ITEM No ...5.....

REPORT TO: COMMUNITY SAFETY & PUBLIC PROTECTION COMMITTEE – 13 JUNE 2022

REPORT ON: AIR QUALITY UPDATE

REPORT BY: EXECUTIVE DIRECTOR OF NEIGHBOURHOOD SERVICES

REPORT NO: 138-2022

1.0 PURPOSE OF REPORT

1.1 To provide a summary of the results of the most recent full years (2021) air quality monitoring data and action measures linked to the Council's Air Quality Action Plan; provide an interim update on monitored air quality levels for the first part of 2022; provide information on the performance of the Scottish Government funded bus retrofitting scheme within Dundee; and to provide an update on the introduction of the Dundee Low Emission Zone scheme.

2.0 RECOMMENDATIONS

- 2.1 It is recommended that Committee note the contents of this report and to:
 - Remit the Executive Director of Neighbourhood Services to continue to take forward the Council's Air Quality Action Plan (AQAP) measures during 2022, and submit the 2022 Air Quality Annual Progress Report to the statutory bodies.
 - 2. Note the information provided in Appendix 2 on provisional air quality monitoring data for the months of January to April 2022.
 - 3. Note the information on the emission levels of retro fitted buses operating across Dundee.
 - 4 Note the approval for the Dundee Low Emission Zone scheme was received from the Scottish Ministers on 19 May 2022, enabling the scheme to be introduced on 30 May 2022 as scheduled.

3.0 FINANCIAL IMPLICATIONS

3.1 Costs associated with the progression of AQAP measures and LAQM duties are contained within the grant funding allocated to the Council from the Scottish Government, as outlined in Section 4.8.

4.0 AIR QUALITY UPDATE

- 4.1 Reference is made to Article V of the Environmental Services and Sustainability Committee of 20th February 2006, which approved the establishment of an Air Quality Management Area (AQMA) in the city and the basis of the necessary air quality monitoring and measures the Council requires to implement to work towards meeting the required air quality standards. As well as meeting the EU/UK National Air Quality Standards (NAQS), for the purposes of Local Air Quality Management (LAQM), local authorities in Scotland are also required to meet the more stringent statutory Scottish Objectives.
- 4.2 Of the seven NAQS pollutants, there continues to be no anticipated risk of exceeding the statutory objectives for benzene, carbon monoxide, 1,3-butadiene, sulphur dioxide and lead.
- 4.3 Through 2021, continuous monitoring for nitrogen dioxide (NO₂) took place at six locations in Dundee. These were Broughty Ferry Road, Lochee Road, Mains Loan (background reference monitor), Meadowside, the Seagate, and Whitehall Street. Continuous monitoring of Particulate Matter (PM) took place at 10 locations: Albert Street, Broughty Ferry Road, Lochee Road, Logie Street, Mains Loan (background reference monitor), Meadowside, Myrekirk Terrace, the Stannergate, and Whitehall Street.

- The 2021 ratified monitoring data shows compliance was met for all air quality objectives at the continuous monitoring locations referred to in 4.3. Details of the 2021 ratified monitoring data results for each of the pollutants monitored at the locations listed in 4.3 against the Air Quality Objectives for Scotland is contained in Table 1 in **Appendix 1.**
- 4.5 The 2021 Annual Progress Report noted that lockdown measures imposed in response to the COVID19 pandemic during 2020 resulted in a dramatic drop in road traffic within Scotland's cities, including Dundee, which contributed greatly to measured NO₂ concentrations decreasing significantly during the lockdown. Traffic data collected by the Council's automated traffic counters indicates that traffic levels in 2021 remained lower during the first half of the year but increased to nearer pre-pandemic levels by the end of the year. As such the measured annual mean NO₂ concentration remained lower than pre-pandemic levels.
- 4.6 Provisional data for the months of January April 2022 for NO₂, PM¹⁰ and PM^{2.5} is contained within Tables 2 19 in **Appendix 2** of this report. The monthly average data for 2022 has not been ratified and will be subject to further quality control meaning that levels contained in the tables in Appendix 2 may change. The data in the tables has been sourced from the Scottish Air Quality Database, which is available through the Air Quality in Scotland website www.scottishairquality.scot
- 4.7 The Council's Air Quality Action Plan (AQAP) includes a range of measures that continue to be progressed in order to achieve further improvements in air quality across the city. These measures are not focussed on specific locations but in combination contribute to improvements in air quality across the city. A summary of AQAP related measures undertaken during 2021 and proposed measures for 2022 are contained within **Appendix 3** of this report.
- 4.8 Funding to help progress some of the proposed AQAP measures during 2022/23 has been obtained through the Scottish Government Air Quality Action Plan grant scheme, with £172,250 being awarded to Dundee City Council. Funding of £45,000 has also been obtained through the Scottish Government Local Air Quality Management scheme for LAQM duties, including for maintenance of the air quality monitoring equipment and undertaking an update of the existing 2011 Air Quality Action Plan. The revised plan will be able to be aligned with other Council strategies aimed at improving the environment such as the Dundee Climate Action Plan and the forthcoming Sustainable Transport Plan, as well as the Dundee Low Emission Zone scheme and the Scottish Governments 'Cleaner Air for Scotland 2 Towards a Better Place for Everyone' air quality strategy which was launched in 2021.

