Subject: **Summary of air pollution monitoring results. Report on progress with work undertaken as part of the statutory Local Air Quality Management (LAQM) regime.**

Background:

1.1. Sefton Council currently monitors air quality using 5 real time automatic monitoring stations measuring fine particles (PM_{10}) and nitrogen dioxide (NO_2) and 99 sites where diffusion tubes provide monthly NO_2 levels that are combined to give an annual mean (average) for comparison with NAQS Objectives. The diffusion tubes are split between the Schools and Community Airwatch programme, 16 sites, in which members of the community and, currently, 2 schools measure NO_2 levels at their property, and the Councils in house NO_2 monitoring programme, 83 sites.

1.2. 5 Air Quality Management Areas (AQMAs) shown in Annex 1, have been declared in Sefton. AQMAs are declared where National Air Quality Strategy (NAQS) Objectives have been exceeded. When an AQMA has been declared, the Council is required to undertake a Further Assessment of air quality in this area to identify the principal sources of pollution, confirm the extent of the area and assist in the production of an Action Plan to improve air quality.

1.3. For all the AQMAs, Further Assessments and Action Plans have been completed and approved by Defra and were considered to be an example of best practice. Initial consultation with residents has been carried out in each of these areas. All Action Plans have now been updated and compiled into one document which has been submitted to Defra for approval and will then be the subject of further consultation with residents.

1.4. Two areas; Pleasant Street, Bootle and Marsh Lane, Bootle, were identified in the 2012 Air Quality Updating and Screening Assessment (USA) as areas where NAQS Objectives may have been exceeded. Detailed Assessments of air quality in these areas were undertaken and showed that the NAQS Objectives would be complied with and that no further action was required. These areas will continue to be monitored in ongoing USAs and Progress Reports.

1.5. As part of the ongoing process of Local Air Quality Management (LAQM), AQMAs are periodically reviewed. If it is found that NAQS Objectives have been complied with over a number of years due to measures implemented as part of the Action Plan, Government Guidance recommends that the AQMA should be revoked.

1.6. An AQMA for PM_{10} was declared at Crosby Road North in 2008 following a Detailed Assessment of air quality in these areas. Another Detailed Assessment for PM_{10} was carried out in 2013 and showed that since the exceedences of the Air Quality Objective (AQO) in 2006 at Crosby Road North compliance has now been achieved all years. These findings support revoking the declaration for PM_{10} at the AQMA. The conclusions of the Detailed Assessment have been approved by Defra and have been reported to Cabinet Member Environment. Subject to approval by Cabinet Member Environment, consultation will be undertaken and based on the results; a report will be taken to Full Council.

Summary of Monitoring Information

1.7. NO_2 is currently measured at five locations in Sefton using real time automatic continuous monitors located at:

- Former St Joan of Arc School Site, Bootle - CM1.
- Crosby Road North, Waterloo - CM2.
- Millers Bridge, Bootle - CM3.
- Princess Way, Seaforth - CM4.
- Hawthorne Road, Litherland - CM5.

1.8. All locations represent relevant public exposure with the exception of the former St Joan of Arc School Site, Bootle, as the school has closed and has now been demolished. However the site is representative of the 'background' level experienced by properties in this area that are not close to major roads.

1.9. Monitoring data from automatic monitoring stations is summarised below. NAQS Air Quality Objectives (AQOs) are shown in Annex 2.

Nitrogen dioxide (NO_2)

Real Time Monitors

1.10. Annual Average NO_2 levels at automatic monitoring stations (NAQS Objective 40 μgm^{-3}) are shown in Table 1. (exceedences shown in bold):

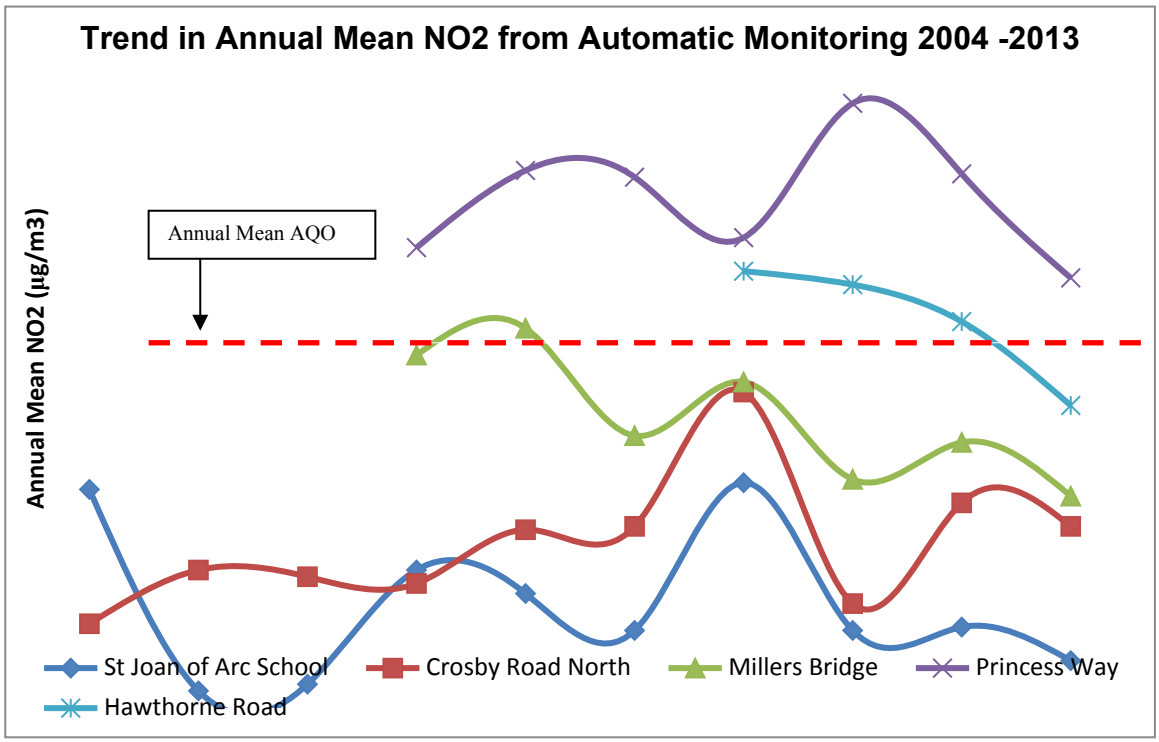
Table 1: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective (2008 – 2013)

