2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

June 2021

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Executive Summary: Air Quality in Our Area

Air Quality in Canterbury City 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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

The Canterbury district is diverse in character and includes the historic city of Canterbury which encompasses a third of the district's population. The coastal towns of Whitstable and Herne Bay are to the north of the city centre and are also significant centres of population. The majority of the remaining areas covered by the Canterbury district are rural in character and comprised of several small villages.

The main source of air pollution in the district is road traffic emissions from major roads, notably the A2, A28 and A299. Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an Air Quality Strategy (AQS) objective, which are legally binding pollution limits to which the Council must adhere.

An AQMA was declared in April 2006 along parts of the A28 at Broad Street/Military Road, in Canterbury City Centre, where exceedances of the annual mean objective for nitrogen dioxide (NO_2) were predicted. This AQMA was then incorporated into an expanded area in 2011 (AQMA No.2 Canterbury City Centre), which also included two small areas of Broad

[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

[3] Defra. Air quality appraisal: damage cost guidance, July 2020

[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

Street and Wincheap where there were predicted exceedances of the NO_2 one hour mean AQS objective. The AQMA was expanded further in April 2018 to incorporate areas along Rheims Way, Old Dover Road, New Dover Road and Chaucer Road due to predicted exceedances of the annual mean NO_2 AQS objective. The boundaries of the updated AQMA (Air Quality Management Area – Canterbury 3) were conservatively selected to cover areas exceeding the annual mean air quality objective for NO_2, as well as those areas within 10% of the objective.

An additional AQMA in Herne (Air Quality Management Area – Herne 1) was also declared in April 2018 to cover the Canterbury Road/School Lane junction for predicted exceedances of the annual mean NO_2 AQS objective.

The city centre suffers from significant congestion due to the large net inflow of commuters as well as secondary school children, shoppers, university students and tourists. The city centre roads are subject to frequent congestion in peak hours due to the high volume of vehicle movements along a historic layout of roads with residential properties in close proximity to the roadside. In Herne, there is an air quality 'hotspot' at the mini roundabout, again as a result of high traffic volumes with residential properties in close proximity to the roadside.

The 2020 automatic monitoring results show that both the long term and short term AQS objectives for PM_{10} and NO_2 were met at the automatic background station (CM1). The automatic roadside station (CM3), which is located within the Canterbury City AQMA boundary, recorded a much higher concentration. However, the 1-hour mean and annual mean NO_2 AQS objectives continued to be met in 2020.

The 2020 diffusion tube results show that overall levels of NO_2 across the district reduced due to the large reductions in traffic associated with the lockdown restrictions. There were no diffusion tube monitoring locations within the Canterbury AQMA in 2020 which exceeded the annual mean NO_2 AQS objective, seven less exceedances than in 2019.

The annual mean NO_2 concentration did not exceed 60µg/m^3 at any monitoring location and therefore exceedances of the NO_2 AQS 1-hour mean objective of 200µg/m^3 at these locations is unlikely. Furthermore, the two continuous NO_2 monitoring sites did not record any exceedances of the 1-hour mean objective in 2020.

Canterbury City Council produced an Air Quality Action Plan 2018-2023 at the end of 2018. The plan summarises the current state of the declared AQMAs, including a source

apportionment study, and puts forward a suite of measures to tackle air quality issues within the AQMAs and in the Council area as a whole.

To ensure air quality is considered thoroughly, an annual review of diffusion tube placement is undertaken to highlight the potential areas where no monitoring is being carried out but air quality impacts are likely to occur. In 2020, 14 additional diffusion tubes were added throughout the Canterbury District to provide better data and to aid air quality assessments within the planning process.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The Council published the Air Quality Action Plan 2018 – 2023 in December 2018. It provides various measures to work towards achieving the Air Quality Objectives within the AQMAs through jointly working with its partners including Kent County Council (KCC), transport operators, schools and local businesses.

There are a number of relevant policies and strategies as below, which can help contribute to overall improvements in air quality and reducing transport emissions:

- South East Plan (Regional Spatial Strategy) (2006-2026)
- Canterbury District Transport Strategy (2014-2031)
- The Kent Environment Strategy: Implementation Plan (2017)

[5] Defra. Clean Air Strategy, 2019

[6] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

- The Kent and Medway Energy and Low Emissions Strategy (ELES) (2020)
- Local Transport Plan for Kent (2016-2031)
- Canterbury District Local Plan (2017)

Canterbury City Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Key measures to reduce emissions include ensuring that all Park and Ride buses are Euro 6 and reviewing the taxi/private hire policy so that only Euro 6 vehicles are licensed from 1 August 2022 and from 1 August 2025 only ultra low emission vehicles are licensed, introducing a new hybrid car club and an electric scooter pilot in Canterbury. Defra air quality grant funded anti-idling projects to undertake enforcement of idling vehicles and to raise awareness in schools continued during 2020. Anti-idling enforcement is planned to start in September 2021 and further work with schools is planned to start in May 2021.

Conclusions and Priorities

The 2020 monitoring results show that the annual mean NO_2 AQS objective has been met at all of the monitoring locations.

There were no new exceedances reported in 2020.

The main priority and challenge for the Council is to tackle poor air quality within the AQMAs. The current air quality action plan will ensure appropriate measures are implemented within the AQMAs to help reduce congestion and improve air quality.

Local Engagement and How to get involved

The main source of air pollution within Canterbury City Council is from road traffic emissions. Therefore the best way for members of the public to help improve air quality in Canterbury is to adjust their normal travel patterns to be more sustainable.

The following are suggested alternatives to private travel that would contribute to improving the air quality within the City:

- Use public transport where available – This reduces the number of private vehicles in operation reducing pollutant concentrations through the number of vehicles and reducing congestion;

- Walk or cycle if your journey allows – From choosing to walk or cycle for your journey the number of vehicles is reduced and also there is the added benefit of keeping fit and healthy;
- 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 benefits by reducing the amount of emissions being released.

Canterbury City Council publishes air quality information on its news website at

https://news.canterbury.gov.uk/blogs/climate-change-1/1#air%20quality

For more information on LAQM and the work being done by DEFRA to tackle air pollution, please visit https://uk-air.defra.gov.uk/.

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1 Local Air Quality Management

This report provides an overview of air quality in Canterbury City Council during 2020. 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 Canterbury City Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

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 should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Canterbury City Council can be found in Table 2.1. The table presents a description of the two AQMAS that are currently designated within Canterbury City Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The NO_2 annual mean air quality objective is pertinent to the current AQMA designations.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Air Quality Management Area – Canterbury 3	AQMA No.2 Canterbury was declared in 2011, extended to contain AQMA Canterbury 3 in April 2018	NO_2 Annual Mean	Large City Centre AQMA in Canterbury	No	55.0µg/m^3	38.5µg/m^3	Canterbury AQAP 01/04/2018	https://democracy.canterbury.gov.uk/documents/s99842/Appendix%201%20Air%20Quality%20Action%20Plan.pdf
Air Quality Management Area – Herne 1	01/04/2018	NO_2 Annual Mean	Junction of the A291 and School Lane, Herne	No	38.2µg/m^3	33.5µg/m^3	Canterbury AQAP 01/04/2018	https://democracy.canterbury.gov.uk/documents/s99842/Appendix%201%20Air%20Quality%20Action%20Plan.pdf

Note: The NO_2 concentrations shown in the table above are from the monitoring sites, within the AQMAs, where the highest concentration was reported in the year of declaration and the current year. The maximum concentration will not necessarily be at the same monitoring site for both years. In 2020, the greatest exceedance was at DT1 in AQMA - Canterbury 3 and DT64 in AQMA - Herne 1

x **Canterbury City Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

x **Canterbury City Council confirm that all current AQAPs have been submitted to Defra.**

Progress and Impact of Measures to address Air Quality in Canterbury City Council

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the information specified in the Guidance.

Canterbury City Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 37 measures are included within Table 2.2, with the type of measure and the progress Canterbury City Council have made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in the Action Plan (2018 – 2023). Key measures Canterbury City Council have been working on to reduce emissions are:

- Improving traffic management by working with partners at KCC and Highways England to make improvements to traffic flow through the city centre. This project to remove traffic from the city centre by the provision of an A2 off slip directly into an expanded Park and Ride site was coupled with real time information on parking signs to enable motorists to navigate to car parks with spaces. It has not yet been delivered as the early funding for the A2 off slip was not granted, but the real time car park occupancy signs are all working.
- Working with the Quality Bus Partnership to improve the local public transport network and get the cleanest fleet in terms of emissions. The fleet operating in the Canterbury district comprises 18 Euro 6 and 45 Euro 5 buses. Euro 6 buses are used on the most heavily used routes. Stagecoach have redesigned their service routes so that Canterbury West station is now served and to improve service reliability across the district;
- New Park and Ride contract renewed to include 100% Euro 6 bus fleet;
- Review of taxi/private hire vehicle policy so that only the cleanest vehicles are licensed;
- Produced an Electric Vehicle Infrastructure Strategy to increase charging provision across the District;

- Introducing increased parking charges in the city centre and 20% discount for electric and plug-in hybrid vehicles at all ANPR car parks;
- New hybrid car club operating from 5 car parks in Canterbury to reduce car ownership;
- Launched a 12 month electric scooter hire pilot in Canterbury;
- Home-working encouraged and facilitated by the roll out of upgraded broadband infrastructure across 138,000 homes and businesses, 95% of properties across Kent now have access to superfast broadband;
- Mitigation measures to reduce air pollution are considered for new developments with reference to the Kent and Medway Air Quality Partnership guidance for developments which may have an impact on the AQMA. Ensuring that 894 electric vehicle charging points are installed across four new residential developments.

