Report to:	Overview and Scrutiny Committee (Regulatory, Compliance and Corporate Services)	**Date of Meeting:**	9th January 2024
Subject:	Air Quality Update 2023		
Report of:	Assistant Director of Place (Highways and Public Protection)	**Wards Affected:**	(All Wards);
Portfolio:	Regulatory, Compliance and Corporate Services		
Is this a Key Decision:	No	**Included in Forward Plan:**	No
Exempt / Confidential Report:	No		

Summary: To provide an update on local air quality management activities and air quality improvement actions underway in Sefton during 2023

Recommendation(s):

That the report be noted

Reasons for the Recommendation(s):

To provide an update to members on the ongoing Local Air Quality Management activities (monitoring and improvement actions) that have taken place in Sefton during 2023.

Alternative Options Considered and Rejected: N/A

What will it cost and how will it be financed?

(A) Revenue Costs

There are no direct revenue costs associated with the recommendations in this report.

(B) Capital Costs

There are no direct capital costs associated with the recommendations in this report.

Implications of the Proposals:

Resource Implications (Financial, IT, Staffing and Assets):
None – update report only

Legal Implications:
None - update report only

Equality Implications:
There are no equality implications.

Climate Emergency Implications:

The recommendations within this report will

Have a positive impact	Y
Have a neutral impact	N
Have a negative impact	N
The Author has undertaken the Climate Emergency training for report authors	Y

Contribution to the Council's Core Purpose:

Protect the most vulnerable:
Poor air quality can have a major impact on health particularly those already vulnerable e.g. young children, the elderly and those with existing respiratory problems. Measures being implemented to improve air quality therefore contribute to this core purpose

Facilitate confident and resilient communities:
Interventions to improve air quality, taken by the Local Authority, partners, and the community, demonstrate that mitigation against poor air quality is possible and the interventions actively support making better choices and behavioural change. Improving air quality contributes to improved health, wellbeing, economic activity/productivity and increased personal and community resilience.

Commission, broker and provide core services:
Local Air Quality Management is a statutory responsibility for the Council

Place – leadership and influencer:
The management and improvement of air quality is a key aspect of place leadership and creating cleaner, greener and healthier places

Drivers of change and reform:
The Council continues to explore innovative approaches to monitoring and mitigating poor air quality and encouraging behaviour change. Some of these approaches are set out in the report.

Facilitate sustainable economic prosperity:
There is an established link between poor air quality, poor health, the ability to work/remain economically active and productive. Improving air quality can therefore

contribute to improved productivity and economic prosperity.
Greater income for social investment: N/A
Cleaner Greener: Poor air quality is an indication of environmental damage and any mitigation measures reduce the impact of this damage.

What consultations have taken place on the proposals and when?

(A) Internal Consultations

The Executive Director of Corporate Resources and Customer Services (FD7471/23) and the Chief Legal and Democratic Officer (LD5571/23 have been consulted and any comments have been incorporated into the report.

(B) External Consultations

Not applicable

Implementation Date for the Decision

Immediately following the committee meeting.

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Appendices:

There are no appendices to this report

Background Papers:

Sefton's Annual Air Quality Status Reports - https://www.sefton.gov.uk/environment/air-quality/

Background

1. Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas.

2. The Environment Act 1995 places an ongoing **statutory duty** on Local Authorities to review and assess air quality in their areas, produce a yearly Air

Quality Annual Status Report (ASR) and implement actions/interventions to improve air quality where poor air quality exists.

3. The Air Quality Regulations made under the Act specify the pollutants that must be considered and set standards and objectives for each of the pollutants, which are referred to as National Air Quality Standard (NAQS) Objectives. These are detailed below with the 2 pollutants still of concern in Sefton shown in red text.

The pollutants that must be considered are shown in table 1 below:

Table 1 National Air Quality Standard Objectives

Pollutant	Description	National Air Quality Standard Objective (NAQS)
Benzene	An organic chemical compound emitted by some industrial processes and a constituent of petrol	**5 µg/m^3** (Annual Mean)
1,3 Butadiene	A Hydrocarbon based gas released from car exhausts	**2.25µg/m^3**(Annual Mean)
Carbon Monoxide	An odourless colourless gas produced by incomplete combustion	**10mg/m^3**(8 hour mean)
Lead	A heavy metal emitted by certain industrial processes	**0.25µg/m^3**(Annual Mean)
Nitrogen Dioxide	A gas produced by internal combustion engines	**200µg/m^3** (1hr mean) not to exceeded more than 18 times per annum. **40µg/m^3**(Annual mean)
Particulate Matter PM_{10}	Particulates less than 10µm in diameter produced by industry and road traffic.	**50µg/m^3** (24hr mean) not to be exceeded more than 35 times per annum. **40µg/m^3**(Annual mean)
Sulphur dioxide	A gas which can be produced when burning fossil fuel and or heavy fuel oil	**266µg/m^3**(15 min mean) Not to be exceeded more than 35 times a year **350µg/m^3**(1hr mean) Not to be exceeded more than 24 times per year **125µg/m^3**(24hr mean) Not to be exceeded more than 3 times a year

4. Where it has been determined that NAQS objectives have been exceeded or are likely to be exceeded an Air Quality Management Area must be declared.

5. Through the ongoing review and assessment process it has been concluded that for the following pollutants, Benzene, 1,3 Butadiene, Carbon Monoxide, Lead and Sulphur Dioxide, the NAQS objectives will **not** be exceeded in Sefton and no additional localised actions are required with regard to these pollutants.

