St Albans City & District Council

Annual Status Report 2020

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2020 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

July 2020

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Executive Summary: Air Quality in Our Area

Air Quality in St Albans City & District Council

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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

St Albans City and District Council is set within Hertfordshire to the north of Greater London. The District has an area of just over 60 square miles with its boundary lines extending from just south of the M25 to a northern point south of Luton. The District is mainly rural in nature but there are a number of urban areas, which include towns such as St Albans, Harpenden and Wheathamstead.

The main source of air pollution within St Albans City and District Council is from vehicle emissions. The main pollutants of concern being Nitrogen Dioxide (NO_2), and Particulate Matter (PM_{10} and $PM_{2.5}$). A number of main roads pass through the District in addition to smaller roads serving the main population centres. The M25 runs east to west through the southern area of the District. The M1 runs north to south up through the western area of the District and the 414 (North Orbital Road) provides an interlink between the M25 and M1.

The road network that serves the main population areas within the District, although smaller in size and in terms of traffic flow to the main roads, pass close to residential areas. The road network experiences more urban based driving conditions such as congestion, causing constant acceleration and deceleration. In addition, the siting of buildings close to these roads can entrap pollutants in urban canyon environments that lessen the effects of natural dispersal. This is apparent to the conditions experienced in St Albans town centre.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

There are three designated Air Quality Management Areas (AQMAs 1, 2 & 7) currently in force within the District, details can be found here: https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=254. The AQMAs have been declared due to exceedances of the NO_2 annual mean AQS objective. All AQMA boundaries are either close to, or have busy roads within them, recognising the influence vehicle emissions have upon air quality.

Details of the AQMAs are provided in Table 2.1 and boundary maps are presented in Appendix D: Maps of Monitoring Locations and AQMAs.

An Air Quality Action Plan (AQAP) was completed in 2003 and progress on the existing measures was last updated in the 2019 ASR. The most recent update of the AQAP measures is included within this report, see Table 2.2. Within the AQAP, measures are outlined to be completed in order to achieve the annual mean objective for NO_2 thus improving air quality within the AQMAs and therefore the District as a whole. The AQAP is updated as measures are progressed and there are a number of projects that are ongoing that will provide a steer for the updated measures included. The Council wish to work towards commencing the process to update the current 2003 AQAP as it is now over 17 years old.

Monitoring of NO_2 is completed within St Albans using a network of passive diffusion tubes. There are currently 43 diffusion tubes within the network. No changes to the network took place during 2019, following the Council's extensive 2018 diffusion tube regime review. In July 2018**,** 11 diffusion tubes were removed and 24 tubes were either introduced or relocated to sites near to their original locations or across St Albans and Frogmore, to allow for more relevant exposure and enhanced AQMA monitoring.

Before distance correction was applied, the bias adjusted results from the 2019 monitoring period indicate that the annual mean Air Quality Objective (AQO) for NO_2 (40µg/m^3) was exceeded at 7 locations SA136, SA137, SA138, SA143, SA148, SA157 and SA160. In addition, 3 sites not already at a location of relevant exposure reported NO_2 annual mean concentrations within 10% of the AQO, prior to distance correction; SA134, SA144 and SA161. Monitoring sites SA138, SA143, SA160 and SA161 are located within AQMA 1. Monitoring site SA147, which was not located at relevant exposure, outside of AQMA 1, also reported a concentration within 10% of the AQS of 39.7µg/m^3. As this location exceeds the sufficient distance required to relevant exposure for distance correction, where the nearest receptor is more than 50m from

the kerb, distance correction cannot accurately take place. In line with TG(16)[4] SA147 was therefore not distance corrected.

Of both the exceeding and within 10% of the AQS objective locations outside of AQMAs discussed (see Table 1.1 below), these sites are located in and around St. Albans centre along the A1057 and A1081.

Table 1.1 – Exceedances or close to exceedance NO_2 monitoring locations outside of AQMAs.

Diffusion Tube (Outside of AQMAs)	2019 NO_2 Concentration Monitored at Site (µg/m^3)	Distance to Kerb (m)	Nearest Relevant Receptor to monitoring location (m)	2019 Distance Corrected Concentration (µg/m^3)
SA134	36.4	2.2	5.0	30.6
SA136	**45.6**	1.1	34.3	25.5
SA137	**41.8**	1.6	4.3	34.7
SA144	38.2	1.2	9.3	28.8
SA147	39.7	15.6	47.5	-*
SA148	**49.0**	0.7	3.1	39.0
SA157	**40.8**	0.5	1.3	35.7

**SA147 was not distance corrected as the nearest relevant receptor was in excess of 50m distance from the kerb.*

The NO_2 fall-off with distance calculator was used to estimate the NO_2 concentration at relevant exposure for the diffusion tube locations that were exceeding or were within 10% of the AQO; details are presented in Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

Following distance correction, all sites fell below the annual mean NO_2 objective in 2019 apart from SA160, which is located within AQMA 1, and reported an annual mean NO_2 concentration of 48.4µg/m^3. All remaining sites not already located at relevant exposure were below 10% of the AQO following distance correction, with the exception

[4] laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf

of SA143 (39.6µg/m^3) and SA148 (39µg/m^3). SA147 was not eligible for distance correction and remained within 10% of the AQS, also.

The closest receptors to sites SA136, SA137, SA138, SA143 and SA148 are located on the second floor of building façades for each location. The NO_2 fall-off with distance calculator does not account for height; therefore, the 2019 concentrations represent the worst-case concentration, as concentrations will further decrease with height. All sites that have been distance corrected are provided in Table C.3.

As 24 sites were new or relocated in July 2018, the 2019 data set was the first full year of reporting at these locations. As a result, trend analysis in 2019 was noted as required in order to determine if concentrations are likely to exceed the AQO. All sites found to exceed the AQO reported a downward trend when compared to their 2018 concentrations, where 2018 data was captured (SA137 did not have sufficient data capture in 2018 and therefore was not reported).

Annual mean concentrations were below 60µg/m^3 at all monitoring locations during 2018 therefore, as per Defra guidance, it is unlikely that the NO_2 1-hour objective of 200µg/m^3 was exceeded at any location.

NO_2 monitoring data for St Albans is presented from 2015 to 2019 (where available) in Table A.2. 27 of the 2019 monitoring sites present a downward trend of annual mean NO_2 concentrations in comparison to 2018 (6 sites within AQMAs). 11 sites reported a slight increase in 2019 (between 0.2 – 4.5µg/m^3), with 1 increased concentration recorded within AQMA 2 (SA142, 0.2µg/m^3 increase in 2019), and 1 site remaining consistent with 2018 (SA107). Relocated sites SA137, SA150 & SA161 did not report the minimum 3 month data capture required for annualisation in 2018, therefore a trend could not be observed in 2019. Monitoring site SA141 reported 1 month of data in 2019, therefore was not included in the Council's 2019 annual mean concentrations. Site SA147 reported a 66.7% data capture in 2019 and was therefore annualisation for SA147 is presented in Table C.2.

The observed reduction in concentration at 63% of the St. Albans monitoring network from 2015 to 2019 is indicative of the Council's ongoing commitment and progress to improve local air quality, with the aim to revoke the declared AQMAs. The slight increases observed may be a result of the relocated or new sites requiring annualisation in 2018, therefore the 2018 data may not be strictly comparable to the more substantial data capture of 2019. The additional monitoring however, both within

and outside of the existing AQMAs introduced in 2018 following recommendations within the previous appraisal, further supports the Council's focus in identifying any additional improvement areas or supporting the existing and any future downward concentration trends in support of future amendment or revocation of the AQMAs 1, 2 & 7.

Actions to Improve Air Quality

The monitoring network within St Albans City and District is in place to constantly monitor NO_2 throughout the year to identify any increases at identified locations throughout the district. Due to the current AQMAs being designated as a result of elevated NO_2 emissions, the monitoring network is an essential part of Local Air Quality Management (LAQM) that aids decision making on air quality issues and identifies where actions are required.

Efforts have been focussed on monitoring NO_2 concentrations in St Albans City and District due to the health effects and growing national concern surrounding this pollutant, illustrated in the Government's Air Quality Plan for NO_2. It is noted that PM_{10} concentrations haven't been ignored, as typically both NO_2 and PM_{10} share the same origin, therefore actions which target NO_2 levels simultaneously impact PM_{10} levels. Nonetheless, the Council will continue to act upon guidance issued by Defra, and will undertake supplementary monitoring if required. In 2019, the highest PM_{10} concentration within St Alban's City and District area, obtained from the Defra estimated background maps (updated 2017), was 18.4µg/m^3, which is well below the AQS objective of 40µg/m^3.

Real-time and historic air quality data across Hertfordshire and Bedfordshire can be viewed on the Herts and Beds Air Quality website; *www.airqualityhertsbeds.co.uk*. This allows the public to view current air quality concentrations, historical data and previously completed LAQM reports. Although there are no real-time automatic monitoring stations within St Albans City, the raw diffusion tube concentrations for St Albans are available for download from the St Albans City and District Council website - *https://www.stalbans.gov.uk/environmental-services*.

Due to the main source of air pollutant emissions arising from vehicular sources within the District, alternative modes of transport to private internal combustion engine vehicles continue to be promoted. The Council's draft Sustainability Strategy and Net

Zero 2030 Action Plan[5] is currently in development and promotes the development of a more sustainable transport system, while aiming to also reduce congestion and promote alternative fuel use. Examples of the Council's sustainable transport goals and their progress are as follows:

- Work in partnership with regional and national government and partners to reduce congestion, improve air quality and support the development of a sustainable transport system across the District;
- Cycling – A District wide cycling map continues to be available to help plan routes across the District and a revised cycling map was launched in spring 2019. SADC Green Travel Plan set out a range of actions to reduce emissions from staff travel, including a staff cycle scheme that was relaunched in spring 2019. The Green Ring route project encircles the city centre; it is a continuous 9km cycling and walking route that will help reduce congestion, pollution and provides a valuable and easy way to exercise. Additional strategies include the provision of secure cycle parking racks, upgrading and constructing new cycle paths and installation of Trixie mirrors at key junctions;
- Public Transport – A well connected bus route that serves St Albans city centre aims to reduce the use of private vehicles, there are services from North London, Welwyn Garden City, Hatfield, Luton and Watford in addition to routes to city suburbs and outlying shopping areas;
- The Idling Action St Albans campaign has been running since 2017 to raise awareness of the issue and urge car, van, lorry, bus and taxi drivers to switch off their engine when parked or stationary for more than a minute. It includes social media activities, letters, school engagement activities, market stalls, Idling Action St Albans events and information leaflets issued with resident car parking permits. In 2019, St Albans installed street signage to encourage drivers outside schools to turn off their engines when stationary and the ongoing work in reference to the control of idling vehicles has continued into 2020 with the Council's District wide anti-idling campaign raising awareness at schools and for members of the public.

[5] https://www.stalbans.gov.uk/sustainability-strategy-and-net-zero-action-plan

- Car Sharing & Eco-Driving Tips – A number of car sharing websites are promoted on stalbans.gov.uk, such as *http://www.stalbans.gov.uk/environmentandwaste/greenerliving/greentravel/carsharing.aspx*; helping drivers link up with others who are willing to car share, reducing the number of cars helps alleviate problems such as congestion as well as reducing NO_2 and PM_{10} emissions. Eco-Driving Tips are also provided on the stalbans.gov.uk page, https://www.stalbans.gov.uk/environmentandwaste/greenerliving/greentravel/carsharing.aspx to not only reduce pollutant emissions but also to reduce fuel consumption and save the driver money; and
- Electric Vehicles – There are a growing number of electrical vehicle (EV) charging points within the District to promote the use of both pure EVs and plug-in hybrid EVs. Details of these points in addition to available grants and subsidies available for EVs are available at; https://www.stalbans.gov.uk/transport-and-streets/electricvehicles.aspx
- The Council have worked under commission of the Intalink Enhanced Partnership[6] in preparation of a bid to the Government's All-Electric Bus Town funding, the outcome of this will be discussed within next year's ASR.

Conclusions and Priorities

St Albans City and District is predominately rural in nature and the main source of air pollution within the District is from road traffic emissions. The city centre has a number of busy streets where canyon effects of pollution are apparent due to buildings being in close proximity to the road. In addition there are a number of main roads with a high volume of traffic that pass through the District including the M1, the M25 and the A414. AQMAS 2 & 7 are located close to the M25 and the M1, and AQMA 1 is located within a congested central road within St Albans that is representative of street canyon conditions.