5.0 SCOTTISH BUS EMISSIONS ABATEMENT RETROFIT FUND

- 5.1 The Bus Emissions Abatement Retrofit (BEAR) fund supports the delivery of Scotland's Low Emission Zones (LEZs) by awarding grants to bus and coach operators in Scotland for the retrofitting of mid-life vehicles operating within Scottish AQMAs and LEZs (to Euro VI standard). The retro-fit technology reduces emissions of NOx gases and particulate matter, with the BEAR grant awards only made available for equipment which has been approved by the Energy Saving Trust through the Clean Vehicle Retrofit Accreditation Scheme (CVRAS).
- 5.2 Between 2018-2021, through four phases of the BEAR scheme, the Scottish Government has awarded funding grants totalling over £18million to bus and coach operators across Scotland. At a local level, operators including Xplore Dundee, Stagecoach East of Scotland, and Moffatt & Williamson have had grants awarded across these phases to retrofit a combined total of 180 buses that operate across the east of Scotland, including Dundee.
- Once in-service the performance of the retrofit systems are evaluated by Transport Scotland, in association with the Energy Saving Trust and Zemo (formerly known as LowCVP), through a comprehensive programme of emissions monitoring. The monitoring obtains data from three sources:
 - Telematics data on NOx reduction performance exported from the retrofitted equipment
 - Portable Emission Measurement System (PEMS) testing by independent specialist contractors of NOx and particulate emissions
 - Remote sensing emissions monitoring

- Information provided to DCC by Transport Scotland advised that the average level of NOx reduction % of retrofitted buses in Dundee was 83% based on the telemetry data taken from 27 retrofitted buses operating in Dundee. Additionally, PEMS tests carried out on buses owned by two of the main bus operators in Dundee averaged 3.7g/km and 2.88g/km respectively for NOx the vehicles tested. The typical engine out levels of NOx are 15-25g/km depending on average speed and other factors. Particulate matter reductions on PEMS tested buses in Dundee are indicative of >99% particulate reduction. These results represent significant reductions in pollution from the retrofitted fleet in Dundee with excellent particulate reductions and good NOx reductions.
- 5.5 Initially buses that had been retrofitted through this scheme by Xplore Dundee in 2019 were being used on routes servicing the Lochee Road corridor. These buses have since been moved to other routes following the introduction of the 12 new Zero-Emission electric buses in January 2022 on the Service 28 route that services Lochee Road, ensuring the previous investment continues to have a positive effect on air quality in the city.

6.0 LOW EMISSION ZONE UPDATE

- Reference is made to Article V of the Community Safety & Public Protection Committee of 21 February 2022 which approved the submission of an application to the Scottish Ministers for approval of the Dundee Low Emission Zone scheme as per Section 10 of Part 2 of the Transport (Scotland) Act 2019. This application was submitted to the Scottish Ministers by the Executive Directors of City Development and Neighbourhood Services on 22 February 2022.
- 6.2 The submitted application was given approval by the Scottish Ministers on 19 May 2022 allowing the scheme to be introduced on 30 May 2022. The approved scheme included a two-year 'grace-period' during which enforcement of the LEZ does not take place, meaning that enforcement will commence on 30 May 2024.

