Portsmouth CITY COUNCIL

Title of meeting:	Cabinet Portfolio Decision Meeting Environment & Climate Change
Date of meeting:	23rd July 2020
Subject:	Assessment of Air Quality - Annual Statement Report 2020
Report by:	Director of Culture, Leisure and Regulatory Services
Wards affected:	All
Key decision:	No
Full Council decision:	No

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1. Purpose of report

1.1 To provide the Cabinet Member information on the:

- Local Air Quality Management (LAQM) process and the 2019 Review and Assessment (R&A) of air quality (AQ) in Portsmouth through the forthcoming publication of the 2020 Annual Status Report (ASR).

- Actions undertaken by Portsmouth City Council (PCC) which are likely to positively impact upon air pollution levels in Portsmouth during 2019.

2. Recommendations

2.1 It is RECOMMENDED that the Cabinet Member for Environment & Climate Change:

- **acknowledges the narrative provided in respect to the 2019 pollution dataset and associated assessment of compliance with the National Air Quality Objectives.**

- **approves the data for inclusion within the forthcoming Annual Status Report 2020 and thereafter its submission to the Department for Environment Food and Rural Affairs.**

3. Submission deadlines and impact of Covid-19

3.1 The formal submission deadline for PCC's 2020 ASR to Department for Environment Food and Rural Affairs (DEFRA) was 30th June 2020. The government has however confirmed flexibility for an extension to this timetable as publication of this year's ASR has been significantly delayed due the impact of the Covid-19 pandemic.

3.2 Whilst the vast majority of the 2019 monitoring data has been collated the final ASR has not been completed in time for formal submission ahead of this decision meeting. The monitoring data contained within this report has however been validated and is not likely to be subject to further substantive revision prior to its presentation to DEFRA.

3.3 Whilst obvious, it is worth highlighting the fact that the 2020 ASR only contains monitored data results for the calendar year 2019. This data is not therefore impacted by the Covid-19 pandemic and any reduction in pollution levels that may have been caused by the decrease in traffic volumes during the lockdown restrictions.

4. The need for action

4.1 In the UK, air pollution is the largest environmental risk to public health[1]. The annual mortality of human-made air pollution in the UK is roughly equivalent to between 28,000 and 36,000 deaths every year. It is estimated that between 2017 and 2025 the total cost to the NHS and social care system of air pollutants (fine particulate matter and nitrogen dioxide), for which there is more robust evidence for an association, will be £1.6 billion.

5. The reason for monitoring nitrogen dioxide

5.1 The main pollutant of concern in Portsmouth is Nitrogen Dioxide (NO_2). The UK government confirms[2] that short-term exposure to concentrations of NO_2 can cause inflammation of the airways and increase susceptibility to respiratory infections and to allergens. NO_2 can exacerbate the symptoms of those already suffering from lung or heart conditions. In addition, NO_2 can cause changes to the environment.

6. The reason for monitoring particulate matter

6.1 Particulate matter (PM) is everything in the air that is not a gas and as such it is made up from a huge variety of chemical compounds and materials some of which can be toxic. Due to the small size of many of the particles that form PM some of these toxins may enter the bloodstream and be transported around the body, lodging in the heart, brain and other organs[3]. Therefore, exposure to PM can result in serious impacts to health, especially in vulnerable groups of people such as the young, elderly and those with respiratory problems. As a result, particulates are classified according to size. The UK is currently focused on measuring the fractions of PM where particles are less than 10 micrometres in diameter (PM_{10}) and less than 2.5 micrometres ($PM_{2.5}$) based on the latest evidence on the effects of PM on health.

[1] https://www.gov.uk/government/publications/air-pollution-applying-all-our-health/air-pollution-applying-all-our-health
[2] https://www.gov.uk/government/publications/air-quality-statistics/ntrogen-dioxide
[3] https://www.gov.uk/government/publications/air-quality-statistics/concentrations-of-particulate-matter-pm10-and-pm25

6.2 Both PM and precursor pollutants that can form it can travel large distances in the atmosphere. A small proportion of the concentrations of PM that people in the UK are exposed to come from naturally occurring sources such as pollen and sea spray (approximately 15 per cent). Another third is transported to the UK from other European countries. However, around half of UK concentrations of PM comes from anthropogenic sources in the UK such as wood burning and tyre and brake wear from vehicles. As such, it is in the interest of the UK to measure these anthropogenic emissions as close to the source where possible in order to assess exposure.