Site ID/ Location	Within AQMA for NO_2?	Valid data capture for full calendar year 2013 %	Annual mean concentrations (μgm^{-3})					
			2008	2009	2010	2011	2012	2013
CM1/Former St Joan of Arc School, Bootle	N	99.2	33.4	32.3	36.7	32.3	32.3	31.4
CM2/Crosby Road North, Waterloo	N	99.9	35.3	35.4	39.4	33.1	36.1	35.4
CM3/Millers Bridge, Bootle	**Y**	99.9	**41.3**	38.1	39.7	36.8	37.9	36.3
CM4/Princess Way, Seaforth	**Y**	97.2	**46.0**	**45.8**	**44.0**	**48.0**	**45.9**	**42.8**
CM5/ Hawthorne Road, Litherland	**Y**	98.7	n/a	n/a	**43.0[1]** **46.7[2]**	**42.6**	**41.5**	39.0

[1] June – December 2010. [2] Annual Mean adjusted for short term monitoring,

1.11. Trends in annual mean NO_2 at all sites, are shown in Figure 1.

Figure 1: Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites



1.12. The trend graph shows the NO_2 annual mean was lower at all monitoring sites in 2013 compared with 2012. Princess Way continues to be consistently well above the annual mean Air Quality Objective (AQO), although there has been a downward trend since the peak of 2011.

1.13. Hawthorne Road has shown a downward trend since monitoring commenced in 2010 and showed borderline compliance with the AQO in 2013, having shown non-compliance in the previous three years. Both of these sites are influenced by road traffic on the A5036, particularly from HGVs and NO_2 levels at both sites are anticipated to rise in future years due to the planned port expansion. A dispersion modelling study is currently being carried out in-house by Sefton Council officers, with the methodology reviewed by Bureau Veritas, to examine how the increased HGV movements due to port expansion will affect residents living next to the A5036.

1.14. The trend at Millers Bridge has been one of compliance with the annual mean AQO from 2009 - 2013, following a period of non-compliance in 2007 and 2008, although compliance in 2010 was borderline.

1.15. Following an unexpected rise in the annual mean NO_2 in 2010 at Crosby Road North, when compliance in that year was borderline, annual concentrations have fallen back to pre-2010 compliance levels.

1.16. The former St Joan of Arc School site continues to show compliance with the NO_2 annual mean AQO. Due to sale of the land at this site the monitoring station will be moved to a new location in this area.

1.17. Automatic monitoring results for NO_2 for comparison with the 1-hour mean Objective continue to show compliance with the AQO at all current monitoring sites in Sefton. Results from 2008 - 2013 are shown in Table 2.

Table 2 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective (2008 – 2013)

Site ID/ Location	Within AQMA for NO_2?	Valid data capture for full calendar year 2013 %	Number of Exceedences of hourly mean (200 μgm^{-3}) *Where the period of valid data is less than 90% of a full year, the 99.8th percentile of hourly means is shown in brackets.					
			2008	2009	2010	2011	2012	2013
CM1/ Former St Joan of Arc School, Bootle	N	99.2	0	0	0	0	0	0
CM2/ Crosby Road North, Waterloo	N	99.9	0	0	0	0	1	1
CM3/ Millers Bridge, Bootle	**Y**	99.9	2	2	1	0	0	0
CM4/Princess Way, Seaforth	**Y**	97.2	0	0	0	2	3	0
CM5/ Hawthorne Road, Litherland	**Y**	98.7	n/a	n/a	1	0	0	0

Diffusion Tubes

1.18. A summary of diffusion tube locations in Sefton which have shown concentrations in excess of the NO_2 annual mean AQO of 40 μgm^{-3} or borderline compliance in 2013 is shown in Table 3. All Objective exceedences are highlighted in bold text. The remaining 83 sites all showed compliance with the annual mean AQO.

Table 3 Nitrogen Dioxide Diffusion Tubes that have shown an Annual Mean Nitrogen Dioxide Concentration in excess of 40 μgm^{-3} or close to the Objective in 2013

Site ID	Site Location	Within AQMA for NO_2 ?	Valid data capture for full calendar year 2013 %	Annual Mean Nitrogen Dioxide Concentration (Adjusted for Bias)				
				2009 NO_2 (μgm^{-3})	2010 NO_2 (μgm^{-3})	2011 NO_2 (μgm^{-3})	2012 NO_2 (μgm^{-3})	2013 NO_2 (μgm^{-3})
NBM	Millers Bridge, Bootle	**Y**	92	**45**	**46**	**46**	**45**	**45**
NBR	Derby Road, Bootle	**Y**	92	**59**	**60**	**56**	**58**	**56**
NBS	Derby Road, Bootle	**Y**	83	**44**	**51**	**46**	**48**	**43**
NCI	Hawthorne Road, Litherland	**Y**	100	**45**	**49**	**49**	**48**	**42**
NCJ	South Road, Waterloo	**Y**	83	**46**	**50**	**43**	**46**	**42**
NDD	Hawthorne Road, Litherland	**Y**	92	n/a	n/a	**48**	**42**	**43**
NDI	Crosby Road North, Waterloo	**Y**	92	n/a	n/a	**43**	**44**	**41**
NDO	Hawthorne Road, Bootle	N	92	n/a	n/a	n/a	**42 (44)**	**44**
NDR	Crosby Road North, Waterloo	**Y**	100	n/a	n/a	n/a	**41 (43)**	**40**
NDV	Moor Lane, Crosby	N	92	n/a	n/a	n/a	**44** (**46)**	**43**
NEB	Copy Lane, Netherton	N	100	n/a	n/a	n/a	39 (**41**)	39
NEC	Dunnings Bridge Road, Netherton	N	100	n/a	n/a	n/a	**43** (**45**)	**40**
NEE	Copy Lane Police Station, Netherton	N	100	n/a	n/a	n/a	**41** (**43**)	**41**
NEL	Breeze Hill, Bootle	N	92	n/a	n/a	n/a	n/a	**43**
NEM	Millers Bridge Industrial, Estate	**Y**	92	n/a	n/a	n/a	n/a	**41**

1.19. Where less than 9 months of data was collected results have been adjusted to annual means using a calculation provided by Defra. These are shown in brackets.

