

**SLOUGH BOROUGH COUNCIL**

**REPORT TO:** Health Scrutiny Panel

**DATE:** 21<sup>st</sup> November 2018

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**WARD(S):** All

**PART I**  
**FOR COMMENT AND CONSIDERATION**

**AIR QUALITY AND HEALTH IN SLOUGH****1. Purpose of Report**

The purpose of the report is to respond to Members' concerns regarding air quality within Slough and the harm air pollution is causing local residents. The following specific areas are addressed:

- 1) Slough's mortality rate attributable to air pollution;
- 2) The causes of this mortality rate;
- 3) The distribution of health conditions related to air pollution (on a range of factors such as geographical area, gender and ethnicity);
- 4) Any plans to review the action plan in the light of this information; and
- 5) Future arrangements for air quality monitoring.

**2. Recommendation**

The Panel is requested to note and discuss the information contained in this report and its implications for local residents. The Panel is also asked to review the short term Public Health mitigation recommendations as detailed in 5.16.

**3. The Slough Joint Wellbeing Strategy, the JSNA and the Five Year Plan****3a. Slough Joint Wellbeing Strategy Priorities**

Slough Borough Council's (SBC) Low Emission Strategy supports the following priorities:

- Protecting vulnerable children
- Increasing life expectancy by focusing on inequalities
- Improving mental health and wellbeing

**3b. Five Year Plan Outcomes**

The Low Emission Strategy also contributes to the following outcomes:

- Our people will be healthier and manage their own care needs.
- Slough will be an attractive place where people choose to live, work and stay

#### 4. Other Implications

##### a) Financial

There are no financial implications relating to the proposed actions within this report.

##### b) Risk Management

There are no identifiable risks associated with this report.

##### c) Human Rights Act and Other Legal Implications

There are no legal or Human Rights Act implications relating to this report.

##### d) Equalities Impact Assessment

There is no identified need to complete an EIA for this report.

#### 5. Supporting Information

- 5.1 At its meeting on 11<sup>th</sup> September 2018, the Health Scrutiny Panel received an answer to a written question which asked for the response of SBC and its NHS partners to Slough's high rate of deaths attributable to air pollution. Whilst the Panel were satisfied with this response which included an outline of the planned Low Emission Strategy (submitted for Cabinet's approval on 17<sup>th</sup> September 2018), they wished for some specific questions to be addressed in an agenda item. These questions are answered in the rest of this report.

#### **Slough's mortality rate attributable to air pollution**

- 5.2 The major air pollutants today are nitrogen dioxide (NO<sub>2</sub>) and anthropogenic particulate matter (PM<sub>2.5</sub>). The principal sources of PM<sub>2.5</sub> emissions are domestic wood and coal burning (39%); industrial combustion (17%); road transport (13%) and industrial processes (10%). In Slough it can be linked to:
- Proximity to the national motorway network, predominately driven by higher rates of NO<sub>x</sub> air pollution in the area near junction 5 and 6 of the M4.
  - Cross boundary effects from London and the continent (under steady anti-cyclonic conditions)
  - Emissions from airplane take-off at Heathrow and unburned jet fuel
  - Incineration and electricity generators
- 5.3 In the latest figures - 2016, 6.2% of all cause adult mortality was attributed to anthropogenic particulate air pollution (PM<sub>2.5</sub>) compared to 5.3% in England and 5.5% in the South East. Based on all cause adult mortality (which in relation to air pollution covers adults aged over 30 as it indicates the mortality burden associated with long-term exposure), this equates to approximately 51 people in Slough. Nationally, this ranges between 28,000 and 36,000 people annually although these numbers are approximate because deaths tend to be caused by multiple factors.

## **The causes of increased mortality rate associated with air pollution**

5.4 There are strong associations between air pollution and major diseases that pose a great health and economic burden, including coronary heart disease<sup>1</sup> (CHD) and stroke (where the relationship seems to be related to hardening of the blood vessels in a similar way to smoking's effects). This is demonstrated in Figure 3 in the Annex. There is also strong evidence for the association of air pollution with lung cancer and childhood asthma.<sup>2</sup> In 2017, the total NHS and social care cost due to PM<sub>2.5</sub> and NO<sub>2</sub> was estimated to be £42.9 million in England.

