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Title of meeting: Climate Change and the Environment

Subject: Assessment of Air Quality - Update

Date of meeting: 26th January 2023

Report by: Director of Culture, Leisure, and Regulated Services

Wards affected: All

1. Purpose of report

1.1 To provide the Cabinet Member for Climate Change and the Environment information on:

- Portsmouth City Council's (PCC) Local Air Quality Management (LAQM) responsibilities and the relevant Review and Assessments (R&A) of air quality (AQ) in Portsmouth since 2019
- the legal responsibilities placed upon PCC in respect to AQ R&A and the appraisals undertaken by Department for Environment, Food and Rural Affairs (DEFRA) in respect to AQ in Portsmouth.

2. Information requested

2.1. PCC as several responsibilities in respect to AQ which include the:

- monitoring of pollutant levels with Portsmouth
- provision of LAQM and R&A data through the formal publication of mandated reports
- provision of monitoring data in respect to the performance of Clean Air Zone (CAZ)
- reduction of levels of pollutant below formal mandated compliance standards as contained within the National Air Quality Objectives (NAQO)
- delivery of consistent AQ improvements to positively impact upon public health
- assessment of activities taken to improve AQ.

2.2 The information provided within the report offers a succinct summary of the formal responsibilities of PCC and the monitoring data in respect to Nitrogen Dioxide (NO₂) (i.e.,

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the pollutant of significance in terms of compliance standards) since the formal publication of the 2020 Annual Status Report (ASR) (which reports upon the 2019 data set).

3. Summary of formal responsibilities and demands for data

3.1 There is a formal requirement upon PCC to R&A AQ and submit an ASR and our monitoring data to the UK Government each year. Where a local authority has failed to produce a draft ASR by the end of each calendar year there is a possibility that the local authority may be issued with a Ministerial Direction to do so under section 85(3) of the Environment Act 1995.

3.2 The 2021 ASR was submitted to DEFRA in line with these responsibilities, however, the 2022 ASR has not been submitted. PCC has engaged with DEFRA in respect to this delay.

3.3 In March 2018 DEFRA issued legally binding Ministerial Directions under the terms of the Environment Act 1995 (Feasibility Study for Nitrogen Dioxide Compliance) Air Quality Direction 2018. These directions ultimately lead to the creation of Portsmouth's CAZ in November 2021 which focuses upon two road links where levels of pollution exceed the mandated levels as determined by the government:

- Link 1 - A3, Mile End Road between the southern end of the M275 and Church Street roundabout. This link was predicted to achieve compliance with the NAQO in 2021
- Link 2 - A3, Alfred Road between Hope Street roundabout and the Queen Street / Anglesea Road / Alfred Road intersection. This link was predicted to achieve compliance with the NAQO in 2020.

3.4 The creation the CAZ created significant additional demands for monitoring data through the creation of a substantial number of supplementary monitoring locations and the installation of a new continuous monitoring station. The demand for data has however grown significantly over the last 5 years.

4. Summary of monitoring locations

4.1 PCC has frequently revised its non-automatic monitoring of NO₂ network via Nitrogen Dioxide Diffusion Tubes (NDDT) expanding it to reach 233 sites in 2021 (not including co-location sites) as a result of the additional monitoring requirements of the CAZ.

4.2 The expansion of NDDT monitoring network has however occurred consistently since 2017 as summarised* below:

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- 27 sites prior to 2017
 - 76 additional monitoring sites were deployed in the period 2017-2018 (103 sites in total)
 - 41 additional monitoring sites were deployed in 2019 (144 sites in total)
 - 17 additional monitoring sites were deployed in 2020 (161 sites in total)
 - 72 sites additional monitoring sites were deployed 2021 to specifically assess the performance of the CAZ (233 sites in total).
- * the number of locations may have been subject to change during each year

4.3 NDDT monitoring sites since 2017 have increased by 763%. NDDT monitoring locations between 2020 and 2021/2022 increased by 45%.

4.4 An expansion of the Continuous AQ Monitoring Station (CAQMS) network occurred in 2020, increasing the PCC network from four to five. The additional station was installed in Alfred Road to further assess the impact of the CAZ.

5. Impact of increasing demands for monitoring data upon reporting

5.1 The impact of the increasing demands for data upon the existing staffing resource of 1 FTE created significant problems in respect to mandatory reporting during 2021/2022.

5.2 This resourcing issue has been carefully considered and additional funding has now been provided to Regulatory Services (RS) to secure additional personnel to maintain the existing R&A requirements and the further reporting needs which have arisen as a result of the CAZ. It is therefore anticipated that PCC will be better placed to meet the requirements of DEFRA, both in relation to the ASR reporting process, and reporting the performance of the CAZ, within 2023.

5.3 Whilst the reporting of data has been significantly impacted as a consequence of the increased need for such, PCC has acquired and retained the necessary data as required by DEFRA and will provide this within 2023, therefore, completing its mandatory reporting requirements.

6. Summary of 2020 data

6.1 According to 2020 NDDT survey dataset, for the same monitored locations as those in 2019, the 2020 NO₂ annual mean levels were in excess of the annual mean NAQO at two locations compared to 12 monitoring locations in 2019 (both locations were along the road links as identified by the Ministerial Direction as highlighted in Section 3.3).