The priorities for the coming year include continuing to work with the Air Quality Action Plan (AQAP) measures with the goal to commence work to draft an updated AQAP from the current 2003 document. In the meantime, the Council will continue implementing the actions that are ready for completion and working with separate

[6] https://www.hertfordshire.gov.uk/media-library/documents/about-the-council/consultations/intalink-enhanced-partnership-plan-and-scheme-v4.5.pdf

departments within St Albans City and District Council on measures benefitting air quality within the Climate Change Action Plan 2016, the council Green Travel Plan and the Hertfordshire County Council Local Transport Plan 2011 – 2031. Progress with the Intalink Enhanced Partnership[7] in preparation of a bid to the Government's All-Electric Bus Town funding will be an additional focus for the Council together with continued development of the draft Sustainability Strategy and Net Zero 2030 Action Plan[8] for St Albans.

The work already undertaken in relation to the reduction of vehicle idling and exploring new options for promotion and enforcement of anti-idling will continue.

Following the application of bias adjustment to the raw data, 7 exceedances of the AQS annual mean objective were identified for NO_2. Of these sites, 3 were located within an AQMA (SA138, SA143 & SA160 – all AQMA 1) and 4 sites situated outside the AQMA boundary, along the A1081 and A1057. In addition, sites SA134, SA144, SA147 and SA161 were found to be within 10% of reaching the exceedance threshold following bias adjustment, of these sites SA161 was the only location found to be within an AQMA (AQMA 1).

Following distance correction, there was only 1 exceedance remaining in 2019 for St Albans (SA160, 48.4µg/m^3), located within AQMA 1.

All sites within an AQMA, except SA142 situated within AQMA 2, reported a downward concentration trend in 2019 when compared to 2018. SA142 reported a slight increase of 0.2µg/m^3.

Outside the AQMAs, 21 sites reported a decrease in concentration and 10 sites reported an increase in concentration when compared to 2018 values. There was also 1 site that remained consistent.

Following the continued downward trends since 2017, the Council aims to give consideration of the possible revocations of AQMAs 2 & 7 over the coming year.

Local Engagement and How to get Involved

At an individual level there are a number of ways the public are able to get involved and help improve air quality on a local level. The main source of air pollution within the

[7] https://www.hertfordshire.gov.uk/media-library/documents/about-the-council/consultations/intalink-enhanced-partnership-plan-and-scheme-v4.5.pdf
[8] https://www.stalbans.gov.uk/sustainability-strategy-and-net-zero-action-plan

District is vehicle emissions, changing the method of transport used can help reduce the amount of pollutant emissions released from vehicle sources. This can be due from both the reduction in the number of vehicles being used and through the type of vehicles being used.

Changes in transport use such as the following help in reducing emissions of NO_2, PM_{10} and $PM_{2.5}$ from vehicle sources:

- Use public transport where available – This reduces the number of private vehicles in operation reducing pollutant concentration through the number of vehicles and reducing congestion;
- Walk or cycle if your journey allows – Choosing to walk or cycle for your journey reduces the number of vehicles on the road. There is the added benefit of keeping fit and healthy. In addition many of the cycle routes are off-road meaning you are not in close proximity to emissions from road traffic sources;
- Reduce time of idling vehicles – If using a car for a journey avoid idling for any long periods of time. When it is apparent there will be no movement required then switch the engine off to reduce the amount of pollutant emissions released;
- Car/lift sharing – Where a number of individuals are making similar journeys, such as travelling to work or to school, car sharing reduces the number of vehicles on the road and therefore the amount of emissions being released. This can be promoted via travel plans through the workplace and within schools; and
- Alternative fuel / more efficient vehicles – Choosing a vehicle that meets the specific needs of the owner, fully electric, hybrid fuel and more fuel efficient cars are available and all have different levels of benefits by reducing the amount of emissions being released.

Real time and historical air quality data for Hertfordshire and Bedfordshire is presented at *www.airqualityhertsbeds.co.uk*, an index related legend is provided so users can follow the current air quality. Also there are a number of links providing further information including the legislation of air quality within the UK, diffusion tube data, previous LAQM reports and graphical representations of data across the region. Up to date diffusion tube data and news relating to air quality within the District can be found

on the St Albans City and District website at https://www.stalbans.gov.uk/environmental-services.

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1 Local Air Quality Management

This report provides an overview of air quality in St Albans City and District Council during 2018. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by St Albans City and District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E: Summary of Air Quality Objectives in England

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of the three AQMAs declared by St Albans City and District (AQMAS 1, 2 & 7) can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at *https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=254.* Alternatively, see Appendix D: Maps of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMAs.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
St Albans AQMA No. 1	Declared 02/11/2004, Amended 08/07/2009	NO_2 Annual Mean	St Albans	The area comprising of odd numbers 1-7 London Road, 1-11c Holywell Hill and even numbers 2-38 London Road, St Albans.	NO	61	µg/m^3	48	µg/m^3	Air Quality Action Plan for St Albans City and District Council	Dec-03	http://aqma.defra.gov.uk/action-plans/StADC%20AQAP%202003.pdf
		PM_{10} 24 Hour Mean				-		-				
St Albans AQMA No. 2	Declared 02/11/2004	NO_2 Annual Mean	St Albans	The area comprising of Beechtree Cottages, Hemel Hempstead Road, St Albans (adjacent to junction of M1 (J7) and M10).	YES	52	µg/m^3	30	µg/m^3	Air Quality Action Plan for St Albans City and District Council	Dec-03	http://aqma.defra.gov.uk/action-plans/StADC%20AQAP%202003.pdf
St Albans AQMA No. 7	Declared 21/09/2004	NO_2 Annual Mean	St Albans	An area encompassing a number of domestic properties in Frogmore on Radlett Road and Colney Street in the vicinity of the M25.	YES	44	µg/m^3	32	µg/m^3	Air Quality Action Plan for St Albans City and District Council	Dec-03	http://aqma.defra.gov.uk/action-plans/StADC%20AQAP%202003.pdf
		PM_{10} 24 Hour Mean				-		-				

☒ **St Albans City & District Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

2.2 Progress and Impact of Measures to address Air Quality in St Albans City & District Council

Defra's appraisal of last year's ASR supported the Council's review of the previous NO_2 monitoring regime and recommended that this should be maintained and continually reviewed in order to identify any potential exceedance sites at relevant exposure. It was recommended that a number of the sites were renamed to maintain clarity, this has been actioned in 2019 with 11 previously duplicate sites renamed to indicate single tube sites (e.g. relocated site SA107b renamed SA107). The appraisal also recommended that the AQMAs 2 and 7 are considered for revocation following further analysis of NO_2 concentration data, with trend graphs per AQMA recommended to be included within the 2020 ASR to support. The appraisal further notes that the Council has not published an updated AQAP since 2003, although measures are updated in the 2019 ASR. The Council have indicated their objective to commence works towards a draft AQAP update of the existing 2003 document.

St Albans City and District Council has taken forward a number of direct measures during the current reporting year of 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in their respective Action Plans; key measures to be completed over the course of the next reporting year are:

- Continuation of the Idling Action St Alban's campaign that commenced in 2017 and has seen success in raising awareness of the issue since its implementation;
- Continue to review and enhance monitoring locations around St. Albans following the July 2018 network diffusion tube overhaul;
- Working with regional and national government and partners to reduce congestion, improve air quality and support the development of a sustainable transport system across the District;
- Progress with the Intalink Enhanced Partnership[9] in preparation of a bid to the Government's All-Electric Bus Town funding; and

[9] https://www.hertfordshire.gov.uk/media-library/documents/about-the-council/consultations/intalink-enhanced-partnership-plan-and-scheme-v4.5.pdf

- Continued development of the Draft Sustainability Strategy and Net Zero 2030 Action Plan[10] for St Albans.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, St Albans City and District Council anticipates that further additional measures will be required in subsequent years to achieve compliance and enable the revocation of all AQMAs in the district.

There were several approved planning applications in 2019 that may impact on several of the existing monitoring sites, however many are consisting of extensions to existing buildings, development of single dwellings and an instance of road infrastructure works in St Albans. These activities are unlikely to produce construction dust that would significantly impact next year's monitoring data. The 2018 approved development and 2019 works of a rear extension and creation of five floors of office space at The Maltings, located 100m from AQMA No. 1 boundary, does not appear to have had a noticeable impact on the monitoring results in 2019 with many monitoring results showing a downward trend within AQMA 1.

[10] https://www.stalbans.gov.uk/sustainability-strategy-and-net-zero-action-plan

Table 2.2 – Progress on Measures to Improve Air Quality

Measure Success Rating: Most Likely to Achieve Reasonable to Achieve Challenging to Achieve

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Investigate the status of on-street parking in the AQMA and determine if parking is contributing to traffic congestion at each junction. Investigate the provision of on-street loading facilities and co-ordinated timings of deliveries.	Traffic Management	Other	2017/18	SADC/HCC	SADC/HCC	Parking restrictions in place	See note 1 at end of table	The Parking Team have been consulting on proposals to amend parking restrictions to improve traffic flows. Work on Belmont hill has been completed with a new residents parking scheme introduced in September 2019. Loading restrictions are in place during peak traffic hours near the shops on Holywell Hill. Further consultation to remove parking bays on Holywell Hill and change single yellow to double yellow lines, to assist with traffic movement is to be considered further. This has not been fully agreed and is subject to consultation. Likely timescale for informal consultation/s are financial year 2021/22.	2019/21	
2	SADC will assert comprehensive control over Part B/Part A2 processes for smaller scale industries under the environmental permitting (England & Wales) regulations 2007.	Environmental Permits	Other	NA	SADC	SADC	Number of inspection	See note 1 at end of table	All processes are risk rated annually and inspection frequency determined based upon risk. Programmed annual inspections to April 2019, are currently up to date. Processes operating without a permit are identified and appropriate enforcement action taken.	Continuous	
3	SADC will investigate complaints about nuisance (domestic and industrial emissions).	Public Information	Other	NA	SADC	SADC	Time taken to resolve complaints	See note 1 at end of table	Complaints are investigated as and when received.	Continuous	
4	Continue to monitor air quality within the district and as necessary review the suitability of monitoring locations in line with DEFRA guidance TG16	Policy Guidance and Development Control	Other	2018	SADC	SADC	Data capture	N/A	Details of diffusion tube monitoring is recorded on https://www.stalbans.gov.uk/environmental-services	Continuous	

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	To increase bus patronage and encourage modal shift from the car to public transport.	Transport Planning and Infrastructure	Bus route improvements	2018	SADC/HCC	SADC/HCC	Service numbers	See note 1 at end of table	St Albans Bus Users Forum provides a platform for bus users, bus service operators and HCC Passenger Transport Team to discuss services and hear about service improvements. HCC and bus operators, alongside the 10 District and Borough Councils who have signed a Memorandum of Understanding, have formed the Intalink Enhanced Partnership (April 2020) using powers enabled by the Bus Services Act 2017. This partnership now provides a forum for closer working between HCC, LA's and Bus Operators. There are 5 key objectives which are aimed at improving bus transport. The initial focus for HCC will be to make changes to the road network to improve bus punctuality by prioritising bus journeys over other traffic in congested areas. Feasibility studies to identify localised improvements have been completed by HCC's consultant WSP. Detailed design of phase 1 schemes is underway, with works on the ground expected to be completed by March 2021.	Ongoing - Bus Users Forum meets twice yearly.	Bus Services operated on a commercial basis
6	To investigate the feasibility of a Clean Air Zone	Promoting Low Emission Transport	Low Emission Zone (LEZ)	2018	SADC / HCC	TBC	Vehicle counts	N/A	To investigate suitability and eligibility for funding for Clean Air Zones via DEFRA		Application for DEFRA funding was unsuccessful. Subject to satisfying eligibility criteria, we may re-apply, should funding streams become available. We are also exploring other measures, which in addition to other AQAP actions and downward trend in air pollution levels, may bring about sufficient reduction to revoke AQMA 1 (Peahen Junction).
7	Pilot the Station Travel Plan	Promoting Travel Alternatives	Other	2010	HCC	SADC / HCC	Usage figures	See note 1 at end of table	St Albans City Station Travel Plan – the travel plan documents are very limited in scope and it will require a Station Travel Plan working group to be established to take ownership of the plan and move towards achieving the		