7.0 POLICY IMPLICATIONS

7.1 This report has been subject to an assessment of any impacts on Equality and Diversity, Fairness and Poverty, Environment and Corporate Risk. A copy of the Impact Assessment is available on the Council's website at www.dundeecity.gov.uk/iia/reports.

6.0 CONSULTATIONS

6.1 The Council Leadership Team were consulted in the preparation of this report and agree with its content.

7.0 BACKGROUND PAPERS

7.1 None

Elaine Zwirlein Tom Stirling

Executive Director of Neighbourhood Services Head of Community Safety & Protection

17 May 2022

APPENDICES

- Appendix 1 2021 ratified monitoring data results for each of the pollutants monitored at the continuous monitoring locations in Dundee against the Air Quality Objectives for Scotland
- Appendix 2 Provisional monitoring data for January April 2022 (monthly averages)
- Appendix 3 Content for the 2022 Air Quality Annual Progress Report on measures linked to the Air Quality Action Plan and actions to be progressed during 2021

Appendix 1: 2021 ratified monitoring data results for each of the pollutants monitored at the continuous monitoring locations in Dundee against the Air Quality Objectives for Scotland)

Table 1: Ratified monitoring data results for 2021 for continuous monitoring locations in Dundee

| Continuous Monitor location | Site type* | NO ₂ annual mean (ug/m³) | NO ₂ hourly mean (# times hourly 200ug/m³ limit exceeded) | PM ₁₀ annual mean (ug/m³) | PM ₁₀ daily mean (# times that 50ug/m³ daily mean exceeded) | PM _{2.5} annual mean (ug/m³) |
|---------------------------------------|---------------|--|--|--|--|--|
| Air Quality Objective ¹ | | 40 | 18 | 18 | 7 | 10 |
| Albert St | K | - | - | - | 0 | - |
| Broughty Ferry Rd** | UI | 12.6 | 0 | 10.1 | 0 0 - | 4.9 |
| Lochee Rd | R | 31.7 | 0 | 10.7 | 0 | 5.7 |
| Logie St | K | - | - | | 1 | |
| Mains Loan | UB | 8.4 | 0 | 7.5 | 0 | 4.4 |
| Meadowside | R | 27.1 | 0 | 10.1 | 0 | 5.2 |
| Myrekirk Tce | R | - | - | | 0 | - |
| Seagate | R | 30.3 | 0 | 11.0 | 0 | 5.6 |
| Stannergate | R | - | - | | 0 | - |
| Whitehall St | R | 27.5 | 0 | 8.3 | 0 | 4.7 |

 $^{^{1.}}$ Air Quality Objectives (Scotland): NO₂ annual mean $-40ug/m^3$, NO₂ hourly $-200ug/m^3$ not to be exceeded more than 18 times per year, PM₁₀ annual mean $-18ug/m^3$, PM₁₀ daily mean $-50ug/m^3$ not to be exceeded more than 7 times per year, PM_{2.5} annual mean $-10ug/m^3$

NOTE: full information on monitoring results in respect to type of analyser, % data capture, annualised results, and 99.8th percentiles will be available in Appendix 1 of the 2022 Air Quality Annual Progress Report for Dundee City Council. The data in Table 1 has been sourced from the Scottish Air Quality Database, which is available through the Air Quality in Scotland website www.scottishairquality.scot

^{*} Site type: K = kerbside, R = roadside, UI = urban industrial, UB = urban background, I = indicative

^{**} The Broughty Ferry Road site includes 3 analysers that monitor PM₁₀ (FIDAS / OSIRIS / PARTISOL)

Appendix 2: Provisional monitoring data for January – April 2022 (monthly averages)

All data in this appendix was sourced from the Scottish Air Quality database held on the Scottish Air Quality website, www.scottishairquality.scot on 12 May 2022.