6.2 A closer examination of the NDDT survey data for the period 2016 to 2020 at the 27 long-term monitoring locations revealed that the 2020 NDDT annual mean levels decreased at all the 27 long-term monitored locations (100%). This level of AQ improvement is similar to that recorded in 2019.

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6.3 The 2020 NO₂ annual mean level also decreased across the 5 CAQMSs compared to that of 2019 and met the NO₂ annual mean NAQO at all CAQMSs.

6.4 It should be recognised that the impact of Covid-19 during 2020 and the restrictions mandated during such will have contributed to the reductions of pollution levels recorded during 2020. Therefore, these levels / this data set should be considered to be exceptional and not representative of NO₂ levels should the Covid-19 restrictions not have been applied.

7. Summary of 2021 monitoring data

7.1 A downward trend emerged at all 162 monitored locations in the last 5 years since 2017 similarly to the monitored locations for the 5-year period commencing in 2016.

7.2 For the same monitored locations, NO₂ annual mean levels were in excess of the annual mean NAQO in 2021 at the same two locations where the annual mean was breached in year 2020 (i.e., Alfred Road and Hope Street).

7.3 Of 162 monitored locations in both 2020 and 2021 the changes in NO₂ annual mean levels exhibited the following characteristics:

- 43 locations exhibited beneficial change in LAQ (26.56%)
 - Negligibly beneficial at 28 out of 162 locations (17.28%)
 - Slightly beneficial at 6 out of 162 locations (3.70%)
 - Moderately beneficial at 9 out of 162 locations (5.56%).
- 119 locations exhibited adverse change in AQ (73.46%)
 - Negligibly adverse at 63 out of 162 locations (38.89%)
 - Slightly adverse at 34 out of 162 locations (20.99%)
 - Moderately adverse at 22 out of 162 locations (13.58%).

7.4 A closer examination of the newly added 72 NDDT monitored locations in 2021 revealed that two locations are likely to be in breach of NAQO. These are located at the top of the Eastern Road and in Fratton Road. NDDT data capture from these locations was less than 25% (therefore unreliable) and was not subjected to any form of corrections.

7.5 The 2021 NO₂ annual mean level increased across two out of the five CAQMSs but still met the NO₂ annual mean NAQO at all CAQMSs. These changes are considered as adverse with variable degrees. However, an overall long-term improvement in AQ over the last five years is demonstrated.

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7.6 The maximum-recorded concentration was registered at Mile End Road CAQMS (34.83µg/m³). The NO₂ annual mean met the NAQO for the second year in a row across all five continuous monitoring stations.

7.7 Data collected at PCC CAQMSs did not register any exceedance of the NO₂ hourly mean NAQO. In addition, none of CAQMS NO₂ annual mean exceeded 60µg/m³ which indicates that an exceedance of the 1-hour mean NAQO was unlikely.

7.8 It should again be noted that, as a result of the impact of the Covid-19 pandemic, levels of pollution fell uncharacteristically in 2020 and therefore it may not be unexpected that increases in NO₂ occurred in 2021 as traffic levels returned to pre-pandemic levels when compared with the levels recorded in 2020. Therefore, a collation between levels of NO₂ increasing in 2021 as a consequence of other contributory factors is uncertain.

8. Summary of the assessment of the CAZ in 2022

8.1 The Government require PCC to undertake appropriate monitoring and evaluation of AQ levels in and around the CAZ. This responsibility is delivered through RS.

8.2 RS have designed a monitoring program to provide sufficient information to appraise whether the measures implemented to reduce NO₂ levels into compliance are having the anticipated impact, need adjusting, or are still needed if they have achieved their air quality improvement outcomes.

8.3 The majority of RS data collected is collected via the NDDT which are exposed monthly. As the months pass DEFRA and their appointed analysts will assess PCCs monitoring results, model the reductions (or increases) and present information in respect to; the impact of the CAZ and the other measures being deployed to address PCC's non-compliance, any impacts outside the geographical area of the CAZ, and how these are affecting public health.

8.4 Our understanding is that for year 1 of the CAZ the national compliance assessment is based on measurement data from the national Automatic Urban and Rural Network and modelled concentrations from the Pollution Climate Mapping model and not from other data sets including our monitoring data.

8.5 The Government are currently investigating a number of options for improving the national compliance assessment to better reflect local situations, including options for incorporating local monitoring data collected as part of their central evaluation. As we move further into year two of the CAZ the focus upon and need for accurate validated monitoring data will significantly increase which PCC will provide to DEFRA.

8.6 As the 2022 data set is not due to be published in June 2023 further updates in respect to such cannot be provided at this time. Additionally, as a result of monitoring data

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taking primacy in respect to assessing the performance of the CAZ during of 2023 it is too early to assess its performance and whether the predicted 'do nothing' compliance dates as specified in Section 3.3 have been achieved.

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

Appendices: None

Background list of documents: Section 100D of the Local Government Act 1972

No documents disclose facts or matters, which have been relied upon to a material extent by the author in preparing this report.