

THE FUTURE OF AIR QUALITY MONITORING WITHIN SEVENOAKS DISTRICT

Cabinet – 12 October 2023

Report of: Deputy Chief Executive and Chief Officer for Planning and Regulatory Services

Status: For Decision

Also considered by:

- Cleaner & Greener Advisory Committee – 10 October 2023

Key Decision: yes:

1. Result in the District Council incurring expenditure, or making savings, which exceed £50,000 in value

Executive Summary: This report proposes to change the way the District Council monitors air quality within Sevenoaks District. The current Bat & Ball and Greatness Air Quality Stations (AQS) are approaching the end of their serviceable lifespans and are expected (within the next 5 years) to become uneconomical to repair. This report proposes that unless alternate funding can be identified by April 2024, that both AQS are closed. In their place the District Council will invest in a network of portable AQS to be strategically sited within Air Quality Management Areas. These portable AQS will allow members of the public to view current up to date air quality data from key locations whilst generating a small in year budget saving as well as removing the need for significant unbudgeted investment in the replacement of existing analysers, equipment and enclosures.

This report supports the Key Aim of: (insert information from Community Plan or Best Value Performance Plan or delete if unnecessary or irrelevant)

Portfolio Holder: Cllr. Margot McArthur

Contact Officer(s): Nick Chapman Ext. 7167 & Colin Alden Ext. 7186

Recommendation to Cleaner & Greener Advisory Committee

That the contents of the report be noted and that C&GAC support and recommend the proposed changes to Air Quality Monitoring (as outlined in this report) to Cabinet

Reason for recommendation: The proposed changes will generate an ongoing budget saving whilst increasing the visibility and accessibility of air quality monitoring data within Sevenoaks District.

Recommendation to Cabinet

That Cabinet agree the proposed changes to Air Quality Monitoring (as outlined in this report).

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Introduction and Background

- 1 Sevenoaks District Council currently has 4 Air Quality Management Areas where Nitrogen Dioxide (NO₂) is predicted/ modelled to exceed national objective levels (40ugm³ as an annual average). These are:
 - a. AQMA 8- London Road/ High Street, Swanley
 - b. AQMA 10 Sevenoaks Town Centre
 - c. AQMA 13 A25- entire length from boundary with Tandridge to Tonbridge and Malling
 - d. AQMA 14- Junction of Birchwood Road and London Road Swanley
- 2 The District Council is required to monitor air quality within these areas and does so through a network of 58 passive diffusion tubes and 2 real time air quality stations.
- 3 Diffusion tubes are generally located on street furniture close to the sources of pollution. They are relatively cheap to deploy but the monthly results they produce must be annualised and ratified before use. Consequently, the data collected for the previous year is published in June within the Air Quality Annual Status Report (i.e. 2022 data is published in June 2023 etc).
- 4 The Air Quality Stations produce data across a number of pollutants on a minute by minute basis:
 - a. Bat & Ball Air Quality Station- Nitrogen Dioxide (NO₂) and Small Particulates (PM₁₀)

b. Greatness Park Air Quality Station- Nitrogen Dioxide (NO₂), Small Particulates (PM₁₀) and Ozone (O₃)

- 5 The data from the Air Quality Station is published 'live' on the London Air Network at: [London Air Quality Network :: Welcome to the London Air Quality Network » Statistics Maps](#)
- 6 The Air Quality Stations are expensive to maintain and operate. These costs have been increasing rapidly over the past two years linked to inflationary pressures including cost of electronics, specialist gasses, contractors and electricity.
- 7 The Bat and Ball Air Quality Station was installed in August 2005 and the Greatness Air Quality Station in January 1998. Both are therefore approaching the end of their reasonably anticipated operational lives. In particular, the structure at Greatness Air Quality Station (a steel shipping container) is rapidly deteriorating and at both AQS, analysers are reaching the point when they are no longer economical to repair.
- 8 This report outlines the options available for the continuation of air quality monitoring moving forward over the next few years and suggests potential options for the delivery and enhancement of air quality monitoring.

Outside the scope of this review

- 9 No changes are proposed for the existing diffusion tube network (i.e. maintain the existing number and location).

