Item 2

12th August 2025

Glasgow City Council

Net Zero and Climate Progress Monitoring City Policy Committee

Report by Executive Director of Neighbourhoods Regeneration and Sustainability

Contact: Gavin Slater Ext: 78347

AIR QUALITY ANNUAL PROGRESS REPORT 2025

Purpose of Report:

To provide Committee with Glasgow's 2025 Annual Progress Report on Air Quality.

Recommendations:

The Committee is asked to:

(a) Note the content of this report on air quality in the city.
(b) Note the new data available on pollution levels
(c) Note the appraisal of the impact of the Glasgow Low Emission Zone on pollution levels
(d) Note the significant improvement in concentrations of nitrogen dioxide

Ward No(s):	Citywide: ✓
Local member(s) advised: Yes ☐ No ✓	consulted: Yes ☐ No ✓

1 Introduction

1.1 This report presents the findings of Glasgow City Council's Annual Progress Report (APR) on air quality, including an overview of data and trends in air quality across the city in the 2024 calendar year. The full report is provided in Appendix A.

1.2 The Environment Act 1995, which implemented EC Directive 96/62, requires that local authorities regularly review and assess the air quality within their area of responsibility. This review and assessment process is the basis of Local Air Quality Management (LAQM). It is intended to compare current and future concentrations of key air pollutants against the objectives detailed in the regulations.

1.3 In accordance with LAQM requirements, the APR considers monitoring data available since the last round of review and assessment (Air Quality Progress Report 2024), as well as assessing the impact from various potential sources of pollution, such as any major new developments.

2. Background

2.1 Previous rounds of the LAQM review and assessment process have resulted in Glasgow declaring Air Quality Management Areas (AQMA). A local authority is required by law to declare an AQMA where statutory air quality objectives are not being met. The Glasgow AQMAs were declared due to elevated levels of the air pollutants nitrogen dioxide (NO_2) and particulate matter (PM_{10}).

2.2 The main source of air pollution produced within the city comes from road traffic. Airborne particulate matter is more heavily influenced by non-local effects such as prevailing wind conditions (over which the city has no control) and can be transported from continental Europe and beyond. Nitrogen dioxide, however, is more directly attributable to local traffic volumes and engine type – and in particular to diesel engines, which emit comparatively more nitrogen dioxide than petrol engines.

2.3 To date the city has declared four AQMAs, as follows:

- City Centre (NO_2 and PM_{10}) – declared in 2002.
- Parkhead Cross (NO_2) – declared in 2007 and revoked in 2020.
- Byres Road/ Dumbarton Road (NO_2 and PM_{10}) – declared in 2007. Amended in 2020 to remove PM_{10}. Fully revoked in 2024.
- City-wide (PM_{10}) – declared in 2012 and revoked in 2016.

3. Actions to Improve Air Quality

3.1 In response to the implementation of the AQMAs in the city, Glasgow City Council produced Air Quality Action Plans (AQAP) in 2004 and 2009, introducing a range of measures aimed at reducing air pollution in the city. The

Action Plans considered several measures such as vehicle idling enforcement, vehicle emission testing and initiatives towards cleaner vehicles. Other measures such as sustainable transport initiatives and public information promotion have been incorporated into the reporting process.

3.2 As a result of progress made to address pollution levels, the Citywide AQMA for PM_{10} was revoked in 2016 and the Parkhead Cross AQMA for NO_2 was revoked in 2020 following a prolonged period of achieving the relevant air quality objectives. The Byres Rd / Dumbarton Rd AQMA was amended in 2020 to remove the PM_{10} component. Revocation of the NO_2 element, and the entire AQMA, was completed in 2024.

3.3 These developments provide evidence that improvements in air quality continue to be achieved within Glasgow. Currently, the City Centre AQMA remains the only active AQMA in the city.

3.4 Following revised guidance and direction from the Scottish Government, a new AQAP was produced and approved by the City Administration Committee on 25th April 2024. The 2024 AQAP identified 7 key priorities and 21 action plan measures to be progressed within the five-year lifespan of the Plan.

3.5 Progress on AQAP actions is reported within the APR in section 2.3 and a table outlining progress during 2024 can be found in Table 2.2 of the APR.

4 Air Quality Update

4.1 Air quality is a devolved matter, and the Council therefore works to measure and achieve hourly, daily and annual objectives on various pollutants which have been set by the Scottish Government. The full list of air quality objectives can be found in Table 1.1 of the APR. The APR is the Council's submission on the current levels of these pollutants, the efforts made to reduce these further, and progress towards full compliance.