6. Additionally evidence obtained through ongoing monitoring, modelling and assessment, shows that air quality in the majority of Sefton (with reference to NO_2 and PM) is deemed to be of a good standard with levels of these pollutants well within the NAQS Objectives given above.

7. There are however areas in the south of the Borough, where due to high levels of traffic and congestion along with other localised pollution sources, levels of NO_2 are above or close to the NAQS limit.

Air Quality Management Areas (AQMAs)

8. As reported previously where monitoring/modelling shows an exceedance of the NAQS, an Air Quality Management Area (AQMA) must be declared by the Local Authority. Through air pollution monitoring and modelling Four (4) localised areas in South Sefton have been identified where levels of Nitrogen Dioxide (NO_2) have exceeded or are close to the annual average limit of **40 µg/m^3**. AQMA's have been declared in these locations as detailed/shown below:

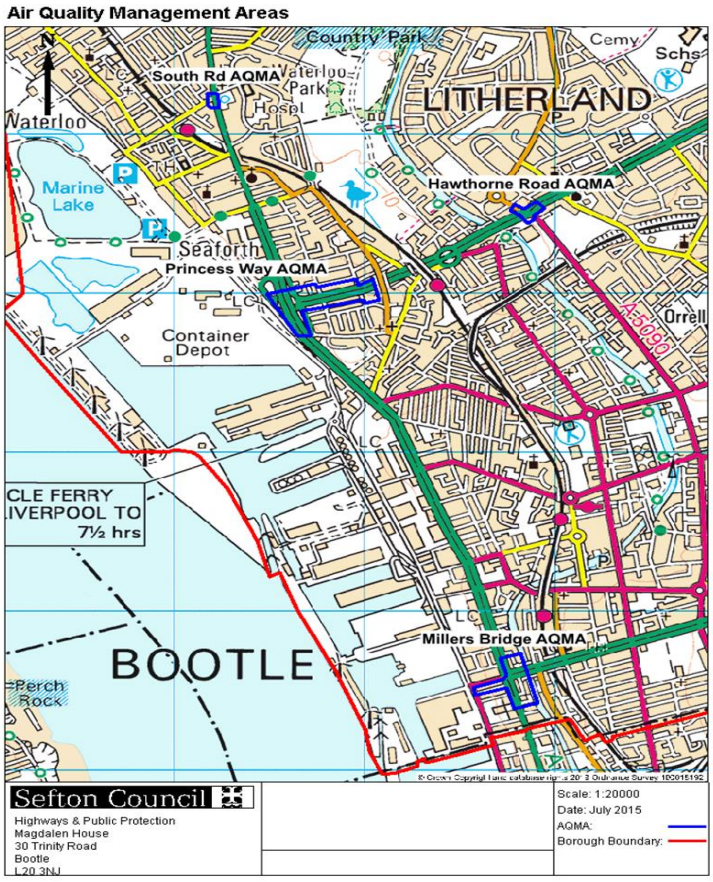
    AQMA 2 - Princess Way, Seaforth.

    AQMA 3 - Millers Bridge, Bootle.

    AQMA 4 - South Road/Crosby Road North, Waterloo.

    AQMA 5 - Hawthorne Road, Litherland.

Map 1 Showing Location of Sefton's AQMAs



AQMA 2-Princess Way, Seaforth

9. AQMA 2 - Princess Way was declared for NO_2 exceedances. The main source of NO_2 in this AQMA is related to HGV traffic. The deep-water berth at the Port of Liverpool is now complete and HGV traffic is anticipated to increase as a result. A major highways scheme is currently being considered by National Highways to accommodate the increase in road traffic because of the port expansion.

10. Several successful air quality actions have been implemented by Sefton to reduce levels of NO_2 in this area. These include assisting in the development and ongoing refinement of port booking systems, development of Sefton's ECOstars fleet recognition scheme, supporting the work to develop the redesigned roundabout improvements and ongoing joint emissions monitoring/enforcement work with the Driver and Vehicle Standards Agency (DVSA).

11. It is recognised, however, that dealing with road traffic related emissions in this area with the potential increase in HGV port traffic is extremely challenging and alternative/innovative measures need to be considered.

AQMA 3 Millers Bridge

12. AQMA 3 - Millers Bridge - was identified for exceedances of the PM_{10} and NO_2 NAQS objectives. The main contributors to the emissions in this area are HGVs and industrial processes in and around the dock estate.

13. Several successful measures have been implemented in this area as part of the action plan to reduce emissions. Officers continue to work jointly with the Environment Agency to ensure industrial emissions are monitored and controlled effectively in this area, a HGV hurry call system has also been introduced which gives priority to HGV's heading up Millers Bridge, reducing the need for stopping at the traffic lights thus reducing emissions. This major junction has also recently been redesigned as part of the North Liverpool Key Corridor Improvement Scheme to improve traffic flow and reduce waiting times at the traffic lights.

14. As a result of these measures the NAQS objective for PM_{10} has consistently been met for a number of years. However, this will be kept under review as the port expands in the future.

15. With regard to NO_2 in this AQMA the results of monitoring continue to show some exceedances of the annual NAQS objective. Dealing with NO_2 exceedances in this location is again challenging due to the level of traffic that passes through the junction, physical characteristics of the area and high background levels of pollutants due to its proximity to the port. Any future increase in traffic resulting from the port expansion could also lead to additional exceedances in this area.