5.5 People with chronic respiratory diseases such as chronic obstructive pulmonary disease (COPD) and asthma are especially vulnerable to the detrimental effects of environmental air pollutants which can induce the acute exacerbation of COPD and onset of asthma, increasing the respiratory morbidity and mortality.<sup>3</sup>

5.6 There is also emerging evidence that suggest links between air pollution and conditions like diabetes, the underdevelopment of infant lungs and cognitive decline through Alzheimer's dementia. Other health concerns related to air pollution include:

- Increase in low birth weight babies (<2500g)<sup>4</sup>
- Inhibits neurological development in children<sup>5</sup> (it is thought that particulates pass through the olfactory (smell) system into the brain where they prevent normal nerve development)
- Inhibits lung function in children, permanently affecting lung capacity<sup>6</sup>
- The World Health Organisation (WHO) classifies diesel exhaust emissions as carcinogenic to humans with evidence linking air pollution with a range of cancers<sup>7</sup> (lung and bladder in particular).

## **The distribution of health conditions related to air pollution in Slough**

5.7 Air pollution is certainly a problem in Slough but one of the reasons why mortality may be relatively higher is because cardiovascular and respiratory health are already poor with above-SE England regional averages of heart disease, COPD and asthma. Furthermore, there are above average rates of tobacco smoking which is both a risk factor and exacerbator for both heart and respiratory disease. In addition, there are high rates of diabetes (and until recently, under-diagnosed hypertension) in the Slough population which are key risk factors for CHD and stroke. Older men are currently more susceptible to the health impacts of air pollution due to higher historical rates of smoking however, this is likely to change over time as women's smoking rates have increased.

5.8 Underlying this are widespread low levels of household income in Slough which determine where people live. For example, we know that, in general, more affluent people choose to live in cleaner greener neighbourhoods where air pollution is lower. In short, a poorer person in Slough is at risk of the triple whammy – more likely to smoke, at higher risk of respiratory and coronary heart disease and more likely to live in a poorer neighbourhood where air pollution is higher, thus worsening the impact of their health conditions.

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<sup>1</sup> Cesaroni, BMJ, 2014

<sup>2</sup> PHE. Estimation of costs to the NHS and Social Care due to the health impacts by air pollution. May 2018.

<sup>3</sup> Kelly FJ & Fussel JC, Pubmed, 2011

<sup>4</sup> Pederson, Lancet, 2013

<sup>5</sup> Jordi Sunyer, CREAL, PRBB group leader, 18 June 2014

<sup>6</sup> <http://www.escapeproject.eu>

<sup>7</sup> [http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221\\_E.pdf](http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf)

5.9 Figure 4 in the Annex shows the distribution of coronary heart disease emergency admissions by ward in Slough – with the highest rates in Chalvey, Elliman and Baylis and Stoke. Figure 5 shows the position of Air Quality Management Areas (AQMAs) in Slough with two AQMAs also in Chalvey and high levels of poor air quality in a variety of other areas including Elliman. Recent air quality monitoring results are shown in Appendix 2.

### **Plans to review the air quality action plan**

5.10 Slough currently has five air quality management areas, which exceed the EU limit for NO<sub>2</sub> (40ug/m<sup>3</sup>). In response to this, air quality management plans were established for AQMA 1 and AQMA 2 (2006) and also AQMA3 and AQMA 4 (2012). These plans will be updated under one comprehensive air quality action plan, to reflect regeneration of the town centre and impacts posed by upcoming infrastructure schemes including the Heathrow expansion and Smart M4. It will also include current and emerging AQMAs in 2019, in conjunction with air quality modelling.

5.11 The AQAP will also address sources of local particulate pollution from construction sites and combustion processes. Industrial processes are currently regulated by the Local Authority and Environment Agency under the Environmental Permitting Regulations.

5.12 The Low Emission Strategy (2018-2025) forms part of the new air quality action plan, which aims to reduce NO<sub>2</sub> emissions from road transport and improve health outcomes. This will be completed by implementing electric public infrastructure such as fast and rapid electric charging points and promote the operation of electric and ultra-low emission vehicles.

5.13 The Low Emission Strategy is used in conjunction with the emerging Slough Transport Strategy (2016-2036) to be completed early 2019. Its primary focus will be to improve and increase public infrastructure, to increase the modal shift away from the car and reduce congestion. This will be done by promoting sustainable travel such as use of E-bikes and electric vehicles, in transition to a low emission economy.

