

GREATER **LONDON** AUTHORITY

REQUEST FOR MAYORAL DECISION – MD2587

Title: Breathe London air quality sensor network

Executive Summary:

The Mayor has identified improving air quality as one of his key priorities. Critical to this is a comprehensive understanding of air quality in London and enhancing our monitoring and modelling capabilities. In 2018 the GLA began work with external partners to deliver “Breathe London”, a pilot hyper-local air quality sensor network mostly supported by philanthropic funding.

After a successful pilot phase, philanthropic funding of the Breathe London network will end in July 2020, as will the contract with the existing delivery partners. The network has been of enormous value, especially to the 30 schools and 10 hospitals which have hosted sensors. Funding has been secured as part of the GLA’s budget process to continue the Breathe London network. This decision seeks approval for the GLA to continue the Breathe London network, providing real time air pollution data to some of the most vulnerable Londoners and deepening our understanding of air pollution across the city.

Decision:

That the Mayor approves:

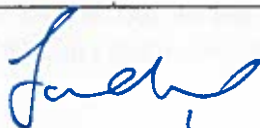
1. expenditure of up to £757,000 over four years (FY20/21 to FY23/24) to continue the Breathe London project and to provide hyper-local air quality monitoring across London;
2. procuring a project delivery partner to help develop and operate the Breathe London network; and
3. a delegation to the GLA’s Executive Director for Good Growth to approve the allocation of any additional funding that may become available to Breathe London, e.g. contributions from external bodies or other projects.

Mayor of London

I confirm that I do not have any disclosable pecuniary interests in the proposed decision and take the decision in compliance with the Code of Conduct for elected Members of the Authority.

The above request has my approval.

Signature:



Date:

25/2/20

PART I – NON-CONFIDENTIAL FACTS AND ADVICE TO THE MAYOR

Decision required – supporting report

1. Introduction and background

- 1.1. Improving air quality is a public health priority. Long-term exposure to air pollution in London contributes to thousands of premature deaths every year. There is also strong scientific evidence of the acute health effects of short-term exposure to very high levels of pollution, like those experienced during an air pollution episode. It is essential that coordinated action is taken to reduce exposure, especially amongst those most at risk such as school children, the sick and the elderly.
- 1.2. Critical to doing this is having a comprehensive understanding of air quality in the city and enhancing our current monitoring and modelling capabilities. To address this the GLA have been working with partners on Breathe London, a 22-month pilot study of hyper-local monitoring.
- 1.3. The Mayor announced the GLA's participation in a joint programme with C40 Cities in December 2017 during his official visit to India and Pakistan. The total value of this programme was £2,150,000 with £2,000,000 in funding provided by the Children's Investment Fund Foundation ("CIFF", a philanthropic foundation) and £150,000 provided by the GLA. The decision for the GLA to contribute £150,000 towards the pilot phase of Breathe London was approved by MD2352 and ADD2332.
- 1.4. The initial pilot phase lasted 12 months from October 2018 to October 2019. After this additional philanthropic funding was secured to extend the pilot by 8 months to July 2020. This extension was agreed with CIFF as the pilot phase was delivering valuable insights into London's air quality and some technical elements of the network were still being developed. When the extension was secured, CIFF made it clear that no further funding would be available for this project.
- 1.5. CIFF chose London to pilot this new approach in part because of London's extensive existing air quality network, which meant data collected from the new lower cost network could be properly validated. The intention was to trial the new approach in London and, once the concept had been tested and proved, use the learnings from London to replicate the network in lower capacity cities globally. CIFF now feel, after a successful pilot, they are ready to apply the learnings from London in cities with less capacity and so are focusing their funding outside of London. Other philanthropic sources of funding have been considered but it is unusual for these organisations to fund existing projects, previously supported by other funders.
- 1.6. A competitive process was undertaken by C40 to recruit the delivery partners, and the successful applicants were a consortium led by Environmental Defense Fund Europe with partners including Google, King's College London, Air Monitors, National Physical Laboratory and the University of Cambridge.
- 1.7. The pilot phase incorporated three types of monitoring; fixed sensors at over 100 locations; mobile monitors in Google Streetview cars; and wearable monitors measuring children's exposure on their route to school.
- 1.8. The mobile and wearable components of Breathe London were studies with a fixed duration and have now been completed. The fixed sensor network continues to provide real time continuous data from over 100 sites across London to the website (<https://www.breathelondon.org/>). As a result, the fixed sensor network will be the component of the pilot phase taken forward with this funding. The data platform will also continue to host and integrate data from the fixed sensor network and other sources.

