such as the Active Travel Fund proposals for the A259 and Old Shoreham Road. The University of Brighton also records background pollutants at Falmer (south of the railway).
- 3.5 The results of assessments and monitoring of air quality are set out in the Council's Annual Status Reports and are available on its and the Sussex Air website.
- 3.6 Officers are in the process of reviewing monitoring contracts locally and across Sussex with other air quality partners, as there are local and economic/value for money and data quality advantages of taking a consolidated approach. Being aware of the growing interest in real-time monitoring, council officers have raised this matter as part of those discussions and the new contract is likely to be in place by early 2022.

Real-time monitoring systems

- 3.7 There are a number of 'real-time' systems that are already in place in the UK and across the world. These include London and Neath in Wales. The Neath project is a pilot study to achieve a better understanding of air quality on a local level by using digital technology. The data will enable more effectively targeted interventions and provide a better understanding of the impact of particular policies: crucial to designing effective strategies for managing air pollution. The project will have digital sensors across the city.
- 3.8 The proposal for a new real-time monitoring system across the Greater Brighton area includes three new automatic analysers in addition to the analyser on North Street. This will be complemented initially with fifteen node sensors at locations across the city. The investment in this pilot project will provide co-located node sensors that aim to monitor fine particles and nitrogen dioxide for three years, with a review of the technology's effectiveness in the second and third years. Quality assurance and quality control of the data to verify monitors and stream data to the public domain will be a key part of the project.
- 3.9 Monitoring is required for a sustained duration because short-term results will be affected by prevailing conditions lasting less than a few months. These variables include the weather, the sun and season, gas boilers and biomass burning, school term time, visitor traffic and international pollution episodes. Over a calendar year, results will include these variations. Air Quality standards for the protection of human health are annual averages or the number of polluted hours or days throughout the calendar year. To compare air quality with established standards and measure progress towards future objectives, it will be necessary to monitor for at least one calendar year
- 3.10 To report long term trends and seasonal comparisons with previous years, it will therefore be necessary to sustain long-term air monitoring through continued revenue investment to maintain the system. Other benefits of developing the council's monitoring system would be to support better smoke control and monitoring has the potential to detect and map clusters of smoky chimneys, in addition to assessing the direction of plumes from fires.

Funding opportunities

- 3.11 Officers regularly work with partners to seek and secure funds to reduce emissions, achieve better air quality and raise awareness. Opportunities are often provided by the DEFRA, Office of Low Emission Vehicles [OLEV] and Department for Transport [DfT]. The council has recently prepared and submitted a joint, cross-boundary bid for DEFRA grant funding which can be allocated to projects that will improve knowledge and information about air quality and steps individuals can take to reduce their exposure to air pollution and/or projects that include measures that deal with Particulate Matter. The result of the bid should be known by March 2022 and if successful will enable the purchase of further sensors to support a real-time monitoring system for the city.
- 3.12 Allocations of funding can also be made from the council's own budgets such as the Carbon Neutral Fund as explained in section 7 of this report. Increased monitoring will help support the development of a new ULEZ [Ultra Low Emission

Zone] and other air quality management monitoring with new stations and sensors. Further revenue funding will be required from 2022/23 onwards to support and maintain the system.

- 3.13 In terms of planning policy, the Brighton and Hove Local Plan 2005 and City Plan (Parts 1 and 2) set out a number of policies to ensure development avoids adverse impacts on local air quality by seeking mitigation and beneficial outcomes. This include policies SA2, SU9, DM35 and DM40. Developers also need to consider the air quality and emissions mitigation guidance for Sussex.
- 3.14 The council's updated Infrastructure Delivery Plan (IDP) for the City Plan has also included the need for further air quality monitoring infrastructure to be secured from the Community Infrastructure Levy [CIL]. As a result, future bids can be made for equipment from the CIL strategic infrastructure budget.

4. ANALYSIS & CONSIDERATION OF ANY ALTERNATIVE OPTIONS

- 4.1 The council will continue with long term diffusion tubes verified by regulatory standard automatic analysers. The existing automatic analysers can achieve near real-time and stream provisional results to the public domain. Diffusion tubes provide monthly results that comply with DEFRA's guidance, and can be used to track long term trends that are reported annually.

