Wiltshire Council

Wiltshire Community Air Network

Briefing Note No. 25 - 05

Service:	Environmental Control and Protection team
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Background

The Environmental Control and Protection team has launched a one-year project to monitor PM2.5 air pollution across the county and are seeking hosts for 100 low-cost air quality sensors.

The air quality sensors will measure PM2.5 air pollution, small particles in the air that can increase the risk of health problems and that can be damaging to the environment. This is part of the council's Wiltshire Community Air Network (WCAN) project and is the first step in gathering evidence on local PM2.5 concentrations. The sensors will provide real time data which members of the public will be able to access online.

Individuals and organisations can now apply online to borrow a sensor.

We encourage you to share the information about the WCAN project with your networks, and with constituents who may be interested in applying for a sensor.
The closing date for applications is Friday 11 July 2025.

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The data collected from the sensors will enable us to gain a greater understanding of PM2.5 air pollution and put us in a stronger position to determine requirements for long-term monitoring and identify ways to reduce pollution.

Existing monitoring indicates that the air quality in Wiltshire is predominantly very good. However, there are a small number of locations where the combination of traffic, road layout and physical features of an area result in pollutants being trapped so that concentrations increase to unacceptable levels.

Historically two pollutants have been of concern in Wiltshire: nitrogen dioxide and PM10. There have been significant improvements in the levels of these pollutants and the council intend to start revoking some of the eight air quality management orders currently in place, where pollutant levels now comply with UK air quality standards.

Recent focus has shifted to air pollution from very fine particulates (PM2.5) as there is increasing evidence of damage to health and the environment, but it is not well understood at the local level. PM2.5 is not currently part of the UK Government's Local Air Quality Management framework, so local authorities are not required to monitor and report PM2.5 levels. However, since 2016 the government has stated that it expects all local authorities to effectively use their powers to reduce PM2.5 emissions from the sources which are within their control.

Professional-grade air quality monitoring equipment is expensive, costing tens of thousands of pounds to purchase and maintain. The council currently has professional-grade air quality monitoring stations in Salisbury, Bradford-on-Avon, Marlborough, and Devizes. Recent technological developments have made it possible to use low-cost air quality sensors for some types of air quality monitoring. The low cost makes it possible to monitor a much wider range of locations than would be possible with professional-grade air quality equipment. The quality of the data from low-cost sensors is more limited than that of professional-grade equipment, so findings will need to be treated as indicative and used with caution.

Low-cost air quality sensors are easy to use and maintain, making them ideal for citizen science projects, which involve members of the public in research and collecting data. Evidence shows it is an effective way to improve public understanding of air quality challenges and supports deeper engagement in addressing these challenges.

Alongside this project, Wiltshire Council are in the process of updating the equipment at two regulatory air quality monitoring stations (Masons Lane in Bradford-on-Avon and Exeter Street in Salisbury). The new equipment will measure PM2.5, alongside PM10 and nitrogen dioxide, providing long-term, high quality PM2.5 monitoring at these locations.

Together, these new sources of evidence will be an important input in developing the next Air Quality Strategy, which will include a new focus on addressing PM2.5 challenges in Wiltshire, alongside efforts to keep reducing nitrogen dioxide and PM10.

Hosting an air quality sensor

We are asking members of the public and local organisations to volunteer to host a sensor outside their home or building. This will generate PM2.5 data in communities all over Wiltshire, creating a detailed local picture.

The sensors need to be placed outdoors, plugged in to a mains power supply and connected to a stable internet connection. They are easy to use, and volunteers will be supported to set up and maintain the sensor. At the end of the one-year project, hosts can choose to keep the sensor for their own use or return it to the council for recycling.

The approximate location of the sensor will be visible on a publicly available online map.

Once applications have been assessed, successful applications contacted, and sensors will be delivered to them with detailed installation instructions. Support will be available for anyone that needs help installing the sensor.

How the sensors will be allocated

To ensure a wide range of places and communities are part of the project, we have allocated a number of sensors to each of the 18 community areas of Wiltshire. This is based on the size of the population.

In each area, we will be prioritising applications from:

1. Schools, including nurseries, primary schools, secondary schools, and tertiary institutions.
2. NHS medical settings, including healthcare centres, hospitals, or GP surgeries.
3. Supported housing providers.
4. Locations near known or suspected sources of PM2.5 pollution.

If there is high demand for air quality sensors then we may run more projects in the future.

If an application is unsuccessful this time we will encourage people to keep an eye on our social media and webpage for future opportunities.

Requirements

People need to:

- Be over 18 years of age
- Have a suitable outdoor location to place the sensor for one year, without being disturbed. It must be placed outside, between 1.5m and 3m above ground level.
- Confirm that the sensor will be continuously connected to mains power and a reliable Wi-Fi connection (including overnight and during holidays). This is important as the sensor will not work without power and internet connection.
- Have permission from the bill payer to pay the cost of power and Wi-Fi used by the air quality sensor. The sensors only use a small amount of power and bandwidth, costing under £3 to run for a whole year.

What is PM2.5?

PM2.5 refers to airborne particulate matter with an aerodynamic diameter of 2.5µm or less. Particulate matter is a complex mix of solids and liquids from a variety of human and natural sources, such as pollen, sea spray, domestic wood burning and tyre/ brake wear from vehicles.

Trial sensor at Holy Trinity CE Academy Primary School

Holy Trinity CE Academy, a primary school in Calne, volunteered to install a trial sensor in March 2025. The real-time PM2.5 data from the trial sensor in Calne is already available to view on the PurpleAir online map. For best results, check the settings on the map. In the top left corner, there is a black cog. Click here and select “raw PM2.5 (ug/m3)” as the data layer and set the averaging peri od to 1-hour.

The team is working closely with the council’s Data and Insights team to develop a Power BI dashboard that will analyse the data to identify PM2.5 pollution trends and hotspots.

Insights from the project will be shared with the public via Wiltshire Council communications channels. The information will be used to help direct future air quality monitoring in Wiltshire.

More information

More information and application form www.wiltshire.gov.uk/wiltshire-community-air-network
Email: communityairnetwork@wiltshire.gov.uk(opens new window).
Phone: 01225770293