

Report to:	Overview and Scrutiny Committee (Regulatory, Compliance and Corporate Services)	Date of Meeting:	12 th January 2021
Subject:	Air Quality and Clean Air Zone update		
Report of:	Head of 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 regarding air quality management and the ongoing clean air zone work.

Recommendation(s):

The report be noted

Reasons for the Recommendation(s):

To update members on current Air Quality activities and the ongoing work taking place on the development of an Outline Business Case (OBC) for a Sefton Based Clean Air Zone (CAZ)

What will it cost and how will it be financed?

(A) Revenue Costs –

N/A - this report is an update only.

(B) Capital Costs-None

N/A

Implications of the Proposals:

Resource Implications (Financial, IT, Staffing and Assets):
There are no resource implications currently
Legal Implications:
There are no legal implications
Equality Implications:
There are no equality implications.

Contribution to the Council's Core Purpose:

Protect the most vulnerable: Yes, 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: Yes, interventions to improve air quality taken by the Local Authority and its partners, including the community demonstrates that mitigation against poor air quality is possible and the interventions actively support making better choices and behavioural change.
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: Clean Air Zones are important tools for improving vehicle fleets.
Facilitate sustainable economic prosperity: There is an established link between poor air quality, poor health, the ability to work/remain economically active and productivity. Improving air quality can therefore contribute to improved productivity and economic prosperity.
Greater income for social investment: N/A
Cleaner Greener-Yes, 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 (FD6249/20) and the Chief Legal and Democratic Officer (LD4450/20.) have been consulted and any comments have been incorporated into the report.

(B) External Consultations

‘not applicable’

Implementation Date for the Decision

Following the expiry of the “call-in” period for the Minutes of the Cabinet Meeting

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Background

1. Evidence has shown that certain atmospheric pollutants are linked to poor health. The Environment Act 1995 places a **statutory duty** on all Local Authorities to review and assess air quality in their areas at regular intervals. The Air Quality Regulations made under the Act specify the pollutants that must be considered and sets 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 shown in red text.

The pollutants that have to be considered are:

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/m³ (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/m³ (8 hour mean)
Lead	A heavy metal emitted by certain industrial processes	0.25µg/m³ (Annual Mean)
Nitrogen Dioxide	A gas produced by internal combustion engines	200µg/m³ (1hr mean) not to exceeded more than 18 times per annum 40µg/m³ (Annual mean)

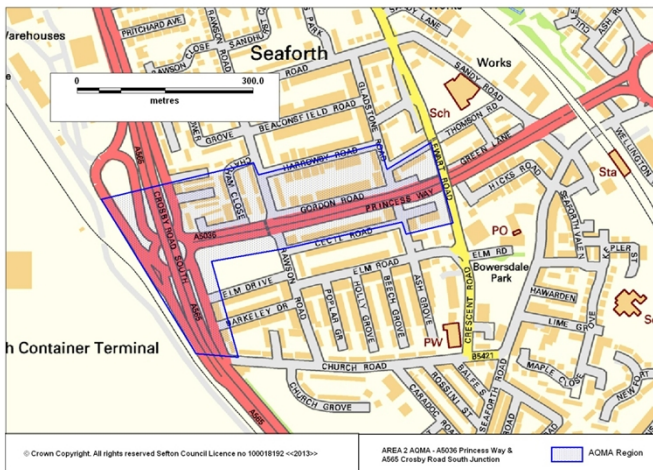
Particulate Matter PM ₁₀	Particulates less than 10µm in diameter produced by industry and road traffic.	50µg/m³ (24hr mean) not to be exceeded more than 35 times per annum 40µg/m³ (Annual mean)
Sulphur dioxide	A gas which can be produced when burning fossil fuel and or heavy fuel oil	266µg/m³ (15 min mean) Not to be exceeded more than 35 times a year 350µg/m³ (1hr mean) Not to be exceeded more than 24 times per year 125µg/m³ (24hr mean) Not to be exceeded more than 3 times a year