1.20. Of the 12 diffusion tube sites that showed non-compliance with the annual mean Objective in 2010, eight sites were within existing AQMAs:

- Four locations, sites NBM, NBR, NBS and NEM are within the existing Millers Bridge, Bootle AQMA (AQMA 3).

- Two locations, sites NCJ and NDI are within the existing South Road/Crosby Road North AQMA (AQMA 4).

- Two locations, sites NCI and NDD Hawthorne Road are within the existing Hawthorne Road AQMA (AQMA 5).

1.21. Of the remaining 4 diffusion tube sites that showed non-compliance with the annual mean Objective in 2012:

- NDO (Hawthorne Road, Bootle) is located near to the junction with Linacre Lane and was sited to monitor NO_2 levels at a new development of flats on Hawthorne Road. An annual mean of 44 μgm^{-3} was recorded in 2013. As the AQO applies at the façade of the property, the Defra NO_2 fall off with distance calculator was used to estimate the NO_2 concentration at the property façade to assess relevant exposure. This showed at annual mean of 36.5 μgm^{-3} at the façade which id below the AQO.

- NDV (Moor Lane, Crosby) is located close to a roundabout and was sited to assess levels at the property opposite a pedestrian crossing, as this appeared to be a potentially more polluted site than a site which had been set up at the opposite side of the roundabout, site NCK (The Northern Road, Crosby) which had previously shown an annual mean of 36 μgm^{-3} in 2010. An annual mean of 43 μgm^{-3} was recorded for NDV in 2013. The Defra NO_2 fall off with distance calculator was used to estimate the NO_2 concentration at the property façade to assess relevant exposure. This showed an annual mean of 30.6 μgm^{-3} at the façade which is below the AQO.

- NEE (Copy Lane Police Station) is located close to the A5036 Dunnings Bridge Road / Copy Lane junction. An annual mean of 41 μgm^{-3} was recorded for NEE in 2013, however there is no relevant public exposure at this location as employment sites are not counted as relevant exposure in the LAQM regime. The tube was sited here to build up a picture of NO_2 levels close to the A5036 and the junction to assist in the assessment of the impacts of port expansion.

- NEL (Breeze Hill) is located near to the A5058 Breeze Hill/ A5038Southport Road junction. This tube was set up to replace tube NEN Manor Close, to assess NO_2 level at residential property more affected by queuing traffic at the traffic lights in this area. An annual mean of 43 μgm^{-3} was recorded for NEL in 2013. The Defra NO_2 fall off with distance calculator was used to estimate the NO_2 concentration at the property façade to assess relevant exposure. This showed at annual mean of 36.4 μgm^{-3} at the façade which is below the AQO.

1.22. Of the two sites that recorded an annual mean of 40 μgm^{-3} :

- NDR (Crosby Road North) is within the existing South Road/Crosby Road North AQMA 4.

- NEC (Dunnings Bridge Road) is located close to the A5036 Dunnings Bridge Road/Copy Lane junction. There is no relevant public exposure at this location. The site was selected to build up a picture of NO_2 levels close to the A5036 and the junction to assist in the assessment of the impacts of port expansion.

1.23. The single site that showed borderline compliance with the Objective in 2013, with a recorded annual mean of 39 μgm^{-3} was NEB (Copy Lane). The measurement was taken 0.5 m from the kerb and the nearest relevant exposure is 15m away. The Defra NO_2 fall off with distance calculator was used to estimate the NO_2 concentration at the property façade to assess relevant exposure. This showed an annual mean of 28.8 μgm^{-3} at the façade which is below the AQO.

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1.24. The results of diffusion tube monitoring have shown annual mean NO_2 concentrations to be above the annual mean Air Quality Objective at a number of locations. However these were either at sites already within existing AQMAs, at locations where there is no relevant public exposure, or were such that the drop off in concentration with distance showed compliance with the Objective at the nearest public exposure receptor.

1.25. Nitrogen dioxide diffusion tubes are widely used to assess annual mean concentrations against the Objective. However research studies have looked at the relationship between the annual mean and the 1-hour mean Objective. The technical guidance currently advises that local authorities can assume that exceedences of the 1-hour Objective are only likely to occur where the annual mean concentrations are 60 μgm^{-3} or above. There were no diffusion tube site locations where the measured annual mean concentration in 2013 was greater than 60 μgm^{-3}.

Fine particles (PM_{10})

1.26. PM_{10} is currently measured at 4 locations in Sefton using real time automatic monitors located at:

- Former St Joan of Arc School, Rimrose Road, Bootle - CM1.
- Waterloo Primary School, Crosby Road North, Waterloo - CM2.
- Millers Bridge, Bootle - CM3.
- Lathom Close, Princess Way, Seaforth - CM4.

1.27. All locations represent relevant public exposure with the exception of the former St Joan of Arc School site Bootle as the school has now closed. However the site is representative of the 'background' level experienced by properties in this area that are not close to major roads.

1.28. Automatic monitoring results for PM_{10}: comparison with the annual mean Objective (40 μgm^{-3}), at all current monitoring sites in Sefton are shown in Table 4. Objective exceedences are highlighted in bold text.