4.2 An update on the main pollutants of concern can be summarised as follows:

4.3 Particulate Matter (PM_{10})

4.3.1 Levels of PM_{10} recorded across the city in 2024 were satisfactory with both the daily mean and annual mean objectives being met at all monitoring locations. Annual mean concentrations recorded at ten automatic monitoring stations ranged from 8.0ug/m^3 to 12.9ug/m^3 against an objective level of 18ug/m^3. No days recorded a daily mean above 50ug/m^3 in 2023. This continued the trend of compliance in respect of this pollutant. It should be noted that the Scottish annual mean objective for this pollutant is set at just under half that of the UK and EU limits. The city therefore continues to perform well in this area.

4.4 Particulate Matter ($PM_{2.5}$)

4.4.1 Levels of $PM_{2.5}$ recorded across the city in 2024 were satisfactory with the annual mean objective being met at all monitoring locations. Annual mean concentrations recorded at nine automatic monitoring stations ranged from 5.0ug/m^3 to 7.2ug/m^3 against an objective level of 10ug/m^3. As ultra-fine particulate pollution is considered to be a pollutant with significant impact on human health, the city is also performing well in this respect.

4.5 Nitrogen Dioxide (NO_2)

4.5.1 Monitoring of NO_2 is undertaken using a combination of both automatic monitoring stations and diffusion tubes. Use of diffusion tubes allows the monitoring of this pollutant at more locations than is economic or practical using automatic stations. Although less accurate than the reference level automatic monitors, this accuracy is improved by use of monthly monitoring to compare against the annual mean objective and by the colocation of diffusion tubes with reference monitors and correction for 'bias'.

4.5.2 Levels of NO_2 in 2024 at all automatic monitoring stations were below the objective levels, continuing the trend of compliance observed since 2022. Glasgow Kerbside (Hope St - see Figure 1 below) remains the station recording the highest level of NO_2. However, NO_2 levels continue to decrease and the 2024 annual mean of 36.3ug/m^3 at this location is now almost 10% below the objective level of 40ug/m^3.

4.5.3 No exceedances of the annual mean NO_2 objective in 2024 were recorded in monitoring conducted by diffusion tube, reduced from two exceedances at two locations recorded in 2023.

4.5.4 The hourly mean NO_2 objective is set at 200ug/m^3 with 18 hours above this level permitted before an exceedance is considered to have been made. No hourly mean levels above 200ug/m^3 were recorded at any of the monitoring stations in 2024.

4.6 NO_2 Trends

4.6.1 Levels of NO_2 pollution have been on a downward trend in recent years as a result of improvements in vehicle emissions and the phased introduction of the Glasgow LEZ for scheduled bus services since 2018. NO_2 levels dropped significantly in 2020 due to pandemic restrictions, before increasing in 2021 as these restrictions lessened. However, most automatic stations recorded a slight decrease in NO_2 levels between 2021 and 2022, with further decreases in 2023 and 2024. Figure 1 below shows the trend at automatic stations between 2020 and 2024.