Canterbury City Council expects the following priority measures to be completed over the course of the next reporting year:

- Explore feasibility of introducing a low emission zone in Canterbury City Centre;
- Introduction of enforcement action by officers issuing a Fixed Penalty Notice (FPN) to drivers allowing their engines to run unnecessarily while their vehicle is stationary, if they fail to comply with a requirement to stop the running of the engine of that vehicle;
- Replacement of 2 parking enforcement vehicles with electric vehicles; and
- Installation of on street and off street electric charging points.

These measures will contribute towards increasing the public's awareness of air quality and encouraging positive behaviour change to assist with reducing transport emissions and reducing children's exposure to high levels of air pollution.

Canterbury City Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in the majority of the AQMA in Canterbury city by 2023. Improvements in Herne AQMA are also anticipated by 2023.

The principal challenges and barriers to implementation that Canterbury City Council anticipates facing are financial pressures associated with Covid-19 recovery causing delays in progress with measures in 2021.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Anti-idling education campaign followed by adoption of district wide anti idling enforcement powers	Traffic management	Anti-idling enforcement	2019	Autumn 2021	Local Authority Environmental Health, Local Authority Transport Dept.	Defra and LA	Yes	Fully funded	£10K	Planning	Reduced vehicle emissions	Number of promotions Number of Fixed Penalty Notices issued	On-going anti-idling communications campaign. Anti-idling enforcement scheduled to start in September 2021.	First phase successful, second phase on-going
2	Cleaner Air for Schools Campaign	Promote travel alternatives	Active travel	2019	Ongoing	Local Authority Environmental Health Dept	Defra and LA	Yes	Fully funded	£5K	Implemented	Reduced vehicle emissions	Number of awareness raising events	Outdoor activity with Herne Junior school scheduled for May 2021.	-
3	Promote travel alternatives such as walking and cycling, car share, park and pedal, Canterbury car club, cycle hire options	Promote travel alternatives	Active travel	2018	Ongoing	Local Authority Transport Dept	LA	No	Fully funded	<£1K	Implemented	Reduced vehicle emissions	Take up of park and pedal Canterbury Car club usage Cycle hire usage	A new car club of 5 hybrid vehicles was launched in November 2020 but is very slow owing to little demand at present. We will be going out to tender later this year for a partner to operate a cycle hire scheme. An electric scooter hire scheme was started in November as part of DfT trial and is about to widen its operating area.	-
4	Support improvement in broadband infrastructure across the district enabling more home working and reducing vehicle movement into Canterbury	Promote travel alternatives	Encourage and facilitate Home working	2018	2022	Kent County Council	Kent County Council	No	Fully funded	Unknown	Implemented	Reduced vehicle emissions	Annual update from KCC	To date 138,000 homes and businesses across Kent have had upgraded broadband infrastructure. 95% of properties across Kent now have access to superfast broadband.	-
5	Review use of wood burning stoves and promote Defra “Ready to Burn” guide	Promote low emission plant	Regulations for fuel quality	2018	Ongoing	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Implemented	Reduction in PM10 and PM2.5	No of promotion events	Wood burning article posted on the newsroom and social media in December 2020. Air quality web pages also include information on wood burning and links to Defra leaflets.	Campaign will run each winter
6	Work with event venues to restrict use of generators / equipment using solid fuel, diesel or petrol	Environmental permits	Permits based on environmental criteria	2018	Ongoing	Local Authority Events Dept	**LA**	No	Fully funded	£0	Implemented	Reduced generator emissions	No petrol / diesel generators in use	Action complete and KPI reported under action 33.	-
7	Promote and implement CCC staff travel plan	Promote travel alternatives	Workplace travel plans	2018	Ongoing	Local Authority Transport Dept	**LA**	No	Fully funded	£0	Planning	Reduced vehicle emissions	Reduction in number of staff driving to work	The travel plan will be reviewed as part of the office accommodation project which will result in significantly fewer parking spaces.	-
8	Continue to enforce industrial pollution control and nuisance legislation	Promoting Low Emission Plant	Regulations for fuel quality	2018	Ongoing	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	100% statutory inspections and no enforcement actions	All statutory inspections were completed by 31.03.2021 and all processes were	-

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														compliant.	
9	Explore expansion of smoke control area	Promoting Low Emission Plant	Regulations for fuel quality	2019	2021	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Planning	Reduction in PM10 and PM2.5	Progress reported to AQ Steering Group	New legislation banning the sale of wet wood and coal will supersede this	-
10	Explore feasibility of introducing a low emission zone in Canterbury City Centre	Traffic management	Road User Charging (RUC)/ Congestion charging	2018	2021	Local Authority Environmental Health Dept	**LA**	No	Not funded	> £1m	Planning	Reduced vehicle emissions	Progress reported to AQ Steering Group	Work has started on the feasibility of a CAZ.	-
11	Explore opportunities to enhance sustainable transport hub at Canterbury West station	Alternatives to private vehicle use	Rail based Park & Ride	2018	2022/23	Local Authority Transport Dept	**LA**	No	Partially funded	< £500K	Planning	Reduced vehicle emissions	Progress reported to AQ Steering Group	Planning phase	Lengthy Timescale
12	Review Taxi / Private Hire Vehicle Policy licence fees. Promote low emission vehicles by ranking charges based on emission levels. (Lowest fees / lowest emissions)	Environmental permits	Permits as economic instrument	2020	August 2022	Local Authority Licensing Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Increase in number of taxis in cleaner emissions classes	New Licensing Policy adopted in February 2021 requires all vehicles to be Euro 6 from 01/08/22 and for all vehicles to be ULEV by 01/08/25 and to be all electric by 01/08/30.	-
13	Work with Quality Bus Partnership to Review bus routes and links to train stations Introduce low emission buses and technology Supporting socially necessary bus routes Contactless tickets for public transport network Improve technology and bus infrastructure such as boarders/ shelters/ signage	Traffic management	Strategic highway improvements	2018	Ongoing	Local Authority Transport Dept	LA & Bus Companies	No	Partially funded	£100k - £500k	Planning	Reduced vehicle emissions	Increase in number of buses in cleaner emissions classes	Euro 6 buses are used on the most heavily used routes. The Park and Ride contract from April 2021 includes 100% Euro 6 bus fleet. Improvements to bus stop infrastructure continues.	-
14	Implement intelligent transport system such as: Linking traffic signals, interactive car parking signs, variable messages to give motorists up to date information	Traffic management	Congestion management	2018	Ongoing	Local Authority Transport Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Number of real time car parking signs giving accurate parking information	All real time car parking signs now give accurate parking information. Kent Car Share and Park and Ride being promoted on VMS.	-
15	Incentivise car parking fees to reduce city centre car parking	Traffic management	Emission based parking or permit charges	2019	Complete February 2020	Local Authority Transport Dept	**LA**	No	Fully funded	Reduced Income	Implemented	Reduced vehicle emissions	Increase in park and ride take-up	Increased parking charges in the city centre and 20% discount for electric and plug-in hybrid electric vehicles at ANPR car parks.	-
16	Promote strategic routes for freight - link from CCC website to http://www.freightjourneyplanner.co.uk/	Freight and delivery management	Route management plans	2018	Complete November 2018	Local Authority Communications Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Reduction on HGVs using inappropriate routes	Implemented Link on CCC air quality website page created	-
17	Promote the reporting of "dirty" freight vehicles to DfT (https://www.gov.uk/report-smoky-vehicle)	Freight and delivery management	Other	2018	Ongoing	Local Authority Communications Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	DfT data on number of reported vehicles	Implemented	-
18	Review of Park and Ride bus contract to include consideration of air quality issues - low emission buses, routes to train stations etc	Alternative to private vehicle use	Park and Ride	2019	Complete February 2021	Local Authority Transport Dept	**LA**	No	Fully funded	< £500K	Implemented	Reduced vehicle emissions	New contract to include low emission buses	The Park and Ride contract includes a 100% Euro VI bus fleet.	-
19	Promote all development sites to have electric charging points for electric / hybrid vehicles	Promote low emission transport	Low emission infrastructure	2018	Ongoing	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Number of sites with ECPs permitted per year	Air quality mitigation is being secured for all new strategic development sites, including the installation of electric vehicles charging points, which will help to incentivise and accelerate the uptake of electric vehicles. Four applications for large housing developments including 894 ECPs were permitted this	-