Table 4 Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective (2008 – 2013)

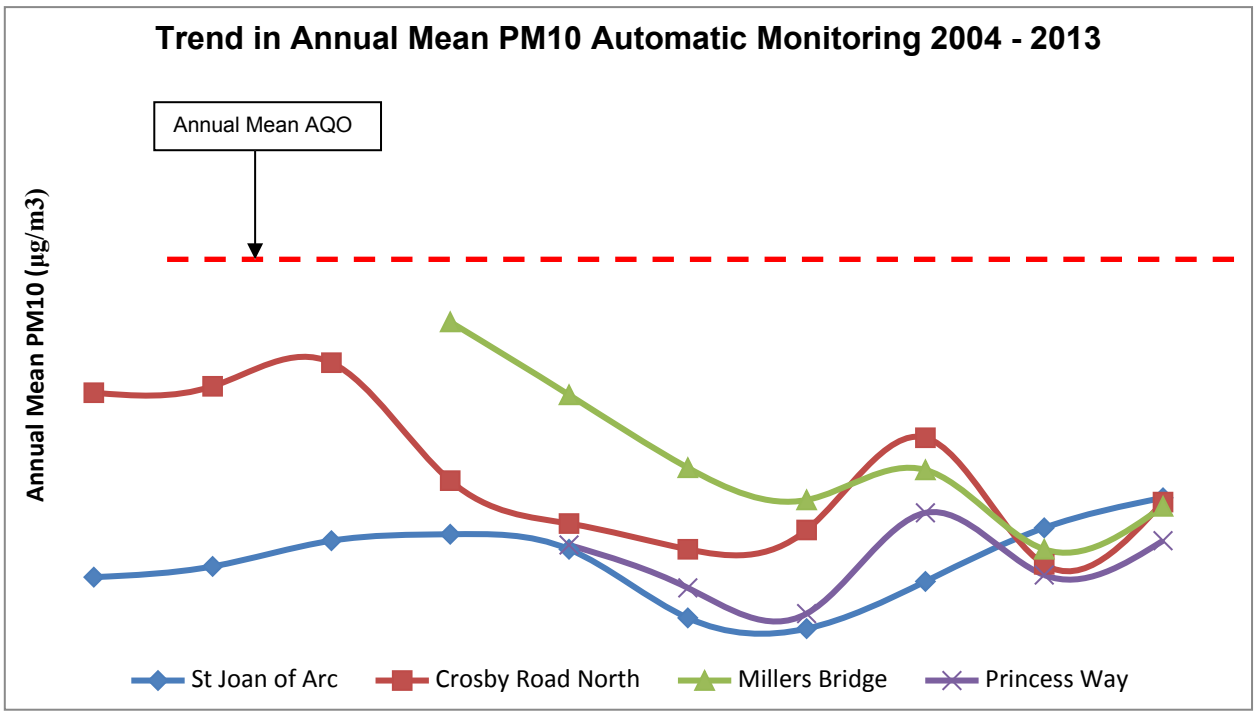
Site ID/ Location	Within AQMA for PM_{10}?	Valid data capture for full calendar year 2013 %	Annual Mean PM_{10} Concentrations (μgm^{-3})					
			2008	2009	2010	2011	2012	2013
CM1/Former St Joan of Arc School, Bootle	N	85.5	26.1[1]	22.9[2]	22.4	24.6	27.1	28.5
CM2/Crosby Road North, Waterloo	**Y**	96.1	27.3	26.1	27.0	31.3	25.4	28.3
CM3/Millers Bridge, Bootle	**Y**	94.0	33.3	29.9	28.4	29.8	26.1	28.1
CM4/Princess Way, Seaforth	N	83.4	26.3	24.3	23.1	27.8	24.9	26.5

[1]Jan – Sept, [2] March – Dec

1.29. Results of automatic monitoring has shown compliance with the PM_{10} annual mean Objective at all sites in 2013 and in all years that monitoring has been undertaken.

1.30. The trends in annual mean PM_{10} at all sites are shown in Figure 2.

Figure 2: Trends in Annual Mean PM_{10} Measured at Automatic Monitoring Sites



1.31. The trend at all sites is one of continued compliance with the annual mean Objective of 40µgm^{-3}. There was a slight increase in the annual mean at all sites in 2013 compared to 2012.

1.32. Automatic monitoring results for PM_{10}: for comparison with the 24-hour mean Objective (50 μgm^{-3}, 35 excedences allowed in 1 year), at all current monitoring sites in Sefton are shown in Table 5. Objective exceedences are highlighted in bold text.

Table 5: Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective (2008 – 2013)

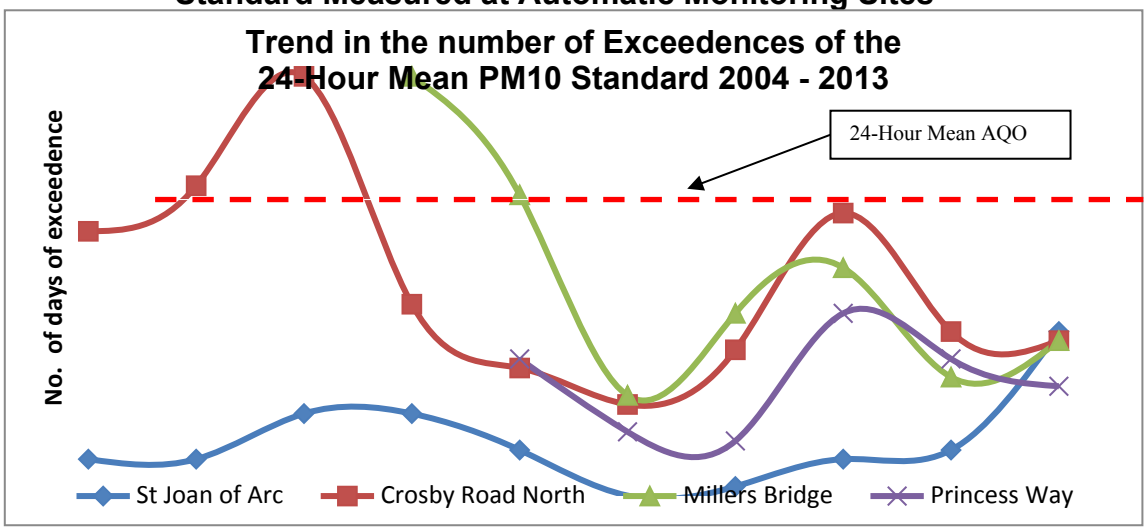
Site ID/ Location	Within AQMA for PM_{10}?	Valid data capture for full calendar year 2013 %	Number of Exceedences of PM_{10} Daily Mean Objective (50 μgm^{-3})					
			2008	2009	2010	2011	2012	2013
CM1/Former St Joan of Arc School Bootle	N	85.5	5[1]	0[2]	1	4	5	18[3]
CM2/Crosby Road North Waterloo	**Y**	96.1	14	10	16	31	18	17
CM3/Millers Bridge Bootle	**Y**	94.0	33	11	20	25	13	17
CM4/Princess Way Seaforth	N	83.4	15	7	6	20	15	12[4]

[1] *Jan – Sept,* [2] *March – Dec,* [3] 90.4th percentile of daily means 44 μgm^{-3}, [4] 90.4th percentile of daily means 43 μgm^{-3}.