AQMA 4 Crosby Road North, South Road Waterloo

16. AQMA 4 was identified for exceedances of the NO_2 NAQS objective. As part the Action Plan to address this exceedance, improvements to the South Road and Haigh Road junction were agreed to improve traffic flow. The junction improvement works have now been completed and the ongoing effectiveness of these in terms of reducing levels of NO_2 in the AQMA is being monitored using diffusion tubes. Monitoring results show that levels of NO_2 in the AQMA have now reduced, to below, the national limit and have remained compliant for the last 3 years. This AQMA is unlikely to be impacted significantly by increasing port related traffic and as such It is likely that the Council will be in a position to revoke this AQMA in the near future.

AQMA 5 Hawthorne Road, Church Road Junction Litherland

17. AQMA 5 was identified for NO_2 NAQS objective exceedances. The main source of the emissions at this location is road traffic. For the last 5 years this AQMA showed compliance with the annual NAQS objective for NO_2. However as with AQMA 2, this site may be affected by the increased emissions due to HGV traffic because of the port expansion and will remain in place.

Air Quality Monitoring

18. To provide accurate data on pollution levels in Sefton and as part of our ongoing duties, officers continue to undertake extensive air pollution monitoring using both DEFRA approved real time automatic monitoring systems and diffusion tubes which provide average annual levels.

19. Sefton operates one of the largest monitoring networks in the City Region with officers consistently review monitoring locations and activities to ensure the air quality situation in the borough is effectively captured.

20. Sefton has recently supplemented its monitoring capability with a number of lower cost air pollution sensors which, although not approved by DEFRA, do provide real time air pollution data so we can better understand air pollution patterns/issues in a given area. We have installed these to support several initiatives, including the school streets project which is discussed later in the report.

21. As Sefton has to comply with DEFRA's monitoring requirements the latest ratified monitoring results are for the year 2022. Monitoring for 2023 has only just been completed (last diffusion tube collected in January 2024) and as such this data is currently being checked and ratified.

Automatic Monitoring

22. Sefton currently monitors air pollution at 5 key locations using DEFRA approved automatic equipment. The location, justification for its siting and pollutants monitored are provided in table 2.

Table 2 Location of automatic monitoring stations

Monitor Location	Justification for Location	Pollutants Monitored
Waterloo Primary School, Crosby Road North, Waterloo.	Within previous AQMA1 Crosby Road North. Proximity to Road/Sensitive Receptor	PM_{10} NO_2
Hawthorne Road opposite KFC, Litherland	Within AQMA 5 Church Road Junction- Proximity to Road Junction/Sensitive Receptor	NO_2, PM_{10}
Lathom Close, Seaforth	Within AQMA 2. Proximity to Road/Docks/Sensitive Receptor	PM_{10} $PM_{2.5}$ NO_2
Millers Bridge, Bootle	Within AQMA 3. Proximity to Road Junction/ Docks and Sensitive Receptor.	PM_{10} $PM_{2.5}$ NO_2
Regent Road Crosby (installed summer 2020)	Background Particulate Levels in suburban area	PM_{10} $PM_{2.5}$

Diffusion tube monitoring

23. In addition to the real-time monitors, Sefton measures monthly NO_2 levels at 82 sites across the Borough using diffusion tubes. The diffusion tubes are located in areas that have already been identified as AQMA's or are located in areas in close proximity to sensitive premises where additional data and monitoring is required to assess current/future NO_2 levels as part of the ongoing Review and Assessment process. The monthly results from these tubes are combined to enable comparison with the annual mean NAQS objective for NO_2.

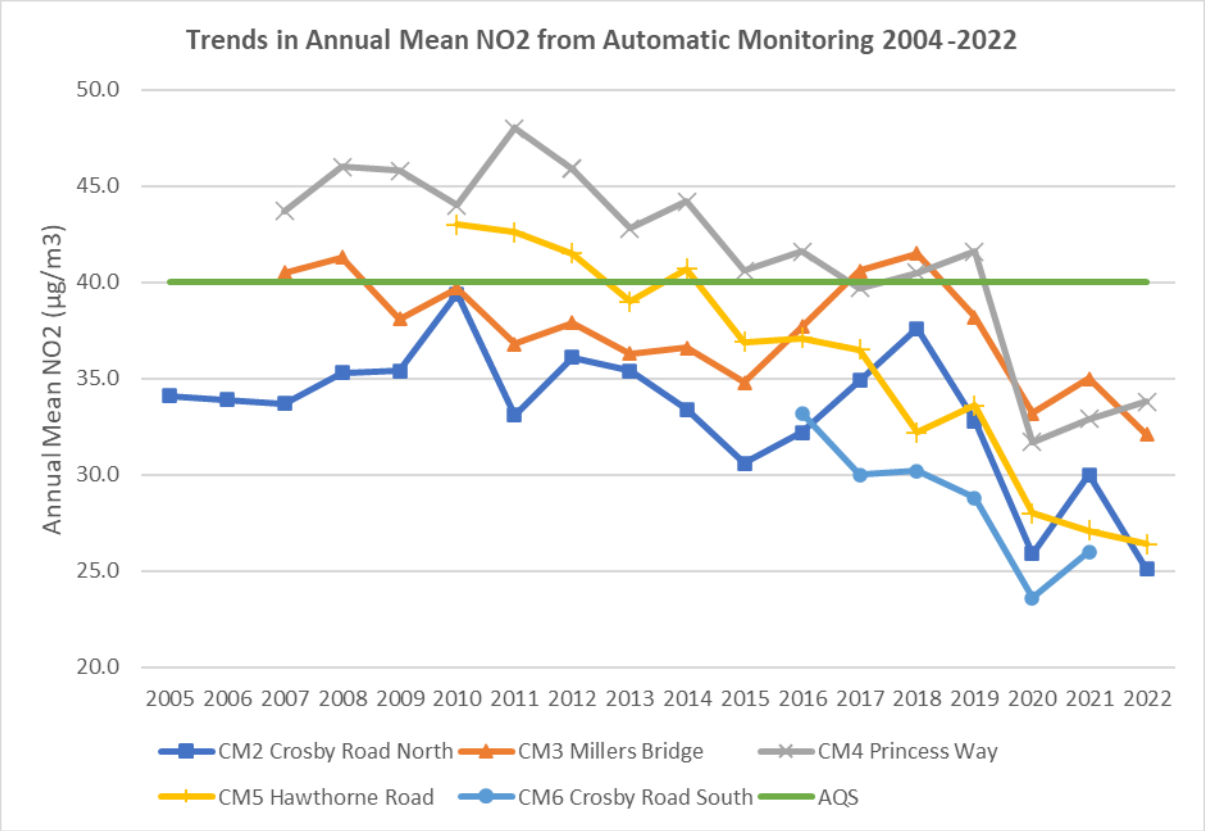
24. Several sites have also been added recently to assess the impact the port expansion will have on NO_2 levels. The location of these is reviewed annually to ensure all areas of concern are monitored.