5.14 A feasibility study for the implementation of a Clean Air Zone (CAZ) in Slough will be conducted in 2019/20, delivered in line with the Slough Transport Strategy. It sets emission standards to encourage the uptake of EVs, and ULEVs which meet the latest European Emission Standard, applicable to public transport vehicles, HGVs and LGVs. The CAZ may be charging or non-charging. Should the feasibility study demonstrate that a charging CAZ is necessary in Slough, an application will be made to the Secretary of State to introduce such a zone by 2021.

### **Future arrangements for air quality monitoring**

5.15 Slough has an extensive air quality network of automatic monitoring stations which measure NO<sub>2</sub> and particulate matter, and diffusion tubes which monitor NO<sub>2</sub>.

5.16 Slough currently has seven continuous monitoring stations. The network was extended in October 2017 with three new monitoring stations in AQMA 4, 2 and 3. Four sites monitor particulate concentrations of PM<sub>10</sub>, and two sites monitor in Colnbrook and Poyle monitor particulate concentrations of PM<sub>2.5</sub>. The full

dataset obtained by these monitors will be reported in the Annual Status Report by June 2019, and will be used in our updated air quality modeling and source apportionment work. Detailed air quality modelling was last conducted in 2015, to assess the impact on NO<sub>2</sub> concentrations by improving the European Emission Standards of conventional vehicle technologies and use of alternative technologies such as electric.

- 5.17 Concentrations of PM<sub>2.5</sub> and PM<sub>10</sub> recorded at locations within Slough are significantly below the national air quality objectives, however continued monitoring is required due to the associated health effects and to monitor impact of upcoming infrastructure impacts.
- 5.18 Diffusion tubes are present at 53 sites and have been used to monitor annual NO<sub>2</sub> for over 20 years. New diffusion tubes were co-located with air quality monitors introduced in October 2017. Results show that the rate of improvement average over a 5 year monitoring trend has been slow (approximately 3% per annum across the network) and no new AQMAs have been declared, but continued monitoring is needed to understand NO<sub>2</sub> trends longer than 5 years, and to determine if a new AQMA is required and observe the impact of introducing the new air quality action plan.
- 5.19 Air Quality monitoring stations and sensors are constantly been improved, and we will continue to invest in the most appropriate and up to date monitoring equipment.

#### **Short term health outcomes**

- 5.20 The Low Emission Strategy and Air Quality Action Plan are designed to address long term objectives. The aim of the Low Emission Strategy is to reduce NO<sub>2</sub> emissions caused by road traffic and consequentially, improve air quality and the health outcomes of those living in Slough.
- 5.21 Air quality data can be used to inform the public of local air quality trends and be used to recommend actions and health advice. An example of a short term method which combines both technical and public health elements is the AirTEXT service.
- 5.22 AirTEXT is a free service for public use, operated by Cambridge Environmental Research Consultants (CERC) Ltd. The service provides air quality maps, created using CERC's urban air quality dispersion modelling system (ADMS-Urban), which are used to predict air quality and emissions across London and surrounding boroughs. It delivers air quality alerts by SMS message, email and voicemail to those who have subscribed to the service and provides a 3-day forecast of air quality, pollen, UV and temperature.
- 5.23 Slough pays an annual subscription to the service. See Figure 6 in the Annex for full details
- 5.24 The Public Health team is supporting the mitigation of air pollution in the short term through a range of informative actions which include:
  1. Linking the AirTEXT service to the integrated lifestyle service "CardioWellness4Slough". This will ensure that residents being triaged by this service will be reminded to sign up to AirTEXT and the importance of being

aware of air pollution in Slough. This will be of particular relevance to the smoking cessation service “SmokeFreeLifeBerkshire”

2. Direct communication with primary care to ensure awareness of AirTEXT and specifically which patients are most at risk from poor air quality.
3. Integration of Air Pollution messages with physical activity interventions, for example Active Movement in Primary Schools, to increase awareness of the impact of travel on air quality and to support things like active travel.
4. General promotion of air pollution mitigation options and AirTEXT through the Public Health channels, specifically twitter, Facebook and newsletters.