- 1.9. Sensors are deployed at (i) pollution hotspots, (ii) areas close to highly sensitive receptors and (iii) areas identified as experiencing an air quality management intervention, such as the ULEZ, during the project. Sites include 10 of London's most polluted hospitals and 30 schools.
- 1.10. Philanthropic funding of the Breathe London network pilot by the Cluff Foundation will end in July 2020, as will the contract with the existing delivery partners. The network has been of enormous value, especially to the schools and hospitals which have hosted sensors. It is therefore recommended that it continues. The continuation of the Breathe London network will build on the successes of the pilot phase as well as develop the data integration capacity of the platform. The network will continue to engage and inform Londoners and measure the impact of the new, tighter standards for the Londonwide Low Emission Zone in 2020 and expansion of the Ultra Low Emission Zone in 2021.
- 1.11. The Mayor is requested to approve expenditure of up to £757,000 over four years (FY20/21 to FY23/24) to continue the Breathe London project and to provide hyper-local air quality monitoring across London by means of grant funding to a delivery partner(s), to be identified through a competitive process in accordance with the GLA's Contracts and Funding Code.

2. Objectives and expected outcomes

- 2.1. This work programme will contribute to the London Environment Strategy objectives:
- Objective 4.1 – Support and empower London and its communities, particularly the most disadvantaged and those in priority locations, to reduce their exposure to poor air quality;
 - Objective 4.2 – Achieve legal compliance with UK and EU limits as soon as possible, including by mobilising action from London boroughs, Government and other partners; and
 - Objective 4.3 – Establish and achieve new, tighter air quality targets for a cleaner London by transitioning to a zero emission London by 2050, meeting World Health Organization health-cased guidelines for air quality.
- 2.2. The main elements of the work programme, its objectives and expected outcomes are set out below.

Objectives

- Build on the pilot phase of the project, maintain a robust, open access, real-time, hyperlocal data set for data collected that incorporates, lower-cost hyper local monitoring with London's existing reference quality network (including AURN, Air Quality England and LAQN, where possible), showing an unprecedented level of detail about London's air quality;
- develop an algorithm for analysing multiple datasets that use high accuracy reference measurements to characterize lower accuracy low cost sensor measurements;
- host a public website that incorporates the data in innovative ways, with reference to source apportionment and health impacts;
- measure the impact of interventions such as the tightening of standards for the Londonwide Low Emission Zone in 2020 and expansion of the Ultra Low Emission Zone in 2021; and
- provide hyper-local air quality data for vulnerable groups such as school children, the sick and elderly to minimise.

Expected outcomes

- London will have an enhanced and advanced air quality network, which can be replicated in other world cities;

- effective monitoring and assessment of the impact of expansion of the ULEZ and other Mayoral air quality initiatives as a result of the continued collection of air quality data from the 100+ locations;
- a user-friendly data platform will enhance public awareness and support world class research including into the health effects of short-term exposure to air pollution;
- increased citizen engagement with the air quality sensor programme;
- increased citizen engagement awareness and engagement with schools and hospitals where sensors are located;
- NHS staff at participating hospitals will be better informed about air pollution, associated health risks and able to give vulnerable patients appropriate advice;
- researchers will be able to use on site air pollution concentrations alongside patient records to better understand the relationship between air pollution and health effects; and
- schools and hospitals will be able to measure the impacts of measures they take to improve air quality.