1.33. Results of automatic monitoring has shown compliance with the daily mean Objective at all sites in 2013.

1.34. The trends in the number of exceedences of the PM_{10} 24-hour mean Standard at all sites are shown in Figure 3.

Figure 3 Trends in the number of exceedences of the PM_{10} 24-hour mean Standard Measured at Automatic Monitoring Sites



1.35. The trends show continued compliance with the 24 hour mean Objective at all sites since 2008. The number of exceedences at Crosby Road North, Millers Bridge and Princess Way in 2013 was not significantly different from 2012. However the former St Joan of Arc School site showed a marked increase in the number of exceedences from 5 to 18. The reason for this is currently being investigated.

1.36. The high number of daily exceedences recorded at Crosby Road North in 2006 that led to AQMA declaration has not been repeated. The actions as part of the Route Management Plan adopted for the A565 corridor through Crosby have contributed to compliance with the AQO at this site. A Detailed Assessment completed in 2014 concluded that the AQMA declaration at Crosby Road North could be revoked. A briefing report concerning revocation of this AQMAs has been provided for Cabinet member Environment.

Detailed Assessments in areas where Air Quality Objectives may be exceeded

1.37. The 2012 Updating and Screening Assessment (USA) of air quality for Sefton Council identified that a Detailed Assessment (DA) was required for nitrogen dioxide (NO_2) at two locations in south Sefton as nitrogen dioxide diffusion tube monitoring in 2011 had shown exceedence of the NAQS annual mean nitrogen dioxide Objective.

1.38. The Detailed Assessment has shown that at:

- Pleasant Street, Bootle: Although diffusion tube monitoring at the junction of Pleasant Street with the A565 Derby Road in Bootle showed exceedence of the NAQS annual mean nitrogen dioxide Objective in 2011, further diffusion tube monitoring in 2012 has shown compliance with the NAQS Objective. It will therefore not be necessary to declare an AQMA at this location.

- Marsh Lane, Bootle: Diffusion tube monitoring at Marsh Lane in Bootle showed exceedence of the NAQS annual mean nitrogen dioxide Objective in 2011. However further diffusion tube monitoring in 2012 has shown compliance with the NAQS Objective. It will therefore not be necessary to declare an AQMA at this location.

1.39. Both locations will remain under close observation with the continuation of diffusion tube monitoring at both sites to assess future annual mean concentrations.

Production of the statutory Progress Report to Defra

1.40. The Annual Air Quality Progress Report 2014 has been completed and submitted to Defra for approval. The report has considered all new monitoring data and any changes that have taken place since the last report that may affect air quality.

Overall assessment of the impact of the Air Quality Action Plan

1.41. All of the site specific action plan measures have now been fully implemented, with the exception of measures affecting AQMA 2 and AQMA 5 that will be implemented as part of the highways work linked to port expansion and the South Road junction improvements at AQMA 4 that form part of the A565 Route Management Plan., Work is progressing on these measures.

1.42. A Detailed assessment completed in 2014 has concluded that the declaration for PM_{10} at AQMA 1 Crosby Road North could be revoked. A report has been sent to Cabinet Member Communities and Environment for consideration.

1.43. AQMA 2 Princess Way continues to show annual NO_2 concentrations above the AQO. Work has commenced on expansion at the Port of Liverpool and construction of the new deep water berth to accommodate post- Panamax vessels. Work is underway to look at the potential options to mitigate the increase in emissions due to the greater numbers of HGVs that will be on the A5036 as a result of port expansion. Compliance with the AQO at AQMA 2 in the short term is unlikely, as the site specific measures currently in place (Port booking system and ECO Stars fleet recognition scheme) are unlikely to have a great enough impact to enable compliance. It is recognised that a major highways intervention will be required accommodate the increased traffic due to port expansion. The Highways Agency has appointed Atkins to examine the business case for the various highways improvement options available. Sefton Council are also currently undertaking a programme of emissions estimation and air pollution modelling to assess the impacts of the expansion of the Port of Liverpool. The Council are undertaking the modelling and emissions estimation in house, with Bureau Veritas providing consultancy support in the form of advice and critical review of the proposed modelling programme and the project outputs and challenge to conclusions to ensure the report is sufficiently robust.

1.44. AQMA 3 Millers Bridge has shown continued compliance with the PM_{10} annual mean. The Hurry Call system at Millers Bridge is working well and compliance at the automatic monitoring location has been achieved since 2009, although it was borderline in 2010. At some locations diffusion tube monitoring with relevant exposure still shows exceedence of the AQO. Should compliance with the AQO continue at the automatic monitoring site and some diffusion tube sites, a Detailed Assessment will be carried out to determine whether the AQMA boundary should be amended.

1.45. AQMA 4 South Road continues to show annual NO_2 concentrations above the AQO. Work has still to commence on junction improvements at South Road / Haigh Road, however significant progress has been made on the preliminary phase of the scheme.

1.46. AQMA 5 Hawthorne Road, showed borderline compliance with the NO_2 annual mean AQO in 2013, having shown non-compliance in the previous three years. This AQMA will be affected in a similar way by port expansion as AQMA 2 with NO_2 likely to increase in the future due to the increase in port related traffic. The Council's ECO Stars fleet recognition programme will have only a small impact at present in reducing emissions. Similarly to AQMA 2, it is recognised that a major highways intervention will be required accommodate the increased traffic due to port expansion and it will be some time before a decision on which highways measures will be implemented is made.

Planning Applications

1.47. A number of new developments and planning applications with potential air quality implications have been considered. Two applications which were assessed had significant air quality implications associated with the proposals.

1.48. An air quality assessment carried out for a proposed residential development at the site of the former St Joan of Arc R. C. School, Peel Road, Bootle, showed exceedence of the NO_2 annual mean Objective at the properties nearest to Rimrose Road. The site layout was changed to ensure no properties were in the exceedence area.