7. The reason for the recommendations

7.1 To fulfil the duties placed upon PCC under the Environment Act 1995[4]. LAQM is the statutory process by which we are required to monitor, assess and take action to improve local AQ.

7.2 PCC is committed to improving AQ. The UK Government through DEFRA has required PCC to benchmark pollution actions intended to improve air quality against the Clean Air Zone (CAZ) Framework[5] for England published in 2017 so that they can have confidence that our plans will achieve compliance with the National Air Quality Objectives[6] (NAQO) in the same time or a quicker time than the implementation of a CAZ. This is the reason why DEFRA frequently uses the terminology of *"the shortest possible timeframe*" in respect to the need to achieve compliance.

7.3 In 2018 a different assessment regime of the European Union (EU) Directive on AQ led to DEFRA placing an obligation on PCC to develop a plan to tackle areas where NO_2 levels are in excess of the NAQO. The new assessment criteria was in addition to where we had previously identified pollution hotspots and where we had been monitoring pollution concentrations for many years.

7.4 During 2018 a part of Portsmouth not previously assessed under the LAQM regime and where there was an absence of long-term public exposure (i.e. pavements alongside busy roads with no nearby residential uses) became a new focus.

7.5 The main areas of concern centred around the roadside locations of Alfred Road between Hope Street roundabout and the Queen Street / Anglesea Road / Alfred Road intersection and Mile End Road between the southern end of the M275 and Church Street roundabout. These areas were mentioned in both the 2018 and 2019 ASRs and we now have short term NO_2 monitoring data for these sites.

7.6 The 2018 Ministerial Directions served by the government on PCC required us to submit studies on the steps needed to comply with roadside NO_2 limits in the shortest amount of time. In October 2018 the government published a

[4] http://www.legislation.gov.uk/ukpga/1995/25/contents
[5] https://www.gov.uk/government/publications/air-quality-clean-air-zone-framework-for-england
[6] https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update.pdf

supplement to this original plan prescriptively setting out what work we needed to do. Portsmouth is therefore mandated to take forward new measures to improve air pollution and reduce pollution levels to those below the NAQO.

8. Summary of actions taken to improve air quality in 2019

8.1 In October 2019 PCC submitted an Outline Business Case (OBC)[7] to DEFRA's Joint Air Quality Unit (JAQU) setting out the measures that we proposed to address exceedances in annual limit values for NO_2 in the shortest possible time. This OBC proposed that the following measures should be implemented to ensure compliance before the end of 2022:

- Class B charging Clean Air Zone (CAZ) focused around the two identified exceedance locations of Alfred Road and Commercial Road
- Improvements to strategic cycle routes
- Review of car parking availability
- Changes to traffic signal timings on Alfred Road
- Delivery of a real time air quality monitoring and warning system
- Tightening of licensing requirements for taxis and private hire vehicles (subject to approval at licensing committee)

8.2 Further details of measures that have been undertaken in the last year to improve air quality include:

- Electric Vehicle Charge Point Scheme: Funding was secured from the Office for Low Emission Vehicles (OLEV) On-street Residential Chargepoint Scheme (ORCS) to install 36 charge points in residential areas, enabling residents without off-street parking the ability to charge their vehicles at home. Following the success of this project PCC have been successful in securing an additional £229,860 of funding enabling delivery of a further 70-80 EV charge points across the city.

- Stomp for Stamps: In 2019 around 1200 children from across Portsmouth took part in the "Pompey Monsters" challenge which rewards school children with collectable key rings for walking, scooting or cycling to school. Due to the success of this campaign a "Stomp for Stamps" challenge was held during the summer holidays, encouraging children to walk around the city to find hidden stamps. Such campaigns have been important in raising awareness about vehicle emissions around schools.

- Bus Retrofit Programme: A bus retrofit programme is underway in the city, for Stagecoach and First buses running through the Mile End Road and Alfred Road routes. This scheme will enable pre-Euro VI buses to be upgraded to the higher emission standard of Euro VI, which is expected to help to improve local air quality. 105 buses are due to be retrofitted through this programme with completion anticipated for July 2020.

[7] https://democracy.portsmouth.gov.uk/mgAi.aspx?ID=12234

- Public Transport Information: Bus waiting facilities have been improved across the city with the addition of new shelters and the installation of real-time passenger information units to give passengers up to date information about when buses can be expected.