Cost associated with the Air Quality Stations

- 10 Table below shows the annual costs associated with maintenance and operation of the two air quality stations:

Task	Bat & Ball AQS	Greatness AQS	TOTAL
Data Management Costs	£6,035	£6,035	£12,070
Engineering Costs	£3,125	£3,125	£6,250
Local Site Operator Duties	£4,995	£4,996	£9,991
Electricity Costs	£7,853	£7,854	£15,707
Calibration Gas Purchase + Rental	£749	£749	£1,498
Total	£22,757	22,780	£45,516

- 11 In addition to these annual costs, there are a number of periodic, “one off” costs which may be incurred. These include replacement analysers, air conditioning plant and structural maintenance. The table below provides indicative costs for these items.

Item	Typical Cost (estimate)
Air Quality Analyser	£15,000-£30,000 (depending on pollutant measured)
Air Conditioning Plant	£3,000 to £5,000
Replacement Air Quality Station Enclosure including installation	£35,000 to £70,000 depending on number of analysers installed

- 12 At the Greatness Air Quality Station we currently have 3 analysers. One of these (the NO_x Analyser) was replaced with a 2nd hand unit in 2021. The Ozone and TEOM (PM₁₀) analysers are believed to have been installed in 1998 and so are approximately 25 years old and therefore are likely to require replacement in the next 2 years. The current air conditioning plant was installed May 2020 and is anticipated to need replacing in 2025. The enclosure at Greatness Park is rapidly deteriorating and we have had recent problems with water ingress through the steel structure (shipping container type). Whilst temporary repairs have been affected, we may need to replace the enclosure in the near future.
- 13 At the Bat and Ball Air Quality Station, we currently have 2 analysers. Unfortunately, one of these analysers requires immediate replacement (NO_x Analyser). The BAM (PM₁₀) is believed to date from 2005 and therefore may need replacement within the next 5 years. The current air conditioning plant was installed in August 2022 and is anticipated that it will need replacing in 2025.
- 14 Based on the above information it is anticipated that the District Council will need to spend between £328,580 and £384,580 over the next 5 years in order to maintain our existing monitoring capability.
- 15 Of this anticipated spend, £227,580 is currently budgeted for.

Historical Significance/ Public Health Value of the Air Quality Stations

- 16 The Sevenoaks Annual Status Report 2023 shows that in 2022 all monitoring locations across the district were within the National Objective level for Nitrogen Dioxide (NO₂). This data is in accordance with local and national trends over the past 10 years.
- 17 For more than 10 consecutive years we have not measured a breach of any relevant air quality objective/ standard at either of our AQS.

- 18 The Bat & Ball AQS is located on the north-eastern edge of the Bat and Ball Junction and was situated in this location in order to measure roadside emissions. However, owing to constraints at time of construction it is located approximately 9m from the carriageway (pollution source) and so is not fully representative of exposure. As a result, data obtained is slightly compromised.
- 19 Junction improvements, including the potential installation of a roundabout, are being considered for the Bat & Ball junction as part of proposed nearby development. It is anticipated that this work will require the re-siting of the Bat & Ball AQS. Owing to the significant variations in air quality depending on geographical location, where an AQS is re-sited data previously collected can no longer be used to establish trends/ or assess changes.
- 20 The Greatness AQS is located on the southern edge of Greatness Park. This AQS measures background air quality.
- 21 The data collected by the Greatness AQS is considered strategically important for Kent and London. The background NO₂ levels measured at this station help inform localised concentrations of roadside NO₂ in London. Further, the Greatness AQS is one of the few in the South East that measures Ozone (O₃), a pollutant that is considered critical to public health as it has a multiplying effect on NO₂. Local Authorities are however not legally required to measure Ozone concentrations and so whilst this information is of national scientific interest it does not help the District Council meet its air quality monitoring obligations.

Alternative monitoring methods

- 22 In the last 20 years there have been significant technical advancements in air quality monitoring technologies. There are now multiple providers of low cost portable air quality monitors that can be affixed to roadside lampposts.
- 23 Whilst these monitors do not conform with 'reference standards' they can be deployed near to sources of pollution and are able to report real time data (every 5 minutes) via a web portal. Some sensors are able to report on a wider range of pollutants than is currently possible from our current AQS.
- 24 Costs of portable air quality monitors vary but we have received indicative costs of £2000 per year per unit per year. In addition, there is a need for the District Council to seek permission from KCC to install units on their lampposts. The indicative cost for the engineering assessments and permits is likely to be a one of cost of approximately £2000 plus an annual permit fee of around £150 per site.

Proposed Solution

- 25 As outlined above, significant investment (budgeted and unbudgeted) is required to maintain the existing Air Quality Stations at Greatness and Bat & Ball over the next 5 years.