## 6. **Comments of Other Committees**

The Low Emission Strategy was taken by Cabinet on 17th September 2018. The Strategy has been adopted as a Council Strategy at Full Council on 27<sup>th</sup> September 2018, therefore Slough Borough Council are committed to the objectives contained within the Strategy. The wellbeing of those living in Slough are the highest priority and implementation of the Low Emission Strategy and its Programmes over the next few years will improve air quality and therefore health for all of those living and working in the Borough.

## 7. **Conclusion**

This report addresses a series of questions raised by the Panel at its last meeting. The Panel is asked to discuss the content of this report in this context.

The Low Emission Strategy itself does not address short term air quality issues or pollution events. Collaboration is required between environmental quality, public health and other key departments and local community organisations to bring together long term and short term objectives.

## 8. **Appendices Attached**

### **Annex includes:**

- Figure 1 - Pollutants that affect air quality – Particulate Matter PM2.5
- Figure 2 - Pollutants that affect air quality –Nitrogen Oxides NOx
- Figure 3 – The impact of air pollution on the human body
- Figure 4 - Emergency admissions for CHD in Slough (2011 – 2016)
- Figure 5 - Air quality management areas (AQMA) in Slough - 2018
- Figure 6 - AirTEXT subscription details

### **Additional documentation:**

- Appendix 1- Air Quality Management Area Map
- Appendix 2 – Slough air quality results
- Appendix 3 – Ward boundaries map

## 9. **Background Papers**

Agenda Papers and Minutes, Cabinet (17<sup>th</sup> September 2018)