9. Summary of 2019 NO_2 monitoring data in Portsmouth

9.1 Whilst currently incomplete, PCC will meet the requirements to submit the 2020 ASR to DEFRA as soon as possible. Presentation and data collection requirements will be followed in accordance with the formal guidance[8] published by DEFRA and explanations of data sets will be provided to ensure that conclusions can be drawn easily by members of the public. Ratified and adjusted monitored NO_2 2019 annual mean concentrations have however been collated for both our network of NO_2 diffusion tubes (NDDT) and continuous monitoring stations and a summary is provided below.

9.2 In 2019 PCC revised its NDDT network, expanding it to reach 154 sites (including co-location sites):

- 27 of these sites having been routinely monitored for many years (5 years plus). These are considered to be long-term monitoring sites
- 78 were installed in 2017 / 2018
- 43 were installed since the beginning of 2019
- The remaining were co-location sites.

9.3 When comparing the entire 2019 dataset with the results from the locations that existed in 2018 the NDDT survey concluded that the NO_2 annual mean levels were in excess of the annual mean NAQO at four locations compared to 13 monitoring locations in 2018. These four exceedances occurred outside the Tap Public House, London Road and three locations along Alfred Road.

9.4 The NDDT survey data for the period 2019 in comparison with 2018 revealed that the annual mean levels decreased at all of the 27 long-term monitored locations. This level of improvement is higher than that registered in 2018 where the NDDT annual mean levels decreased at 53.57% of the monitored locations compared to 2017. The 2019 NDDT annual mean levels exceeded the NO_2 annual mean NAQO at one of the 27 monitored locations namely the Tap Public House, London Road.

9.5 Assessment of 104 monitored locations which were present in both 2019 and 2018 / 2017 demonstrated that 99 locations exhibited reductions in NO_2 annual mean levels with the remaining 5 locations exhibiting an increase in levels.

9.6 Of the 78 NDDT locations set up in 2017 / 2018 comparison with the 2019 dataset revealed that exceedance of the NO_2 annual mean levels occurred at three locations along Alfred Road for the second year in a row:

[8] https://laqm.defra.gov.uk/technical-guidance/

- Alfred Road, ref. column 9 - 48µg/m^3
- Alfred Road, ref. column 12 - 52.52µg/m^3
- Alfred Road, ref. opposite MW-SABS - 46.90 µg/m^3

9.7 When considering the 43 newly established monitoring locations in year 2019, eight exhibited exceedances of the NO_2 annual mean NAQO:

- 8 Old London Road, ref. OLR-8 - 40.81µg/m^3.
- Hope Street by Sainsburys, ref. unmarked lamp post - 43.91µg/m^3.
- Southampton Road, ref. column 171 - 41.97µg/m^3.
- Southampton Road, ref. column 177 - 43.04µg/m^3.
- Eastern Road, ref. column 116 - 40.92µg/m^3.
- Eastern Road, ref. column 51 - 45.25µg/m^3.
- Commercial Road, ref. column 3 - 41.50µg/m^3.
- Fratton Road, ref. column 5 - 41.88µg/m^3.

9.8 The 2019 NO_2 annual mean level decreased across the five Continuous Air Quality Monitoring Stations (CAQMS) compared to that of 2018 and met the NO_2 annual mean NAQO at all but London Road CAQMSs. In 2019 the maximum recorded concentration was at London Road kerbside CAQMS (40.46µg/m^3) which equates to a continued breach of the NO_2 annual mean NAQO (if greater than 40µg/m^3 is considered an exceedance as technically it is 40.5µg/m^3).

9.9 A summary of the results from the five stations located within Portsmouth is as follows:

- **London Road CAQMS**:
  - The NO_2 annual average remained above the NAQO in the last four years.
  - The NO_2 annual average at this kerbside monitoring location decreased by 0.11µg/m^3 (a decrease of 0.27%) between 2018 and 2019, but remained above the NAQO in 2019 (40.46µg/m^3) exhibiting a negligible AQ improvement in the short-term.
  - The NO_2 annual average presented an upward trend in the last 5 years.