3. Equality comments

- 3.1. The GLA and other public authorities must have 'due regard' to the need to eliminate unlawful discrimination, harassment and victimisation as well as to the need to advance equality of opportunity and foster good relations between people who share a protected characteristic and those who do not, under section 149 of the Equality Act 2010. This involves having due regard to the need to remove or minimise any disadvantage suffered by those who share a relevant protected characteristic; taking steps to meet the different needs of such people; and encouraging them to participate in public life or in any other activity where their participation is disproportionately low.
- 3.2. The "protected" characteristics and groups are: age, disability, gender reassignment, pregnancy and maternity, race, gender, religion or belief, sexual orientation and marriage/ civil partnership status. Compliance with the Equality Act may involve treating people with a protected characteristic more favourably than those without the characteristic. The duty must be exercised with an open mind and at the time a decision is taken in the exercise of the GLA's functions. Conscientious regard must be had that is appropriate in all of the circumstances.
- 3.3. In January 2019 the GLA has published analysis on exposure to air pollution which shows that not only are there huge health impacts of pollution but the way these fall on the most vulnerable means that improving air quality is fundamentally about tackling social injustice and health inequalities.
- 3.4. The report considers pollution exposure in London and considers how exposure varies by age, indicators of relative deprivation and ethnic groups in London. It also looks at total exposure (broken down by borough) and exposure at schools. Through the research described in this report, City Hall is seeking to understand inequalities in access to clean air in London and to consider how this will be improved by planned air pollution controls.
- 3.5. The research shows on average that the most deprived 10th of the population are exposed to concentrations of NO₂ which are 25 per cent higher than the least deprived 10th of the population. It is important to note that hidden within this are pockets of extreme wealth with very high levels of exposure, e.g. those living in Westminster or in Royal Borough of Kensington and Chelsea. Of the 360 primary schools located in areas of high pollution it is estimated about four-fifths are classified as 'deprived' with more than 40 per cent of the school children at a given school being eligible for free school meals.

- 3.6. In terms of ethnicity, whereas there is a normal distribution of exposure for white people, the pattern shows increasing exposure in areas that have higher percentage of non-white ethnic groups, with a particularly skewed distribution for the Black/African/Caribbean/Black British population. A greater proportion of mixed, black and other ethnic groups are exposed to levels of pollution that exceed the NO₂ limit value than their proportion of the total population.
- 3.7. The programme of work set out in this MD will benefit all Londoners, but due to the unequal impacts of pollution on the most vulnerable Londoners there is likely to be a positive effect in tackling social and health inequality of this programme of activity. Having a better understanding of air pollution, particularly at school will also create new opportunities to take targeted and effective action.

4. Other considerations

Key risks and issues

	Risk description (cause, risk, event, potential impacts)	Probability (1-5)	Impact (1-5)	RAG	Mitigation/risk response (state if the response is done or pending)
1	No project partner can be found after a competitive procurement process	1	5	G	The procurement process with the pilot phase was extremely competitive. It is likely there will be similarly high levels of interest. Interest has already been expressed by several parties.
2	Not enough funding is available to maintain the whole of the existing network	2	3	G	Breathe London is a scalable network. Some reductions in functionality and scope could be delivered and remaining sensors focused on the highest priority areas.
3	Complications arise in the handover process from EDFE and result in the network being offline for a short period	4	1	G	London already has a good air quality monitoring network which would ensure some monitoring continues. If the network is offline for a short period sites such as schools and hospitals should be prioritised
4	Data collected is of a poor quality	2	3	G	In the pilot phase Breathe London has proved that with sufficient network calibration low cost sensors can produce reliable data. London's extensive

					reference networks provides a sense check and opportunity to co-locate sensors
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Impact assessment

- 4.1. A comprehensive Integrated Impact Assessment was undertaken to support the London Environment Strategy (LES) which covered air quality, including proposed action at schools and nurseries. The Integrated Impact Assessment (IIA) found that the GLA had considered aspects for improving London's air quality based on four policy options. This was recognised in the LES IIA as the most effective approach for addressing human health impacts. The LES includes targets for some of the pollutants identified in the IIA recommendations. The GLA agreed that it would look to include specific interventions to improve air quality around schools, hospitals and care homes.

Links to Mayoral Strategies

- 4.2. Policy 4.1.2 of the London Environment Strategy (Improve the understanding of air quality health impacts to better target policies and action) includes the proposal:

"Proposal 4.1.2.b: The Mayor will work with boroughs to safeguard the existing air quality monitoring network, and enhance it by exploiting new technologies and approaches such as personal and localised monitoring"

- 4.3. The strategy explicitly recognises the importance of both the sensor project and advancing understanding of how and when to use personal monitors:

"The Mayor will work with boroughs and other partners to encourage innovation in monitoring, starting with a new sensor monitoring trial in partnership with the C40 Cities Climate Leadership Group. This is a network of the world's megacities committed to addressing climate change and air pollution."