Nitrogen dioxide (NO₂) monthly averages and annual mean

(Air Quality Objectives (Scotland): NO2 annual mean – 40ug/m3) (N/D = no data) (= provisional data)

Table 2: Broughty Ferry Road NO₂

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 13 | 10 | 17 | 10 | | | | | | | | | |
| 2021 | 27 | N/D | N/D | N/D | N/D | 12 | 8 | 8 | 11 | 13 | 14 | 19 | 13 |
| 2020 | 21 | 22 | 23 | 20 | 17 | 18 | 11 | 10 | N/D | 20 | 22 | 25 | 20 |
| 2019 | 31 | 30 | 19 | 28 | 22 | 18 | 15 | 18 | 19 | 21 | 25 | 27 | 23 |
| 2018 | 35 | 35 | 29 | 28 | 24 | 18 | 16 | 12 | 13 | 19 | 22 | 29 | 23 |

Table 3: Lochee Road NO₂

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 37 | 28 | 28 | 13 | | | | | | | | | |
| 2021 | 43 | 30 | 29 | 30 | 27 | 22 | 21 | 24 | 31 | 35 | 42 | 45 | 32 |
| 2020 | 47 | 46 | 35 | 17 | 15 | 19 | 22 | 24 | 32 | 36 | 40 | 42 | 31 |
| 2019 | 66 | 63 | 45 | 33 | 34 | 30 | 30 | 32 | 39 | 39 | 46 | 53 | 43 |
| 2018 | 59 | 56 | 45 | 41 | 35 | 30 | 28 | 35 | 38 | 48 | 43 | 65 | 43 |

Table 4: Mains Loan NO₂ (background)

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 9 | 7 | 13 | 9 | | | | | | | | | |
| 2021 | 13 | 9 | 8 | 8 | 7 | 5 | 5 | 7 | 8 | 9 | 10 | 14 | 8 |
| 2020 | 10 | 11 | 9 | 6 | 4 | 5 | 4 | 6 | 8 | 10 | 13 | 15 | 8 |
| 2019 | 19 | 15 | 9 | 12 | 8 | 7 | 6 | 7 | 8 | 11 | 16 | 15 | 11 |
| 2018 | 22 | 16 | 10 | 10 | 10 | 7 | 8 | 7 | 7 | 13 | 16 | 21 | 12 |

Table 5: Meadowside NO₂

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 34 | 27 | 37 | 27 | | | | | | | | | |
| 2021 | N/D | N/D | 25 | 27 | 26 | 19 | 19 | 21 | 27 | 32 | 34 | 42 | 27 |
| 2020 | 39 | 36 | 31 | 13 | 13 | 9 | N/D | N/D | N/D | N/D | N/D | N/D | 24 |
| 2019 | 48 | 48 | 33 | 32 | 29 | 24 | 26 | 27 | 28 | 32 | 34 | 41 | 34 |
| 2018 | 40 | 43 | 36 | 36 | 35 | 26 | 24 | 26 | 29 | 37 | 33 | 45 | 34 |

Table 6: Seagate NO2

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 29 | 26 | 34 | 25 | | | | | | | | | |
| 2021 | 36 | 32 | 28 | 31 | 30 | 22 | 27 | 26 | 29 | 30 | 32 | 39 | 30 |
| 2020 | 40 | 41 | 33 | 18 | 13 | 17 | 20 | 26 | 29 | 33 | 34 | 37 | 28 |
| 2019 | 52 | 60 | 44 | 53 | 45 | 38 | 35 | 36 | 37 | 41 | 49 | 47 | 45 |
| 2018 | 52 | 52 | 50 | 56 | 49 | 41 | 38 | 36 | 36 | 45 | 50 | 54 | 46 |

Table 7: Whitehall Street NO₂

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 22 | 16 | 24 | 20 | | | | | | | | | |
| 2021 | 31 | 33 | 24 | 30 | 29 | 22 | 27 | 25 | 25 | 26 | 26 | 34 | 28 |
| 2020 | 28 | 30 | 26 | 13 | 13 | 11 | 18 | 24 | 24 | 31 | 28 | 33 | 24 |
| 2019 | 40 | 42 | 30 | 42 | 34 | 29 | 22 | 26 | 28 | 32 | 39 | 36 | 33 |
| 2018 | 41 | 42 | 43 | 45 | 41 | 35 | 30 | 29 | 27 | 37 | 40 | 41 | 38 |

Particulate Matter (PM) 10 monthly averages and annual mean

(Air Quality Objectives (Scotland): PM¹¹ annual mean – 18ug/m³) (N/D = no data) (____ = provisional data)