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
									objectives. It has been decided to wait until the station development is completed before setting up the working group. Val Male HCC Rail Team.		
8	Community Rail Partnership (CRP) The Abbey Line	Promoting Travel Alternatives	Promote use of rail and inland waterways	2010	SADC/HCC	SADC/HCC	Usage figures	See note 1 at end of table	The Abbey Line CRP works closely with HCC, SACD, West Midlands Trains and other partners and stakeholders to promote the line as a sustainable transport option for journeys between St Albans and Watford. The CRP has engaged with the community to deliver projects to raise the profile of the line and improve facilities at stations on the line. A travel plan has been developed for the line which looks at options to improve the “last mile” access to the stations.		
9	Investigate possibility of road signs to discourage through traffic.	Traffic Management	Other	2017/18	HCC	HCC	Traffic counts	See note 1 at end of table	Variable Message Signs to be activated during city centre events to inform motorists of delays and parking options.	Ongoing	Messages restricted by DfT Traffic Signs Regulations & General Direction
10	Investigate introduction of additional electric charging at council car parks within the District .	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2019/20	SADC	SADC	Usage figures	See note 1 at end of table	Car Parking back in house (Oct 19) We are currently looking at options to install EV charging points in all our Car Parks. Feasibility study/EV strategy work underway.	Continuous	
11	Consider requiring developers to install electric charging points in new developments under S106 agreements.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018/19	SADC	Local developers	Installation	See note 1 at end of table	We provided a response to the SLP consultation. Further discussions with the Planning Department regarding formulation of St Albans AQ Planning Policy Guidance to provide consistency of advice to developers across Herts & Beds are continuing. 10 Electric Vehicle Charge Points to be installed in 2021 by the Project Team in the new Harpenden Sports and Leisure Centre.	2020/21	
12	Consider an increase in car parking charges with the view to making bus travel a more attractive alternative.	Promoting Travel Alternatives	Other	2018/19	SADC	SADC	Car park volume figures	See note 1 at end of table	Annual review undertaken. Potential price increase in car park charging is under negotiation.	Continuous	

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
13	Continue the Trees Against Pollution project and explore green wall/hedging opportunities	Transport Planning and Infrastructure	Other	2017/18	SADC	SADC	Number of trees planted: 600,000	See note 1 at end of table	361 trees were planted by SADC and 450 trees planted through tree wardens and London Colney Parish Council. The Council submitted an Urban Tree Challenge Fund application to the Forestry Commission on 1 May 2020 for grant aided tree planting. we await the outcome.	Continuous	
14	Cycling and walking Strategy	Promoting Travel Alternatives	Promotion of cycling	2016/17	SADC / HCC	SADC / HCC	Usage figures	See note 1 at end of table	Cycling (2008) and Walking (2009) strategies in place. SADC Green Travel Plan sets out a range of actions to reduce emissions from staff travel. Staff cycle scheme relaunched in Spring 2019. Improvements and investments in cycling and walking infrastructure include; • Implementation of the St Albans Green Ring route project. • Revised St Albans Cycling map launched Spring 2019. • Construction of cycle and walking paths in Verulamium Park. • Provision of secure cycle parking racks within the city centre and at rail stations. • Upgrading and resurfacing of the Alban Way Leisure path. • Installation of Trixie mirrors at key junctions in the city centre • Installation of new section of shared footpath/cyclepath London Road, St Albans. • Early cycle release traffic signals at Hatfield Road, St Albans • Improved access to Nicky Line in Harpenden. • New link from Alban Way to St Albans City Rail station. • Provision of way finding monoliths within the city centre. A414 Corridor Strategy identifies package of walking/cycling improvements	Continuous	

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
15	Taxi emissions.	Promoting Low Emission Transport	Taxi Licensing conditions	2017/18	SADC	SADC	Certificate of Compliance data	See note 1 at end of table	Emissions controlled through Certificate of Compliance at garage check. Vehicle Licence Conditions amended to include the following; Any taxi driver can licence a fully electric vehicle as long as it complies with the hackney carriage and private hire vehicle licence conditions. This type of vehicle attracts a discount of £60. A new taxi licensing policy will be introduced this year (2020) which will include an emission standard for engines in taxis and private hire vehicles.	Continuous	
16	Campaign to raise awareness of air quality and the impact on air quality, of idling engines (when parked)	Public Information	Via the Internet	2016/17	SADC	SADC	Media coverage	See note 1 at end of table	The Idling Action St Albans campaign has been running since 2017 to raise awareness of the issue.of engine idling when parked or stationary for more than a minute. It includes social media activities, letters, school engagement activities, market stalls, Idling Action St Albans events and information leaflets issued with resident car parking permits. The possibility of installing street signage to encourage drivers outside schools to turn off their engines when stationary is being explored. More work is expected to take place in 2021 when there are more resources.	2021	
17	Bus fleet/ lower pollutant emissions	Promoting Low Emission Transport	Other	2019	SADC/HCC	DfT's All Electric Bus Town Fund	Number of link improvements	See note 1 at end of table	The A414 Corridor Strategy was consulted on in 2019, and supports the development of an east west mass rapid transit system along the A414 corridor to provide an alternative for private car journeys. Work on the delivery of cross-county Mass Rapid Transit is ongoing, with a recent MRT Draft Parameters report produced by the consultants engaged in this work, AECOM, to identify the necessary ingredients to a successful system. A long list of routeing options has been	Ongoing	

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
									produced following consultation. It provides opportunities for improving links by public transport from St Albans to Watford, Hemel and towards Welwyn, Hatfield and Hertford and providing alternatives to individual car use. A bid for the DfT's All Electric Bus Town Fund (https://www.gov.uk/government/publications/apply-for-the-all-electric-bus-town-scheme) for St Albans has been submitted. If successful, this could lead to the conversion of buses in St Albans to zero-emission using DfT subsidies towards purchase of new vehicles and implementation of the charging network.		
18	Freight Management Plan	Freight and Delivery Management	Other	2014/17	SADC	TBC	Numbers of vehicles and routes taken	TBC	Project is on hold pending possibility of feeding into larger scale project (feasibility of CAZ) subject to funding stream being available.	Ongoing	

NOTE 1 - It is not possible to specifically quantify the impact of small scale projects that the Council are working on with partners. However individual & cumulative AQ measures which reduce emissions are beneficial to improving pollutant levels both AQMA's and the District generally.

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or 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.

St Albans City and District Council are working to reduce emissions of air pollutants across the District, many of the measures used to reduce emissions of NO_2 also impact the emissions of PM_{10} and $PM_{2.5}$ due to the pollutants originating from the same sources. The main source of local air pollution concentrations within St Albans is from vehicle emissions, both NO_2 and particulates are released from vehicular sources, therefore measures focussing on changing the number of vehicles on the roads, and the type of vehicles being used will help reduce emissions of both pollutants.

The Public Health Outcomes Framework indicator[11] for the fraction of deaths attributable to $PM_{2.5}$ in St Albans is 5.7% (current available report ref. 2018), which is slightly above the regional average of 5.5% and the national average of 5.2%.

There is currently no ongoing monitoring of $PM_{2.5}$ within the District, and no specific measures in place to address $PM_{2.5}$ concentrations, as the air quality across the District is considered good. Modelled concentrations of $PM_{2.5}$ in 2019 using the Defra 2017 Background Maps tool identify that grid reference x509500, y207500 contains the highest $PM_{2.5}$ concentration across the district at a predicted 11.5µg/m^3. This area is located 5.3km west of St Albans close to junction 8 of the A414 joining onto the M1.

[11] https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000006/ati/201/are/E07000240/iid/30101/age/230/sex/4/cid/4/page-options/car-do-0

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

There is currently no continuous monitoring undertaken by St Albans City and District Council.

3.1.2 Non-Automatic Monitoring Sites

St Albans City and District Council undertook non-automatic (passive) monitoring of NO_2 at 43 single tube locations during 2019, 8 of these tubes are located within an AQMA. The 2018 review of the Council's monitoring regime led to 16 new tube locations, including one that is located within an AQMA (SA160) and one that is within 12m of an AQMA boundary (SA148). Currently all other monitoring locations are outside of the existing AQMAs. Table A.1 in Appendix A: Monitoring Results provides details of all diffusion tube locations in 2019.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments, annualisation and distance correction, are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias[12] and distance correction[13]. Annualisation (where the data capture falls below 75%), was carried out at 1 diffusion tube location (SA147) in 2019. Monitoring location SA141 reported 1 month of data in 2019 therefore did not have sufficient data in order to complete annualisation. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B.

[12] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[13] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

Site SA141 reported 1 months' data during 2019, therefore due to the low data capture at this site, annualisation could not be carried out accurately. Monitoring location SA147 reported a data capture below 75% in 2019 (66.7%) therefore annualisation was applied and the annualisation methodology is presented in Table C.2. It was also noted that 4 tubes (SA133, SA141, SA144, SA160) located in the cente of St Albans were missing from the data capture in October 2019 due to the installation of some festive lights on the monitoring sites' lamposts, which had inadvertantly knocked them down, this however did not impact greatly on the individual sites' data capture.

Following the application of bias adjustment to the raw data, 7 exceedances of the AQS annual mean objective were identified for NO_2 at sites SA136, SA137, SA138, SA143, SA148, SA157 and SA160. Of these sites, 3 were located within an AQMA (SA138, SA143 and SA160 – all AQMA 1). Monitoring locations SA136, SA137 and SA148 were located along the A1081 that passes through St. Albans centre and SA157 was located along the A1057 to the north of both the town centre and AQMA 1.

Sites SA134, SA144, SA147 and SA161 were also found to be within 10% of the exceedance threshold following bias adjustment, of these sites SA161 was the only location found to be within an AQMA (AQMA 1).

The closest receptor to sites SA136, SA137, SA138, SA143 and SA148 are located on the second floor of the nearest building façade and, as the distance calculator does not account for height, the distance corrected concentrations at these locations should be therefore treated with caution as the results provided demonstrate a worst case concentration as it is anticipated that emissions would decline with height.

Following distance correction, there was only 1 exceedance reported in 2019 for St Albans, located within AQMA 1 (SA160, 48.4µg/m^3) and 2 of the distance corrected sites remained witin 10% of the AQO for 2019; SA143, within AQMA 1 - 39.6µg/m^3 and SA148, located approximately 25m outside of the AQMA 1 boundary – 39µg/m^3. All sites that have been distance corrected are provided in Table C.3.

Within last year's ASR, 24 sites were new or relocated in July 2018. Therefore, a full year of data was not available until the end of 2019. Trend analysis of the 2019 data is required in order to determine if concentrations are likely to exceed the AQO. Of the relocated/new sites; SA137, SA143, SA148, SA157 & SA160 each reported an exceedance of the AQO prior to distance correction in 2019, however reported below

the AQO following distance correction, apart from location SA160 within AQMA 1. All sites found to exceed the AQO reported a downward trend in comparison to 2018, where 2018 data was captured (SA137 did not have sufficient data capture in 2018).

Annual mean concentrations were below 60µg/m^3 at all monitoring locations during 2019, therefore as per Defra guidance it is unlikely that the NO_2 1-hour objective of 200µg/m^3 was exceeded at any location.

NO_2 monitoring data for St Albans is presented from 2015 to 2019 (where available) in Table A.2. Of all 43 2019 monitoring sites; 27 present a downward trend of annual mean NO_2 concentrations in comparison to 2018, 11 sites reported a slight increase in 2019 (between 0.2 – 5.4µg/m^3), with 1 site remaining consistent with 2018. Relocated sites SA137, SA150 & SA161 did not report the minimum 3 month data capture required for annualisation in 2018, therefore a trend could not be then observed in this year's report for these sites following a sufficient data capture for 2019. Monitoring site SA141 reported 1 month of data in 2019, therefore was not included in the Council's 2019 annual mean concentrations and SA147 was annualised.

Of the monitoring locations within all three AQMAs, downward trends were observed in comparison to 2018, apart from a slight increase (0.2 µg/m^3) at SA142 within AQMA 2. The monitoring data trends available from 2017 for AQMA 2 continues to be below the AQO. With added consideration given to a historic monitoring site, SA124 in AQMA 7, the trends show that AQMA 7 has reported concentrations less than 10% since 2017. This trending data supports the revocation of both AQMAs 2 & 7. AQMA 1 continues to present concentrations within or above the AQO, with 7 locations close to the boundary reporting similar concentrations. This suggests that AQMA 1 may wish to be considered by the Council for boundary amendment.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SA101	Museum Hatfield Road St Albans	roadside	515105	207476	NO_2	N	9.34	1.64	NO	2.7
SA107	Redbourn JMI Long Cutt Redbourn	background	510138	212525	NO_2	N	11.25	2.2	NO	2.6
SA109	High Street Harpenden	kerbside	513427	214308	NO_2	N	6.25	0.1	NO	2.6
SA110	Crabtree JMI Crabtree Lane Harpenden	kerbside	514438	214353	NO_2	N	7.5	1.5	NO	2.6
SA112	High Street Wheathampstead	kerbside	517727	214041	NO_2	N	16.25	1.7	NO	2.6
SA114	Fleetville 1 Royal Road St Albans	background	516549	207391	NO_2	N	51.25	12.5	NO	2.45
SA117	Five Acres London Colney Roundabout	kerbside	517712	204782	NO_2	N	11.88	1.4	NO	2.42
SA120	Sleapcross Gardens Smallford	kerbside	520053	206618	NO_2	N	15.63	1.7	NO	2.3
SA121	Mount Drive Park Street	kerbside	514654	204546	NO_2	N	37.5	1.4	NO	2.45
SA123	Radlett Road Park Street	kerbside	515311	202730	NO_2	AQMA 7	4.38	0.25	NO	2.4
SA124	Smug Oak Lane Bricket Wood	kerbside	515383	202528	NO_2	AQMA 7	4.5	1.3	NO	2.5