NO_2 Automatic Monitoring Results

Table 3 - NO_2 Annual Mean results (limit 40 µg/m^3)

Site	NO_2 Annual Mean µg/m^3										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Crosby Road North	36.1	35.4	33.4	30.6	32.2	34.9	37.6	35.0	25.9	30.0	25.1
Millers Bridge	37.9	36.3	36.6	34.8	37.7	40.6	41.5	38.2	33.2	35.0	32.1
Princess Way	45.9	42.8	44.2	40.6	41.6	39.7	40.5	41.6	31.7	32.9	33.8
Hawthorne Road	41.5	39.0	40.7	36.9	37.1	36.5	32.2	33.6	28.0	27.1	26.4
Crosby Road South				34.6	33.2	29.6	30.2	28.8	23.6	26.0	N/A

Graph Showing NO_2 Trends at Automatic Stations.



25. levels of NO_2 at all automatic monitoring sites again showed compliance with the NO_2 annual mean NAQS objective in 2022 (at the monitoring location) with the highest monitored level of 33.8 µg/m^3 recorded at Princess Way.

26. Sites CM2 (Crosby Road North), CM3 (Millers Bridge) and CM5 (Hawthorne Road) have shown reductions in NO_2 levels compared to those observed in 2021 and currently show no indication that they are returning to pre pandemic levels observed in 2019.

27. CM4 (Princess Way) is the only site to report an increase from 2021 with concentrations over the past two years showing a rising trend since the covid pandemic. Notwithstanding this NO_2 levels at this location are still much reduced compared to those observed in 2018 and 2019 and it does appear that the legacy of the Covid pandemic is having an ongoing positive effect on air quality in the borough.

28. There were no exceedances of the NO_2 1-hour mean objective at any of the automatic monitoring sites.

29. Whilst it is obviously positive to see that levels of NO_2 at the automatic stations are within the NAQS, it is still unclear whether this trend will continue and there is

ongoing concern that increases in port related traffic will impact on pollution levels in the AQMA's and surrounding locality.

30. Automatic monitoring will continue at these sites to enable future trends to be observed.

Diffusion tube NO_2 results

31. During 2022, 78 diffusion tube sites reported a decrease and four reported increases in NO_2 levels when compared to 2021. Notably there was only one exceedance of the annual mean NO_2 NAQS objective of 40 µg/m^3, this was at site ID BR Derby Road within the Millers Bridge AQMA with a NO_2 level of 41.0 µg/m^3. This was also the maximum concentration reported in 2022.

32. As this site recorded a NO_2 annual mean concentration in exceedance of the air quality objective at a monitoring site which is not representative of public exposure, the concentration at the nearest receptor for this location was estimated using the distance correction via the Defra diffusion tube processing tool. This showed the estimated concentration of 38.6 µg/m^3 just below the NAQS objective.

33. In line with the automatic results it does appear the legacy of the Covid pandemic is having a lasting positive effect on NO_2 levels in the Borough with no indication that concentrations are returning to those observed pre pandemic. It is likely the declining trend in concentrations is due to changes in commuting habits since COVID resulting in less peak time travel therefore less congestion and overall emissions.

Particulate Matter Results

Table 4 PM_{10} Annual Mean 2012-2021 (Limit 40 µg/m^3)

Site	PM $_{10}$ Annual Mean µg/m^3										
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Crosby Road North	25.4	28.3	23.6	23.7	17.0	21.1	19.9	26.2	N/A	N/A	26.5
Millers Bridge	26.1	28.1	28.8	28.7	25.4	23.9	20.1	17.6	16.1	19.5	19.9
Princess Way	24.9	26.5	26.5	26.7	23.8	23.1	22.6	16.9	20.0	17.5	17.2
Hawthorne Road						23.9	21.2	23.7	20.3	18.7	21.5
Regent Road									13.2	9.5	12.9

34. The table above shows the measured levels of PM_{10} at each of the continuous monitoring sites since 2012. The national limit is 40 µg/m^3 and whilst the monitors are not located exactly at the receptor locations, they provide an accurate indicator of PM_{10} levels in the locality.

35. All areas are now consistently compliant with the PM_{10} NAQS objective with annual levels well within the standard. The number of daily exceedances is also consistently below the standard of 35 exceedances per year. Monitoring of PM_{10} will however continue to assess the impact the port expansion may have on particulate emissions.

$PM_{2.5}$ Monitoring

36. Although Sefton Council monitors PM_{10} at several locations in the Borough, there is now clear evidence that even smaller particles with an aerodynamic diameter of 2.5µm or less, known as $PM_{2.5}$, have a greater impact on human health.

