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**Enhanced Air Quality Monitoring Proposal**

Relevant Portfolio Holder	Councillor Harrison
Portfolio Holder Consulted	The Portfolio Holder in the 2022/23 municipal year was consulted.
Relevant Head of Service	Simon Wilkes
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Wards Affected	All
Ward Councillor(s) consulted	No
Relevant Strategic Purpose(s)	Communities that are safe, well maintained and green
Non-Key Decision	
If you have any questions about this report, please contact the report author in advance of the meeting.	

**1. RECOMMENDATIONS**

**The Executive Committee is asked to RECOMMEND that:-**

**Following successful outcome of air quality grant bid to Defra, that match funding totalling £2,300 be funded from Corporate Earmarked Reserves over the life of the project.**

**2. BACKGROUND**

- 2.1 During the course of 2022 several partner authorities expressed a keen interest in developing their own enhanced air quality data provision. This along with the timely announcement that DEFRA was allowing grant bids for monitoring equipment as part of LOT 2 of 2022/23 air quality grant framework provided an opportunity to bid for funding.
- 2.2 On 10<sup>th</sup> February 2023, DEFRA confirmed WRS had been successful in a County wide air quality grant application to cover a significant proportion of costs for enhanced monitoring equipment.
- 2.3 For the purpose of complying with the Government set Local Air Quality Management (LAQM) regime, monitoring of air quality is undertaken almost exclusively across Worcestershire utilising passive diffusion tube monitoring techniques. This method has been robustly tested over many years and is used by all local authorities for the purpose of monitoring nitrogen dioxide (NO<sub>2</sub>) in the outdoor environment. The measurement technique has been fine-tuned over time and it provides

us with a level of accuracy that is considered acceptable by the Department of the Environment, Food and Rural Affairs (DEFRA) for the purposes of LAQM work. It is also the cheapest method at a cost of around £7 per location per month (laboratory supply and analysis only). Data using this technique can be harvested over a large geographic area and this method has also proven excellent for the purpose of trending air quality over a long period of time.

- 2.4 There are however limitations to using this technique. Diffusion tubes lack absolute accuracy and can display a +/-10% error rate so locations close to the government objective threshold for action require further study using more sophisticated methods prior to taking further action. Diffusion tube results are not immediate, as they must be subjected to the national QA/QC process which corrects the 'tube bias' retrospectively following the completion of the national adjustment study co-ordinated by DEFRA. Hence data collected in a specific year is not available in a reliable format until the following April.
- 2.5 All of the Worcestershire authorities have diffusion tube monitoring programmes however two locations do have enhanced monitoring and they are located in Kidderminster.
- 2.6 A very accurate NO<sub>2</sub> gas analyser is installed in Kidderminster that monitors pollution in real-time. Diffusion tubes are also co-located here. The data harvested from both techniques provide us with a local bias adjustment factor which provides several scientific advantages over that of the slow national scheme. The data collected also allows us to report nationally what the background NO<sub>2</sub> concentration's are in Worcestershire. Capital cost of this system would be around £17,000 today with annual maintenance cost of £3,000 (single pollutant only). This system is officer time hungry to and is effectively a laboratory instrument inside a bespoke roadside case.
- 2.7 The second site employs a purpose-built electrochemical gas measuring system purchased by Wyre Forest District Council. This system is not as accurate as the other gas analyser and as of writing, is not approved for LAQM work. Nevertheless, it provides real-time information on NO<sub>2</sub> levels, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and ozone (O<sub>3</sub>). The equipment is deployed in the Blackwell Street/Horsefair area which was subject to significant road junction improvements in 2019. Prior to these changes this area had the poorest air quality in Worcestershire and the equipment is being used to monitor the effectiveness of these improvements. The equipment will also be used to monitor the significant developments planned on the

east side of Kidderminster over the forthcoming years and determine whether they have a detrimental effect on air quality at this location. The system has a capital cost of around £4,000 and annual maintenance and data harvesting cost is £2,500 per year.