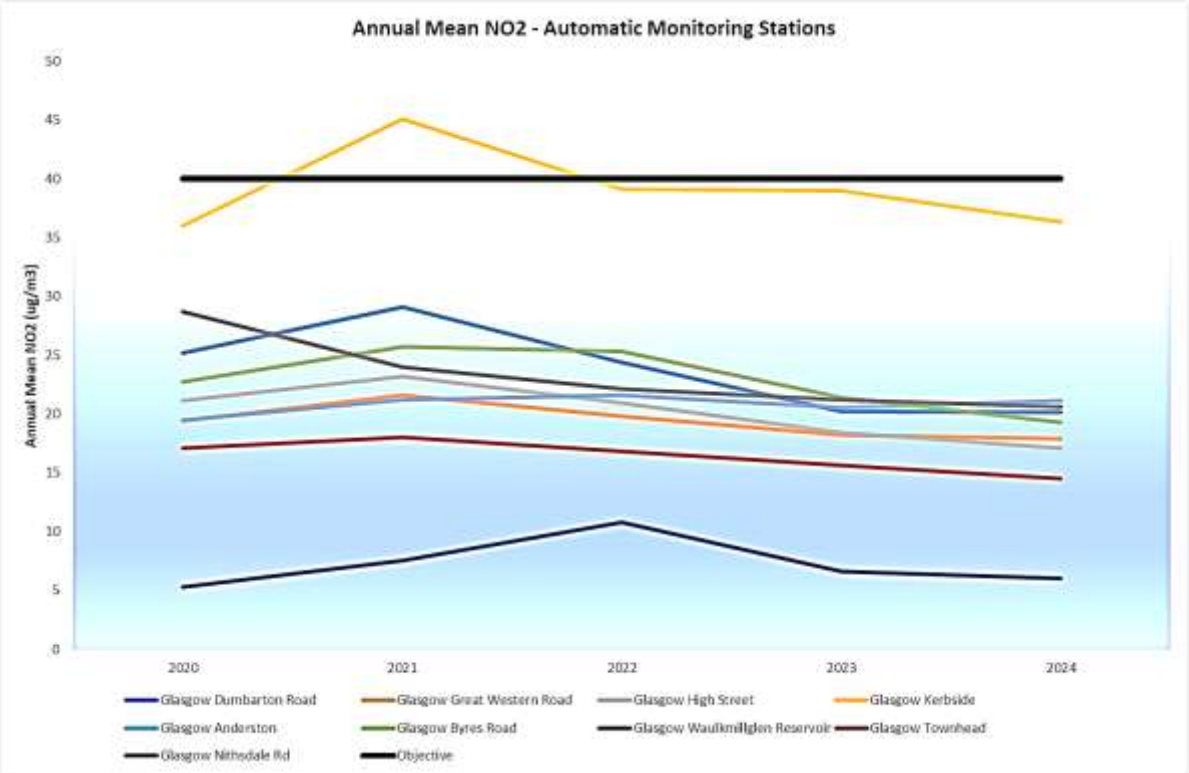


Figure 1: Trends in annual mean NO_2 at selected automatic monitoring stations

4.7 City Centre NO_2 Trends

4.7.1 As noted above, automatic monitoring stations, including the three located within the city centre, continue to show decreases in annual mean NO_2. The Glasgow Kerbside site recorded an annual mean of 36.3ug/m^3, almost 10% below the objective. The other city centre stations, Glasgow High St and Glasgow Townhead, recorded levels less than half of the annual mean objective at 17.1 and 14.5ug/m^3 respectively.

4.7.2 Table 1 below shows results from the city centre monitoring using NO_2 diffusion tubes. City centre NO_2 levels have seen a downward trend, and this accelerated significantly in the pandemic affected year of 2020, where all but one location recorded levels below the annual mean objective. As pandemic restrictions eased in 2021, all but three locations recorded rising levels of NO_2, with two locations exceeding the objective level for this year. As pandemic restrictions eased further in 2022, NO_2 levels continued to rise as did the number of locations exceeding the annual mean objective.

4.7.3 However, diffusion tube monitoring in 2023 observed a significant reduction in NO_2 levels recorded. The average reduction between 2022 and 2023 within the city centre and the Glasgow Low Emission Zone (which began enforcement on 1st June 2023) was 20%. Whilst NO_2 levels reduced across the city, the average reduction for locations outside the city centre was 15%.

4.7.4 Diffusion tube monitoring in 2024 observed a further significant reduction in NO_2 levels recorded. The average reduction within the city centre was 17.7% from 2023 levels. Again, NO_2 levels reduced across the city with the reduction most pronounced within the LEZ. The average reduction outside of the city centre was 6.7%.

4.7.5 Comparing 2024 with 2022, the last full year before the introduction of the Glasgow LEZ, shows locations within the zone have observed an average reduction in annual mean NO_2 of 34% whilst locations outside of the zone observed an annual reduction of 21%.

Table 1: Monitoring results from city centre locations during the period 2019 – 2024