- **Gatcombe Park CAQMS:**
  - The NO_2 annual average remained considerably below the NAQO in the last 5 years.
  - The NO_2 annual average at this urban background monitoring location decreased by 1.21µg/m^3 (a decrease of 6.48%) between 2018 and 2019, and remained below the NAQO in 2019 (17.47µg/m^3) exhibiting an AQ improvement in the short-term.
  - The NO_2 annual average presented a downward trend in the last 5 years.

- **Burrfield Road CAQMS**:
  - The NO_2 annual average has remained below the NAQO in the last 5 years.
  - The NO_2 annual average at this roadside monitoring location decreased by 2.88µg/m^3 (a decrease of 8.47%) between 2018 and 2019 and remained

below the NAQO in 2019 (31.12µg/m^3) exhibiting an AQ improvement in the short-term.
- The NO_2 annual average presents a downward trend in the last 5 years.

- **Mile End Road CAQMS:**
- The NO_2 annual average remained below the NAQO in the last 5 years.
- The NO_2 annual average at this roadside monitoring location decreased by 1.51µg/m^3 (a decrease of 4.45%) between 2018 and 2019 and remained below the NAQO in 2019 (32.44µg/m^3) exhibiting an AQ improvement in the short-term.
- The NO_2 annual average presented an upward trend in the last 5 years exhibiting an AQ deterioration in the long-term.

- **DEFRA's Anglesea Road CAQMS**:
- The NO_2 annual average remained below the NAQO for the second consecutive year.
- The NO_2 annual average at this roadside monitoring location decreased by 2.72µg/m^3 (a decrease of 8.91%) between 2018 and 2019 and remained below the NAQO in 2019 (27.80µg/m^3) exhibiting an AQ improvement in the short-term.

10. Summary of 2019 PM monitoring data in Portsmouth

10.1 There has been no exceedance of the PM_{10} annual mean NAQO since 2015 at any of Portsmouth based CAQMSs. The highest registered annual mean since then was recorded in 2015 at London Road kerbside CAQMS (34.36µg/m^3). The 2019 highest PM_{10} annual mean (19.49 µg/m^3) was recorded at DEFRA's Anglesea Road.

10.2 The 2019 PM_{10} monitoring concluded that PM_{10} annual average increased at all CAQMSs except for Mile End Road where the beneficial change was negligible.

10.3 PM_{10} annual averages represent a downward trend in the last 5 years across all PCC's CAQMS, demonstrating an AQ improvement in the long-term.

10.4 In 2019 the highest number of daily means in excess of 50µg/m^3 was recorded at DEFRA's CAQMSs on two occasions. This does not amount to an exceedance of the daily NAQO.

10.5 The 2019 $PM_{2.5}$ annual mean remains below the NAQO at all 3 CAQMSs, with the highest annual mean level (11.19 µg/m^3) being recorded at London Road. The 2019 $PM_{2.5}$ annual mean decreased at all CAQMSs representing an AQ improvement.

11. An update on the Clean Air Zone proposals

11.1 In March 2020 government issued a forth ministerial direction requiring PCC to deliver a Class B charging CAZ and further approved measures as soon as possible, and at least in time to bring forward compliance to 2022.

11.2 Since this direction was issued we have seen changes in traffic movements and travel behaviour as a result of the lockdown measures introduced in response to the Covid-19 pandemic. Whilst not to be referenced within the 2020 ASR (as occurring outside the reporting period) these measures have been linked to the reduction in levels of nitrogen dioxide which have occurred over the last few months. This data further demonstrates the direct impact vehicles have on our air quality.

11.3 It is not yet clear whether these changes in travel behaviour will continue as lockdown restrictions continue to be eased. It is also unclear what the impact of the lockdown will have on economic activity, including whether people are able to afford to replace their older more polluting vehicles with newer ones.

11.4 With such uncertainty about the longer term impacts the lockdown will have PCC must continue with its plans to introduce a charging CAZ in Portsmouth to ensure that we reach legal limits for nitrogen dioxide by the end of 2022.

11.5 PCC are holding a public consultation in July 2020 to seek views on how the zone should operate and to inform our understanding of how to help businesses and individuals who cannot afford to replace their polluting vehicles.

11.6 The consultation will seek views on a Class B CAZ which focuses upon buses, coaches, taxis, private hire vehicles and heavy goods vehicles. Through the consultation we are however extremely interested in hearing all opinions in respect to the type of the charging CAZ needed in Portsmouth.