2. Sefton has undertaken several Review and Assessments since the Environment Act placed this duty on Local Authorities. As part of these previous assessments it has been determined 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 as such, no AQMAs have been declared for these pollutants. These pollutants will however be kept under regular review as part of the Review and Assessment process.
3. The ongoing review and assessment process has confirmed that in the majority of Sefton, Air Quality is of a good standard and complies with the National Air Quality Standard Objectives given above. There are however areas in the South of the Borough, where due to high levels of traffic, levels of NO₂ are above or close to the national standard.

Air Quality Management Areas (AQMAs)

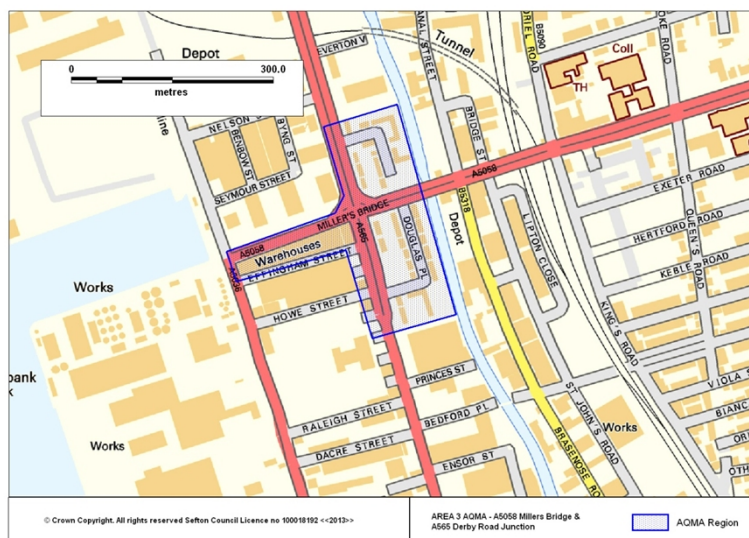
4. If it has been identified that levels of air pollution may exceed the NAQS an Air Quality Management Area (AQMA) has to be declared.
5. 4 localised areas in South Sefton have been identified where levels of Nitrogen Dioxide (NO₂) have exceeded or are close to the annual average standard of 40 µg/m³. AQMA's have been declared in these locations and are discussed in more detail below.

AQMA 2-Princess Way, Seaforth.



6. AQMA 2 - Princess Way was identified for NO₂ exceedances. The main source of NO₂ in this AQMA is related to HGV traffic. The deep-water berth at the Port of Liverpool is now complete and HGV traffic is predicted to increase as a result. A major highways improvement intervention is currently being considered by Highways England to accommodate the increase in road traffic as a result of the port expansion.
7. A number of air quality actions have been implemented by Sefton to reduce levels of NO₂ in this area. These include assisting in the development of port booking systems, participation in the ECOstars fleet recognition scheme and the redesigned 'hamburger' roundabout improvements.
8. 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