Site Name	**2020**	**2021**	**2022**	**2023**	**2024**	**% reduction 2022 to 2023**	**% reduction 2023 to 2024**	**% reduction 2022 to 2024**
George Square	19.4	25.0	29.9	22.6	19.2	24.4	15.0	35.8
Union Street	25.8	37.5	38.4	31.4	24.3	18.2	22.6	36.7
Bath Street	23.3	31.7	36.2	29.7	21.9	18.0	26.3	39.5
Glassford St	24.9	28.6	34.3	30.7	23.0	10.5	25.1	32.9
Buchanan St	23.9	25.9	32.7	26.5	19.2	19.0	27.5	41.3
Castle Street	20.1	24.3	27.5	22.2	16.0	19.3	27.9	41.8
Hope Street 3	23.4	35.2	**40.4**	35.1	29.3	13.1	16.5	27.5
Montrose St	19.1	22.3	27.0	20.3	17.9	24.8	11.8	33.7
Cochrane St	21.9	28.6	29.9	22.9	20.8	23.4	9.2	30.4
Renfield Street	28.2	33.1	38.6	30.3	25.0	21.5	17.5	35.2
George Street	18.1	24.6	29.7	25.8	18.3	13.1	29.1	38.4
North Street	20.6	19.3	22.8	19.8	16.5	13.2	16.7	27.6
Hope Street 1	**40.3**	**43.5**	**44.9**	39.0	29.2	13.1	25.1	35.0
Gordon Street	36.3	**40.2**	**50.0**	**42.1**	29.8	15.8	29.2	40.4
Hielanman's Umbrella North	26.9	35.6	**42.3**	**40.9**	25.2	3.3	38.4	40.4
Saltmarket	23.0	26.2	31.8	21.2	16.5	33.3	22.2	48.1
High Street	25.9	25.3	34.8	25.7	20.2	26.1	21.4	42.0
Dobbies Loan	18.7	21.8	23.6	17.9	16.4	24.2	8.4	30.5
Dundasvale St	20.6	24.0	24.5	20.6	17.0	15.9	17.5	30.6
Royston Road	21.4	23.8	28.8	21.5	18.9	25.3	12.1	34.4
St Mungo Ave	19.9	21.0	23.7	19.6	14.8	17.3	24.5	37.6
Brown Street	16.7	19.3	21.0	15.7	11.4	25.2	27.4	45.7
Broomielaw	22.5	31.8	36.2	26.7	25.6	26.2	4.1	29.3

Site Name	2020	2021	2022	2023	2024	% reduction 2022 to 2023	% reduction 2023 to 2024	% reduction 2022 to 2024
McLeod Street	22.2	22.1	29.3	20.7	15.8	29.4	23.7	46.1
Sauchiehall St	21.2	23.8	28.5	23.4	25.9	17.9	-10.7	9.1
St Mungo's PS	18.6	14.7	19.2	14.6	15.7	24.0	-7.5	18.2
Garnetbank PS	21.3	21.6	23.1	18.2	18.8	21.2	-3.3	18.6

**Exceedances of annual mean shown in bold.

4.7.6 Table 2 and Figure 2 below show those monitoring locations which were exceeding or within 10% of the annual mean objective in the last full pre-pandemic year of 2019 and the results for these locations in the subsequent years. Diffusion tube results show a clear upward trend since the pandemic affected year of 2020 with all locations showing increases between 2021 and 2022. This is then followed by significant decreases in 2023 and 2024 as the enforcement of the Glasgow LEZ begins.

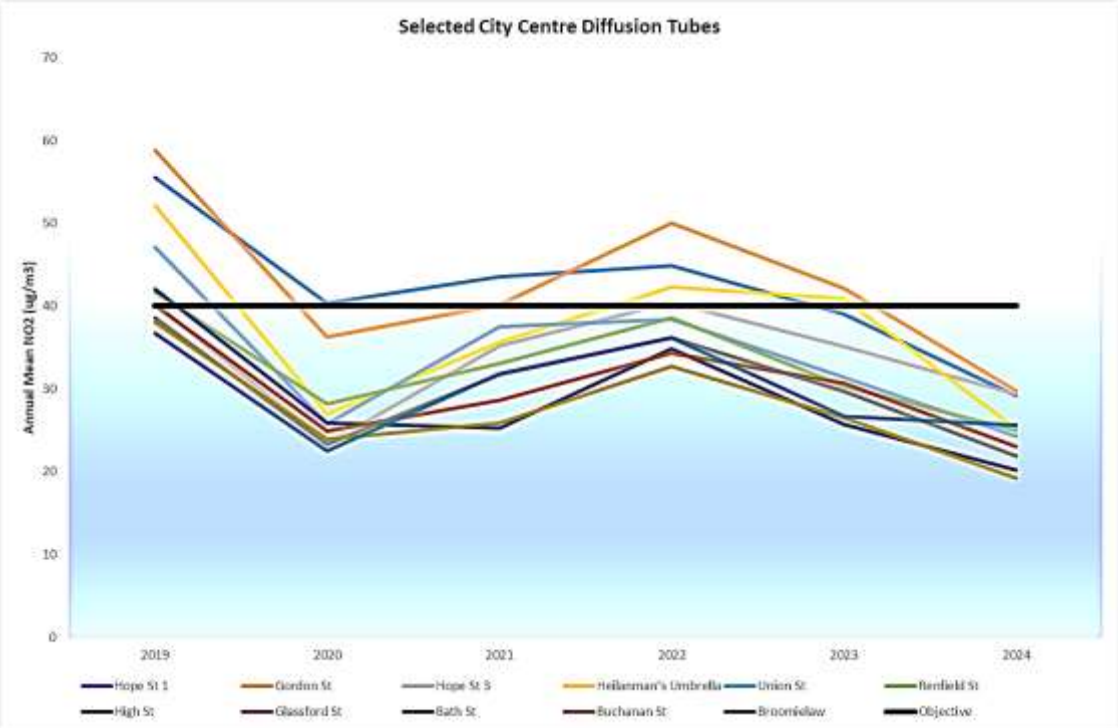
Table 2: Selected monitoring results from city centre locations exceeding or within 10% of the objective during the period 2019 – 2024