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
SA125	Lye Lane Bricket Wood	kerbside	513308	202655	NO_2	N	15.63	0.4	NO	2.4
SA127	Oakwood Road Bricket Wood	kerbside	512570	202716	NO_2	N	4.38	1.4	NO	2.37
SA128	Waterdale Old Watford Rd Bricket Wd A405	roadside	512004	202105	NO_2	N	1	25	NO	2.4
SA133	Belmont Hill St Albans	kerbside	514606	206801	NO_2	N	13.75	2.5	NO	2.4
SA134	Albert Street St Albans	kerbside	514648	206919	NO_2	N	5	2.18	NO	2.6
SA135	Watsons Walk St Albans	kerbside	515060	206866	NO_2	N	3.75	1.2	NO	2.48
SA136	St Peters Street St Albans	kerbside	514883	207422	NO_2	N	34.34	1.1	NO	2.34
SA137	High Street St Albans	kerbside	514684	207105	NO_2	N	4.34	1.6	NO	2.5
SA138	Peahen PH Holywell Hill St Albans	kerbside	514701	207082	NO_2	AQMA 1	15.63	2.6	NO	2.62
SA139	Civic Centre St Peters St St Albans	background	514921	207391	NO_2	N	73.13	2.4	NO	>3.00
SA140	Lattimore Road St Albans	kerbside	515185	207070	NO_2	N	6.25	2.5	NO	2.48
SA141	Town Hall St Albans	background	514722	207226	NO_2	N	1.88	1.5	NO	2.64
SA142	Beech Tree Cottage St Albans (AL3 6AR)	roadside	510754	206091	NO_2	AQMA 2	20.15	0	NO	2.25

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
SA143	London Road West St Albans	kerbside	514752	207094	NO_2	AQMA 1	0.63	2.8	NO	2.6
SA144	Forester House 1 St Peters Street St Albans	kerbside	514833	207347	NO_2	N	9.34	1.2	NO	2.62
SA145	Moor Mill Lane Colney Street	roadside	515257	202638	NO_2	AQMA 7	12.5	1.6	NO	2.32
SA146	Forrester House 2 St Peters Street St Albans	background	514856	207353	NO_2	N	5.63	21.88	NO	2.6
SA147	Shops St Peters Street St Albans	background	514818	207357	NO_2	N	47.5	15.63	NO	2.5
SA148	Chequer Street St Albans	kerbside	514705	207119	NO_2	N	3.13	0.72	NO	2.44
SA149	London Road East St Albans	roadside	515067	206946	NO_2	N	5.63	2.5	NO	2.6
SA150	Hatfield/Royal Road St Albans	kerbside	516590	207276	NO_2	N	7.5	1.8	NO	2.3
SA151	Thamesdale London Colney	roadside	518782	203507	NO_2	N	4.38	1.5	NO	2.3
SA152	Shenley Lane/Kings Road London Colney	roadside	517091	204114	NO_2	N	6.88	2.4	NO	2.4
SA153	Watling Street Park Street	kerbside	515275	202794	NO_2	N	12	1.4	NO	2.4
SA154	Mount Pleasant Lane Bricket Wood	roadside	512776	202050	NO_2	N	21.88	2	NO	2.45
SA155	Westminster Court St Albans	kerbside	514346	206329	NO_2	N	27.5	1.75	NO	2.35

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SA156	Folly Lane East St Albans	roadside	514602	207674	NO_2	N	2.5	1.55	NO	2.4
SA157	Catherine Street St Albans	kerbside	514840	207613	NO_2	N	1.25	0.5	NO	2.4
SA158	High Street Redbourn	roadside	510818	212167	NO_2	N	2.5	1.7	NO	2.6
SA159	Marford Road Wheathampstead	roadside	517727	213901	NO_2	N	2.5	2	NO	2.6
SA160	Hollywell Hill St Albans	roadside	514682	207060	NO_2	AQMA 1	2.5	2.5	NO	2.4
SA161	London Road Centre St Albans	kerbside	514787	207069	NO_2	AQMA 1	1.88	0.53	NO	2.45

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3) (4)				
							2015	2016	2017	2018	2019
SA101	515105	207476	roadside	Diffusion Tube	100	100	27.9	35.6	28.5	28.3	29.1
SA107	510138	212525	background	Diffusion Tube	83	83	-	-	-	20.9	20.9
SA109	513427	214308	kerbside	Diffusion Tube	75	75	-	-	-	25.0	26.9
SA110	514438	214353	kerbside	Diffusion Tube	83	83	-	-	-	21.0	21.2
SA112	517727	214041	kerbside	Diffusion Tube	100	100	-	-	-	26.7	26.1
SA114	516549	207391	background	Diffusion Tube	100	100	22.3	27.2	26.4	26.3	27.2
SA117	517712	204782	kerbside	Diffusion Tube	100	100	-	-	23.0	25.5	26.3
SA120	520053	206618	kerbside	Diffusion Tube	100	100	31.5	30.3	30.3	29.3	29.8
SA121	514654	204546	kerbside	Diffusion Tube	100	100	35.3	36.0	35.0	31.6	31.4
SA123	515311	202730	kerbside	Diffusion Tube	100	100	-	-	-	34.4	32.4
SA124	515383	202528	kerbside	Diffusion Tube	100	100	36.2	36.4	33.7	34.4	32.3
SA125	513308	202655	kerbside	Diffusion Tube	92	92	23.9	29.1	26.2	25.8	24.5
SA127	512570	202716	kerbside	Diffusion Tube	83	83	26.2	31.4	25.9	26.6	27.1
SA128	512004	202105	roadside	Diffusion Tube	92	92	31.0	35.9	34.3	34.7	34.4
SA133	514606	206801	kerbside	Diffusion Tube	75	75	33.9	37.9	34.1	31.8	33.4

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3) (4)				
							2015	2016	2017	2018	2019
SA134	514648	206919	kerbside	Diffusion Tube	100	100	30.9	35.7	32.8	34.8	36.4
SA135	515060	206866	kerbside	Diffusion Tube	100	100	-	-	-	34.3	32.8
SA136	514883	207422	kerbside	Diffusion Tube	100	100	38.8	**51.0**	**52.5**	**48.5**	**45.6**
SA137	514684	207105	kerbside	Diffusion Tube	100	100	-	-	-		**41.8**
SA138	514701	207082	kerbside	Diffusion Tube	100	100	**42.4**	**46.5**	**41.2**	**45.2**	**43.6**
SA139	514921	207391	background	Diffusion Tube	100	100	28.5	25.1	24.4	22.4	21.8
SA140	515185	207070	kerbside	Diffusion Tube	100	100	26.8	28.9	26.5	27.3	26.3
SA141	514722	207226	background	Diffusion Tube	8	8	-	-	-	26.8	-(5)
SA142	510754	206091	roadside	Diffusion Tube	92	92	-	-	36.0	30.2	30.4
SA143	514752	207094	kerbside	Diffusion Tube	100	100	-	-	-	**42.4**	**40.8**
SA144	514833	207347	kerbside	Diffusion Tube	83	83	-	-	**46.5**	39.7	38.2
SA145	515257	202638	roadside	Diffusion Tube	100	100	-	-	37.4	34.2	32.3
SA146	514856	207353	background	Diffusion Tube	100	100	-	-	-	30.6	29.6
SA147	514818	207357	background	Diffusion Tube	67	67	-	-	-	35.2	39.7
SA148	514705	207119	kerbside	Diffusion Tube	100	100	-	-	-	**52.7**	**49.0**
SA149	515067	206946	roadside	Diffusion Tube	92	92	-	-	-	32.3	30.0

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3) (4)				
							2015	2016	2017	2018	2019
SA150	516590	207276	kerbside	Diffusion Tube	100	100	-	-	-	-	31.5
SA151	518782	203507	roadside	Diffusion Tube	100	100	-	-	-	36.8	34.2
SA152	517091	204114	roadside	Diffusion Tube	100	100	-	-	-	29.1	27.0
SA153	515275	202794	kerbside	Diffusion Tube	100	100	-	-	-	27.6	27.0
SA154	512776	202050	roadside	Diffusion Tube	100	100	-	-	-	29.3	26.8
SA155	514346	206329	kerbside	Diffusion Tube	100	100	-	-	-	31.3	29.4
SA156	514602	207674	roadside	Diffusion Tube	100	100	-	-	-	37.1	35.9
SA157	514840	207613	kerbside	Diffusion Tube	75	75	-	-	-	**46.2**	**40.8**
SA158	510818	212167	roadside	Diffusion Tube	83	83	-	-	-	25.4	20.5
SA159	517727	213901	roadside	Diffusion Tube	100	100	-	-	-	29.7	28.8
SA160	514682	207060	roadside	Diffusion Tube	92	92	-	-	-	**59.3**	**54.7**
SA161	514787	207069	kerbside	Diffusion Tube	100	100	-	-	-	-	38.7

☒ **Diffusion tube data has been bias corrected**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance adjustment**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(4) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(5) Location SA141 has not been included within the NO_2 annual mean results for 2019 as only 1 month of data (March 2019) was recorded