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														year	
20	Undertake a programme of facilitating electric charging points	Promote low emission transport	Low emission infrastructure	2018	Ongoing	Local Authority Transport Dept	Defra and LA	Yes	Partially funded	£100k - £500k	Implemented	Reduced vehicle emissions	Number of Electric Charging Points installed	A new Electric Vehicle Infrastructure Strategy has been produced to increase the number of charging points across the District. The installation of 9 on street chargers in 2019 has proved very successful and has had a high take up. Usage is good and rising each month. Currently compiling requests for second tranche of on street chargers.	-
21	Increase park and ride capacity at New Dover Road, Wincheap and Sturry Road sites	Alternative to private vehicle use	Park and Ride	2018	2023	Local Authority Transport Dept	**LA**	No	Fully funded	> £1m	Planning	Reduced vehicle emissions	Progress reported to AQ Steering Group	Planning application for the expansion of Wincheap P&R was considered in late 2019 but stalled owing to objections and a Judicial Review.. This has now been withdrawn Provision of New Dover Road relocated and expanded P&R site is linked to Mountield Park planning application. The Park and Ride site is to be available prior to the occupation of 1600 dwellings.	Legal challenges
22	Develop public realm improvements to increase walking opportunities	Transport planning and infrastructure	Walking cycle network	2018	2023	Local Authority Transport Dept	**LA**	No	Fully funded	< £500K	Planning	Reduced vehicle emissions	Number of schemes completed	Remedial works to all three subways required and ordered for later this year. Repaving work in St Margaret's Street is under construction now. Repaving works to St George's Street were delayed owing to lockdown and financial pressures. Rising bollard scheme, designed as a counter terrorism initiative will also remove all extraneous vehicles from the city centre and was installed during 2020	-
23	Develop programme of cycle route improvements	Transport planning and infrastructure	Walking cycle network	2018	Ongoing	Local Authority Transport Dept	**LA**	No	Fully funded	< £500K	Planning	Reduced vehicle emissions	Number of routes completed	1st phase of Riverside and Crab and Winkle routes both completed during 2020	-
24	Work with KCC to enhance bus lanes	Transport planning and infrastructure	Bus route improvements	2018	Ongoing	Local Authority Transport Dept	KCC	No	Not funded	Unknown	Planning	Reduced vehicle emissions	Improved bus journey times and increased patronage	The Sturry Road midsection bus lane scheme was dropped by KCC. Funding for the Sturry Road western section has not been identified	Funding Lack of public support

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25	Develop road network improvements	Traffic management	Strategic highway improvements	2019	March 2023	Local Authority Transport Dept	KCC	No	Partially funded	Unknown	Planning	Reduced vehicle emissions	Report on completion of works and change to traffic flows	Planning consent granted for A2 off slip road. but technical approval from HE is still outstanding	It has not been possible to get technical approval from Highways England for A2 slip road
26	Investigate reducing traffic delays at level crossings and minimise time that level crossing gates are down	Transport planning and infrastructure	Walking cycle network	2018	Summer 2023	Local Authority Transport Dept, Network Rail	Network Rail	No	Not funded	£20K	Planning	Reduced vehicle emissions	Reduced waiting time	Network Rail currently seeking funding to go towards two trackside detectors at £10k each	-
27	Deliver Herne relief road	Traffic Management	Strategic highway improvements	2019/20	2023	Kent County Council	KCC	No	Partially funded	> £1m	Underway	Reduced vehicle emissions	Reduction in volume of traffic through Herne	This scheme is linked to planning consent for sites in Herne and Hillborough. Funding is part secured.	-
28	Reporting of air quality in Corporate Annual Report and the Annual Status Report on the assessment of air pollution in the area	Policy guidance and development control	Other policy	2018	Ongoing	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Reports published	Annual monitoring report will be included in corporate annual report which will go to Committee in July	-
29	Introduce and implement measures to improve air quality in all strategies, when each strategy is reviewed	Policy guidance and development control	Other policy	2018	Ongoing	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Number of strategies having due regard to air quality	Central to the review of the Parking Strategy, the Taxi & PHV Licensing Policy and the Electric Vehicle Infrastructure Strategy	-
30	Work with KMAQP to introduce a county wide Energy & Low Emissions Strategy	Policy guidance and development control	Other policy	2018	Complete December 2019	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Development of guidance and strategy	Kent and Medway Energy and Low Emission Strategy adopted and being implemented	-
31	Embed air quality in the Procurement process especially relating to vehicles / plant. For CCC vehicles and plant as well as those related to contracts	Promote low emission transport	Vehicle procurement	2018	Ongoing	Local Authority Procurement Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Number of contracts issued with air quality as part of contract	Alternative fuel options investigated when purchasing or leasing vehicles. Current contract information for all contracted services with large vehicle fleets gathered and contract managers informed of new vehicle emissions standards (Euro 4 petrol and Euro 6 diesel). Officers are asked to move to battery electric vehicles when leases expire. Currently 1 officer has swapped to a battery electric vehicle. Park and Ride will be Euro VI buses. The Waste vehicles specification will consider low emissions as preferable. We will continue to discuss emissions of vehicles and air quality with client officers as new procurements occur.	-
32	Ensure permits and licences issued by the Council for Markets, Concessions and Events include standard terms and conditions to ensure good air quality.	Environmental permits	Permits based on environmental criteria	2018	Ongoing	Local Authority Events Dept	**LA**	No	Fully funded	£0	Implemented	Reduced generator emissions	No of permits and licensed issued reported annually	Events Implementation Strategy 2019-21 requires minimum environmental standards which restricts the use of	-

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														generators/equipment using solid fuel, diesel or petrol. Consistent standard terms and conditions are applied to all permits and licenses.	
33	Work with neighbouring authorities on Kent wide Energy and Low Emission Strategy	Policy guidance and development control	Area wide strategies to reduce emissions	2018	Complete December 2019	Local Authority Environmental Health Dept	**LA & KCC**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	KPIs in countywide strategy	Kent and Medway Energy and Low Emission Strategy adopted and KCC travel plan monitoring officer appointed	-
34	Work with stakeholders on awareness raising projects	Public Information	Other	2018	Ongoing	Local Authority Environmental Health Dept	**LA**	Yes	Fully funded	£10K	Implemented	Reduced vehicle emissions	Number of projects delivered	Promotion of University of Kent research on anti-idling messages in a press release on 27 June 2019. Anti-idling road signs installed at St Stephens, St Dunstans and Sturry railway crossings in January 2020.	-
35	Dedicated web page with graphics, maps, information and links.	Public Information	Part of promotional campaign	2018	Complete March 2020	Local Authority Environmental Health Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Number of views	Webpages updated and improved with a new anti-idling webpage and information electric vehicle charging points.	-
36	Promotion of national initiatives	Public Information	Part of promotional campaign	2018	Ongoing	Local Authority Communications Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Number of promotions	Clean Air Day promotion on social media	-
37	Promotion of local initiatives	Public Information	Part of promotional campaign	2018	Ongoing	Local Authority Communications Dept	**LA**	No	Fully funded	£0	Implemented	Reduced vehicle emissions	Number of promotions	An air quality communications plan has been developed. Internal communication on what help there is available to employees to clean up the air in the city. New car club article on newsroom and on social media on 21 November 2020. Increased messaging on anti-idling from early January to mid March.	-

Note: Measures have been colour-coded based on the efficacy of the approach:

Most Effective	Somewhat Effective	Least Effective

$PM_{2.5}$ – 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.

Canterbury City Council is taking the following measures to address $PM_{2.5}$:

- Action 5: promotion of the Defra Ready to Burn guide and wood burning campaigns each winter; and
- Action 6: Work with event venues to restrict use of generators / equipment using solid fuel, diesel or petrol.

Canterbury City Council does not currently undertake any monitoring of $PM_{2.5}$. However, PM_{10} monitoring is undertaken in the district and can therefore be used to estimate $PM_{2.5}$ concentrations, as recommended in box 7.7 of LAQM.TG(16). The national factor of 0.7 was applied to the 2020 PM_{10} annual mean concentration to estimate the $PM_{2.5}$ annual mean concentration. The estimated $PM_{2.5}$ annual mean concentration, based on the PM_{10} monitored data was calculated as 11.8µg/m^3 for 2020, which is well below the $PM_{2.5}$ obligatory standard of 25µg/m^3.

The current Defra 2020 background maps for Canterbury City Council (2018 based[7]) show that all background concentrations of $PM_{2.5}$ are well below the 2020 annual mean AQS objective for $PM_{2.5}$. The highest concentration is predicted to be 10.4µg/m^3 within the 1 x 1km grid square with the centroid grid reference of 614500, 158500. This point is located close to St Dunstan's Street within the Canterbury 3 AQMA, an area known for traffic congestion.

[7] Defra Background Mapping data for local authorities (2018-based), available online at https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

The Public Health Outcomes Framework data tool[8] compiled by Public Heath England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale (latest available data: 2019). The 2019 fraction of mortality attributable to $PM_{2.5}$ pollution in Kent is 5.3%. This is above the fractions reported for the South East region of England which is 5.2% and the fraction across England which is 5.1%.