37. Unlike Nitrogen Dioxide particulate matter emissions are caused by a number of different sources, including the burning of domestic solid fuel, degradation of vehicle tyres and brakes and to a lesser degree combustion engines. As such tackling $PM_{2.5}$ emissions is likely to be challenging.

38. To gather information on current $PM_{2.5}$ levels in Sefton three dual PM_{10} / $PM_{2.5}$ monitors have now been installed in the Borough, the latest being at Princess way and was commissioned in Autumn 2022.

39. The national standard for $PM_{2.5}$ has recently been reduced from 25 µg/m^3 to 10 µg/**m^3** due to the health-related concerns regarding this pollutant. The results below show that monitored levels in Sefton are within the target limit.

Table 5 $PM_{2.5}$ monitoring results.

Year	2017	2018	2019	2020	2021	2022
Millers Bridge $PM_{2.5}$ Annual Mean µg/m^3	7.1	8.9	10.0	7.8	9.6	9.7
Regent road Crosby $PM_{2.5}$ Annual Mean µg/m^3				7.3	5.9	8.1
Princess Way $PM_{2.5}$ Annual Mean µg/m^3						9.5

40. In line with our other LAQM duties local authorities are expected to work towards reducing emissions and concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases. Whilst monitoring shows levels in Sefton are below the target limit the development of air quality improvement actions to tackle particulate emissions continues and are discussed later in the report.

Summary of monitoring results 2022

41. During 2022, all NO_2 automatic monitoring sites within Sefton showed compliance with the NAQS objective with no indication that levels are returning to those observed pre pandemic.

42. All passive monitoring (diffusion tubes), except one location, were compliant with the NO_2 NAQS objective in 2022. With the majority of sites reporting decreases from 2021. The decrease in NO_2 concentrations from 2021 at 95% of sites suggests that the legacy of changed transport habits during the COVID-19 pandemic, coupled with fleet improvement, has continued to have a positive effect on Sefton's air quality in 2022, as overall levels have still not returned to pre-pandemic levels. There was one reported exceedance of the annual mean NO_2 AQS objective of 40 µg/m^3 within Sefton, which was at monitoring location BR-Derby Road (41.0 µg/m^3), located in AQMA 3-Millers Bridge. BR (41.0 µg/m^3) is not at a location of relevant exposure, and once fall-off with distance calculations have been carried out to predict the concentration at the nearest relevant receptor, the estimated concentration is 38.6 µg/m^3.

43. Levels of Particulate Matter have increased slightly compared to 2021, but as in previous years all AQMA's show compliance with the PM_{10} national air quality standard objective by some margin.

44. The extensive air pollution monitoring will continue in 2024 and beyond to determine future trends and compliance in Sefton.

Actions to Improve Air Quality

45. Notwithstanding the improvements we are currently observing in air quality as a result of changing commuter habits and fleet improvements the main on-going priority in Sefton for the coming years is to fully understand the effects that the predicted increase in HGVs due to port expansion will have on air quality and how this can be mitigated.

46. This is undoubtedly the most significant challenge for the Council in terms of air quality impact in the Borough at the present time, due to the scale of the expansion and the potential for this to impact on air quality in existing AQMAs and also impact on public exposure receptor residential locations on port access routes.

47. A number of specific AQ actions are already underway to improve air quality in the AQMA's and wider borough, along with the development of Sefton's Strategic Clean Air Plan (CAP) where we are considering in detail various air quality intervention options to deal with the predicted increase in emissions, including a HGV Charging Clean Air Zone (CAZ).

48. An update is provided below on the current ongoing air quality improvement actions.

Sefton Clean Air Plan (CAP)

49. As reported previously Cabinet gave approval for Officers to progress the development of a detailed Outline Business Case (OBC) for the creation of a Sefton Based CAZ, in line with the approach recommended by DEFRA. AECOM were commissioned in 2020 to undertake the additional air quality and transport modelling work needed and prepare a draft OBC in conjunction with Council officers.

50. The development of the CAP OBC forms part of the Council's wider AQ programme overseen by the AQ Cabinet Member Reference Group.

51. The OBC proposal, in the main, comprises a HGV Charging CAZ scheme that aims to address persistent air quality issues identified within Sefton in the shortest time possible. The CAZ scheme preferred option (referred to as 'Option 2A') features a charging CAZ applied to non-compliant HGVs (Euro 5 and older) that cross into a designated section of the Sefton highway network. The preferred option HGV CAZ is focused on the A565 and A5036 corridors, incorporating all four of the existing Air Quality Management Areas (AQMAs). Incorporating the A5036 within the CAZ requires entry and exit signs and enforcement cameras to be installed on the National Highways network and would require a co-operative approach between Sefton Council and National Highways on this issue.

52. The Outline Business Case for the potential implementation of a HGV CAZ sets out the rationale for the whole project and provides more detail about the proposals, including clear strategic objectives for the proposals.

53. The objective of the Clean Air Plan is to address persistent air quality issues within Sefton which occur in some of the most income/health deprived areas in the borough.

54. The key case for change is that the Government, and Local Authorities, in accordance with their local air quality management responsibilities, are required to meet air quality limit values in the shortest possible time. Within Sefton, this is also supported by a local desire to go further ('beyond compliance') to improve air quality and public health and well-being.