Site name	Location Description	Annual Mean NO_2 (µg/m^3)					
		2019	2020	2021	2022	2023	2024
Hope St 1	Road canyon – next to taxi rank	**55.5**	**40.3**	**43.5**	**44.9**	**39.0**	29.2
Gordon St	Road canyon – next to taxi rank	**58.8**	**36.3**	**40.2**	**50.0**	**42.1**	29.8
Hope St 3	Road canyon – general traffic	**40.3**	23.4	35.2	**40.4**	35.1	29.3
Heilanman's Umbrella	Sheltered location – poor dispersion	**52.1**	26.9	35.6	**42.3**	**40.9**	25.2
Union St	Bus gate – buses and commercial traffic	**47.1**	25.8	**37.5**	**38.4**	31.4	24.3
Renfield St	Road canyon – general traffic	**41.7**	28.2	33.1	**38.6**	30.3	25.0
High St	General traffic	**42.0**	25.9	25.3	34.8	25.7	20.2
Glassford St	General traffic	**40.1**	24.9	28.6	34.3	30.7	23.0
Bath St	General traffic	**38.6**	23.3	31.7	**36.2**	29.7	21.9
Buchanan St	Bus gate – buses and taxis	**38.0**	23.9	25.9	32.7	26.5	19.2

Site name	Location Description	Annual Mean NO_2 (µg/m^3)					
		2019	2020	2021	2022	2023	2024
Broomielaw	General traffic	**36.7**	22.5	31.8	**36.2**	26.7	25.6

*Exceedances of annual mean shown in red. Monitoring within 10% of objective shown in bold.

Figure 2: Selected monitoring results from city centre locations exceeding or within 10% of the objective during the period 2019 – 2024



5 Glasgow Low Emission Zone

5.1 Enforcement of the Glasgow LEZ began on 1st June 2023 following the mandatory one-year grace period after formal introduction of the zone on 31st May 2022. Therefore, the 2025 APR, reporting on monitoring conducted in 2024, is the first to report on post-LEZ air quality levels across a full calendar year

5.2 The LEZ was enforced for the full 2024 reporting period; however it should be noted that residents of the zone were subject to a further year grace period and were therefore exempt from the LEZ until 1st June 2024. The Glasgow taxi fleet were also eligible for a time-limited exemption, with 776 exemptions until 31st May 2024 issued to operators.

5.3 Following the initial positive results from 2023, further significant reductions in the monitored levels of NO_2 have been recorded across the city and particularly

within the area of the LEZ in 2024, as can be seen in the information provided in Section 4 above and within the APR.

5.4 In 2024, air pollution monitoring conducted within the city met all applicable statutory objectives. This is the first time full compliance has been recorded since the Local Air Quality Management process was established under Part IV of the Environment Act 1995.

5.5 The level of compliance with the annual mean NO_2 objective in 2024 is of note. The Hope St automatic station, at a kerbside location and consistently the station which records the highest NO_2 levels within Scotland, is now recording levels almost 10% below the objective. City centre diffusion tubes, which in 2023 recorded levels above the objective at two locations, are now in full compliance and the highest recorded level is more than 25% below the objective.