[8]Public Health Outcomes Framework, Public Health England. data tool available online at https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000008/ati/201/are/E07000106/iid/30101/age/230/sex/4/cid/4/page-options/eng-vo-0_eng-do-0_ovw-do-0_cin-ci-4_car-do-0

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

This section sets out the monitoring undertaken within 2020 by Canterbury City Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Canterbury City Council undertook automatic (continuous) monitoring at 2 sites during 2020. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The Kentair page presents automatic monitoring results for Canterbury City Council with automatic monitoring results also available through the UK-Air website.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Canterbury City Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 64 sites during 2020. Table A.2 in Appendix A presents the details of the non-automatic sites.

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 and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater

than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.1.3 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The monitoring results from the urban background Chaucer Technology School automatic monitoring station (CM1) show that NO_2 concentrations were well below the 1-hour and annual mean objective levels during the monitoring years 2016-2020.

The trend at this site shows that annual mean concentrations have dropped to 9.9µg/m^3 in 2020 which is the lowest recorded level. There was a slight increase in results in 2016 and 2017, where concentrations increased to 14µg/m^3 and 14.9µg/m^3, respectively.

The roadside Military Road automatic monitoring station (CM3), which is located within the current AQMA, recorded much higher concentrations. Nonetheless, the annual mean NO_2 AQS objective has been met at this site for the past 5 years. Similar to CM1, annual mean concentrations peaked in 2016 and 2017 but have decreased to 25.3µg/m^3 in 2019 and decreased further to 19.9µg/m^3 in 2020. Further monitoring at both sites will help determine whether the trends remain at these lower levels. Figure A.1 shows the trend in automatic monitoring results over the past five years.

Figure A.2 and Figure A.3 in Appendix A show trends in annual mean NO_2 concentrations measured at non-automatic sites inside the AQMAs. The 2020 diffusion tube results show that overall levels of NO_2 across the district reduced due to the large reductions in traffic associated with the lockdown restrictions. The monitoring results indicate that the annual

mean NO_2 AQS objective was achieved at all of the monitoring locations in 2020, seven fewer exceedances than 2019:

Trends over the past five years at DT28, located within the Herne AQMA, have shown a gradual increase in NO_2 concentrations resulting in an exceedance of the objective in 2019. However, this location recorded a concentration of just 32.0µg/m^3 in 2020 (see Figure A.3).

Figure A.4 shows trends in annual mean NO_2 concentrations measured at non-automatic sites outside the AQMAs. The monitoring results indicate that the annual mean NO_2 AQS objective was not exceeded at any location in 2020 and all sites reported concentrations that were less than 36µg/m^3 (10% of the annual mean NO_2 AQS objective).

The annual mean NO_2 concentration did not exceed 60µg/m^3 at any monitoring location and therefore exceedances of the NO_2 1-hour mean AQS objective (200µg/m^3) are unlikely at these locations. Additionally, no exceedances of the 1-hour mean AQS objective were noted at either of the continuous monitoring sites, CM1 and CM3 during 2020.

3.1.4 Particulate Matter (PM_{10})

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

Both annual mean and 24-hour mean PM_{10} AQS objectives have been met in all of the past five years.

The PM_{10} monitoring equipment failed on 21 April 2020 and was not replaced as it was unable to be repaired. The data has been annualised as the data capture falls below 75%. Further details on adjustments are provided in Appendix C.

Figure A.5 in Appendix A shows trends in annual mean PM_{10} concentrations measured at the Canterbury site. It can be seen that the annual mean PM_{10} concentration increased to 21µg/m^3 in 2018, but then returned to 17µg/m^3 in 2019 and fell to 16µg/m^3 in 2020 which is well below the AQS objective of 40µg/m^3.

Figure A.6 in Appendix A shows the number of exceedances of the PM_{10} 24-hour mean air quality objective of 50µg/m^3. It can be seen that the number of exceedances was stable at

two exceedances between 2016 and 2017, decreasing to one exceedance in 2018. The number of exceedances increased to three in 2019, which is still well below the 35 exceedances per year limit. As monitoring was undertaken for less than a full year, the 90.4th percentile for 24 hour PM10 of 30µg/ is reported which means that if there had been 100% data capture, there would have been less than 35 exceedances of 50µg/m^3 during the year.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
Chaucer Technology School	Urban background	616186	157320	NO_2, PM_{10}	NO	Chemiluminescence, TEOM	0	26.2	2.6	Chaucer Technology School
Military Road	Roadside	615401	158169	NO_2	YES (Canterbury 3)	Chemiluminescence	0	3.2	1.75	Military Road

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 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)[1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT1	92b Broad Street	ROADSIDE	615295	158001	NO2	YES (Canterbury 3)	0.4	1.4	NO	2
DT6	75 Sturry Road	ROADSIDE	615655	158696	NO2	YES (Canterbury 3)	9.5	3.7	NO	2.6
DT7	31 St Dunstans	ROADSIDE	614355	158267	NO2	YES (Canterbury 3)	0.2	2.1	NO	2.3
DT8	Albany House 115 High St, Herne Bay	ROADSIDE	617785	168231	NO2	NO	1.8	0.4	NO	2.6
DT9	100 High Street, Whitstable	ROADSIDE	610686	166421	NO2	NO	2.7	0.7	NO	2.95
DT11	28 High Street, Littlebourne	ROADSIDE	620909	157426	NO2	NO	4.5	1.85	NO	2.1
DT2	95 Wincheap	KERBSIDE	614229	157091	NO2	YES (Canterbury 3)	1	0.4	NO	2.6
DT13[4]	Spring Lane, Canterbury	URBAN BACKGROUND	616186	157320	NO2	NO	0	0	YES	2.7
DT3	48 North Lane	ROADSIDE	614675	158219	NO2	YES (Canterbury 3)	2.4	0.3	NO	2.2
DT4	Old Tannery Rheims	ROADSIDE	614410	157702	NO2	YES (Canterbury	11	0.6	NO	2.6

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)[1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
	Way					3)				
DT27	44 Broad Street	ROADSIDE	615295	158030	NO2	YES (Canterbury 3)	2	0.6	NO	2.4
DT12	Green Island, Military Road	ROADSIDE	615390	158180	NO2	YES (Canterbury 3)	0	1.75	NO	2.95
DT14	Non Conformist Burial Ground, Wincheap,	ROADSIDE	614065	156976	NO2	YES (Canterbury 3)	0	1.75	NO	2.55
DT15	284 Wincheap, Canterbury	ROADSIDE	613902	156851	NO2	YES (Canterbury 3)	0	1.7	NO	2.6
DT16[4]	Military Road Monitoring Station	ROADSIDE	615401	158169	NO2	YES (Canterbury 3)	0	3.2	YES	1.4
DT17	170 Sturry Road	ROADSIDE	616169	159067	NO2	YES (Canterbury 3)	0	2	NO	2.45
DT18	25 Old Dover Road	KERBSIDE	615106	157382	NO2	YES (Canterbury 3)	0	1.8	NO	2.4
DT19	72 St Dunstans	ROADSIDE	614454	158180	NO2	YES (Canterbury 3)	0	1.8	NO	2.6
DT20	St Mildred Court, St Peter S Place	ROADSIDE	614479	157857	NO2	YES (Canterbury 3)	2	2.8	NO	2
DT21	The Old Raj, 25-26 North	ROADSIDE	614688	158251	NO2	YES (Canterbury	1	1.1	NO	2.45

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)[1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
	Lane					3)				
DT22	Opp 9 St Martin S Hill	ROADSIDE	615851	157672	NO2	NO	0	1.2	NO	2.6
DT23[3]	Opp 10-16 Wincheap, Canterbury,	KERBSIDE	614501	157338	NO2	YES (Canterbury 3)	2.6	0.5	NO	2.7
DT24	Jct Of Sturry Hill/field Way,	ROADSIDE	617748	160331	NO2	NO	0	1.3	NO	2.45
DT26	11 Herne Street, Herne	ROADSIDE	618242	165948	NO2	YES (Herne 1)	5.7	1	NO	2.9
DT28	18 Herne Street, Herne	ROADSIDE	618241	165928	NO2	YES (Herne 1)	0	0.9	NO	2.4
DT29	Opp 247 Canterbury Road, Herne	ROADSIDE	618125	166309	NO2	NO	18	1.65	NO	2.16
DT31	Lay By On A2990 Thanet Way, Herne Bay	ROADSIDE	617217	167155	NO2	NO	20	3.45	NO	2.82
DT32	66 London Road	KERBSIDE	614055	158242	NO2	NO	2	0.55	NO	2.65
DT30	O/s 230 Canterbury Road, Herne Bay	KERBSIDE	618073	167085	NO2	NO	4.4	0.64	NO	2.23
DT34	Falstaff Hotel 8-10 St Dunstans, Canterbury	ROADSIDE	614541	158137	NO2	YES (Canterbury 3)	0.5	5.2	NO	2.4