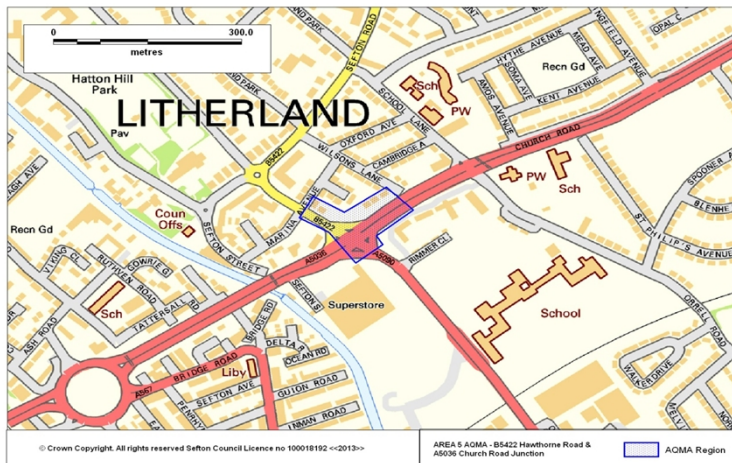
9. AQMA 3 was identified for exceedances of the PM₁₀ and NO₂ NAQS objectives. The main contributors to the emissions in this area were found to be HGVs and industrial processes on the dock estate.
10. A number of successful measures have been implemented in this area as part of the action plan to reduce emissions. Intensive road and footpath cleaning has been undertaken previously to reduce the amount of particulates being re-suspended, joint work the Environment Agency to ensure industrial emissions are monitored and controlled effectively in this area is ongoing, 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. The major junction has also recently been redesigned to improve traffic flow and reduce waiting times at the traffic lights.
11. As a result of these measures the NAQS objective for PM₁₀ has consistently been met for the last 8 years. However, this will be kept under review as the port expands in the future.
12. With regard to NO₂ the results of monitoring show some exceedances of the annual NAQS objective in this AQMA. Dealing with NO₂ exceedances in this area is again challenging and alternative measures are under consideration.

AQMA 4 Crosby Road North, South Road Waterloo



13. AQMA 4 was identified for exceedances of the NO₂ 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 effectiveness of these in terms of reducing levels of NO₂ in the AQMA is currently being monitored using diffusion tubes. The latest results show that levels of NO₂ in the AQMA have now reduced to below the national limit. Further monitoring will be undertaken to ensure consistent compliance with the NAQS before the decision to revoke this AQMA is made.

AQMA 5 Hawthorne Road, Church Road Junction Litherland



14. AQMA 5 was identified for NO₂ NAQS objective exceedances. The main source of the emissions at this location is road traffic. In 2017, 2018 and 2019 this AQMA showed compliance with the annual NAQS objective for NO₂. However as with AQMA 2, this site may be affected by the increased emissions due to HGV traffic as a result of the port expansion and will remain in place

Monitoring

Real Time Automatic Monitoring Stations

15. As in previous years Sefton undertakes extensive air pollution monitoring using both real time monitoring systems and diffusion tubes which provide average annual levels. The table below details the location of the automatic monitors and the pollutants monitored.

Table 1-location of Automatic Air Quality Monitors

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 NO ₂
Millers Bridge, Bootle	Within AQMA 3. Proximity to Road Junction/ Docks and Sensitive Receptor.	PM ₁₀ PM _{2.5} NO ₂
A565, Crosby Road South previously located at St Joan of Arc School	Proximity to Road /Docks and Sensitive receptor.	PM ₁₀ NO ₂ SO ₂
Regent Road Crosby (installed summer 2020)	Background Particulate Levels in suburban area	PM ₁₀ PM _{2.5}

16. Two additional dual particulate monitors measuring PM₁₀ and PM_{2.5} have been recently purchased, one is located at Regent Road in Crosby to monitor background levels of particulate matter and one is to be installed at Princess Way to provide additional PM_{2.5} data at this location.

Diffusion Tubes

17. In addition to the real-time monitors, Sefton measures monthly NO₂ levels at approximately 100 sites across the Borough using diffusion tubes.

18. 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 into assess current/future NO₂ 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 NO₂.