It is getting easier for people and groups to buy personal and relatively low cost monitoring systems. These can be valuable tools but knowing how best to use and locate the monitors is vital if the results are to provide meaningful information. It is also important to understand the limitations of monitoring equipment, and how best to interpret and publish results. The Mayor will offer guidance and advice on how air quality is monitored in London, and help people understand what type of equipment is available."

- 4.4. This programme is consistent with and takes forward the commitment set down in the London Environment Strategy.
- 4.5. There are no conflicts of interest to note for any of the officers involved in the drafting or clearance of this decision form.

5. Financial comments

- 5.1. This decision seeks to continue the Breathe London Network by requesting approval for expenditure of up to £757,000.
- 5.2. This network will be funded by a combination of budgets over a four-year period as set out below:

Source of Funding	Amount (£)
2020/21 – 2023/24 Breathe London Revenue Budget	415,000
2021/22 Breathe London Capital Budget	300,000
BLEN 1*	42,000
Total	757,000

*BLEN 1 approved under DD2441

5.3. The indicative profile will be as follows and may be subject to change:

2020/21	2021/22	2022/23	2023/24	Total
£400,000	£119,000	£119,000	£119,000	£757,000

5.4. The delegation to enable the Executive Director to receive income is on the basis of potential funds from other sources becoming available including approximately £150,000 from the Good Growth Fund, which is awaiting approval by the LEAP Board.

5.5. There is scope to enhance this network further which will subsequently require additional funding. In this instance supplementary approval will need to be sought via the Authority's decision-making process.

6. Legal comments

6.1. The proposed funding is permissible pursuant to the Mayor's statutory powers to do anything which he considers will further the promotion of social development and the improvement of the environment in Greater London under section 30 of the GLA Act 1999.

6.2. The award of funding and form of contractual agreement with the successful delivery partner should be made in accordance with the GLA's Contracts and Funding Code.

7. Planned delivery approach and next steps

Activity	Timeline
Procurement process for project partner begins	February 2020
Successful project partner announced	July 2020
GLA control of Breathe London network, to be managed by newly appointed project partner	August 2020

7.1. As procurement will be required to identify a suitable project delivery partner, the funds will not be released until the new Mayoral term begins. This will provide the next administration an opportunity to review this decision.

Appendices and supporting papers:

None

Public access to information

Information in this form (Part 1) is subject to the Freedom of Information Act 2000 (FoIA) and will be made available on the GLA website within one working day of approval.

If immediate publication risks compromising the implementation of the decision (for example, to complete a procurement process), it can be deferred until a specific date. Deferral periods should be kept to the shortest length strictly necessary. **Note:** This form (Part 1) will either be published within one working day after it has been approved or on the defer date.

Part 1 - Deferral**Is the publication of Part 1 of this approval to be deferred? YES**

If YES, for what reason: Until the completion of the competitive procurement process. If the authority is to achieve best value, it is essential that potential bidders are not aware of the total available budget and other sensitive information.

Until what date: 1 August 2020.

Part 2 - Sensitive information

Only the facts or advice that would be exempt from disclosure under FoIA should be included in the separate Part 2 form, together with the legal rationale for non-publication.

Is there a part 2 form - NO

ORIGINATING OFFICER DECLARATION:

Drafting officer
to confirm the
following (✓)

Drafting officer:

Rosalind O'Driscoll has drafted this report in accordance with GLA procedures and confirms the following:

✓

Sponsoring Director:

Philip Graham has reviewed the request and is satisfied it is correct and consistent with the Mayor's plans and priorities.

✓

Mayoral Adviser:

Shirley Rodrigues has been consulted about the proposal and agrees the recommendations.

✓

Advice:

The Finance and Legal teams have commented on this proposal.

✓

Corporate Investment Board

This decision was agreed by the Corporate Investment Board on 24 February 2020.

EXECUTIVE DIRECTOR, RESOURCES:

I confirm that financial and legal implications have been appropriately considered in the preparation of this report.

Signature

M. J. Allge

Date

24.2.20

CHIEF OF STAFF:

I am satisfied that this is an appropriate request to be submitted to the Mayor

Signature

D. Bellamy

Date

24/2/2020