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)[1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT35	47 New Dover Road, Canterbury	KERBSIDE	615645	157192	NO2	NO	24	0.3	NO	2.4
DT36	Westside Apts, Station Road West, Canterbury	KERBSIDE	614522	158240	NO2	NO	2.6	0.3	NO	2.6
DT37	Red House Nursing Home, A2050, Canterbury	ROADSIDE	613621	158073	NO2	YES (Canterbury 3)	33.3	2.2	NO	2.3
DT38	Ten Perch Road, Canterbury	KERBSIDE	613722	156784	NO2	NO	103	0.6	NO	2.5
DT39	1 Pippins Place, Ashford Rd, Thanington	ROADSIDE	612923	156682	NO2	NO	9.6	1.5	NO	2.4
DT40	155/157 Cromwell Road, Whitstable	KERBSIDE	611070	166555	NO2	NO	6.4	0.4	NO	2.3
DT41	Old Thanet Way Eastbound, Whitstable	ROADSIDE	610696	164570	NO2	NO	110.5	2.1	NO	2.2
DT42	Reeves Way Roundabout, Chestfield	ROADSIDE	613484	166687	NO2	NO	73.8	2.6	NO	2.3
DT43	Bullockstone Road, Herne Bay	KERBSIDE	617091	165749	NO2	NO	22.4	0.9	NO	2.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)(1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT44	17 New Dover Road, Canterbury	KERBSIDE	615445	157408	NO2	NO	3.7	0.4	NO	2.3
DT47	23 Harbour Street, Whitstable	ROADSIDE	610665	166785	NO2	NO	0	3.6	NO	2.43
DT48	9 - 11 High Street, Whitstable	ROADSIDE	610647	166658	NO2	NO	0	2.1	NO	2.23
DT49	St Alphege School, Oxford Street, Whitstable	ROADSIDE	610670	166252	NO2	NO	3.5	1.8	NO	2.36
DT50	53 Shalloak Road, Broad Oak	KERBSIDE	616728	161469	NO2	NO	2.2	0.8	NO	1.91
DT52	Island Road/The Poplars, Hersden	ROADSIDE	620633	162100	NO2	NO	7	1.32	NO	2.09
DT53	Sturry Court Mews, Sturry Hill, Canterbury	ROADSIDE	617674	160475	NO2	NO	5.2	1.4	NO	2.25
DT57	St Stephen's Road South, Canterbury	KERBSIDE	614927	158813	NO2	NO	12	0.4	NO	2.23
DT58	St Stephen's Road, North, Canterbury	KERBSIDE	614867	158899	NO2	NO	13	0.3	NO	2.23
DT60	Canterbury Bus Station	ROADSIDE	615044	157557	NO2	NO	N/A	1.7	NO	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)[1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT61	29 Herne Street, Herne	KERBSIDE	618285	165902	NO2	YES (Herne 1)	0	0.00	NO	2.30
DT62	33 Herne Street, Herne	ROADSIDE	618311	165865	NO2	YES (Herne 1)	0	2.60	NO	2.45
DT63	The Forge, Herne Street, Herne	KERBSIDE	618314	165821	NO2	YES (Herne 1)	0.74	0.80	NO	2.50
DT64	32 Herne Street, Herne	ROADSIDE	618292	165801	NO2	NO	0	1.42	NO	2.21
DT65	Military Road Roundabout, Canterbury	ROADSIDE	615618	158367	NO2	YES (Canterbury 3)	2.05	1.05	NO	2.30
DT66	Riverside Childrens' Centre, Kingsmead Road, Canterbury	ROADSIDE	615177	158623	NO2	NO	0	32.00	NO	2.25
DT67	6/8 Island Road, Sturry	ROADSIDE	617840	160482	NO2	NO	0	2.20	NO	2.27
DT68	32 St George's Place, Canterbury	KERBSIDE	615327	157495	NO2	YES (Canterbury 3)	2.28	0.40	NO	2.25
DT69	Morrisons Taxi Rank, Herne Bay	KERBSIDE	617693	168177	NO2	NO	3.53	0.50	NO	2.22
DT70	32 Mill Road, Sturry	ROADSIDE	617691	160045	NO2	NO	0.31	1.50	NO	2.40
DT71	29 Mill Road, Sturry	ROADSIDE	617747	160101	NO2	NO	0.33	1.53	NO	2.48
DT72	58 Mill Road, Sturry	ROADSIDE	617753	160089	NO2	NO	0.4	1.32	NO	2.44

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)(1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT73	St Augustines Court, Eddington	ROADSIDE	618006	166914	NO2	NO	6.0	1.86	NO	2.26
DT74	New Lidl on the Thanet Way, Herne Bay	ROADSIDE	616476	167240	NO2	NO	4.24	1.77	NO	2.21

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.

(3) DT23 was relocated in January 2019

(4) Triplicate site

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
CM1	616186	157320	Urban background	99%	99%	14	14.9	12	12.3	9.9
CM3	615401	158169	Roadside	97%	97%	33	37.2	27	25.3	19.9

x**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

(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%).

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
DT1	615295	158001	ROADSIDE	83%	83%	**49.2**	**51.9**	**45.1**	**45.1**	39.2
DT6	615655	158696	ROADSIDE	100%	100%	33.6	32.9	29.2	29.3	23.3
DT7	614355	158267	ROADSIDE	50%	50%	30.3	31.7	26.2	25.2	20.3
DT8	617785	168231	ROADSIDE	100%	100%	28.6	28.7	25.0	25.0	21.5
DT9	610686	166421	ROADSIDE	92%	92%	30.0	27.0	23.8	25.2	20.0
DT11	620909	157426	ROADSIDE	83%	83%	20.6	21.8	18.0	19.2	14.4
DT2	614229	157091	KERBSIDE	83%	83%	33.9	33.1	29.3	28.3	22.7
DT13(6)	616186	157320	URBAN BACKGROUND	83%	83%	15.2	15.2	11.7	11.9	10.2
DT3	614675	158219	ROADSIDE	83%	83%	36.2	36.9	34.1	32.6	25.4
DT4	614410	157702	ROADSIDE	83%	83%	**49.6**	**50.5**	**43.9**	**44.6**	38.0
DT27	615295	158030	ROADSIDE	66%	66%	**48.2**	**49.0**	**46.3**	**45.9**	38.3
DT12	615390	158180	ROADSIDE	66%	66%	**42.1**	**43.2**	37.5	38.3	30.6
DT14	614065	156976	ROADSIDE	75%	75%	**43.3**	**43.5**	39.4	39.8	32.5
DT15	613902	156851	ROADSIDE	66%	66%	**49.0**	**48.5**	39.0	**42.5**	33.6
DT16(6)	615401	158169	ROADSIDE	83%	83%	33.6	37.1	27.3	26.0	20.2
DT17	616169	159067	ROADSIDE	92%	92%	**42.0**	**41.4**	39.4	38.6	31.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
DT18	615106	157382	KERBSIDE	83%	83%	38.2	37.0	34.1	33.1	24.4
DT19	614454	158180	ROADSIDE	83%	83%	**43.9**	**42.7**	38.1	38.8	28.3
DT20	614479	157857	ROADSIDE	50%	50%	38.6	34.5	33.6	30.6	24.7
DT21	614688	158251	ROADSIDE	50%	50%	29.7	27.0	26.3	25.7	20.5
DT22	615851	157672	ROADSIDE	83%	83%	35.7	39.6	32.8	31.2	27.3
DT23	614501	157338	KERBSIDE	83%	83%	**57.6**	**63.4**	**48.5**	**44.1**[5]	32.9
DT24	617748	160331	ROADSIDE	100%	100%	31.4	32.7	26.5	29.2	23.7
DT26	618242	165948	ROADSIDE	100%	100%	28.3	28.4	24.8	24.6	20.7
DT28	618241	165928	ROADSIDE	50%	50%	31.5	38.2	39.9	**41.3**	32.0
DT29	618125	166309	ROADSIDE	92%	92%	21.8	20.6	19.2	20.2	16.6
DT31	617217	167155	ROADSIDE	42%	42%	29.4	30.3	26.7	28.0	21.1
DT32	614055	158242	KERBSIDE	83%	83%	31.3	31.9	25.2	28.1	20.5
DT30	618073	167085	KERBSIDE	92%	92%	28.9	30.0	25.3	24.6	20.6
DT34	614541	158137	ROADSIDE	83%	83%	33.4	30.3	29.1	30.7	22.1
DT35	615645	157192	ROADSIDE	66%	66%	-	33.7	32.6	31.9	25.1
DT36	614522	158240	KERBSIDE	66%	66%	-	27.5	28.2	27.6	19.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
DT37	613621	158073	ROADSIDE	58%	58%	-	24.3	21.3	23.1	16.9
DT38	613722	156784	KERBSIDE	75%	75%	-	22.9	27.2	24.2	18.9
DT39	612923	156682	ROADSIDE	83%	83%	-	26.0	22.8	22.7	18.1
DT40	611070	166555	KERBSIDE	92%	92%	-	17.3	17.1	17.9	14.9
DT41	610696	164570	ROADSIDE	83%	83%	-	**40.8**	29.1	29.7	23.2
DT42	613484	166687	ROADSIDE	100%	100%	-	27.8	24.4	23.9	19.1
DT43	617091	165749	KERBSIDE	100%	100%	-	12.8	12.8	12.6	10.1
DT44	615445	157408	KERBSIDE	75%	75%	-	36.7	36.4	35.2	25.2
DT47	610665	166785	ROADSIDE	100%	100%	-	-	19.0	18.9	15.1
DT48	610647	166658	ROADSIDE	92%	92%	-	-	26.3	23.8	20.1
DT49	610670	166252	ROADSIDE	83%	83%	-	-	21.1	20.9	16.3
DT50	616728	161469	KERBSIDE	100%	100%	-	-	22.9	20.0	17.1
DT52	620633	162100	ROADSIDE	83%	83%	-	-	19.4	19.3	18.3
DT53	617674	160475	ROADSIDE	100%	100%	-	-	31.1	35.3	30.5
DT57	614927	158813	KERBSIDE	75%	75%	-	-	29.2	30.1	21.1
DT58	614867	158899	KERBSIDE	75%	75%	-	-	25.0	22.8	17.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
DT60	615044	157557	ROADSIDE	50%	50%	-	-	-	34.6	23.3
DT61	618285	165902	KERBSIDE	100%	100%	-	-	-	-	24.7
DT62	618311	165865	ROADSIDE	83%	83%	-	-	-	-	27.6
DT63	618314	165821	KERBSIDE	100%	100%	-	-	-	-	27.5
DT64	618292	165801	ROADSIDE	75%	75%	-	-	-	-	33.0
DT65	615618	158367	ROADSIDE	83%	83%	-	-	-	-	21.0
DT66	615177	158623	ROADSIDE	83%	83%	-	-	-	-	13.3
DT67	617840	160482	ROADSIDE	92%	92%	-	-	-	-	25.8
DT68	615327	157495	KERBSIDE	50%	50%	-	-	-	-	38.2
DT69	617693	168177	KERBSIDE	92%	92%	-	-	-	-	18.2
DT70	617691	160045	ROADSIDE	66%	66%	-	-	-	-	26.9
DT71	617747	160101	ROADSIDE	92%	92%	-	-	-	-	18.9
DT72	617753	160089	ROADSIDE	92%	92%	-	-	-	-	23.3
DT73	618006	166914	ROADSIDE	100%	100%	-	-	-	-	20.7
DT74	616476	167240	ROADSIDE	33%	33%	-	-	-	-	26.9

xAnnualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

xDiffusion tube data has been bias adjusted.

x**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 correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

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**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

(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%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

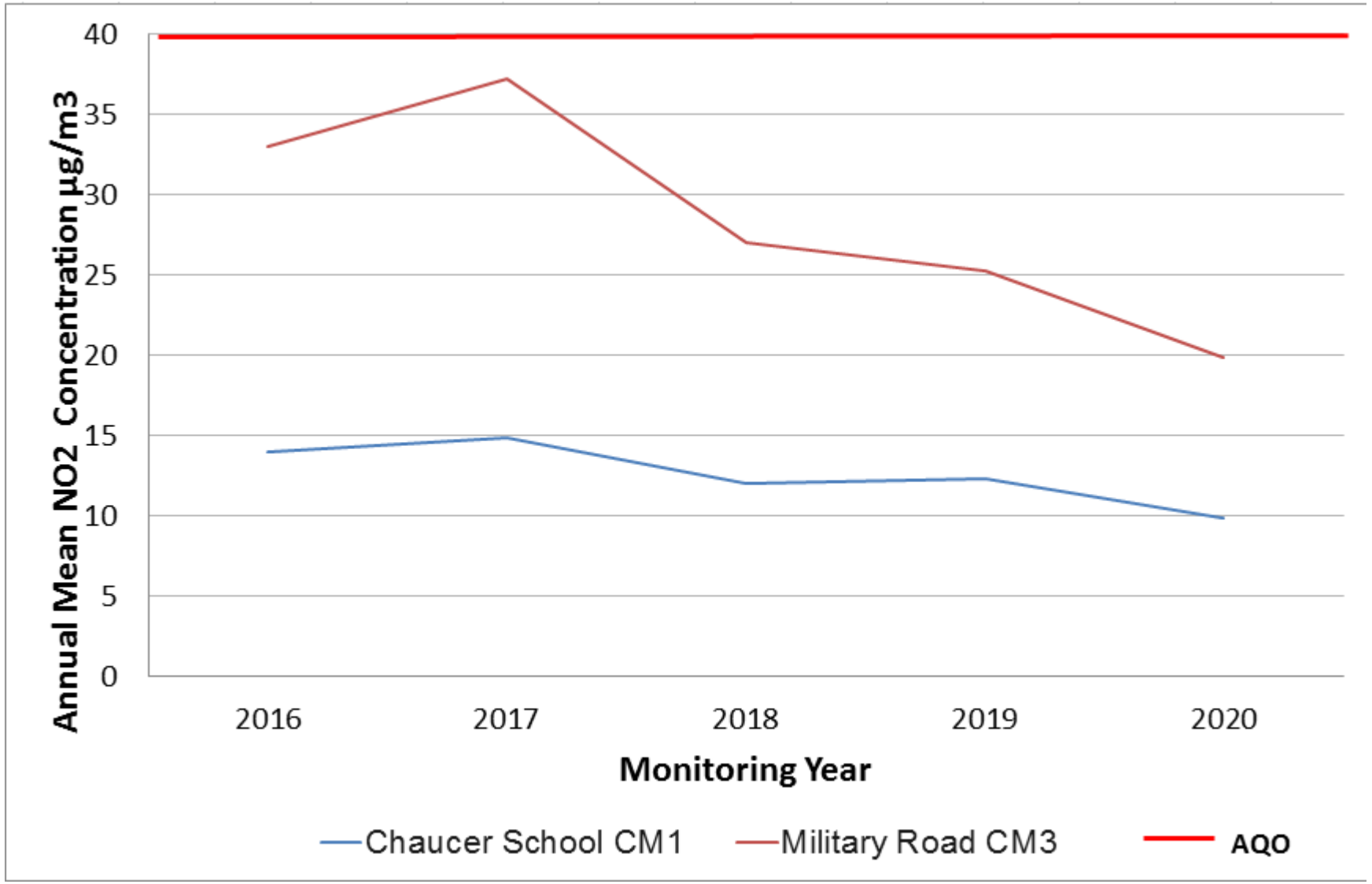
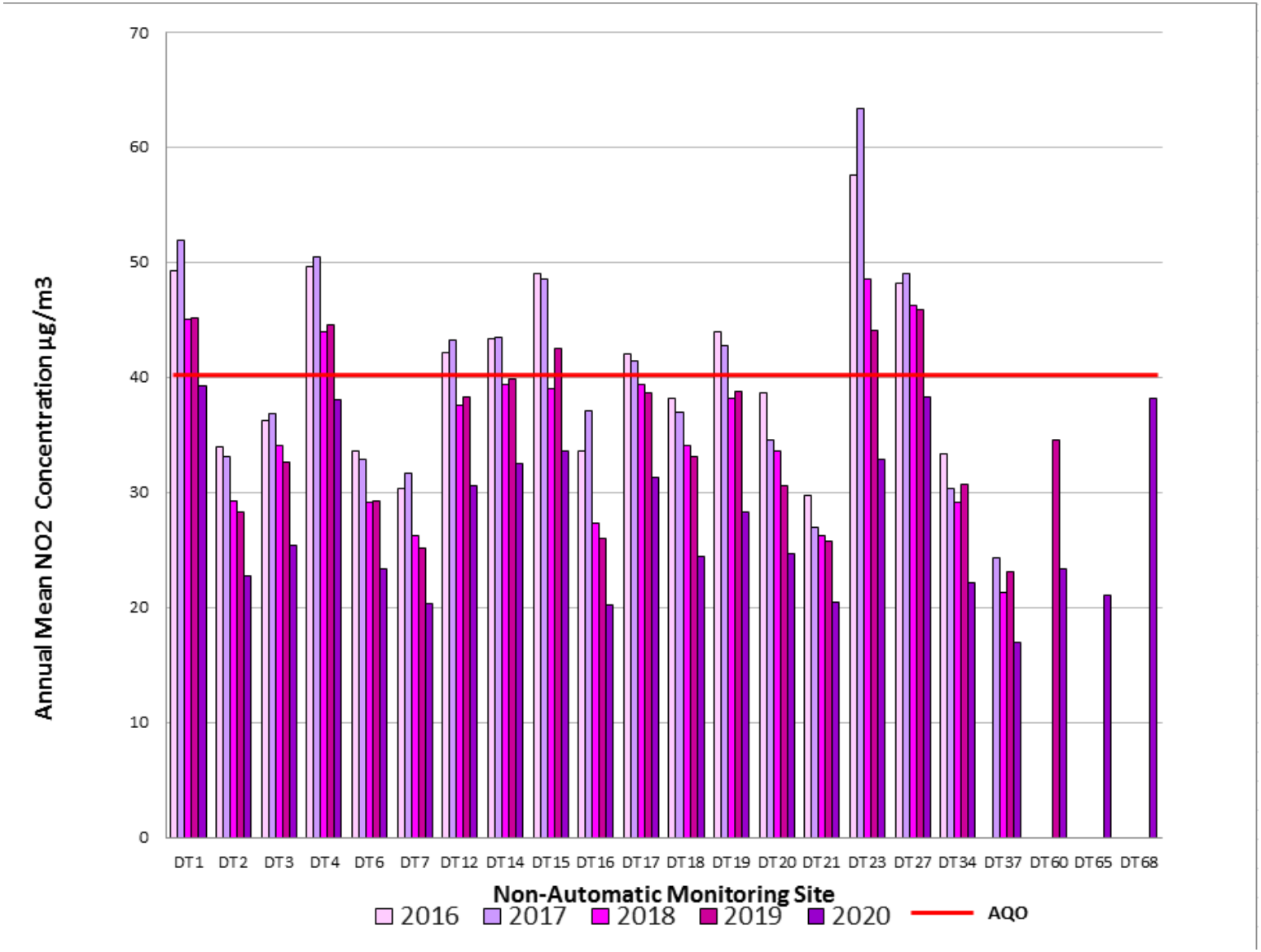


Figure A.2 - Trends in Annual Mean NO_2 Concentrations: Canterbury City AQMA



Note: DT23 has been moved to the façade of a building, further from the road to reflect relevant exposure. The concentration reported will therefore be lower than previous years.