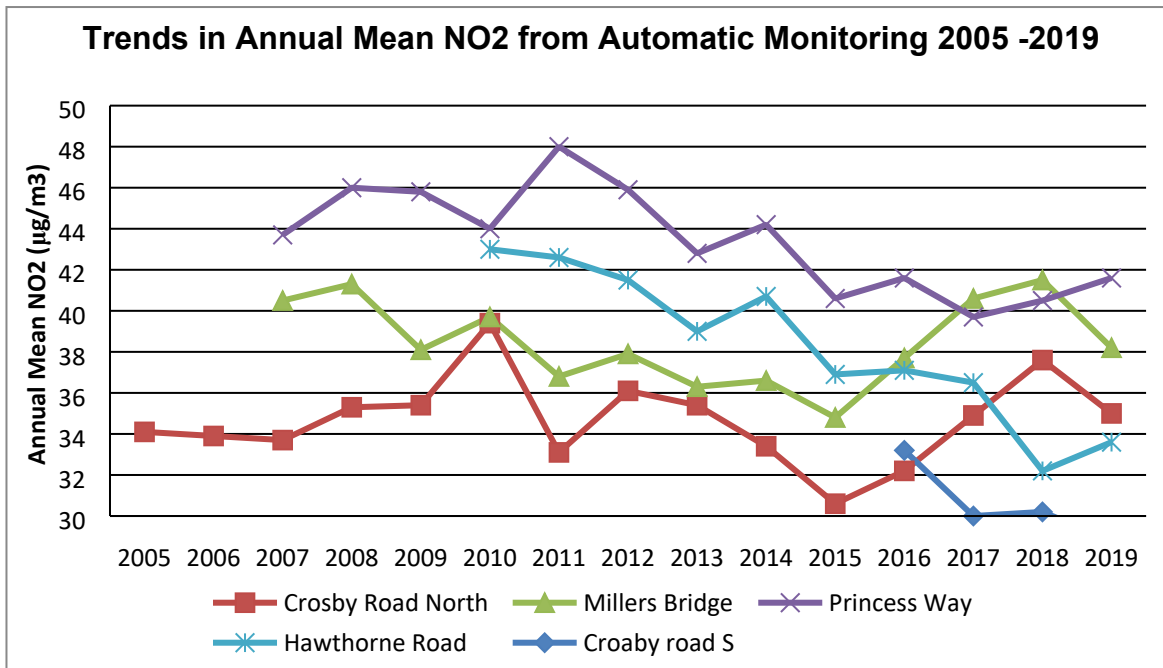
19. A number of sites have also been added recently to assess the impact the port expansion and subsequent highway improvement will have on NO₂ levels. The location of these is reviewed annually to ensure all areas of concern are monitored.

Diffusion Tube Monitoring Results

NO₂ Annual Mean 2012 - 2019 (limit 40 µg/m³)

Site	NO ₂ Annual Mean µg/m ³							
	2012	2013	2014	2015	2016	2017	2018	2019
Crosby Road North	36.1	35.4	33.4	30.6	32.2	34.9	37.6	35.0
Millers Bridge	37.9	36.3	36.6	34.8	37.7	40.6	41.5	38.2
Princess Way	45.9	42.8	44.2	40.6	41.6	39.7	40.5	41.6
Hawthorne Road	41.5	39.0	40.7	36.9	37.1	36.5	32.2	33.6
Crosby Road South				34.6	33.2	29.6	30.2	28.8

20. The table above shows the measured levels of NO₂ at each of the continuous monitoring sites since 2012. The national limit is 40 µg/m³ and whilst the monitors are not located exactly at the receptor location, they provide an accurate indicator of NO₂ levels in the locality.



21. The graph above shows the trends in Annual mean NO₂ levels between 2005 and 2019 at each of the continuous monitoring sites.
22. Princess Way monitor which is located within AQMA 2 showed levels in exceedance of the NO₂ annual mean objective of 40µg/m³ in 2019 This represents an increase in levels compared to 2017 and 2018.
23. Hawthorne Road monitor which is located within AQMA 5 showed a slight increase compared to 2018 however levels are still within the NAQS. Due to the port expansion this monitor is ideally placed to assess any future increases.
24. Monitoring in 2019 at Millers Bridge which is located within AQMA 3 has shown a slight reduction in NO₂ levels compared to 2018. Monitoring at this junction will continue
25. Trends at Crosby Road North automatic monitoring site continue to show compliance with the annual standard and levels have reduced since 2018.
26. Levels at Crosby Road South were well within the NAQS objective and remain fairly constant.