5. COMMUNITY ENGAGEMENT & CONSULTATION

- 5.1 The real-time monitoring project will raise awareness and promote community engagement. The information will also aid with community engagement in choosing the best environmental options and behavioural change around the travel and heating choices people make at an individual and community level.
- 5.2 It is intended that the system and the information it can provide will highlight airborne pollution as it happens and encourage more people to choose zero emissions more of the time or alter their behaviour or activities to protect their health.

6. CONCLUSION

- 6.1 Current monitoring equipment and investment plans provide the basis for establishing real-time data. New contractual arrangements will further enable information to be published and provide a platform for a sustained air quality monitoring network to enable further real-time data to be made more widely available. This network can then be developed further as technology improves in future years.

7. FINANCIAL & OTHER IMPLICATIONS:

Financial Implications:

- 7.1 Recognising that a greater level of information can help raise awareness of the effects of harmful emissions on people's and communities' health and inform their day to day and future travel decisions to switch to zero emission alternatives, capital funding allocations totalling £195,000 have been agreed by

the Policy & Resources Committee in July and October 2021 to enable investment in additional air quality monitoring equipment and initial running costs.

- 7.2 Sustained levels of investment will require appropriate levels of capital and revenue funding to be included in future council budgets from 2022/23 onwards. A bid has also been submitted to DEFRA's Air Quality Grant to start a 'real time' monitoring project with community engagement. The outcome of this bid is likely to be known March 2022.

Finance Officer Consulted: John Lack

Date: 21/12/21

Legal Implications:

- 7.3 As noted in the report, local authorities have statutory duties under the Environment Act 1995, to review and assess air quality in their areas. The report's recommendations will assist the Council in complying with these duties.

Lawyer Consulted: Hilary Woodward

Date: 5/1/22

Equalities Implications:

- 7.4 Consideration will be given to the accessibility requirements of a new system to ensure that the information and data are fully promoted and available to those people with protected characteristics who may need to access it. An Equality Impact Assessment of the system will be carried out if required.

Sustainability Implications:

- 7.5 Improved information about air quality can assist in people's travel decisions and lifestyle choices, resulting in more sustainable outcomes and reductions in harmful emissions. Monitoring of greenhouse gases is additional to toxic nitrogen dioxide, particulate matter, and smoke. Consideration could be given to adding this function at selected monitoring sites, if space and funding was allocated.

Brexit Implications:

- 7.6 For air quality, EU directives such as nitrogen dioxide are transposed into UK legislation. Since then, the government is required to set out additional recommendations to improve ambient particulate levels and local emissions.

Any Other Significant Implications:

Crime & Disorder Implications:

- 7.7 There are no direct crime and disorder implications.

Risk and Opportunity Management Implications:

- 7.8 Risks could include that technology used within a wider node sensor system does not provide verifiable results, has poor data capture, or cannot deliver in accordance with the expectations of real-time. The development of the system

will provide the opportunity to use the air monitoring results platform to highlight other messages and provide advice to the public for reducing emissions to improve neighbourhood air quality outdoors and indoors.

Public Health Implications:

- 7.9 Since the pandemic there is heightened interest in overall health and respiratory wellbeing. It is acknowledged in the council's Annual Status report on local Air Quality that airborne pollution is a key determinant on the health of children and older people, as well as affecting the wellbeing of some people of working age. The development of a real-time monitoring system will increase awareness of issues and actions and engage people further in delivering better health and wellbeing across the city.

Corporate / Citywide Implications:

- 7.10 The Corporate Plan recognises improvements in air quality will contribute towards the key outcomes of creating 'a sustainable city' and 'a healthy and caring city'. A real-time monitoring system will contribute towards doing so by raising awareness amongst communities and encouraging

SUPPORTING DOCUMENTATION

Appendices:

None

Background Documents

1. Government's Environment Act (1995 and 2021)
2. BHCC Annual Status Reports on air quality (2020 and 2021) found at: [How we manage air quality in the city \(brighton-hove.gov.uk\)](https://www.brighton-hove.gov.uk/air-quality)
3. Reports to Policy & Resources Committee - Carbon Neutral Fund allocations (1 July and 7 October 2021)