Figure A.1– Trends in Annual Mean NO_2 Concentrations; AQMA 1

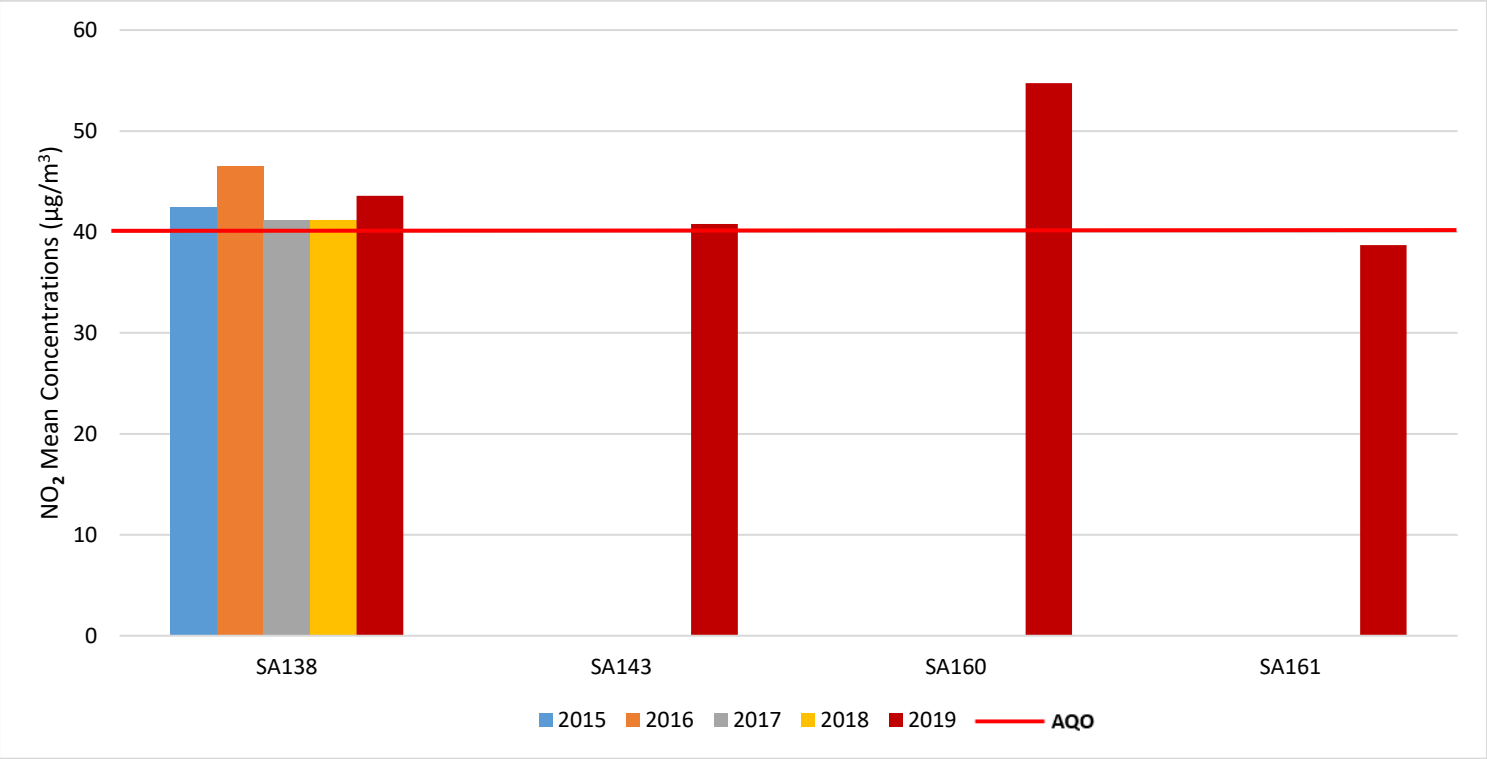


Figure A.2– Trends in Annual Mean NO_2 Concentrations; AQMAs 2 & 7

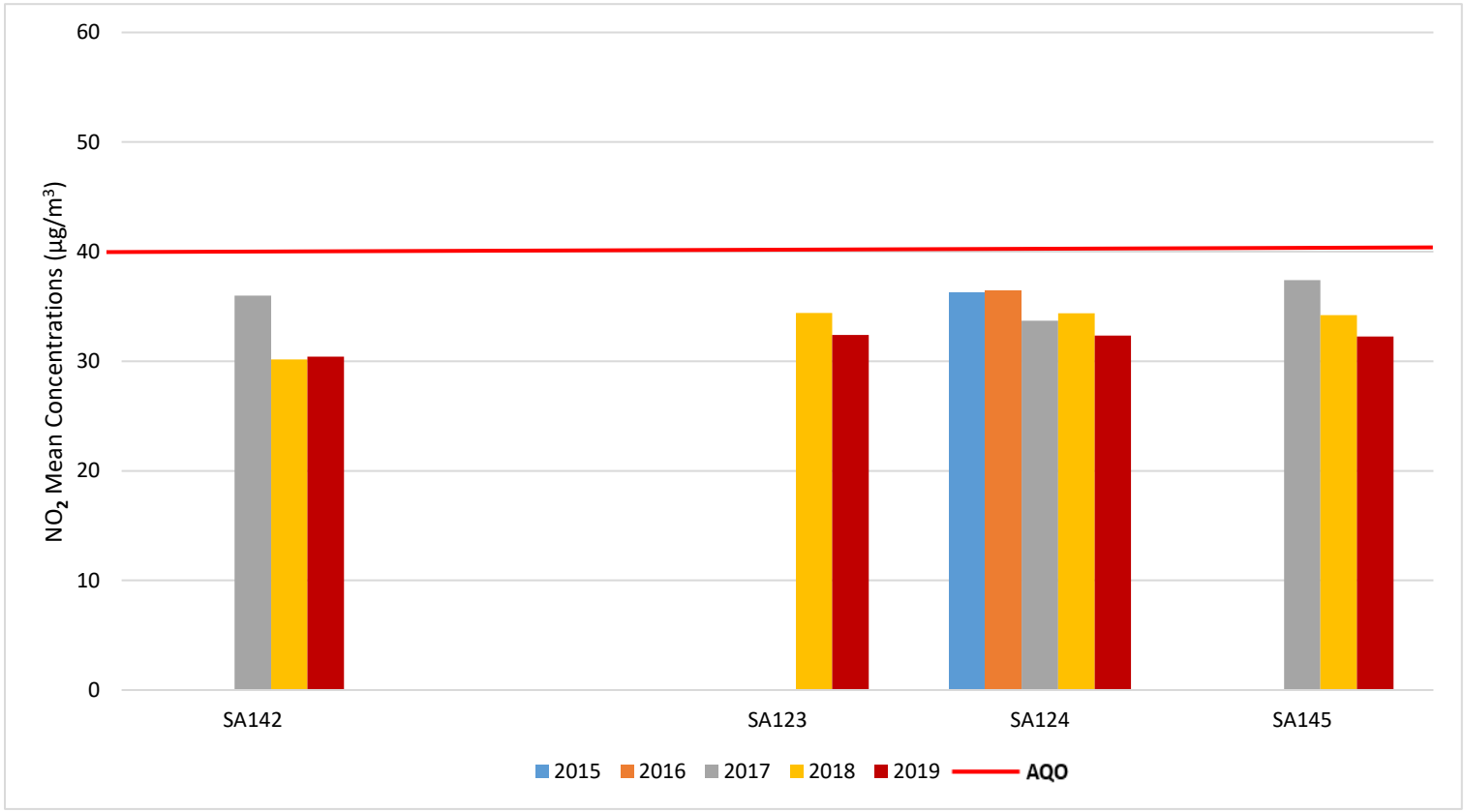
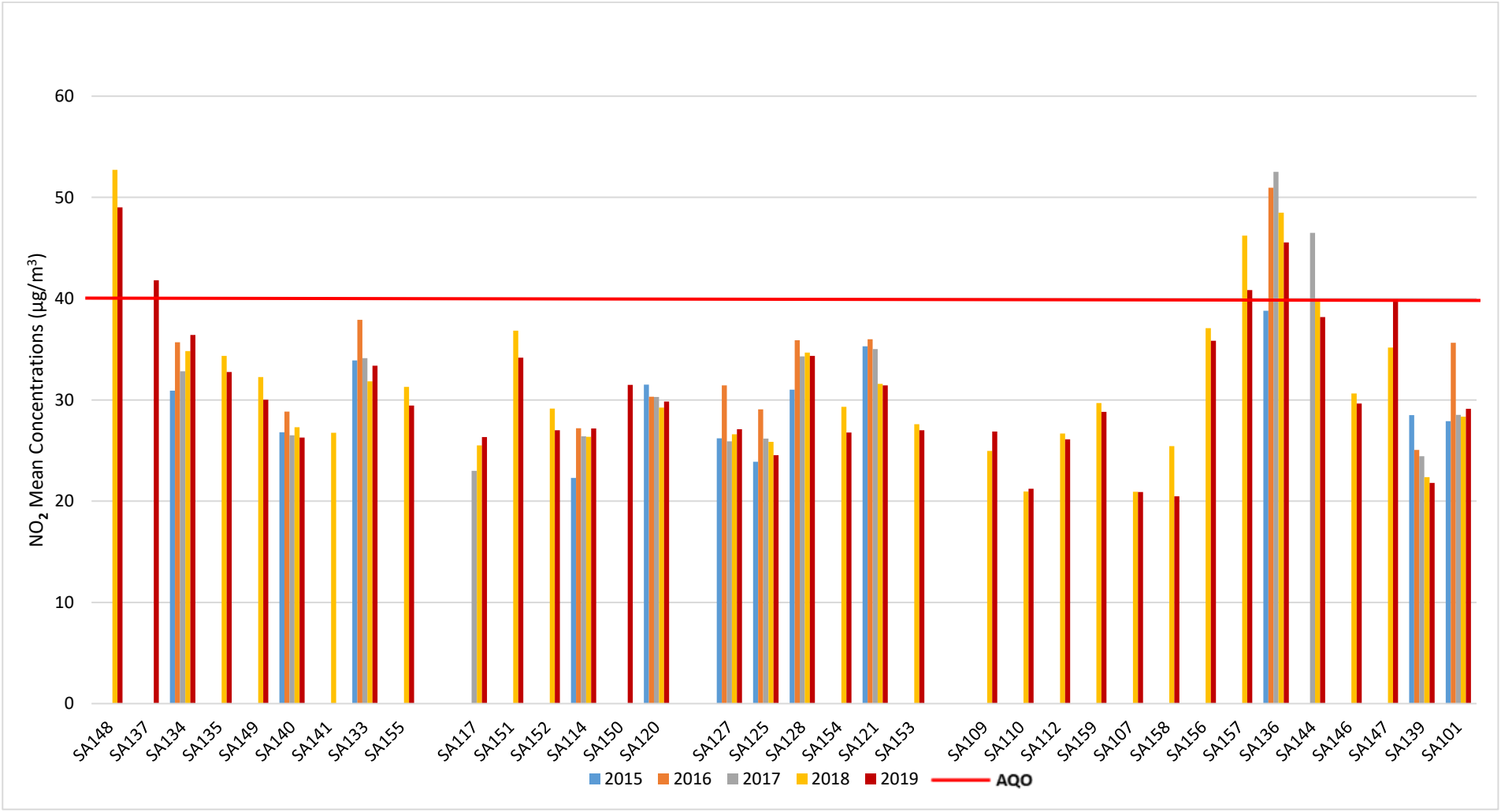


Figure A.3- Trends in Annual Mean NO_2 Concentrations; Outside Declared AQMAs



Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.93) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
SA101	515105	207476	47.0	36.3	32.2	28.2	22.4	25.1	26.1	24.4	29.2	31.4	39.9	33.3	31.3	29.1	
SA107	510138	212525	35.3		20.9	14.4		15.4	15.2	18.6	18.8	23.6	32.5	30.0	22.5	20.9	
SA109	513427	214308	31.1	36.3	26.6	27.8			21.9	22.1		27.6	36.8	29.8	28.9	26.9	
SA110	514438	214353	38.3	37.0			14.3	14.1	14.3	23.2	18.3	20.4	29.0	19.4	22.8	21.2	
SA112	517727	214041	**40.9**	27.3	28.1	27.7	24.5	27.0	22.5	21.8	23.7	29.5	34.9	29.1	28.1	26.1	
SA114	516549	207391	39.1	**43.1**	28.8	20.4	19.0	19.9	19.3	19.9	25.4	32.5	38.0	**45.2**	29.2	27.2	
SA117	517712	204782	38.2	33.6	25.4	33.4	21.2	18.3	21.6	33.6	21.3	28.2	37.0	27.9	28.3	26.3	
SA120	520053	206618	**42.5**	39.7	28.6	27.5	20.9	30.8	30.3	32.4	26.9	34.3	37.7	33.5	32.1	29.8	
SA121	514654	204546	**42.5**	39.9	33.6	30.7	25.4	32.0	31.1	31.3	34.2	33.9	**41.0**	30.0	33.8	31.4	
SA123	515311	202730	**42.4**	**43.3**	33.3	30.3	27.4	30.3	29.8	26.4	34.1	34.6	**43.2**	**43.2**	34.9	32.4	
SA124	515383	202528	**45.6**	39.1	38.0	**43.6**	30.9	34.0	31.3	19.5	34.2	30.7	**44.1**	26.1	34.8	32.3	
SA125	513308	202655	33.9	31.5		10.5	24.6	26.5	24.3	22.9	28.3	25.8	37.2	24.6	26.4	24.5	
SA127	512570	202716	**40.0**		25.5	24.1	23.5	22.2		34.0	25.2	27.8	**40.0**	29.3	29.2	27.1	
SA128	512004	202105	**49.0**	**41.0**	**42.2**	29.4	29.9	31.5	32.5		36.3	31.3	**44.4**	39.0	37.0	34.4	
SA133	514606	206801	**43.2**	36.2	34.4	36.5	26.7	33.9	34.4		34.8		**43.1**		35.9	33.4	

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.93) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
SA134	514648	206919	37.4	**57.7**	**49.2**	**45.1**	**41.9**	32.0	31.4	28.9	33.9	34.5	43.3	34.4	39.1	36.4	30.6
SA135	515060	206866	**45.6**	**42.6**	38.3	29.3	27.9	32.1	29.8	28.8	32.4	35.3	**43.7**	37.0	35.2	32.8	
SA136	514883	207422	**52.0**	**46.8**	**43.5**	**64.5**	**43.4**	**54.4**	**50.9**	**42.6**	39.7	**46.7**	**59.2**	**44.3**	**49.0**	**45.6**	25.5
SA137	514684	207105	**58.0**	**40.6**	33.3	35.8	28.2	**46.3**	**44.5**	**49.8**	**48.6**	**47.0**	**56.9**	**50.7**	**45.0**	**41.8**	34.7
SA138	514701	207082	**49.6**	**53.1**	**45.6**	**56.2**	35.9	**48.5**	**45.9**	**41.2**	**46.5**	**46.7**	**54.0**	39.1	**46.9**	**43.6**	30.9
SA139	514921	207391	31.4	28.1	22.0	17.9	18.1	18.1	19.3	18.7	21.7	26.8	33.0	26.3	23.4	21.8	
SA140	515185	207070	35.8	35.1	26.8	28.6	22.4	25.1	22.1	22.0	24.6	29.6	36.8	30.3	28.3	26.3	
SA141	514722	207226			29.0										29.0	-(3)	
SA142	510754	206091	**42.5**	**47.7**	30.1	24.9	25.3	24.7		31.5	30.9	25.5	38.0	38.8	32.7	30.4	
SA143	514752	207094	**55.5**	**49.2**	**42.5**	36.6	39.1	**40.9**	**43.7**	36.9	**46.9**	**43.5**	**55.3**	36.5	**43.9**	**40.8**	39.6
SA144	514833	207347		**52.1**	**42.1**	34.5	30.9	**41.8**	**41.2**	**41.3**	39.9		**47.0**	**40.0**	**41.1**	38.2	28.8
SA145	515257	202638	**40.7**	**46.4**	36.1	27.3	24.6	29.1	28.7	35.7	31.1	33.3	**40.7**	**42.9**	34.7	32.3	
SA146	514856	207353	38.1	38.2	33.2	29.5	22.6	24.8	27.4	26.0	29.2	32.7	**44.5**	36.3	31.9	29.6	
SA147	514818	207357	**63.6**	**41.7**	36.9		**47.4**	33.2	34.7		35.8			35.9	**41.1**	39.7	
SA148	514705	207119	**42.8**	**62.3**	**59.7**	**49.9**	**43.7**	**53.9**	**57.1**	**53.4**	**47.8**	**51.7**	**53.7**	**56.4**	**52.7**	**49.0**	39.0
SA149	515067	206946		**40.2**	31.5	32.1	23.3	28.8	28.4	26.3	30.6	34.5	**45.7**	33.8	32.3	30.0	
SA150	516590	207276	**41.6**	**47.8**	32.6	26.4	29.1	28.8	29.9	33.0	30.8	33.4	37.5	35.6	33.9	31.5	
SA151	518782	203507	**48.8**	32.6	34.4	36.5	32.1	33.6	34.2	36.7	33.9	38.4	**42.8**	37.2	36.8	34.2	
SA152	517091	204114	39.8	36.0	27.6	25.3	24.2	23.1	25.6	27.2	28.1	28.6	39.2	23.9	29.0	27.0	