Table 8: Broughty Ferry Rd PM¹⁰

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 11 | 9 | 28 | 14 | | | | | | | | | |
| 2021 | 6 | 10 | 11 | 14 | 9 | 11 | 12 | 11 | 12 | 7 | 7 | N/D | 10 |
| 2020 | 7 | 8 | 13 | 14 | 9 | 10 | 7 | 9 | 9 | 7 | 8 | 6 | 9 |
| 2019 | 10 | 20 | 12 | 28 | 11 | 11 | 12 | 15 | 13 | 10 | 11 | 10 | 14 |
| 2018 | 11 | 14 | N/D | 16 | 16 | 15 | 11 | 10 | 10 | 10 | 13 | 9 | 12 |

Table 9: Lochee Road PM¹⁰

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 13 | 11 | 29 | 15 | | | | | | | | | |
| 2021 | 8 | 11 | 12 | 15 | 9 | 10 | 14 | 11 | 11 | 8 | 9 | 12 | 11 |
| 2020 | 8 | 10 | 15 | 12 | 9 | 9 | 6 | 10 | 10 | 8 | 10 | 8 | 10 |
| 2019 | 13 | 18 | 15 | 22 | 9 | 9 | 10 | 9 | 9 | 9 | 10 | 9 | 12 |
| 2018 | 16 | 21 | 19 | 15 | 13 | 12 | 10 | 7 | 7 | 8 | 12 | 11 | 13 |

Table 10: Mains Loan PM¹⁰ (background)

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 8 | 6 | 21 | 11 | 10 | | | | | | | | |
| 2021 | 5 | 8 | 7 | 9 | 6 | 8 | 9 | 9 | 9 | 6 | 5 | 8 | 8 |
| 2020 | 6 | 6 | 8 | 11 | 7 | 8 | 5 | 7 | 7 | 6 | 8 | 6 | 7 |
| 2019 | 8 | 15 | 8 | 22 | 7 | 7 | 8 | 8 | 8 | 7 | 8 | 6 | 9 |
| 2018 | 8 | 9 | 12 | 11 | 11 | 11 | 8 | 6 | 6 | 7 | 11 | 9 | 9 |

Table 11: Meadowside PM¹⁰

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 11 | 11 | 32 | 15 | | | | | | | | | |
| 2021 | 6 | 11 | 15 | 14 | 8 | 10 | 11 | 11 | 11 | 8 | 8 | 10 | 10 |
| 2020 | 8 | 10 | 14 | 13 | 9 | 9 | 7 | 8 | 9 | 7 | 9 | 7 | 9 |
| 2019 | 16 | 27 | 18 | 27 | 9 | 10 | 10 | 9 | 10 | 8 | 12 | 8 | 14 |
| 2018 | 15 | 27 | 17 | 19 | 16 | 13 | 13 | 10 | 9 | 16 | 16 | 13 | 15 |

Table 12: Seagate PM¹⁰

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 13 | 11 | 28 | 15 | | | | | | | | | |
| 2021 | 7 | 11 | 12 | 15 | 10 | 11 | 12 | 13 | 12 | 9 | 9 | 11 | 11 |
| 2020 | 8 | 10 | 14 | 13 | 9 | 9 | 8 | 10 | 10 | 8 | 10 | 7 | 10 |
| 2019 | 14 | 21 | 15 | 29 | 11 | 11 | 11 | 11 | 11 | 10 | 12 | 9 | 14 |
| 2018 | 12 | 19 | 19 | N/D | 20 | 18 | 18 | 12 | 11 | 13 | 17 | 14 | 16 |

Table 13: Whitehall Street PM¹⁰

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 9 | 7 | 22 | 12 | | | | | | | | | |
| 2021 | 5 | 9 | 8 | 9 | 7 | 9 | 10 | 10 | 10 | 7 | 6 | 9 | 8 |
| 2020 | 7 | 8 | 10 | 11 | 8 | 9 | 6 | 8 | 8 | 7 | 8 | 6 | 8 |
| 2019 | 10 | 19 | 12 | 26 | 11 | 9 | 10 | 10 | 9 | 8 | 10 | 8 | 12 |
| 2018 | 9 | 12 | 15 | 17 | 17 | 21 | 21 | 16 | 15 | 18 | 17 | 12 | 16 |

Particulate Matter (PM) 2.5 monthly averages and annual mean

(Air Quality Objectives (Scotland): PM^{2.5} annual mean – 10_{ug/m³}) (N/D = no data) (____ = provisional data)