12. 2020 ASR conclusions

12.1 Taking account of all the above information, the conclusions of the 2020 ASR will remain consistent with those published in 2019 ASR namely:

- NO_2 levels in Portsmouth remain a significant concern.
- Delivering compliance with statutory obligations and thereafter further reducing harmful levels of pollution remains a key priority.
- Modelled future compliance has been predicted to require the deployment of CAZ Class B[9].
- The data summarised within this report and that to be contained within the published 2020 ASR represents an improvement in air quality.
- In 2020 PCC will continue to increase its knowledge of NO_2 levels by expanding its monitoring network in line with that presented within the Air Quality Compliance Monitoring report as approved on the 30th January 2020[10].
- PCC continues to commit to working closely with DEFRA and consulting with other interested parties to assess the complex needs of the city whilst undertaking this necessary and important work.

[9] https://www.portsmouth.gov.uk/ext/news/government-confirms-the-council-should-submit-the-final-plan-portsmouths-clean-air-zone
[10] https://democracy.portsmouth.gov.uk/ieListDocuments.aspx?CId=486&MId=4431&Ver=4

12.2 The key 2019 monitoring results are shown in Table 1 below:

Table 1

NDDTS = Nitrogen Dioxide Tube Survey
CAQMS = Continuous Air Quality Monitoring Station
*All results are annual averages
N/A = Not applicable

NDDTS year	*NO_2 downward trends recorded at long term monitoring locations	Improvement?
2015 - 2019	92.59%	Yes
2014 - 2018	60.71%	
NDDTS year	Long term locations *NO_2 % decrease	Improvement?
2019	100%	Yes
2018	53.57%	
NDDTS year	Long term locations in excess of *NO_2 NAQO	Improvement?
2019	3.70%	Yes
2018	7.41%	
NDDTS year	Number of long term sites in excess of *NO_2 NAQO located outside an AQMA	Improvement?
2019	0	N/A
2018	0	
NDDTS	Number of sites exceeding NAQO	Improvement?
2019	12	N/A
CAQMS Station	5 year *NO_2 trend	Improvement?
London Road	Upward	No
Gatcombe Park	Downward	Yes
Burrfields Road	Downward	Yes
Mile End Road	Upward	No
CAQMS Station	*NO_2 2019 compared with 2018	Improvement?
London Road	0.27% decrease	Yes
Gatcombe Park	6.48% decrease	Yes
Burrfields Road	8.47% decrease	Yes
Mile End Road	4.45% decrease	Yes
Anglesea Road	8.91% decrease	Yes
CAQMS Station	Exceeding *NO_2 NAQO	
London Road	Yes	
Gatcombe Park	No	
Burrfields Road	No	
Mile End Road	No	
Anglesea Road	No	

13. Integrated Impact Assessment

13.1 An Integrated Impact Assessment (IIA) is attached. Whilst not directly impacting upon many of the criteria the need for excellent air pollution data has an association with the majority of the assessment areas. Monitoring the delivery of cleaner air and monitoring the success (or otherwise) of our actions is of significant importance and relates to almost everything that we do.

14. City Solicitor's comments

14.1 The timetable submitting the ASR is provided in Section 2.5 of the Local Air Quality Management Technical Guidance 2016 (updated in February 2018).

14.2 The aim of the assessment of AQ is to identify with reasonable certainty whether or not a likely exceedance of the NAQO will occur. The AQ (England) Regulations 2000 (SI 928)[11] and The Air Quality (England) (Amendment) Regulations 2002 (SI 3043)[12] make it clear that likely exceedances of the objectives should be assessed in relation to the quality of the air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present. It is particularly important that our assessments focus on those locations where members of the public are likely to be regularly present and which are likely to be exposed for a period of time appropriate to the averaging period of the objective.

15. Head of Finance comments

15.1 The costs of continuing to R&A AQ in Portsmouth will need to be met from within existing budgets.

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Signed by: Stephen Baily, Director of Culture, Leisure and Regulatory Services

Appendix 1: Integrated Impact Assessment

Background list of documents: Please see footnotes provided

The recommendations set out above in 2.1 above were approved / approved as amended / deferred / rejected by the Cabinet on 23rd July 2020.

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Signed by: Councillor Dave Ashmore, Cabinet Member for Environment & Climate Change

[11] http://www.legislation.gov.uk/uksi/2000/928/contents/made
[12] www.legislation.gov.uk/uksi/2002/3043/contents/made