1.49. An application for the installation of two biomass boilers in an existing garage building at Ince Blundell Hall Convalescent Home had air quality planning conditions attached to the approval notice that need to be discharged prior to the development commencing, to address concerns over adequate dispersion of emissions from the chimney stack. Detailed dispersion modelling has been carried out by the applicant and this has shown that although there would be no exceedence of the NAQS Objectives, there would be a significant rise in NO_2 and PM_{10} levels. As this is a sensitive receptor Public Health England have been asked to comment.

1.50. A Planning Policy Guidance note is being developed that will bring together existing Sefton guidance notes on air quality assessment, low emissions strategies and biomass. The note will be shared with other authorities in the City Region through the Merseyside Air quality Management Group and it is hoped it will be adopted across the City Region.

ECO Stars

1.51. An action in the Action Plans for AQMA 2, Princess Way, and AQMA 4, Hawthorne Road, was to establish an ECO Stars fleet recognition scheme centred on the A5036. ECO Stars is a nationally recognised scheme that provides free advice to fleet operators on how to improve their fleets, reducing costs to operators and emissions of air pollutants. Defra Air Quality Grant funding was secured to operate the scheme for 2 years. Seton's ECO Stars was initiated in August 2013 and officially launched in May 2014. It now has over 20 members, including Sefton's own fleet, which is ahead of the target set for this point in the scheme.

Dustscan Monitoring

1.52. A third round of dust monitoring using 'Dustscan' sticky pad monitors has been undertaken in Bootle in the area around the port.

Geomagnetic Analysis

1.53. Geomagnetics is a new technique that uses magnetic properties to identify materials. The Council is collaborating with Exeter University in a project to use geomagnetic analysis and scanning electron microscopy coupled with X ray diffraction to analyse dust samples taken from material deposited on streets and residents properties and from dust sampling equipment. It is hoped that using

these techniques to determine the composition of the dust will assist with source apportionment.

Defra Grant Applications

1.54. An application has been made to the 2014 / 15 round for funding for a feasibility study into establishing gas refuelling facilities in the City Region, Switching from diesel to gas is recognised as an important way of reducing emissions.

Port Expansion Study

1.55. The study to assess the impacts of port expansion on air quality in the Bootle area is underway and good progress has been made. A baseline model is nearing completion and will shortly be verified. No data has yet been received on predicted increases in traffic levels and changes in traffic patterns due to port expansion and no decision has yet been made with regard to any highways solutions to improve access and reduce congestion. When this data is available it will be included in the model for assessment. As well as the air pollution modelling study air quality officers are also working with the Low Emissions Partnership to assess changes in emissions due to port expansion and develop a package of possible emissions reductions measures.

Air Pollution and Health

1.56. Air quality officers continue to work closely with the Council's Public Health Department and Public Health England to develop an understanding of the impact of air pollution on health in Sefton. Defra will shortly be publishing a toolkit and guidance, including specific guidance for Directors of Public Health, on air pollution and health and consideration is being given to arranging a workshop in Sefton around the guidance.

Local Air Quality Management (LAQM) Reports

1.57. All LAQM reports have previously been placed on the air quality section of the Council's website. When the website was redesigned this was no longer possible. Air quality officers are working with Avarto, the Council's IT partner, to create a library section on the Breathingspace website were these reports can again be made available. It is hoped this work will be completed in the near future.

Conclusions

1.58. NAQS Air Quality Objectives are complied with across the majority of Sefton. Review and Assessment and air pollution monitoring have identified areas where NAQS Objectives will not be met and Action Plans are in place to work towards compliance in these areas.

1.59. Action plan measures have shown some success and levels of pollution have reduced. However there are also areas where there are major challenges to air quality. Port expansion and the associated increase in HGVs will lead to an increase in emissions that will affect air quality in the AQMAs and other areas around the A5036, A565 and A5058. A study is underway to determine the impacts

of these increases in emissions and suggest possible emissions reductions measures.

1.60. Air quality officers continue to work with the Environment Agency to reduce emissions from industrial sites across the Borough.

1.61. Innovative new methodologies, such as Geomagnetics, are being tested alongside established monitoring methods and the continuing development of the Merseyside Atmospheric Emissions Inventory to assist with source apportionment and help develop a better knowledge of the nature of air pollution in Sefton.

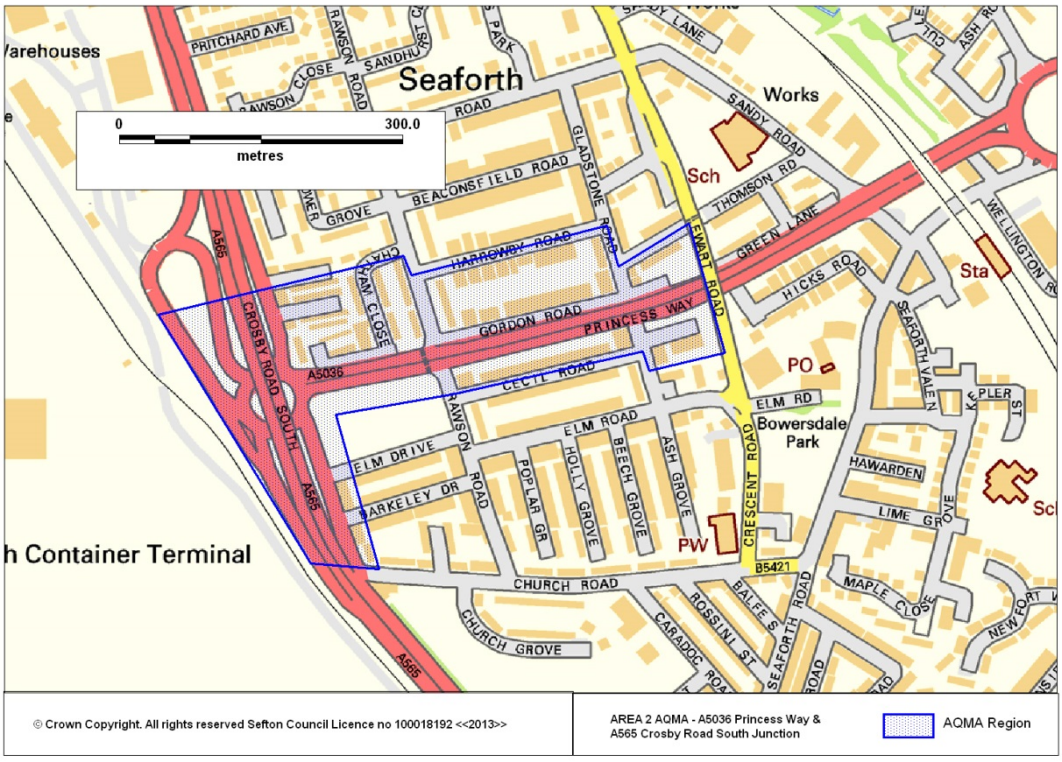
1.62. A better understanding of the impacts of air pollution on health is being gained by joint working with the Council's Public Health Department and Public health England.