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)												Annual Mean		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.93) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
SA153	515275	202794	36.4	36.6	26.3	26.9	20.5	24.0	22.8	26.0	26.8	30.0	**40.4**	31.7	29.0	27.0	
SA154	512776	202050	38.8	36.3	25.3	20.0	23.5	25.4	24.6	27.7	29.0	29.4	34.9	30.6	28.8	26.8	
SA155	514346	206329	33.7	42.3	24.9	30.1	26.1	32.9	29.1	32.5	27.5	35.3	36.6	29.1	31.7	29.5	
SA156	514602	207674	**52.0**	**54.4**	**42.2**	37.5	31.5	32.9	31.4	29.8	34.4	29.3	**52.8**	34.5	38.6	35.9	
SA157	514840	207613	**56.5**		**46.4**	**40.2**	36.1		**41.9**	33.3		**40.2**	**61.5**	39.2	**43.9**	**40.9**	35.7
SA158	510818	212167	32.4		22.3	21.3	16.3	18.5	17.7	20.6	20.2	25.5		25.4	22.0	20.5	
SA159	517727	213901	39.3	38.9	32.6	27.3	25.1	29.8	24.7	24.8	25.8	30.8	39.4	33.5	31.0	28.8	
SA160	514682	207060	**66.1**	**61.2**	**62.3**	**53.1**	**54.3**	**53.0**	**66.0**	**56.3**	**60.2**		**61.0**	**54.1**	**58.9**	**54.7**	**48.4**
SA161	514787	207069	52.7	59.2	38.9	32.4	33.5	35.3	36.6	39.6	41.5	38.8	52.0	38.9	41.6	38.7	33.0

TUBE MISSING ERRONEOUS DATA

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column**

Notes: Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

(3) Location SA141 has not been included within the NO_2 annual mean results for 2019 as 1 month of data (March 2019) was recorded

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

Diffusion Tube Bias Adjustment Factors

It is stated within the LAQM section of https://uk-air.defra.gov.uk/ that diffusion tubes are affected by several sources of interference which can cause substantial under or overestimation (bias) compared to a chemiluminescent analyser (the reference method). This can prove to be a problem in any situation where diffusion tube results are compared with the AQS objectives. As a result, local authorities are required to quantify the bias of their diffusion tube measurements and apply an appropriate bias adjustment factor if required.

The bias adjustment factor, which is an estimate of the difference between diffusion tube concentration and continuous monitoring, the latter assumed to be a more accurate method of monitoring has been used to factor the results. LAQM.TG(16) provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

With regard to the application of a bias adjustment factor for diffusion tubes, the Defra Technical Guidance LAQM.TG(16) and the LAQM Helpdesk[14] recommend the use of a local bias adjustment factor where available and relevant to diffusion tube sites.

St Albans City and District Council does not operate any continuous monitors within the District and therefore a co-location study is not available to derive a local bias factor, thus the national bias adjustment factor spreadsheet[15] has been used.

Diffusion tube data for St Albans City and District Council is supplied and analysed by Gradko International Ltd, the tubes were prepared using the 20% TEA in water preparation method. The 2019 national bias adjustment factor for Gradko 20% TEA in

[14] Laqm.defra.gov.uk
[15] National Diffusion Tube Bias Adjustment Factor Spreadsheet, version 03/20 published in March 2020

water is 0.93 (based on 27 studies, version 03/20) as derived from the national bias adjustment factor spreadsheet.

The bias adjustment factors used for 2015 to 2019 are shown in Table C.1.

Table C.1 – Bias Adjustment Factors

Year of Data	Bias Adjustment Factor
2015	0.91 – National factor
2016	0.92 – National factor
2017	0.87 – National Factor
2018	0.92 – National Factor
2019	0.93 – National Factor

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Gradko International Limited utilising the 20% Triethanolamine (TEA) in water preparation method.

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The laboratory follows the procedures set out in the Harmonisation Practical Guidance and participates in the AIR proficiency-testing (AIR-PT) scheme. Defra and the Devolved Administrations advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR-PT scheme. Laboratory performance in the AIR-PT is also assessed by the National Physical Laboratory (NPL), alongside laboratory data from the monthly NPL Field Inter-Comparison Exercise.

In the 2019 AIR-PT results, AIR-PT AR0030 (January to February 2019), AIR-PT AR031 (April to May 2019), AR033 (July to August 2019) and AR034 (September to November 2019), Gradko scored 93.8%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Short-term to Long-term Data Adjustment

According to TG16 (paragraph 7.124), for the annualisation technique to be applied, there must be at least three months of annual data captured at the monitoring location. Diffusion tube location SA141 reported one month of data during 2019 (March 2019; 29.04µg/m^3), therefore was not eligible for annualisation and not included within the Council's NO_2 annual mean concentration results for 2019.

For the 2019 diffusion tubes, annualisation was required at 1 site due to data capture reporting below 75%; SA147, 66.7% data capture.

For the annualisation of SA147, data has been taken from three automatic monitoring stations that are within 50 miles of the monitoring location: Haringey Priory Park South, London Bloomsbury and London N. Kensington. These sites form part of the national AURN network and are background monitoring sites. As such, they are not influenced by local sources of air pollution, such as road traffic emissions at roadside monitoring sites. The details for the annualisation of SA147 has been provided in Table C.2.

Table C.2 – SA147 2019 Annualisation Data

Site ID	Unadjusted Diffusion Tube Mean (µg/m^3)	AF London Haringey Priory Park South	AF London Bloomsbury	AF London N. Kensington	Average AF	Annualised & Bias Adjusted (0.93) Concentration (µg/m^3)
SA147	**41.1**	1.0336	1.0299	1.0487	1.0374	39.7

Fall-off With Distance Correction

The NO_2 fall-off with distance calculator was used to estimate the NO_2 concentration at the nearest locations relevant for exposure for the diffusion tubes with annual mean concentrations above 36µg/m^3. As the closest relevant exposure to SA136, SA137, SA138, SA143 and SA148 are located on the second floor of a building façade, and height is not considered in the distance correction calculator, results should be treated with caution. These monitoring locations are therefore representative of worst case exposure as concentrations are likely to decrease with height. Monitoring site SA147, which was not located at relevant exposure, outside of AQMA 1, reported a concentration within 10% of the AQS of 39.7µg/m^3. As this location exceeds the sufficient distance required to relevant exposure for distance correction, where the nearest receptor is more than 50m from the kerb, distance correction cannot therefore accurately take place as per TG(16)[4] guidance.

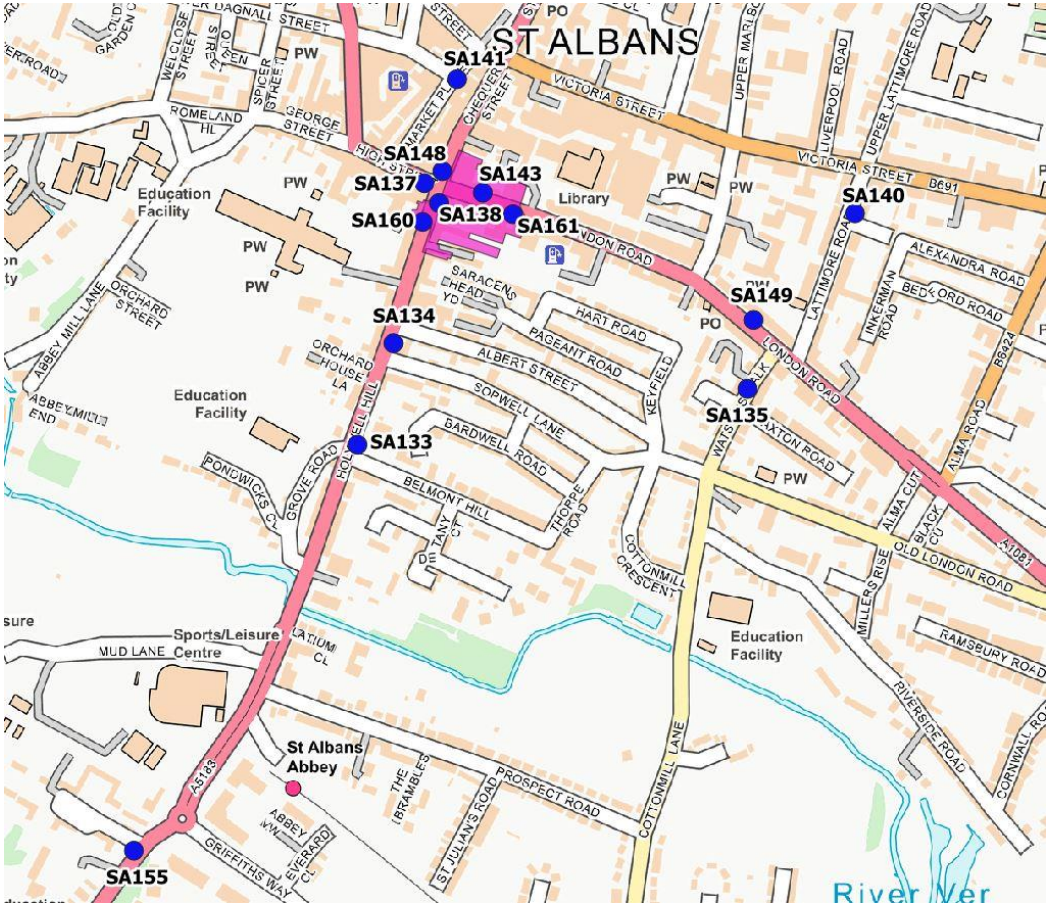
Table C.3 – Fall-off With Distance Correction

Site ID	Site Name	AQMA	Distance to kerb (m)	Distance from relevant exposure to kerb (m)	2019 Background Concentration (µg/m^3)	Bias Adjusted and Annualised Annual Mean (µg/m^3)	Distance Corrected Annual Mean (µg/m^3)
SA134	Albert Street St Albans SA043	No	2.2	7.2	15.9	36.4	30.6
SA136	St Peters Street St Albans SA003	No	1.1	35.4	17.5	**45.6**	25.5*
SA137	High Street St Albans SA039	No	1.6	5.9	17.5	**41.8**	34.7*
SA138	Peahen PH Holywell Hill St Albans SA015	AQMA 1	2.6	18.2	17.5	**43.6**	30.9*
SA143	London Road West St Albans	AQMA 1	2.8	3.4	17.5	**40.8**	39.6*
SA144	Forester House 1 St Peters Street St Albans	No	1.2	10.5	17.5	38.2	28.8*
SA148	Chequer Street St Albans	No	0.7	3.9	17.5	**49.0**	39.0
SA157	Catherine Street St Albans	No	0.5	1.8	17.5	**40.8**	35.7
SA160	Hollywell Hill St Albans	AQMA 1	2.5	5.0	17.5	**54.7**	**48.4**
SA161	London Road Centre St Albans	AQMA 1	0.5	2.4	17.5	38.7	33.0

*Closest relevant exposure is on the second floor of the building façade, result should be treated with caution

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Diffusion Tube Monitoring Locations: St Albans Centre & AQMA 1