Particulate Matter

PM₁₀ Annual Mean 2012-2019 (Limit 40 µg/m³)

Site	PM ₁₀ Annual Mean µg/m ³							
	2012	2013	2014	2015	2016	2017	2018	2019
Crosby Road North	25.4	28.3	23.6	23.7	17.0	21.1	19.9	26.3
Millers Bridge	26.1	28.1	28.8	28.7	25.4	23.9	20.1	17.9
Princess Way	24.9	26.5	26.5	26.7	23.8	23.1	22.6	17.3
Crosby Road South				25.3	22.4	19.5	23.7	N/A
Hawthorne Road						23.9	21.2	23.7

27. The table above shows the measured levels of PM₁₀ at each of the continuous monitoring sites since 2012. The national limit is 40 µg/m³ and whilst the monitors are not located exactly at the receptor locations, they provide an accurate indicator of PM₁₀ levels in the locality.

28. All areas are now consistently compliant with the PM₁₀ 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 PM₁₀ will however continue to assess the impact the port expansion may have on particulate emissions.

PM_{2.5} Monitoring Millers Bridge

29. Although Sefton Council monitors PM₁₀ at a number of 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 significant impact on human health. A new dual PM₁₀ / PM_{2.5} monitor was installed in July 2017 at the Millers Bridge monitoring site with data being used to provide accurate levels of PM_{2.5} in the area to assist in providing data for the Councils new role in reducing levels of PM_{2.5}. The table above shows the last 3 years results to be consistently below the current PM_{2.5} annual mean limit value of 25µg/m³.

Year	2017	2018	2019
PM ₁₀ Annual Mean µg/m ³	7.1	8.9	10.0

Diffusion Tube Monitoring Results

30. Nine non-automatic (passive) diffusion tube monitoring sites showed exceedance of the NO₂ annual mean objective in 2019 at the monitored location. These were within existing Air Quality Management Areas or areas under investigation and are shown in the table below

Site location	NO ₂ level at monitor µg/m ³	NO ₂ Level at receptor µg/m ³
Derby Road/Millers Bridge	51.7	47.5
Hawthorne Road	40.1	33.5
Hawthorne Road	41.7	30.1
Church Road	41.3	26.1
Hawthorne Road /Linacre Lane	44.8	34.9
Princess Way	41.4	36.6
Derby road	41.9	37.1
Derby road /Heman Street	48.0	37.3
A565/South Road	40.8	28.7

Summary of monitoring

31. Overall levels of NO₂ in the areas where monitoring takes place have not changed significantly since 2018. There remains a number of exceedances of the NAQS objective at the monitoring locations and whilst levels at the receptor (when corrected for fall off with distance) are generally within NAQS objectives, a number of receptor sites are very close to the national limit and there is ongoing concern that the increase in traffic associated with the port expansion will cause further exceedances.

Actions to Improve Air Quality

Preliminary CAZ Feasibility Study

32. Because there are still significant challenges ahead with regard to reducing levels of NO₂ in some of Sefton's AQMAs particularly those impacted by traffic entering and leaving the Port of Liverpool. Officers from Environmental Health, Public Health and Transport teams, overseen by the Air Quality Member Reference Group, commissioned environmental consultants AECOM to undertake a Clean Air Zone (CAZ) feasibility study, to assess the feasibility of implementing CAZs in Sefton to reduce traffic related emissions. A copy of the report (May 2019) can be found here <https://www.sefton.gov.uk/media/1611489/Sefton-Clean-Air-Zone-Feasibility-Study.pdf>

33. AECOM's report concluded that given the current and projected make-up of the traffic in the four AQMA areas, a Charging CAZ could deliver more rapid improvements in NO₂ emissions than existing measures, taking account of forecast improvements in the emissions profile of the vehicles on Sefton's roads.