Figure A.3 - Trends in Annual Mean NO_2 Concentrations: Herne AQMA

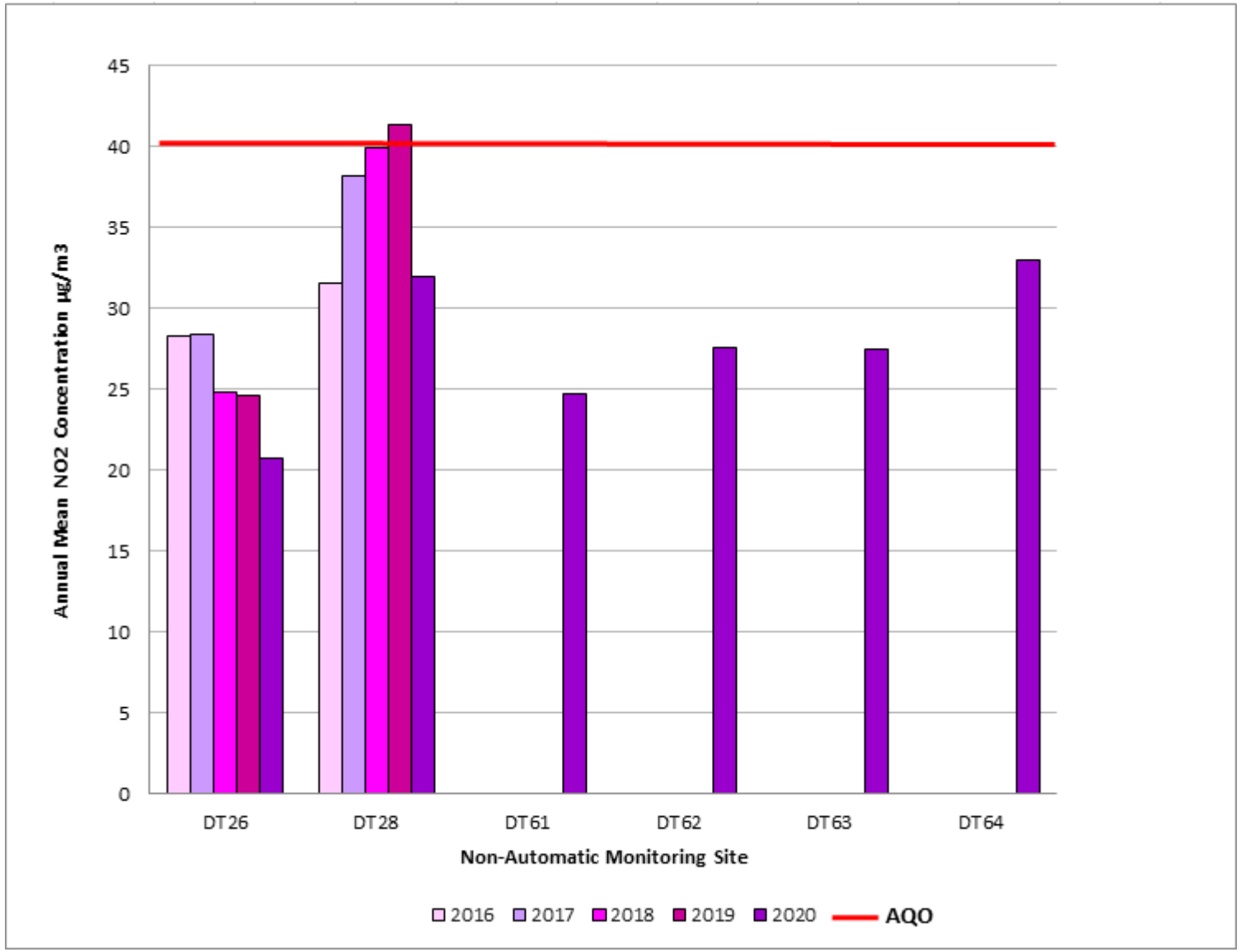


Figure A.4 - Trends in Annual Mean NO2 Concentrations: Outside the AQMAs

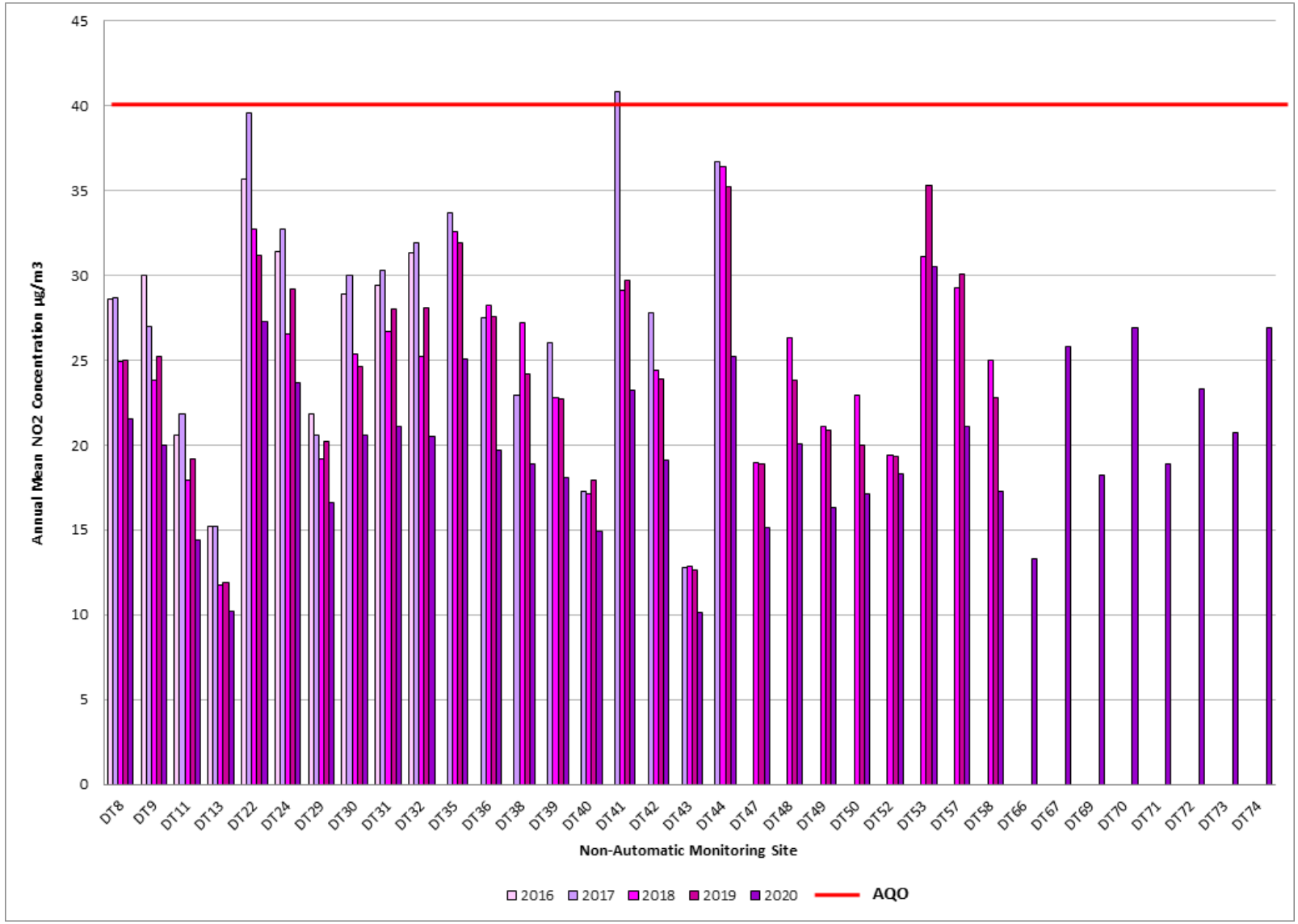


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means> 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
CM1	616186	157320	Urban background	Automatic	99%	99%	0	0	0	0
CM3	615401	158169	Roadside	Automatic	95%	95%	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%).