Legend

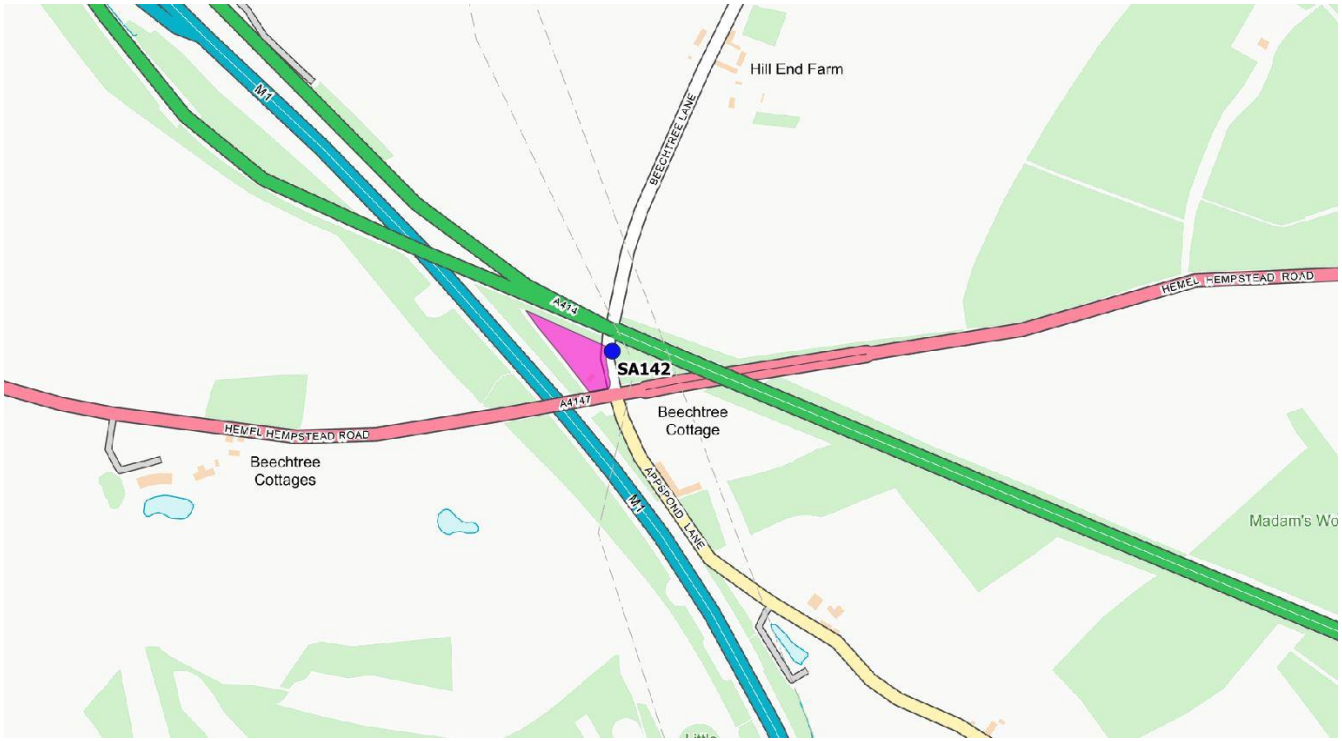
AQMA Boundary

Diffusion Tube

Air Quality
Bureau Veritas
5th Floor
66 Prescot Street
London, E1 8HG

Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: St Albans Centre & AQMA 1	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.1**

Figure D.2 - Diffusion Tube Monitoring Locations: AQMA 2



Legend

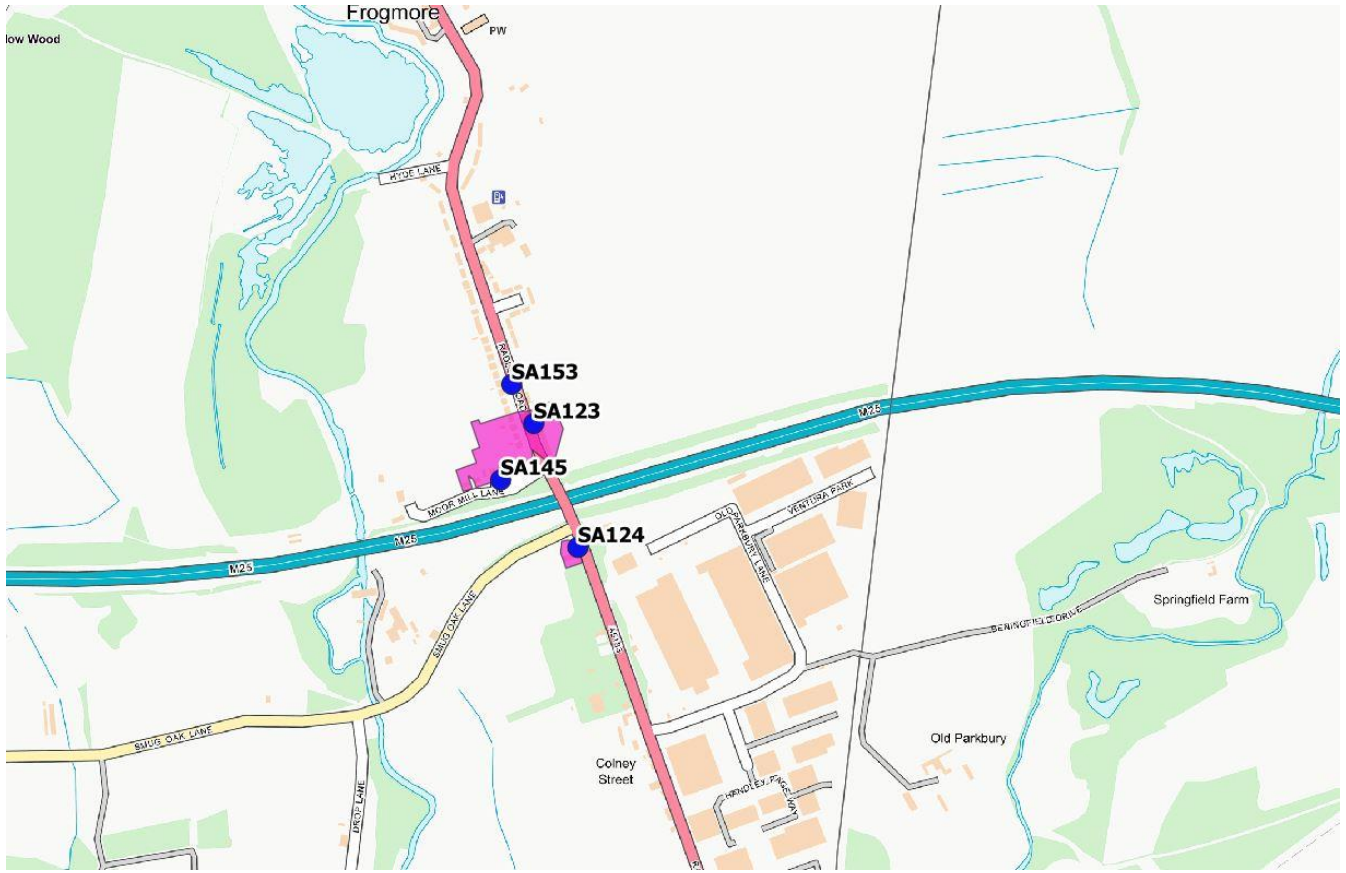
AQMA Boundary

Diffusion Tube

Air Quality
Bureau Veritas
5th Floor
66 Prescot Street
London, E1 8HG

Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: AQMA 2	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.2**

Figure D.3 - Diffusion Tube Monitoring Locations: AQMA 7



Legend

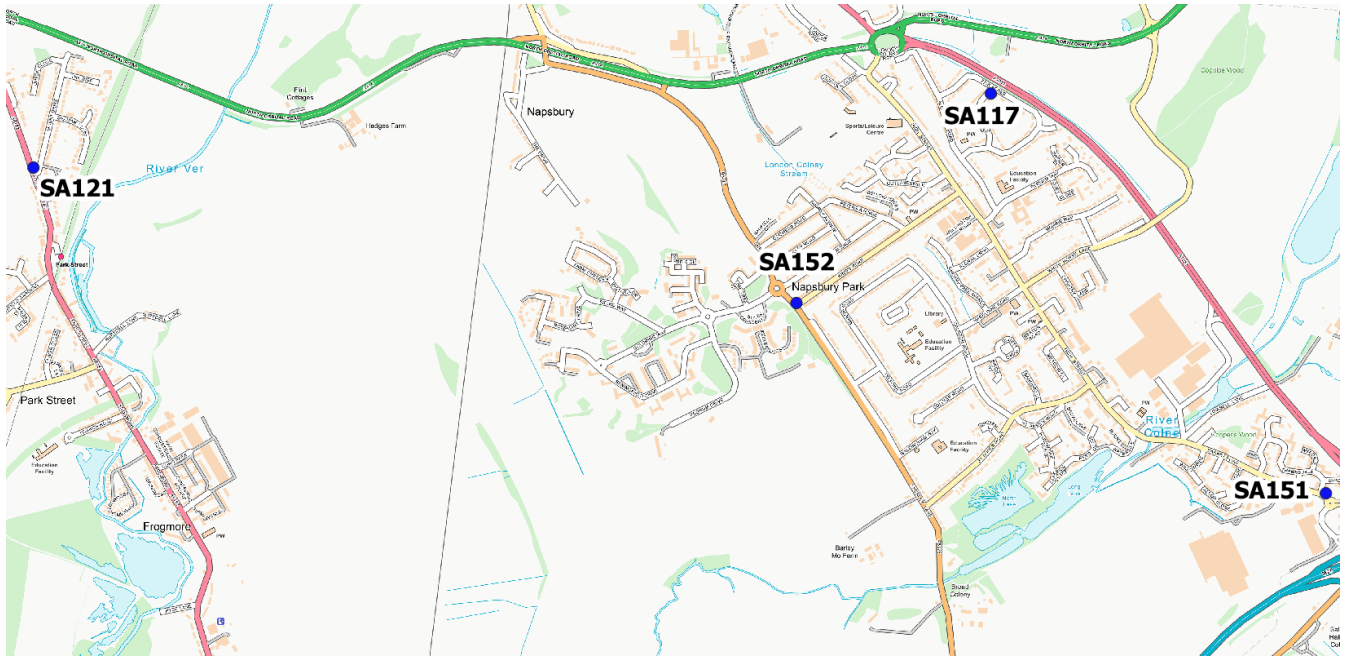
AQMA Boundary

Diffusion Tube

Air Quality
Bureau Veritas
5th Floor
66 Prescot Street
London, E1 8HG

Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: AQMA 7	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.3**

Figure D.4 - Diffusion Tube Monitoring Locations: Napsbury



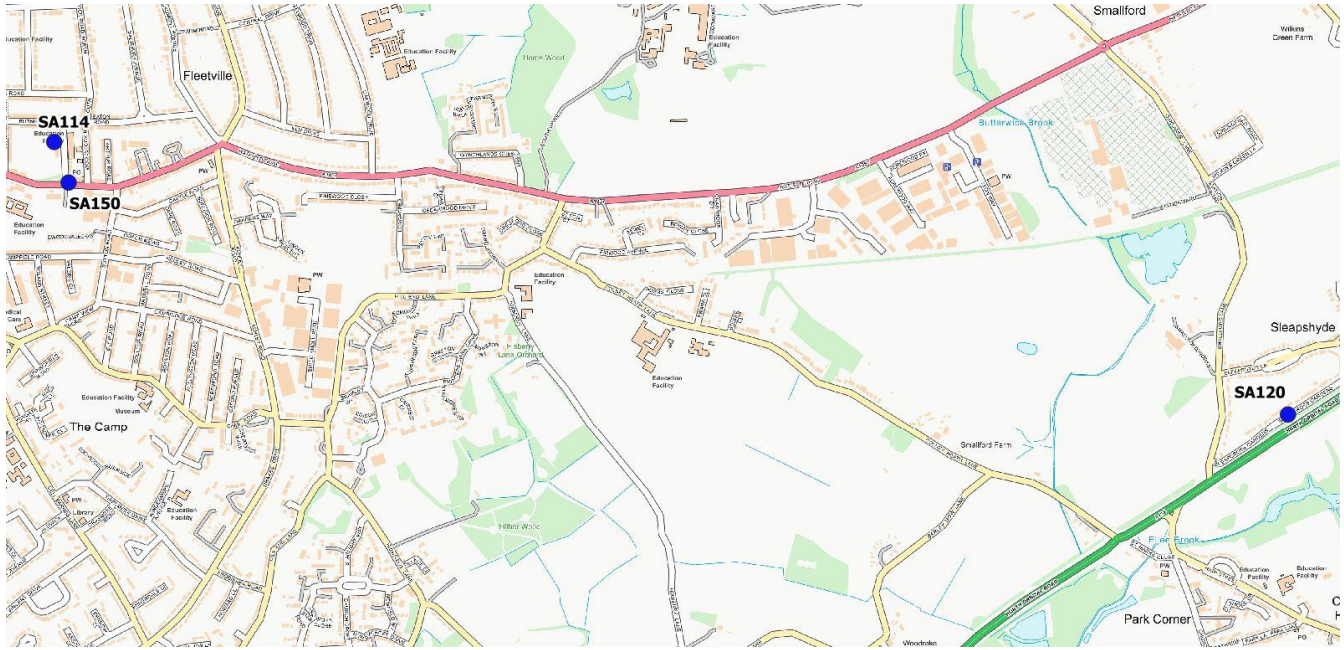
Legend

Diffusion Tube

Air Quality
Bureau Veritas
5th Floor
66 Prescot Street
London, E1 8HG

Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: Napsbury	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.4**