Table 14: Broughty Ferry Road PM^{2.5}

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|------|-----|------|-----|-----|------|-----|--------------|
| 2022 | 5 | 4 | 15 | 7 | | 30.1 | 002 | 7100 | 02. | | 1101 | 520 | 7.1.1.107.12 |
| 2021 | 4 | 5 | 5 | 6 | 5 | 5 | 6 | 5 | 6 | 3 | 3 | N/D | 5 |
| 2020 | 4 | 4 | 5 | 7 | 5 | 5 | 3 | 4 | 4 | 3 | 5 | 3 | 4 |
| 2019 | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D |
| 2018 | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D | N/D |

Table 15: Lochee Road PM^{2.5}

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 6 | 5 | 17 | 8 | | | | | | | | | |
| 2021 | 4 | 5 | 6 | 6 | 5 | 6 | 7 | 6 | 7 | 4 | 4 | 7 | 6 |
| 2020 | 4 | 5 | 6 | 7 | 5 | 5 | 2 | 6 | 5 | 4 | 6 | 5 | 5 |
| 2019 | 7 | 10 | 6 | 13 | 5 | 5 | 5 | 5 | 5 | 4 | 7 | 5 | 6 |
| 2018 | N/D | N/D | 5 | 7 | 7 | 7 | 5 | 3 | 3 | 5 | 8 | 7 | 6 |

Table 16: Mains Loan PM^{2.5} (background)

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 4 | 3 | 14 | 6 | | | | | | | | | |
| 2021 | 3 | 5 | 5 | 5 | 4 | 5 | 6 | 5 | 5 | 3 | 3 | 5 | 4 |
| 2020 | 4 | 4 | 5 | 6 | 4 | 5 | 2 | 4 | 4 | 3 | 5 | 3 | 4 |
| 2019 | 5 | 10 | 5 | 14 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 6 |
| 2018 | 5 | 6 | 7 | 7 | 7 | 6 | 4 | 3 | 3 | 4 | 7 | 6 | 5 |

Table 17: Meadowside PM^{2.5}

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 5 | 4 | 15 | 7 | | | | | | | | | |
| 2021 | 4 | 5 | 7 | 6 | 5 | 5 | 7 | 5 | 6 | 4 | 4 | 6 | 5 |
| 2020 | 4 | 5 | 6 | 6 | 4 | 5 | 3 | 4 | 4 | 3 | 6 | 4 | 5 |
| 2019 | N/D | N/D | 7 | 15 | 4 | 5 | 5 | 5 | 5 | 4 | 7 | 5 | 6 |
| 2018 | N/D |

Table 18: Seagate PM^{2.5}

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 6 | 5 | 16 | 7 | | | | | | | | | |
| 2021 | 4 | 6 | 5 | 6 | 5 | 6 | 7 | 6 | 7 | 5 | 4 | 7 | 6 |
| 2020 | 5 | 5 | 6 | 7 | 5 | 5 | 3 | 5 | 5 | 4 | 6 | 4 | 5 |
| 2019 | N/D | N/D | 7 | 16 | 5 | 5 | 6 | 6 | 6 | 5 | 7 | 6 | 7 |
| 2018 | N/D |

Table 19: Whitehall Street PM^{2.5}

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 2022 | 5 | 4 | 14 | 6 | | | | | | | | | |
| 2021 | 3 | 4 | 4 | 5 | 4 | 5 | 7 | 5 | 6 | 4 | 3 | 6 | 5 |
| 2020 | 4 | 4 | 5 | 6 | 4 | 5 | 3 | 4 | 4 | 4 | 5 | 4 | 4 |
| 2019 | N/D | N/D | 6 | 15 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 5 | 6 |
| 2018 | N/D |

Appendix 3: Content for the proposed 2021 Air Quality Annual Progress Report on measures linked to the Air Quality Action Plan (AQAP) and proposed actions for 2022.

Dundee City Council has taken forward a number of measures linked to our AQAP during the current reporting year of 2021 in pursuit of improving local air quality.