- 26 As outlined in 18, the Bat & Ball Air Quality Station is poorly sited and does not measure worst-case air quality at the junction. Future proposed development may also necessitate that this AQS is removed/ or moved as part of highway works.
- 27 Notwithstanding the above issues, the data collected by the AQS (particularly Greatness Park) has value to the wider scientific community. Officers will therefore hold discussions with interested stakeholders to try and identify funding streams (outside of SDC budgets) to secure ongoing monitoring at the current AQS.
- 28 Should additional funding not be identified, it is proposed that both AQS are closed by April 2024 generating an ongoing budget saving of approximately £45,000 per year and negating the need for further operational investment (replacement of analysers and structural maintenance) of approximately £100,000 over the next 5 years.
- 29 Instead, of replacing the existing AQS it is proposed that SDC implement a network of portable air quality monitors in the following areas (subject to technical constraints and available budgets):
- a. Bat & Ball Junction
 - b. Swanley High Street
 - c. Sevenoaks Town Centre
 - d. Westerham.
- 30 The proposed solution would provide SDC with better data to assess the impacts of traffic flows on our AQMAs and would allow residents and councillors the ability to see real time air quality data within the areas of greatest Air Quality concern.
- 31 The proposed network could be amended or added to as additional funding became available or as new areas of concern arose.
- 32 It is believed that the total costs of the installations as outlined above can be met within the existing Environmental Health budget and generate an annual budget saving on existing costs.

Other options Considered and/or rejected

- 33 **To maintain existing Air Quality Stations through renewal and replacement of equipment and structures.** As advised above, the costs of maintaining the existing Air Quality Stations would require significant, unbudgeted investment from the District Council. Both Air Quality Stations report continuous compliance with air quality objectives and whilst they have scientific merit to the wider scientific community, they currently add little to our understanding of air quality in Sevenoaks. The costs of maintaining our current air quality monitoring in the same form will cost approximately £330k over the next 5

years and this spend is not considered appropriate with consideration to local government finances.

- 34 **To close the Bat & Ball AQS but renew/ replace the Greatness AQS-** As per section 18 above, it is considered that the Bat & Ball Air Quality Station may be sited inappropriately and as a result the data it collects does not significantly inform the District Council's understanding of Air Quality in Sevenoaks.

Currently it is proposed that the Bat and Ball Junction will be replaced with a roundabout as part of a major development nearby and it is considered highly likely that this work will require the relocation of current AQS. Once the AQS is moved, historic data is no longer relevant. It is therefore considered that there is limited benefit to maintaining the AQS at this location in the interim.

Closure of the Bat and Ball Air Quality Station but maintaining the Greatness AQS could save the District Council approximately £43,785 over a 5 year period.

Significant and unbudgeted investment will still be needed in the short term at the Greatness AQS.

- 35 **To close the Bat & Ball/ Greatness AQS without additional/ supplementary air monitoring capacity.** Whilst Air Quality has improved considerably within the District over the past 10 years, officers recognise that it remains an area of significant public concern. We do not consider that it would be desirable to remove our capability to report real time air quality data without identifying an alternate capability.

Key Implications

Financial

The proposals within this report will generate a modest budget saving.

Legal Implications and Risk Assessment Statement.

As part of the annual ratification of passive diffusion tube data it is necessary to bias adjust tube results. Bias adjustment factors can be derived locally (from diffusion tubes collocated with an AQS) or via nationally published bias adjustment factors. Removal of the Bat & Ball and Greatness AQS would require officers to use nationally derived bias adjustment factors in future Annual Status Reports.

Sevenoaks District has 4 declared Air Quality Management Areas (for predicted or monitored exceedances of the annual NO₂ air quality objective levels). Within these AQMAs we are required to monitor levels of NO₂. We can continue to do this through our network of diffusion tubes and we have no legal duty to maintain our current air quality stations.

Equality Assessment

The decisions recommended through this paper have a remote or low relevance to the substance of the Equality Act.

Net Zero Implications

The decisions recommended through this paper have a remote or low relevance to the council's ambition to be Net Zero by 2030. There is no perceived impact regarding either an increase or decrease in carbon emissions in the district, or supporting the resilience of the natural

Appendices

None

Background Papers

[London Air Quality Network : Welcome to the London Air Quality Network »](#)
[Statistics Maps](#)

Richard Morris

Deputy Chief Executive and Chief Officer – Planning and Regulatory Services