The study predicted that in 2020 if no further improvement actions took place there would still be 70 NO₂ exceedances in the south of the Borough. The key study outcomes indicated the following:

- A CAZ would achieve reduced emissions within the defined zone.
- A CAZ B (HGVs, taxis, buses), including the junction of A5036/A565, would potentially achieve the most significant benefits.
- Further analysis would be necessary to identify the type and location of the CAZ.

CAZ Outline Business Case (OBC)

34. Following on from the Preliminary CAZ feasibility study 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 May 2020 to undertake the additional air quality and transport modelling work needed and prepare a draft OBC in conjunction with Council officers.
35. The development of the OBC forms part of the Council's wider AQ programme overseen by the AQ Cabinet Member Reference Group.
36. A temporary CAZ Project Manager has been seconded into the Council on a part-time basis, since May 2020, to oversee and input into AECOM's work in conjunction with the CAZ Steering Group/Project Group, in addition to supporting wider tasks such as the Communication and Engagement strategy for Sefton's overarching Clean Air Plan

Outline Business Case – Progress and Actions – May-December 2020

37. The **aim** of Sefton's CAZ Outline Business Case is to Identify the best value CAZ option to meet the objectives set out by Cabinet.
38. Four key overarching strategic **Objectives** have been set for the OBC, as follows:
 - To improve air quality and achieve compliance with national standards in the shortest possible time in known hotspot areas i.e. within four AQMAs
 - To promote improved air quality in the wider area (outside AQMAs) through more rapid switch over to vehicles with minimal exhaust emissions
 - To reduce human exposure to air pollution and thus improve public health, particularly for areas with high deprivation
 - To reduce emissions relating to the A5036 for HGV vehicle travel, particularly around high-density residential areas.

Key OBC Outputs and Progress to Date:

39. The Outline Business Case process is a systematic approach. It establishes the case for change, evaluates affordability, and aims to identify a commercially viable option or options that offer best value for money and is practically deliverable. The Council is using the "5 Case" Business Case model, which is also the framework

being used in other local authority areas where a CAZ is being considered, as it enables effective risk management and strengthens rigour, transparency and objectivity in decision-making. Investment in this approach is commensurate with the magnitude of costs, benefits and risks that attend future decisions about a CAZ in Sefton.

40. We are currently testing four charging CAZ scenarios against a 'No-CAZ' (Baseline 2023) option to define a preferred/best-value option and this work is progressing well. For each CAZ option the scenario assessments will identify compliance/noncompliance of NO₂ levels and PM₁₀ levels at numerous receptor points across south Sefton in the assessment years.
41. Once all options testing has been completed an evidence-based OBC will be developed which will identify the preferred CAZ option for consideration by Members (guided by the detailed traffic and air quality modelling). The OBC will indicate the benefits the CAZ can bring in terms of improved air quality, thus resulting in the protection of public health and a reduction in inequalities i.e. the worst air quality is recorded in the most disadvantaged areas of Sefton where the AQMAs are defined.
42. The formal business case will include the development of a project plan, risk register, resource costings using recognised project management frameworks, and is aligned to an appropriate communications and engagement plan, as set out below. An outline scheme design will be provided for the preferred CAZ option and the outline scheme costs will be quantified.

Aligned Communication and Engagement Strategy

43. An appropriate Communication and Engagement Strategy has been developed to support the CAZ OBC process.
44. Internal communication and engagement focus on regular routine engagement with key internal stakeholders including
 - Informal Policy Cabinet
 - Executive Leadership Team (ELT)
 - Growth Board
 - Air Quality Member Reference Group
 - OSC (Regulatory, Compliance and Corporate Services)
45. Updates will also be provided, in due course, to the Strategic Capital Investment Group (SCIG) and to wider internal committees, groups and departments as appropriate.
46. External communication and engagement so far has focussed on priority external stakeholders. The strategy is split into 3 stages of Communication and Engagement, as follows:

Phase 1 (Sept 2020 – March 2021) – will raise awareness and seek to gain support In principle for the Clean Air Plan. It will also explore the best way to engage stakeholders going forward;

Priority

- Highways England
- Liverpool City Council
- Peel Ports

Other:

Local authorities, Sefton Youth, Registered Providers, Sefton CVS, Taxi Provider Forum, Bus/Freight companies

Phase 2 (to be confirmed)– wider consultation on the OBC (above plus public, local businesses, taxi drivers, schools);

Phase 3 (to be confirmed) – communication on CAP decisions and any implications for key stakeholders (all of the above).

47. A dedicated Clean Air Plan page is currently being developed on the *YourSeftonYourSay* Platform. This will set the scene and raise general awareness of the project in the first instance.

Timescales / Programme

48. The current timeline for the OBC programme is as follows:

OBC Work Area	Expected completion date
Air Quality and traffic modelling work	Jan/Feb 2021
Define preferred option (Options Appraisal Report)	Feb 2021
Outline Design and Costing of Preferred Option	March/April 2021
OBC draft completion	May /June 2021
Internal review and presentation to Cabinet	June/July 2021

Additional Air Quality Improvement Actions/Developments

Intensive Road Washing (AQMA2, AQMA3, AQMA5)

49. Although there are currently no PM exceedances of the NAQS objectives within Sefton, visual inspections of road and pavement conditions within AQMA2, AQMA3 and AQMA5 showed large accumulations of debris and road grime. Following a previous successful intensive road washing exercise where levels of PM were actively reduced, preparation of a further project began in 2019. The project was planned to start following the completion of the Millers Bridge Junction improvement works, however this was only completed in spring this year and due to the Covid pandemic the project was put on hold. We are currently reviewing when the project can commence.

Schools Air Quality

50. Sefton Council continues to work closely with schools to ensure that its youngest residents are aware of both the causes and risks of air pollution and the steps they can take to avoid it. The 'Clean Air Crew' website continues to be developed with additional teaching resources and interactive learning opportunities for all schools to use. The site has been developed thanks to active engagement with schools and can be found at www.southportecocentre.com/cleanaircrew

Domestic Smoke Behaviour Change Project

51. Sefton is concerned that the increased use of domestic solid fuel is potentially adding to particulate matter levels in the Borough especially PM_{2.5}. Sefton, like all Local Authorities has new duties with regard to PM_{2.5} and the reduction of this particular airborne pollutant. Sefton successfully obtained a £100,000 grant from DEFRA to undertake a Solid Domestic Fuel behaviour change project which is currently ongoing with the primary aim to minimise the Particulate Matter (PM) contribution from domestic solid fuel use in Sefton. The project is employing a number of behaviour change methods and interventions aimed at engaging with householders, fuel suppliers, appliance suppliers and installers to promote best practice.

Conclusions

52. Air Quality in the majority of Sefton is within NAQS Objectives, however, the ongoing review and assessment has identified localised areas where NAQS Objectives will not be met and Action Plans are in place to work towards compliance in these areas. Action Plan measures have shown significant success and levels of pollution have reduced with levels of PM₁₀ at all monitoring locations below the NAQS objectives and resulted in the de-declaration of AQMA 1 near Waterloo primary school

53. There are however areas where there are major challenges to air quality as detailed within the report. Port expansion and the associated increase in HGVs may lead to an increase in emissions that will affect air quality in the AQMAs and surrounding areas around the A5036, A565 and A5058.

54. The development of the Outline Business Case for a Sefton based CAZ under the overarching Clean Air Plan will specifically address these concerns and further update reports will be provided in line with the communication and engagement strategy.

55. Officers will continue to develop and implement air quality improvement actions under the direction of the Air Quality Members Reference group with additional focus on holistic approaches and engagement with all key stakeholders.