Annex

Figure 1 - Pollutants that affect air quality – Particulate Matter PM2.5

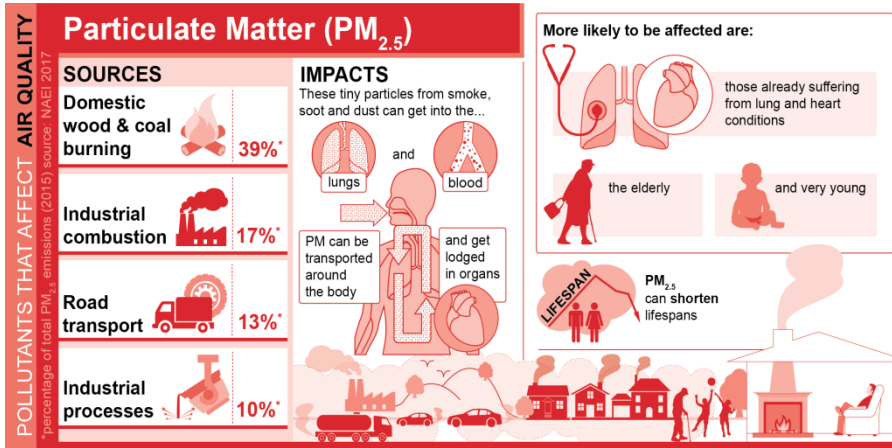


Figure 2 - Pollutants that affect air quality – Nitrogen Oxides NOx

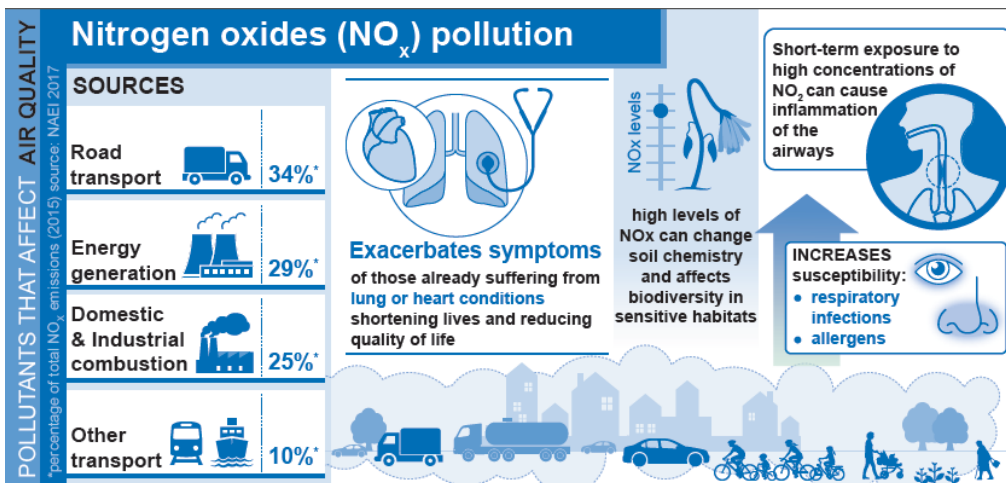


Figure 3 – The impact of air pollution on the human body

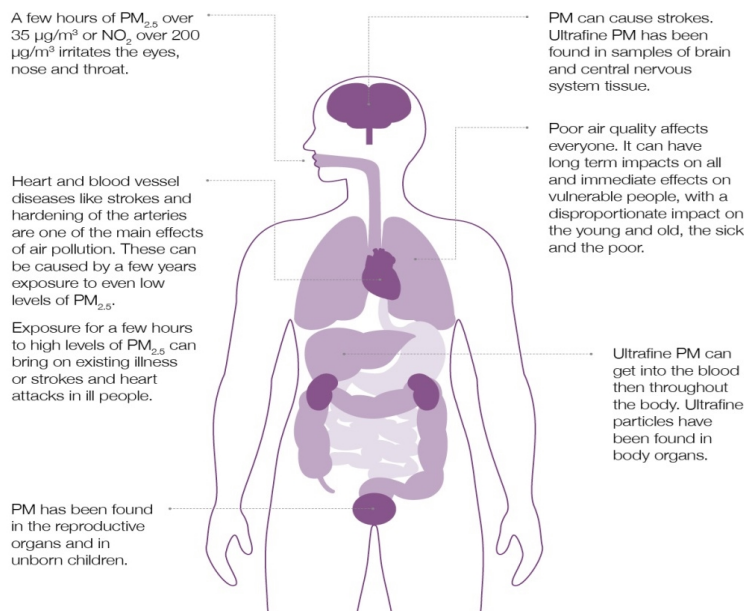




Figure 4: Emergency admissions for CHD in Slough (2011 – 2016)