Annex 1

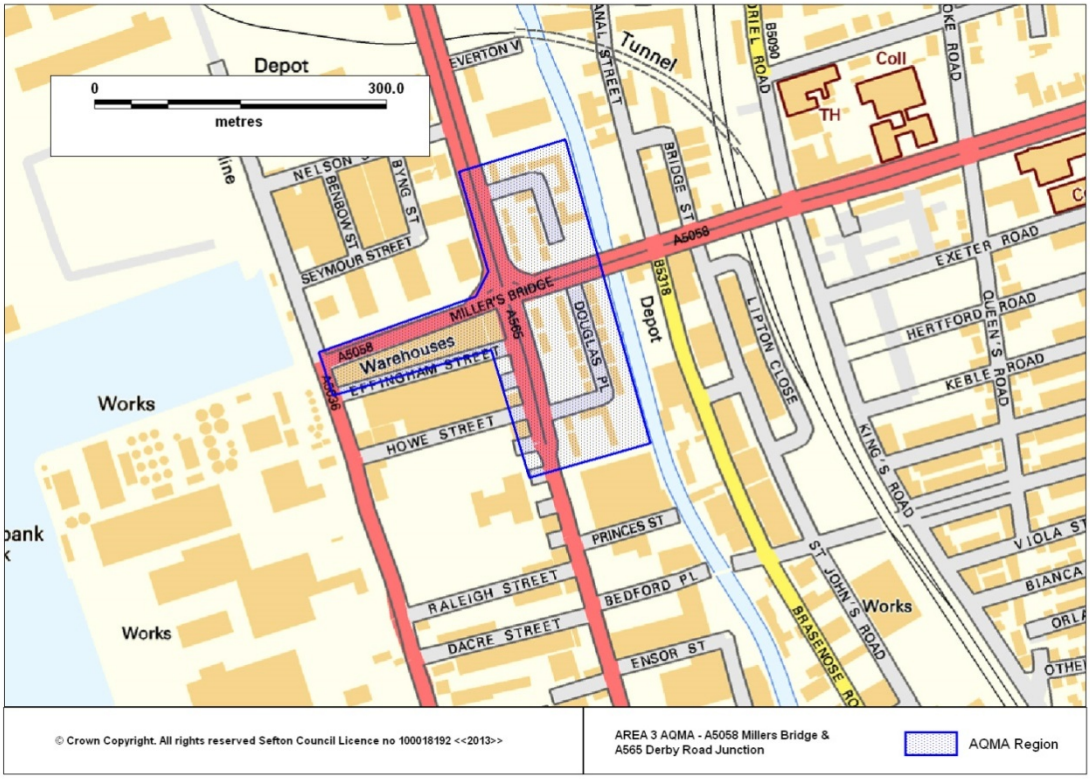
Air Quality Management Areas in Sefton

AQMA 1

AQMA 2



AQMA 3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BENBOW ST
BYNG ST
SEYMOUR STREET
MILLER'S BRIDGE
A565
DOUGLAS PL
Depot
B5318
LIPTON CLOSE
HERTFORD
QUEEN'S ROAD
KEBLE ROAD
KING'S ROAD
Warehouses
EPPINGHAM STREET
HOWE STREET
Works
PRINCES ST
RALEIGH STREET
BEDFORD PL
DACRE STREET
ENSOR ST
ST JOHN'S ROAD
Works
BRASENOSE RO
VIOLA ST
BIANCA
Works
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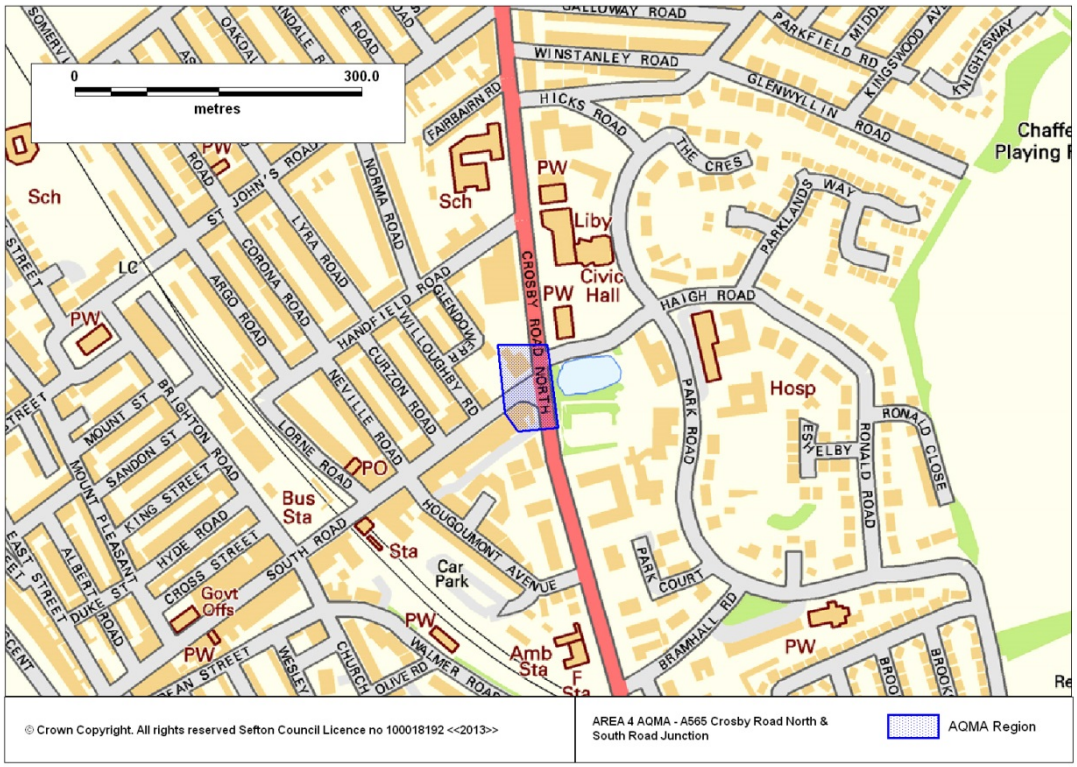
AREA 3 AQMA - A5058 Millers Bridge & A565 Derby Road Junction
AQMA Region