5.6 The Scottish Environment Protection Agency (SEPA) has undertaken an update to the air pollution dispersion modelling conducted in advance of the introduction of the LEZ. This report concludes that the emissions reduction is greater than predicted prior to the introduction of the LEZ, mainly due to the increased proportion (~40%) of bus journeys within the zone which are zero emission at tailpipe. The report also highlights that refreshed dispersion modelling shows full compliance with the annual mean NO_2 objective.

6. Conclusions

6.1 Reporting of air pollution levels is a statutory function for local authorities, particularly in relation to any exceedances of the air quality objectives.

6.2 Results from automatic monitoring stations in 2024 show full compliance with the relevant objectives for all pollutants, continuing the significant reductions observed from the introduction of the Glasgow Low Emission Zone.

6.3 The improvements in levels of NO_2 are such that compliance with the objectives has been achieved by a significant margin, providing a degree of confidence that compliance will continue. This conclusion is further evidenced by the Glasgow LEZ Update report by SEPA.

6.4 LAQM Guidance states in relation to the revocation of Air Quality Management Areas, *"A minimum requirement however will normally be at least three consecutive years where the objectives of concern are being achieved and where monitoring data demonstrates that further exceedances of the objectives are unlikely to occur."*

6.5 This APR concludes that 2024 was the first year in which all statutory air quality objectives were met in Glasgow. Should progress be maintained, the last of the Glasgow Air Quality Management Areas will be eligible for revocation ahead of the schedule set out in the 2024 Glasgow Air Quality Action Plan. The AQAP set out that the City Centre AQMA be revoked by 2029.

6.6 Progress is also being achieved in relation to the long term ambition to meet the World Health Organisation's guidelines for annual mean NO_2. 17 monitoring locations across the city recorded levels in 2024 below the ambitious 10ug/m^3 guidance.

6.5 The Glasgow Air Quality Progress Report will be submitted to the online reporting portal for independent assessment. Monitoring and air quality action plan measures will continue and will be reported within the 2025 APR.

7 Policy and Resource Implications

Resource Implications:

Financial:	There are no new financial implications arising from the report.
Legal:	The report raises no new legal issues.
Personnel:	LAQM duties are undertaken utilising GCC personnel.
Procurement:	No relevant procurement issues.
Council Strategic Plan:	This work supports the key aims of Grand Challenge 3, Mission 2 of the Council Strategic Plan.

Equality and Socio-Economic Impacts:

Does the proposal support the Council's Equality Outcomes 2021-25? Please specify.	LAQM does not impact on any of the Council's service delivery equality outcomes
What are the potential equality impacts as a result of this report?	No significant impact from this report.
Please highlight if the policy/proposal will help address socio-economic disadvantage.	No significant impact from this report.

Climate Impacts:

Does the proposal support any Climate Plan actions? Please specify:	LAQM has many co-benefits and shared actions with the Climate Plan including actions: 22 – development of the LEZ 26 – alternative actions for bus delivery 33 – feasibility study of a Workplace Parking Levy 42 – ban of gas heating in new developments 51 - delivery of a comprehensive active travel network 52 - enable a rapid and strategic shift to electric vehicles through increasing the current rate of deployment of EV charging infrastructure 53 – support transition to cleaner public transport 54 – transition GCC fleet to electric 55 – transition private hire fleet to zero emissions by2030 56 - reduce the need to own and use a car through measures in the City Development Plan 2, Glasgow Transport Strategy and the Liveable Neighbourhoods
What are the potential climate impacts as a result of this proposal?	The APR includes an update on action plan measures, many of which have slight beneficial climate impacts.
Will the proposal contribute to Glasgow's net zero carbon target?	Measures progressed and reported within the APR have slight beneficial climate impacts, especially in relation to transport, and therefore contribute to the net zero carbon target.

Privacy and Data Protection Impacts:

Are there any potential data protection impacts as a result of this report Y/N	No data protection or privacy implications. This report presents analysis of publicly available data and does not represent any privacy or data protection issues.
If Yes, please confirm that a Data Protection Impact Assessment (DPIA) has been carried out	

8 Recommendations

The Committee is asked to:

(a) Note the content of this report on air quality in the city.
(b) Note the new data available on pollution levels
(c) Note the appraisal of the impact of the Glasgow Low Emission Zone on pollution levels
(d) Note the significant improvement in concentrations of nitrogen dioxide