55. The strategic objectives of the Clean Air Plan are:
    - To improve air quality in the shortest time possible in known hotspot areas in Sefton's four AQMAs and achieve compliance with national standards in the shortest time possible.
    - To promote improved air quality in the wider area (outside the four declared AQMAs) through more rapid switchover to vehicles with minimal exhaust emissions.
    - To reduce human exposure to air pollution, and thus improve public health, particularly for areas of Sefton with high levels of deprivation.

- To reduce emissions relating to the A5036 for HGV vehicle traffic, particularly around high-density residential areas.

Outline Business Case – Conclusions of CAP OBC

56. The OBC evidence-base indicates that significant air quality benefits within the CAZ Boundary area (Port Routes/AQMAs) and wider AQ improvements can potentially be achieved if the Council proceeds to the implementation of a HGV Corridor Charging CAZ, subject to the development of a Full Business Case (FBC). Furthermore, the air quality benefits of the Preferred HGV CAZ Option are concentrated in areas with some of highest levels of income/health deprivation – locally and nationally i.e. parts of Bootle, Litherland, Seaforth.

57. The case for change is strong because the OBC evidence base indicates the persistence of poor air quality at discrete locations and future risks due to increased traffic, particularly associated with HGVs on key Port routes (A5036/A565). In addition, HGVs are disproportionately high emitters of both NO_x and PM and the Preferred HGV Charging CAZ which targets key Port routes (A565/A5036) provides the best value option when balanced against the option assessment criteria.

58. The estimated scheme costs (Capital and Operating) for the Preferred CAZ Option are provided within the OBC, but further work would be required at FBC stage to develop the cost estimates, particularly through detailed design work and engagement with potential suppliers and contractors. In addition, funding for potential mitigation costs for financial support for businesses and scheme development and consultation costs require consideration.

59. As Sefton isn't mandated by government to implement a CAP / CAZ, funding sources are yet to be identified for the progression of the OBC to FBC and/or any CAZ implementation. Key risks and measures to mitigate and manage those risks have been identified within the Management Case. Key stakeholders are identified, and consultation has been undertaken throughout the OBC development process, initially to share the high-level objectives, proposals and rationale for the CAZ scheme and more recently to share the outcomes of the OBC.

Outline Business Case – Key Stakeholder Engagement

60. External communication and engagement has focussed to date on key external stakeholders, as follows:
    - National Highways - given the implications of the proposals for the A5036 Strategic Road Network.
    - Liverpool City Council - given they are an adjoining local authority who were legally mandated by Government in 2018 to produce a Clean Air Plan to identify how Nitrogen Dioxide levels could be reduced in the shortest time possible.
    - Peel Ports - given the anticipated growth in port-related HGV traffic and the implications of the proposals for key port routes.

- Joint Air Quality Unit (*oversight board for managing DEFRA's/DfT's NO2 reduction programme*) – given the potential to explore any appropriate funding source for the Clean Air Plan implementation.

Outline Business Case – Recommendations of CAP OBC

61. Through a structured Options Appraisal process, the CAP OBC has assessed four short-listed HGV Charging CAZ Boundary Options. The preferred CAZ boundary option (Option 2A) consists of a Charging HGV CAZ including both the A565 and A5036 corridors, thus including all of the existing AQMAs and focusing on areas of greatest concern. It was also recommended that a reserve option (Option 2B -A565 corridor only) is retained, subject to discussions with JAQU/National Highways regarding the proposal (under Option 2A) to include the A5036 (route managed by National Highways) within the CAZ.

62. The progression of the CAP scheme to the next stage, i.e. Full Business Case, will depend on a number of factors, which include key risks and constraints identified in the OBC work. The decision about whether to proceed to the FBC needs to take account of all these key issues. Additionally the delivery of the CAP has several key dependencies / interdependencies, including:

    - The need to identify a funding source for the implementation of the scheme, including provision for mitigation – noting that any funding sourced via JAQU may result in a mandate and requirements may be specified which differ from the Council's priorities and objectives.
    - Agreement with JAQU/National Highways is required for the inclusion of the A5036, approvals of the proposed CAZ scheme, powers and consents (including the requirement of a Charging Scheme Order under section 168 Transport Act 2000).
    - The neighbouring Liverpool City Council Clean Air Plan, which may have direct impacts on any scheme implemented in Sefton, which must be understood and accounted for.

63. In addition to these key issues/dependencies/interdependencies, it is important to recognise that the implementation of a CAZ is not in itself an all-encompassing solution for air quality issues, either within or outside the CAZ. The modelling analysis for the preferred CAZ option suggests that even with the CAZ scheme in place some existing exceedances will remain at a small number of discrete locations. The ongoing expansion of the Port of Liverpool and changes in the commercial operations at the Port may result in changes in background concentrations of NO_2, which is particularly relevant to the A565 corridor which contains three of the AQMAs. The successful implementation of the CAP therefore requires synergy with ongoing Council policies and initiatives with respect to air quality, as well as the Port Air Quality Strategy, and collaboration with key stakeholders such as the National Highways and neighbouring authorities within the city region.

Outline Business Case – Next Steps for the CAP OBC

64. Based on the OBC outcomes, a number of potential pathways have been identified. Table 6 below shows the different pathways available for Cabinet consideration, to determine the next steps for the CAP OBC.

65. The primary decision for Cabinet is whether to proceed to the preparation of a Full Business Case or not, but there are different approaches that can be taken depending on the primary decision and these are summarised below (Note – a funding source would need to be identified for Options 2 - 4).