- 2.8 These new systems, referred to in section 2.7, are compact, lightweight air pollution sensors that measure harmful gases and particle matter in real-time, including the main pollutants of concern (NO<sub>2</sub> and PM<sub>10</sub> and PM<sub>2.5</sub>). They are powered using internal batteries or via solar panel and can be attached to a lamp post at the required location making siting flexible and expedient without the requirement of street works consent and additional installation costs.
- 2.9 The sensors provide detailed air quality measurements in real-time and therefore can be used for a variety of purposes including identifying short term trends, tracking pollution hotspots, background concentration monitoring, investigating air quality around schools or other areas. These systems can also be used in isolation or deployed as a network across a wide area to provide a detailed picture and due to the immediacy of the data it has many practical applications in providing early warning through the app and website to advise persons who have respiratory problems of imminent risks due to poor air quality episodes. The data will also be publicly available and will be used in future campaigns around behaviour change and the promotion of active modes of travel.
- 2.10 As discussed in section 2.6, monitoring in real time for several pollutant types has been prohibitively expensive. However, the advent of this new technology is changing the landscape. The purpose of this report is to provide some background information on the technology, breakdown on cost and alternative funding options.

### **3. OPERATIONAL ISSUES**

- 3.1 WRS will run and maintain the monitoring equipment on behalf of the authority including the provision of data access through the internet and via mobile app.

### **4. FINANCIAL IMPLICATIONS**

- 4.1 As discussed in sections 2.1 and 2.2 above, WRS has made a successful application to DEFRA for funding of enhanced air quality monitoring equipment. The majority of capital and revenue costs will be

covered by DEFRA funding however a minimum of 10% match funding is expected of the successful applicant (this will be met by the District Councils in proportion to the number of sensors proposed for each Council area). DEFRA intend to monitor progress on project outcomes for 2 years following the award however revenue budget support requested is for 3 years (4 years in total). Beyond the 4 years the Council has the option of funding the servicing and maintenance as the equipment has a life expectancy of between 10-15 yrs.

4.2 WRS have requested grand funding for 2 units on behalf of Redditch BC to be located in strategic locations to be confirmed. Locations under consideration at the moment include a background site for PM monitoring/ Smoke & Solid Fuel burning.

4.3 **Cost Breakdown (with successful grant funding)**

<b>2 units(yr1)</b>	<b>Cost</b>	<b>Match funding (10%) 2022-23 grant</b>
Capital Investment	£8,000	£800
<b>total</b>	<b>£8,000</b>	<b>£800</b>

<b>Revenue (maintenance and data) (3yrs)</b>		
Maintenance	£4,000	£400
Annual data	£1,000	£100
<b>total</b>	<b>£5,000</b>	<b>£500</b>
<b>Total (3 years)</b>	<b>£15,000</b>	<b>£1,500</b>

4.4 As detailed in paragraph 3.2 10% match funding would be required by each district council. It is therefore proposed that Executive Committee recommend that £2,300 match funding be funded from Corporate Earmarked Reserves over the life of the project.

**5. LEGAL IMPLICATIONS**

5.1 None identified

**6. OTHER - IMPLICATIONS**

**Relevant Strategic Purpose**

6.1 Action on this proposal and the data from the units would help to support work to address the green thread at the Council.

**Climate Change Implications**

6.2 This proposal supports green initiatives and plans of the Council as it promotes active travel and other behaviour change projects which discourage travel through the use of motor vehicles.

**Equalities and Diversity Implications**

6.3 There are no equalities or diversity implications with this proposal.

**7. RISK MANAGEMENT**

7.1 WRS have been successful in application for DEFRA grant assistance for the capital cost of this proposal. DEFRA are seeking 10% minimum match funding which includes service, maintenance and data processing costs for a total of 4 years should the Council wish to receive the benefits of enhanced air quality monitoring within its boundary.

**8. APPENDICES and BACKGROUND PAPERS**

Appendix 1 – Images of monitoring equipment & screen shot of real time data feed

**Appendix 1 - images of monitoring equipment & screen shot of real time data feed**



**Screenshot of Website and live Feed**