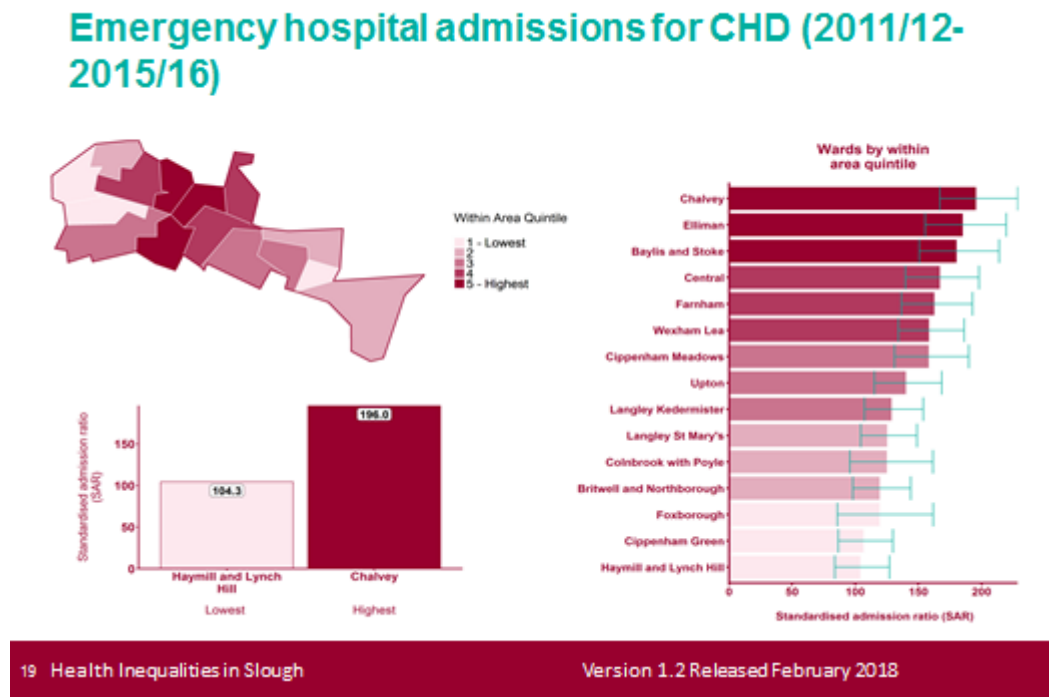
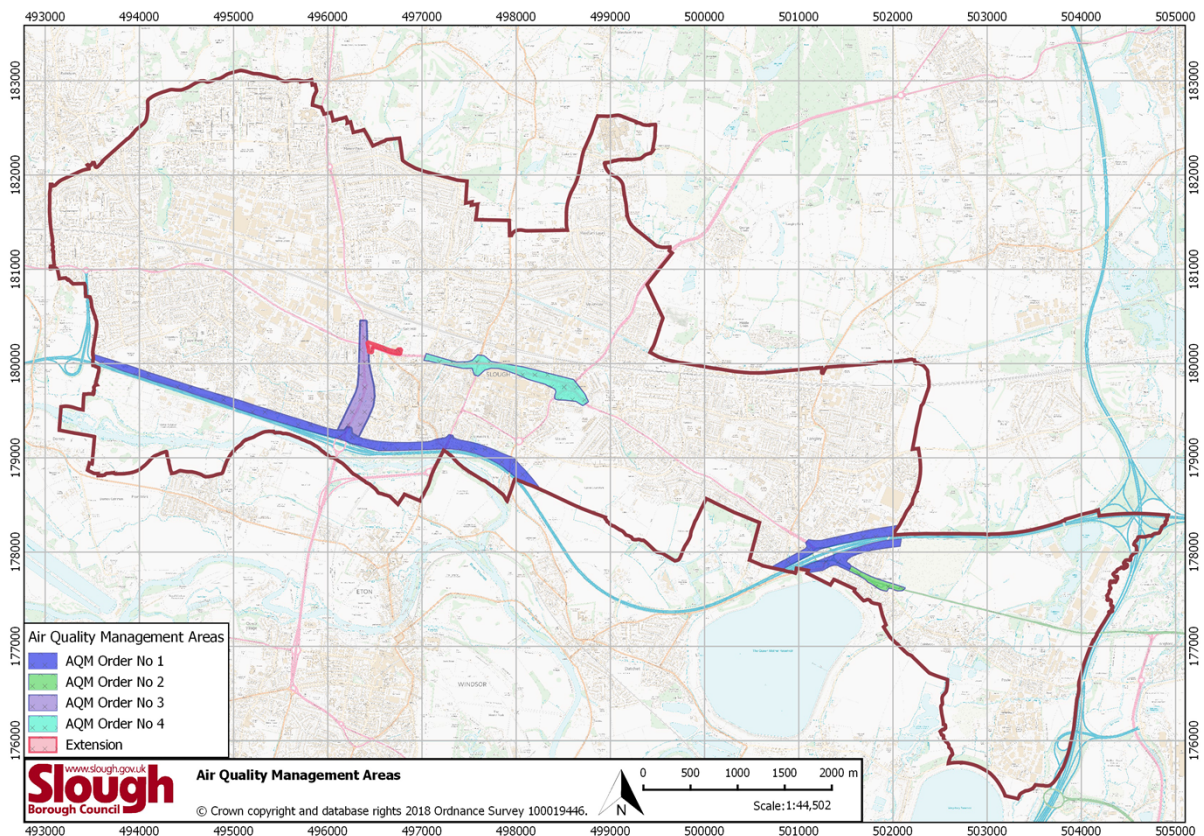


Figure 5: Air quality management areas (AQMA) in Slough - 2018





**Figure 6: AirTEXT subscription details**

<b>Contact Method</b>	<b>Alert Sent Record*</b>	<b>New Subscribers*</b>	<b>Total Subscribers**</b>
<b>Email</b>	466	1	8
<b>SMS message</b>	2550	21	106
<b>Voicemail</b>	76	0	3
<b>Twitter</b>	-	-	6
<b>Total</b>	3092	21	123

\*from 1<sup>st</sup> July 2017 – 31<sup>st</sup> August 2018

\*\*at 31<sup>st</sup> August 2018

From 1<sup>st</sup> July 2017 to 31<sup>st</sup> August 2018, the service gained 21 new subscribers from Slough, producing a total of 123 subscribers for the Borough. This subscription rate is low relative to Slough's population, so work needs to be done to encourage residents to subscribe to the service. This will lead to an increase in awareness of air quality impacts and can be used to promote and aid implementation of the Low Emission Strategy.