Table 6 -Potential CAP OBC Pathways

A. Do not proceed to FBC for charging CAZ:		
1	**Business As Usual (BAU) approach**	Due to generally improving air quality situation and likely compliance with national thresholds within the next few years and the significant costs of implementing a charging CAZ - *Maintain current initiatives and monitoring.*
2	**BAU *plus* Option 2A Corridor focussed measures *i.e. a Non-Charging CAZ (in AQ hotspots)***	**Focus available resources on** *additional and targeted measures to improve air quality in the proposed CAZ corridors*, for example supporting a vehicle upgrade programme.
2+	**BAU *plus* Option 2A Corridor focussed measures *plus wider measures i.e. a Non-Charging CAZ (in AQ hotspots) plus wider area measures***	***As for 2 but allocate additional resources for wider measures*** to improve air quality across south Sefton and **expand to include carbon reduction initiatives** targeted at the freight sector.
B. Proceed to FBC for a charging CAZ along the A565 and A5036:		
3	**FBC for Charging CAZ (*if can gain JAQU/NH support*)**	Only if JAQU support is gained through exploring/securing funding opportunities based on OBC outcomes i.e. ***begin approach for JAQU liaison now*** – understand current funding position / prepare submission.
4	**FBC for Charging CAZ (*Council funded*)**	Decision about submission to ***JAQU to be made at a later date*** i.e. Council fund FBC. *But also need to consider implementation/consultation/mitigation funding needed – recommend funding secured prior to proceeding to FBC.*

66. An **'OBC information'** Report has been presented to Cabinet. The purpose of the report was:

- To advise Cabinet on outcomes of the CAP OBC,
- To seek approval of the OBC findings and recommendations
- To agree release of OBC into the public domain
- To agree further engagement with key stakeholders
- To share potential OBC pathway options for Cabinet to consider, as set out in **Table 6**.

67. Cabinet gave approval to the recommendations and the stakeholder engagement has been ongoing to respond to and effectively communicate technical queries and considerations.

68. A number of observations and challenges have been raised by the key stakeholders on the preferred option which required further detailed consideration by officers.

69. In response, additional technical studies and assessments have been undertaken including an updated Automatic Number Plate Recognition (ANPR) study to determine the current make up and age of Sefton's vehicle Fleet and an updated natural compliance assessment to determine when the predicted NO_2 exceedances would become naturally compliant.

70. The outcome of the stakeholder engagement and analysis of the additional studies indicates that progression to Full Business Case for a HGV Charging CAZ would be extremely challenging and consideration of alternative Non-CAZ measures/interventions is also necessary.

71. Officers have presented the outcome of the stakeholder engagement and additional assessments to Cabinet Members for their consideration. Members have requested more information on the possible non-CAZ measures to enable a final decision to be made as to what pathway to progress i.e. CAZ or Non-CAZ approach.

72. Officers are in the process of finalising the detailed list of potential non-CAZ measures for consideration.

73. A Cabinet 'decision' report will then be prepared to formalise the decision.

74. As well as the strategic high-level work underway as part of the Clean Air Plan detailed above Officers are continually looking at ways to further improve air quality and several actions are currently underway which are discussed in more detail below.

DVSA/Sefton HGV emission monitoring/enforcement Project

75. Officers from Sefton working in collaboration with Driver and Vehicle Standards Agency (DVSA) Inspectors have now undertaken 3 joint vehicle emissions monitoring/enforcement activities, in Dec 2021, Sept 2022 and most recently in September 2023 to identify HGV's travelling along the A5036, A565 and motorway network which were emitting unacceptable levels of air pollution thus potentially indicating emission control system tampering or faults.

76. During the most recent exercise in September 2023 sophisticated air pollution monitoring equipment was installed in DVSA stop cars and levels of NOx and PM were monitored in live traffic to detect suspect vehicles.

77. The DVSA were also testing a new Particulate Monitor (Total Particle Count) in anticipation of bringing in HGV particulate emission limits as part of the HGV MOT.

78. Exhaust plume emissions from 230 vehicles were monitored over the 2-day project. 11 suspect vehicles were stopped at the switch Island DVSA inspection site and subject to further detailed examination by DVSA inspectors. Unexpectedly only 1 vehicle was found to have a fault with the emission control system. All other vehicles stopped were operating within acceptable parameters for the age of vehicle.

79. Compared to previous years very few HGVs were identified for high NOx emissions and those stopped did not show faults. More HGVs were identified for high PM emissions when followed but when tested using the DVSA MOT Particulate monitor they were found to be within acceptable parameters for the age of the vehicle.

80. The study suggests that less HGV's are operating with cheat devices/emission control faults than previous years which is obviously positive and may be one of the factors that has led to the reductions in NO_2/PM observed when analysing the monitoring data.

81. To ensure this trend continues further joint work is being considered, potentially targeting LGVs / private cars and exploring the use of remote sensors/roadside monitoring equipment to detect suspect vehicles.

School Streets AQ Monitoring

82. Officers from Highways and Environmental Health are currently working on a joint air quality monitoring project as part of Sefton's School Streets initiative to help evaluate the effectiveness of the School Street restrictions. (A School Street is a road outside a school with a temporary restriction on motorised traffic at school drop-off and pick-up times. The restriction applies to school traffic and through traffic. The School Street schemes offer a proactive solution for school communities to tackle air pollution, poor health and road danger reduction)