AQMA 4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KNIGHTSWAY
THE CRES
PARKLANDS WAY
Chaffe
Playing
Sch
Sch
PW
Liby
Civic Hall
PW
HAIGH ROAD
CROSBY ROAD NORTH
Hosp
PARK ROAD
ESHELBY
RONALD ROAD
RONALD CLOSE
PARK COURT
BRAMHALL RD
PW
PW
LC
PW
JOHN'S ROAD
NORMA ROAD
LYRA ROAD
CORONA ROAD
ARGO ROAD
HANDFIELD ROAD
GLENDOWER
WILLOUGHBY RD
CURZON ROAD
NEVILLE ROAD
LORNE ROAD
PO
Bus Sta
Sta
Car Park
HOUGOUMONT AVENUE
SOUTH ROAD
MOUNT ST
BRIGHTON ROAD
SANDON ST
KING STREET
HYDE ROAD
CROSS STREET
Govt Offs
MOUNT PLEASANT
ALBERT ST
DUKE ST
EAST STREET
PW
PW
Amb Sta
WALMER ROAD
OLIVE RD
CHURCH
WESLEY
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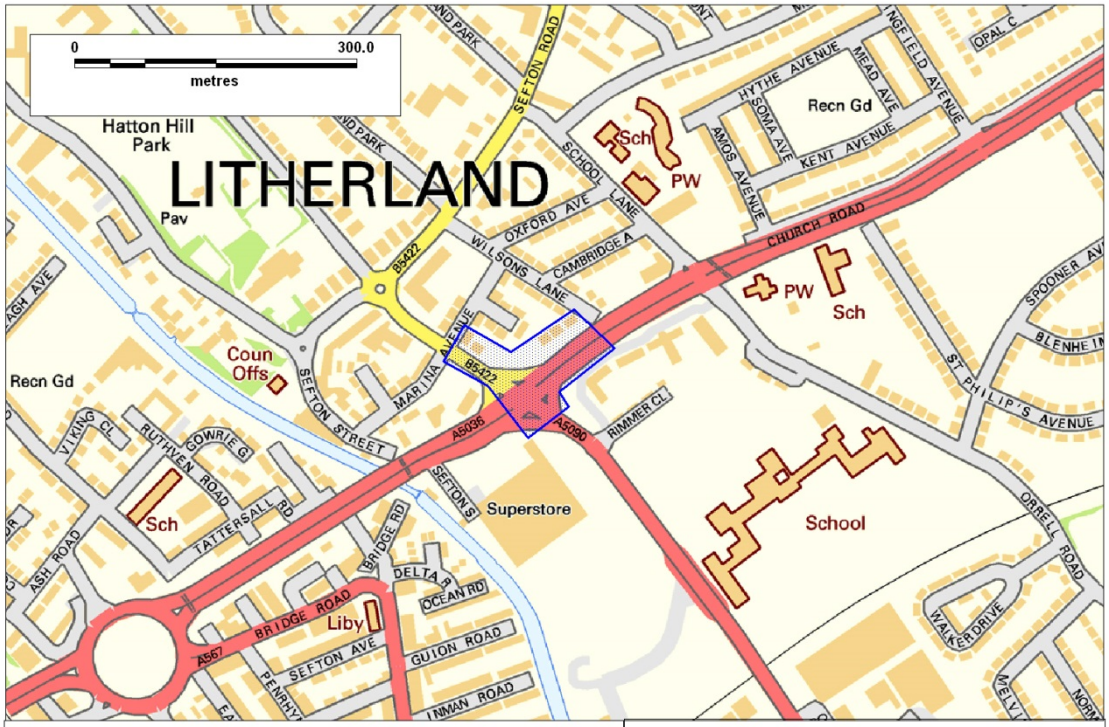
AREA 4 AQMA - A565 Crosby Road North & South Road Junction
AQMA Region

AQMA 5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Superstore
School
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SEFTON ROAD
SCHOOL LANE
OXFORD AVE
CAMBRIDGE A
WILSONS LANE
CHURCH ROAD
HYTHE AVENUE
MEAD AVE
KENT AVENUE
AMOS AVENUE
B5422
MARINA AVENUE
SEFTON STREET
A5036
RIMMER CL
SEFTON ST
BRIDGE RD
DELTA P
OCEAN RD
BRIDGE ROAD
A567
SEFTON AVE
GUION ROAD
INMAN ROAD
VIKING CL
RUTHVEN ROAD
GOWRIE G
TATTERSALL RD
ASH ROAD
ST PHILIP'S AVENUE
ORRELL ROAD
WALKER DRIVE
SPOONER AV
OPAL C
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AREA 5 AQMA - B5422 Hawthorne Road & A5036 Church Road Junction
AQMA Region

Annex 2

National Air Quality Strategy Objectives

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

Abbreviations

AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
Defra	Department for Environment, Food and Rural Affairs
DA	Detailed Assessment
DfT	Department for Transport
DoH	Department of Health
EA	Environment Agency
EU	European Union
FA	Further Assessment
HGV	Heavy Goods Vehicles
HPA	Health Protection Agency
LA	Local Authority
LAQM	Local Air Quality Management
LSTM	Liverpool School of Tropical Medicine
MAEI	Merseyside Atmospheric Emissions Inventory
NAQS	National Air Quality Strategy
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides (NO + NO_2)
$PM_{2.5}$	Particulate Matter less than 2.5μm aerodynamic diameter
PM_{10}	Particulate Matter less than 10μm aerodynamic diameter
$\mu g/m^3$	Micrograms (10^{-6}) of pollutant per cubic metre of air
USA	Updating and Screening Assessment