Updates on AQAP related actions progressed during 2021 include:

- There was a 14% increase in the number of members to the Dundee ECO Stars larger commercial vehicles scheme, with 245 members (8405 vehicles). The number of members of the ECO Stars scheme for taxis/private hire vehicles was maintained at 18 operators (570 vehicles) during 2021.
- Construction of the Active Travel Hub at the Dundee Waterfront was completed in 2021 with this opening to the public in September 2021.
- The Drive Dundee Electric campaign continued to help raise awareness and encourage uptake
 of low emission vehicles through media publications and at various events throughout the year.
 Showcase events included events held the lead up to COP26 in November 2021, including the
 city hosting the 2021 EVI Global Pilot City Forum, in partnership with the International Energy
 Agency.
- The Dundee City Council Fleet section continued to replace older vehicles with newer, less polluting models. During 2021, 24 diesel vehicles were replaced with electric vehicles. In total, 41 fully electric vehicles were added to the fleet, including four more fully electric refuse collection vehicles. By the end of 2021, there was a total of 171 electric vehicles within the council fleet.
- At the end of 2021 there were 165 pure electric taxis in Dundee, up from 161 in 2020.
- Solar canopies were installed on the salt dome at Marchbanks Depot to provide renewable power for the Heavy Goods Vehicle charging hub installed there. The charging hub at the Olympia multi-story carpark opened to the public in February 2021.
- The city's first pop-up chargers were installed at the V&A Museum in May 2021. The number of pop-up chargers installed throughout the city totalled 26 during 2021.
- 'Clean Air Day 2021' was promoted via social media channels on June 17 to help raise awareness of air quality and how we can protect those most vulnerable to the impacts of exposure to poor air quality.
- A School Streets (vehicle exclusion zone) launched at Fintry PS in September 2021.
- Road infrastructure improvements for Lochee Road at Cleghorn Street / Rankine Street were approved to benefit road safety and to help ease congestion caused by vehicles turning right into these streets from Lochee Road. Other options for alterations along the Lochee Road corridor to ease congestion were progressed with air quality modelling of these to be undertaken in 2022. Bus priority measures were introduced on Meadowside in March 2021.
- A further five docking stations for the Embark electric bike hire scheme were progressed in 2021.
- New segregated cycle lanes were implemented in Perth Road and Ninewells Avenue while sections of the Broughty Ferry cycle route received improvements to lighting during 2021.
- Statutory consultation on the preferred option for the Dundee Low Emission Zone scheme was
 undertaken in the summer of 2021, with the preferred option then approved for progression as
 the proposed scheme. The proposed scheme, which included an area within the inner-ring road
 of the city centre of Dundee and applicable to all vehicles other than motorcycles / mopeds,
 was then advertised in November and December 2021, with objections to the scheme being
 accepted during this period. Submission to the Scottish Ministers for approval to introduce the
 proposed Dundee LEZ scheme would then follow in early 2022.

Air Quality Action Plan linked measures to be progressed over the course of the next reporting year include:

- Continuation of both ECOSTARS Schemes for Heavy Duty Vehicles and Taxis / Private Hire
 vehicles to encourage engagement with and participation of these transport providers in the
 achievement of air quality improvements in the city.
- Continued support for Active Travel related projects including the delivery of the School Active
 Travel Delivery programme and behaviour change campaigns to cycling, active and sustainable
 travel across the city via joint working with the Dundee Cycle Hub.
- Work will continue with SEPA on the modelling of air quality impacts of road infrastructure improvements on the Lochee Road corridor, with traffic counts being undertaken in March 2022.
- Work will progress on expanding the School Streets (vehicle exclusion scheme) to five more locations in 2022.
- The promotion of Clean Air Day 2022 on 16 June 2022 to help raise awareness of air quality, with this year's theme being "Air pollution dirties every organ in your body. Take steps to improve your health this Clean Air Day."
- A project to provide residential cycle storage solutions in areas of Dundee where there is a high level of flatted development and tenements will commence.
- A review and update of the existing 2011 Air Quality Action Plan will progress, aligning changes
 that have occurred across Dundee since the initial plan was published plus improvements
 predicted to occur as a result of the LEZ, and action measures contained within the Scottish
 Governments 'Cleaner Air for Scotland 2 Towards a Better Place for Everyone' air quality
 strategy that was published in 2021.
- Following approval by the Scottish Ministers, the Dundee LEZ scheme will be introduced on 30 May 2022. A grace period of two years for both residents and non-residents has been set, meaning that enforcement of the LEZ will not commence until 30th May 2024. Work on the installation of the infrastructure required for delivering enforcement will continue during 2022.