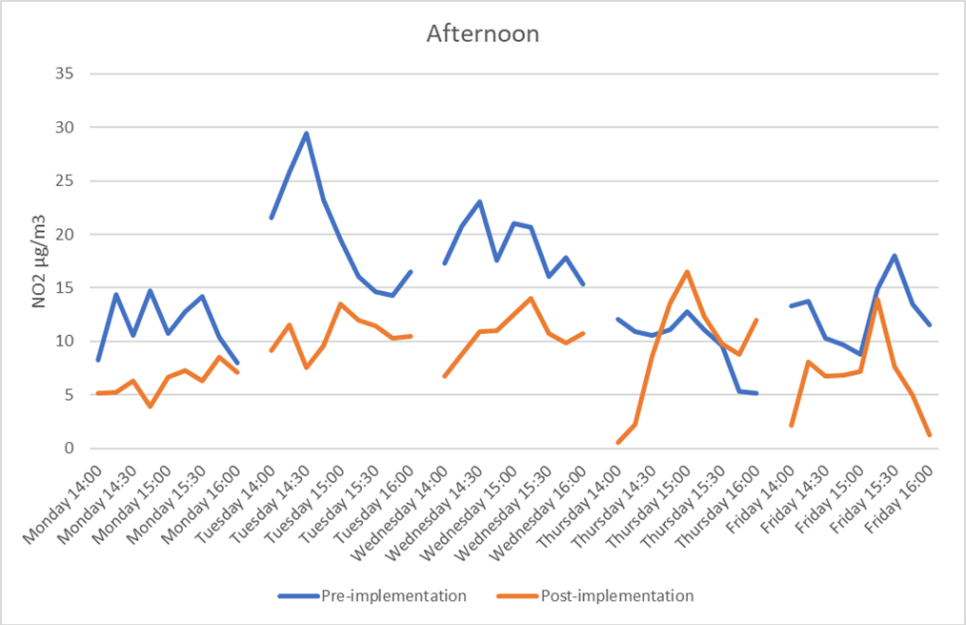
83. Four lower cost automatic air quality sensors have been installed to monitor air quality levels around schools participating in the project.

- Stanley High School-Marshside Road (Sensor installed June 2022)
- Birkdale High School-Windy Harbour Road (Sensor installed June 2022)
- Greenbank High School-Hastings Road (Sensor installed June 2022)
- Bedford Primary-Quarry Road (June 2023)

84. AQ levels have been monitored initially prior to the restrictions coming into force to allow effective evaluation of the measures.

85. Analysis of the air quality monitoring results at Greenbank and Birkdale show noticeable differences between pre implementation and post implementation with short term levels of NO_2 during drop off/pick up times notably higher prior to school streets restrictions coming into force compared to levels following the implementation of the measures. See graph below:

Graph showing Monitoring data - Greenbank High School Afternoon Period –Pre SS implementation (26th-30th June 2023) compared with Post implementation (3rd –7th July 2023)



86. The results to date show that the restrictions are having a positive effect on improving short term air quality in the locality and will form part of the more extensive overall project evaluation which will follow.

87. Officers are looking to include further sensors at schools as the roll out of the project continues.

Traffic signal upgrade/incorporation of AQ sensors

88. As part of a City Region traffic signal upgrade project, funding for 7 air quality sensors (Earthsense Zephyr) was secured which are now operational. The sensors are located at 7 key traffic light junctions in the Borough and integrated into Sefton's traffic signal control system.

89. Real time air pollution data is now available from the sensors at these key locations, which can also be used to trigger specific traffic signal strategies to alleviate congestion if levels of localised pollution are of concern. Officers from Highways and Environmental Health are currently working together to develop potential traffic light strategies based on the sensor outputs.

SCOOT Validation and Strategy Development Project

90. Officers from Environmental Health are currently working with Highways Officers/Yunex Traffic on a joint project which will entail the revalidation of the SCOOT (Split Cycle and Offset Optimisation Technique) urban traffic light control system at 20 key traffic light controlled junctions and 9 crossings situated on

Moor Lane, Crosby Road North, Derby Road, Dunnings Bridge Road, Southport Road and Northway.

91. Surveys will be carried out at each of the key junctions/crossings to determine how effectively the junction is currently functioning in terms of traffic flow and minimising air pollution.

92. Based on the outcome of the surveys new strategies will be developed aimed at improving traffic flow and managing the air quality issues in the locality. The new strategies will be incorporated into Sefton's SCOOT/STRATOS system and then tested for effectiveness.

Conclusions

93. Whilst air quality in the majority of the Borough is within NAQS objectives, the main on-going priority in Sefton for the coming years is to fully understand the effects that the predicted increase in HGVs due to port expansion will have on air quality and how this can be mitigated.

94. As detailed within this report the development of the Outline Business Case for a Sefton based CAZ under the overarching Clean Air Plan is complete and has demonstrated that a corridor HGV charging CAZ covering the A5036 and A565 could achieve significant air quality improvements within the CAZ boundary and wider borough.

95. The progression of the CAP scheme to the next stage, i.e. Full Business Case, however, will depend on a number of factors, which include key risks and constraints identified in the OBC work along with identification of a funding source.

96. A number of potential CAP OBC pathways have been presented to Cabinet (Table 6) and key stakeholder engagement (LCC, National Highways, Peel Ports, Joint Air Quality Unit) has taken place along with additional technical assessments.

97. The results of the stakeholder engagement and technical reports have been presented to Cabinet Members and it is considered that progression to FBC would be very challenging. To assist in the decision-making process, officers have been developing a list of possible non-CAZ measures that could be implemented to improve air quality.

98. Officers are in the process of finalising the detailed list of potential non-CAZ measures for consideration. A Cabinet 'decision' report will then be prepared to formalise the decision. Further update reports specifically on the OBC will be provided in line with the communication and engagement strategy.

99. In addition to the strategic work associated with the CAP, officers continue to explore other innovative actions and activities to improve Sefton's air quality across the Borough and these will be reported at future meetings. The extensive

air pollution monitoring will also continue in 2024 to determine future trends and compliance in Sefton.