Figure D.5 - Diffusion Tube Monitoring Locations: St Albans East



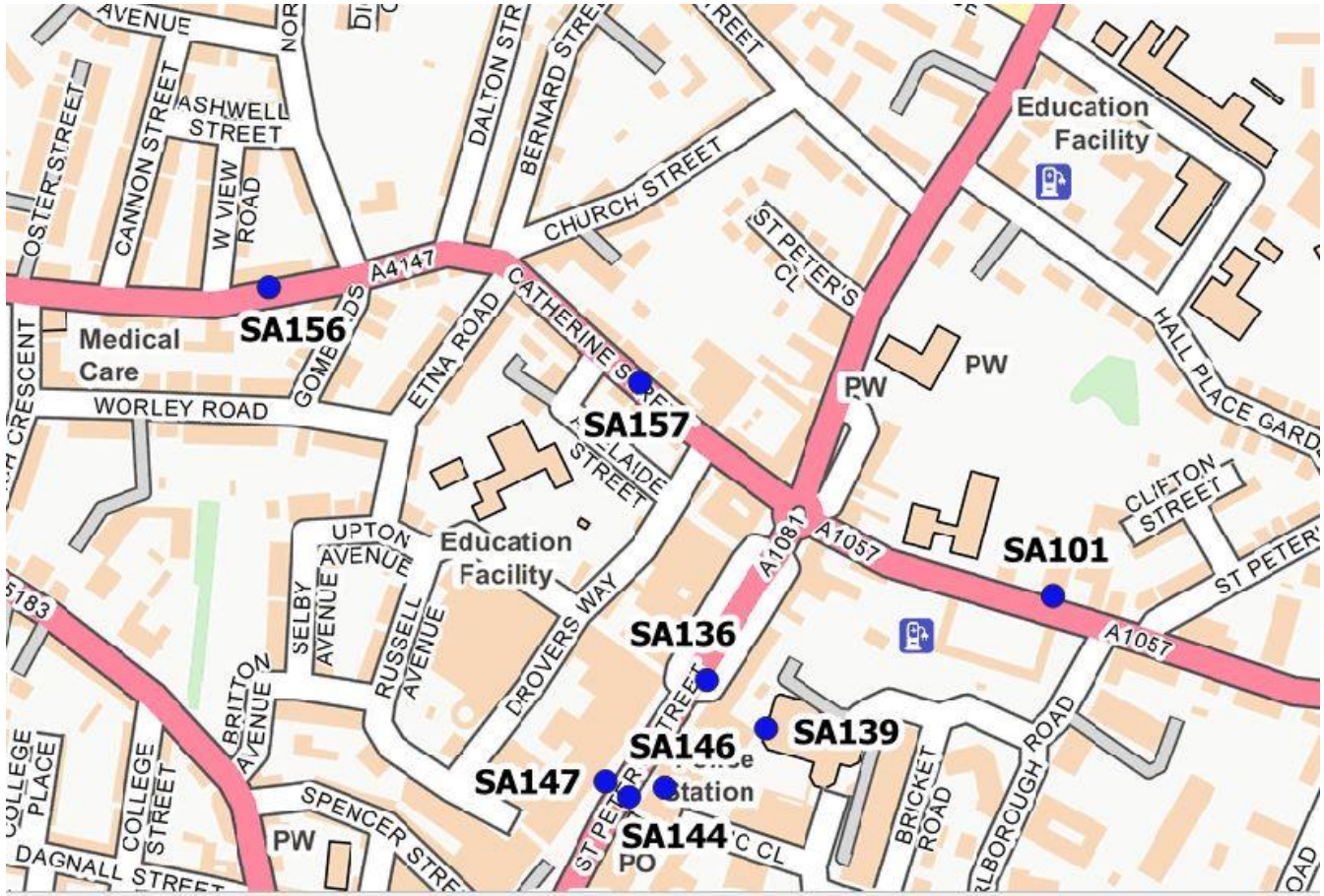
Legend

Diffusion Tube

Air Quality
Bureau Veritas
5th Floor
66 Prescot Street
London, E1 8HG

Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: St Albans East	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.5**

Figure D.6 - Diffusion Tube Monitoring Locations: St Albans North



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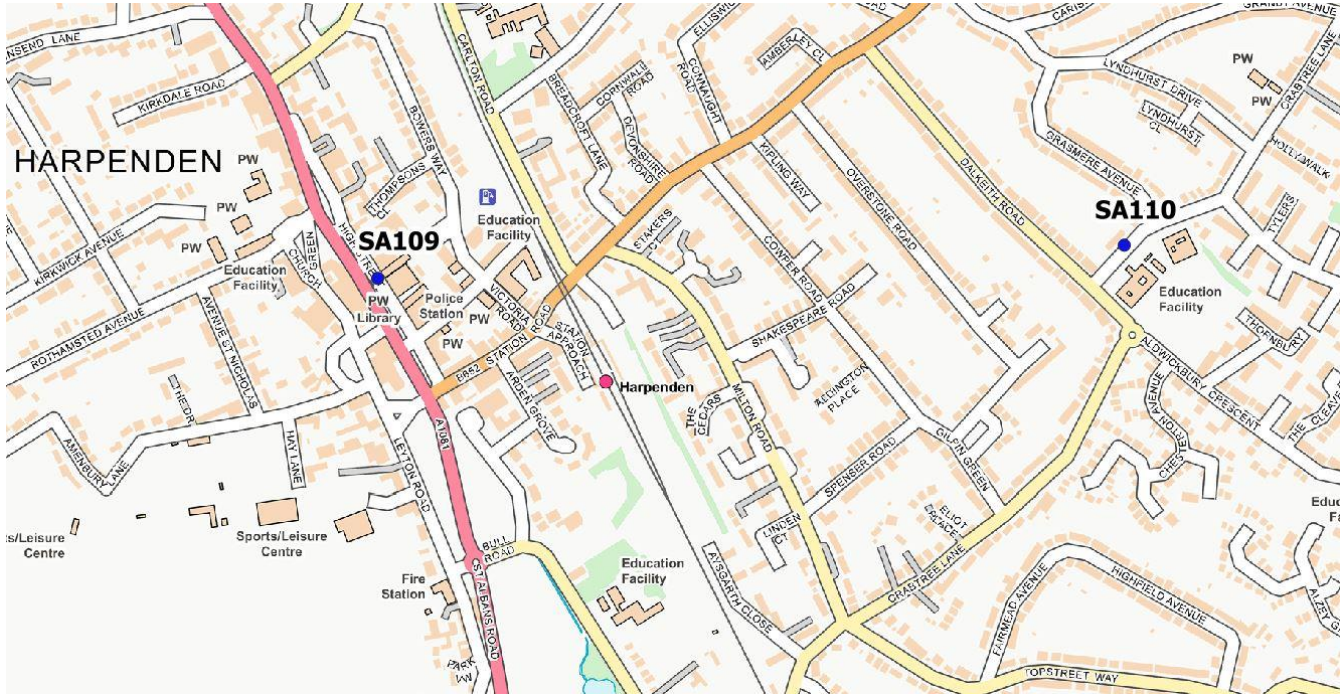
66 Prescot Street
London, E1 8HG

Location	St Albans City & District Council
Title	Diffusion Tube Monitoring Locations: St Albans North
By JD	**Approved** HS
Scale Not to Scale	**Job Ref** 7726885
Date June 2020	**Figure No.** **D.6**

Figure D.7 - Diffusion Tube Monitoring Locations: Harpenden



Legend

Diffusion Tube

Air Quality
Bureau Veritas
5th Floor
66 Prescot Street
London, E1 8HG

Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: Harpenden	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.7**

Figure D.8 - Diffusion Tube Monitoring Locations: Redbourn

Legend

Diffusion Tube

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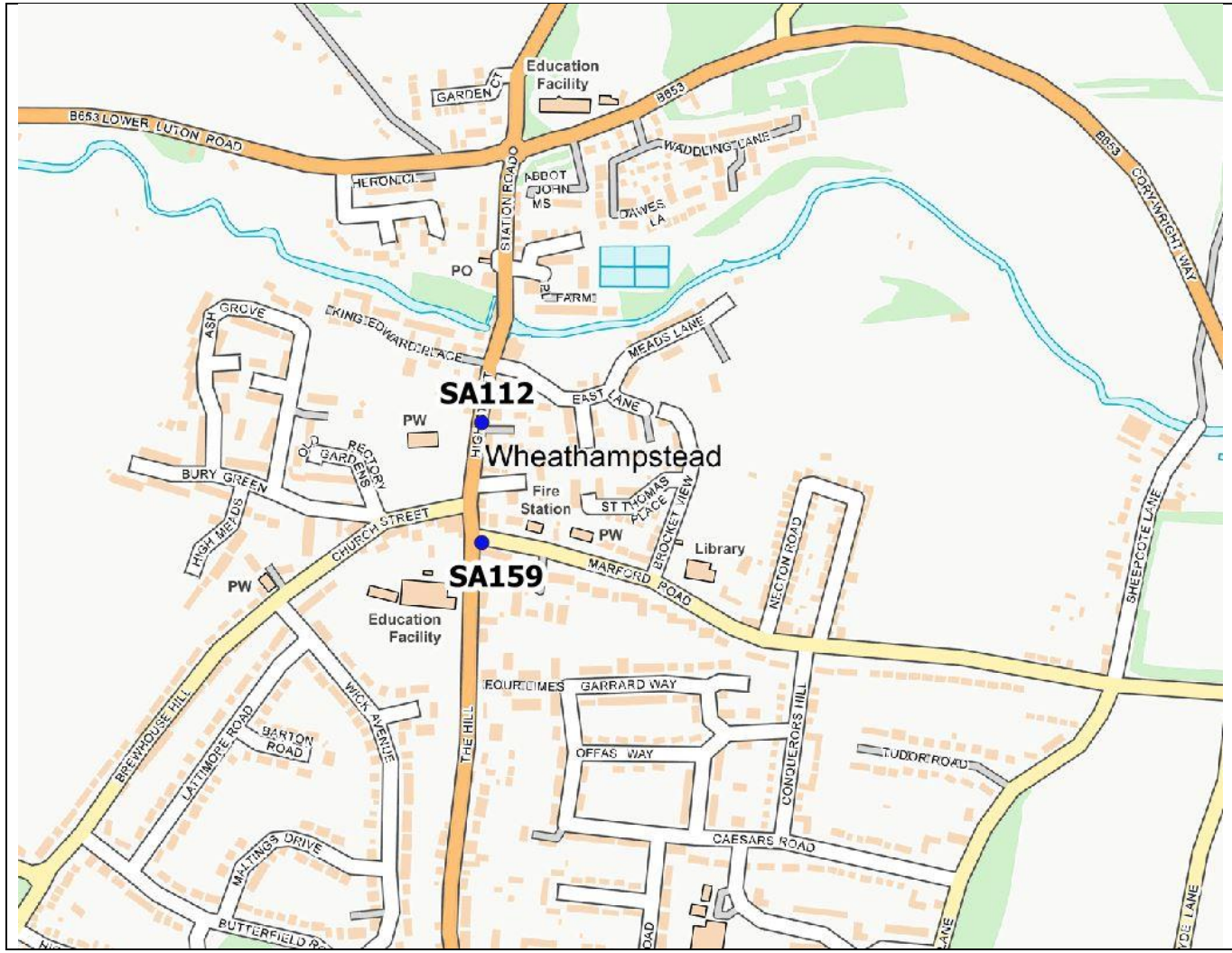
Location	St Albans City & District Council
Title	Diffusion Tube Monitoring Locations: Redbourn
By JD	**Approved** HS
Scale Not to Scale	**Job Ref** 7726885
Date June 2020	**Figure No.** **D.8**

Figure D.9 - Diffusion Tube Monitoring Locations: Wheathampstead



Legend

Diffusion Tube

Air Quality
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Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: Wheathampstead	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.9**

Figure D.10 - Diffusion Tube Monitoring Locations: Bricket Wood

Legend

Diffusion Tube

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Location	
St Albans City & District Council	
Title	
Diffusion Tube Monitoring Locations: Bricket Wood	
By	**Approved**
JD	HS
Scale	**Job Ref**
Not to Scale	7726885
Date	**Figure No.**
June 2020	**D.10**

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[16]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[16] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
AURN	Automatic Urban and Rural Network
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

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- Local Air Quality Management Policy Guidance LAQM.PG(16). Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- NO_2 Fall off With Distance Tool, available at http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html
- National Diffusion Tube Bias Adjustment Spreadsheet, version 03/20 published in March 2020.
- Annualisation Tool, Version 1, available at https://laqm.defra.gov.uk/tools-monitoring-data/annualisation.html
- St Albans City and District Council 2019 Annual Status Report
- Hertfordshire County Council, Local Transport Plan 3, 2011-2031.
- St Albans City and District Council Climate Change Action Plan 2016.
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