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
CM1	616186	157320	Urban Background	30.5	30.5	17	17	21	17	16

xAnnualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

Figure A.5 – Trends in Annual Mean PM_{10} Concentrations

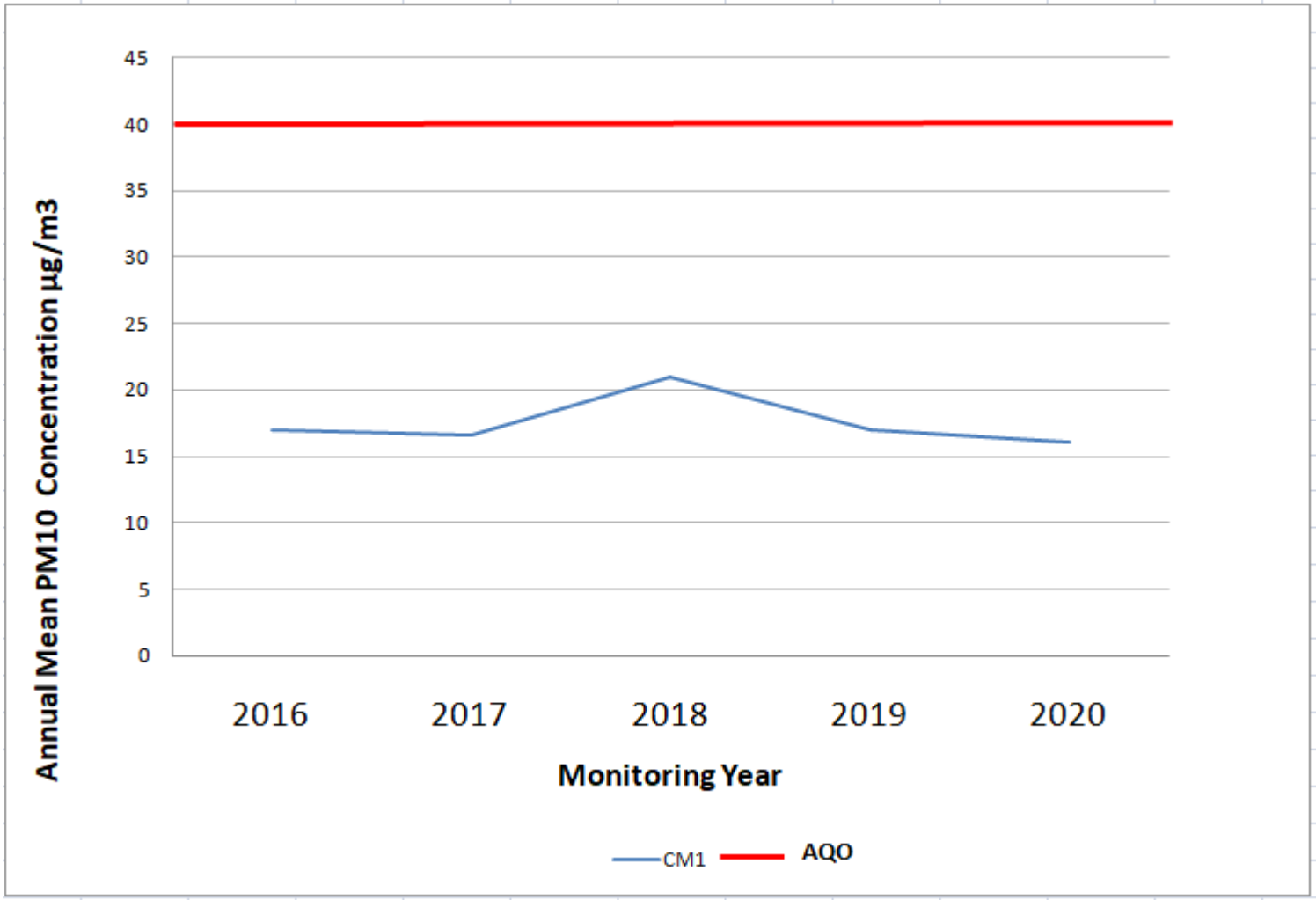


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
CM1	616186	157320	Urban Background	30.5	30.5	2	2	1	3	0 (30 µg m^{-3})

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

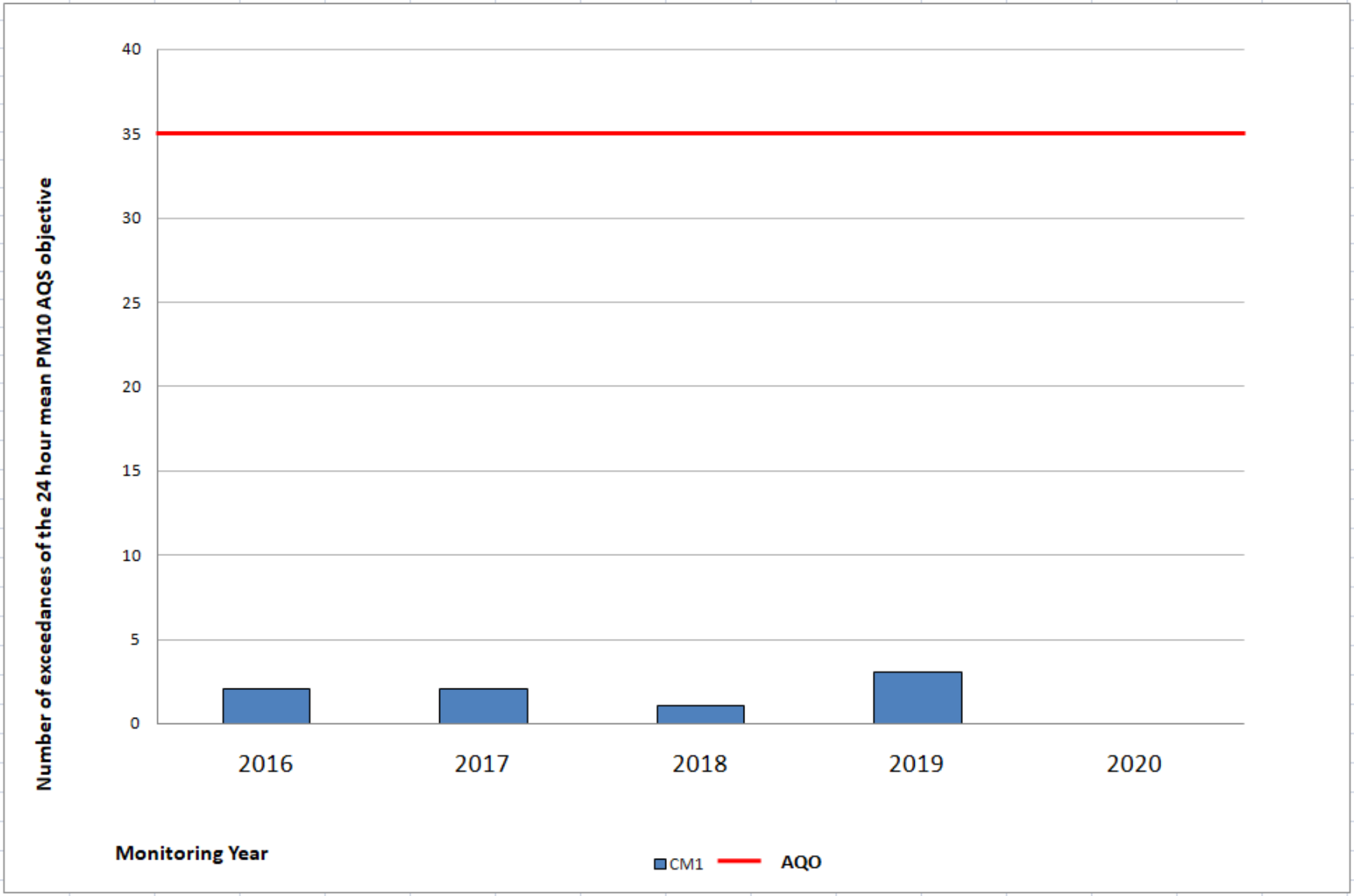
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(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%).

Figure A.6 – Trends in Number of 24-Hour Mean PM_{10} Results >50µg/m^3



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1– $NO_2$2020 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT1	615295	158001	76.1	-	-	36.8	28.6	46.2	39.7	54.0	60.9	-	-	61.9	50.5	39.2	37.8	
DT6	615655	158696	42.1	33.1	22.4	32.5	26.1	25.1	17.8	30.0	34.7	31.2	33.8	34.3	30.3	23.3		
DT7	614355	158267	-	-	-	24.9	18.1	18.3	18.0	26.2	32.3	-	-	-	23.0	20.3		
DT8	617785	168231	30.5	24.2	25.8	33.2	23.9	28.5	19.0	30.3	32.4	22.8	35.4	28.7	27.9	21.5		
DT9	610686	166421	36.2	28.5	17.3	23.3	12.3	24.9	19.7	-	29.4	26.6	35.1	32.3	26.0	20.0		
DT11	620909	157426	26.9	21.2	16.7	18.1	11.8	16.2	14.6	19.0	19.6	-	-	22.6	18.7	14.4		
DT2	614229	157091	39.8	33.3	28.6	30.4	22.2	27.1	19.6	29.7	31.7	-	-	33.1	29.6	22.7		
DT13[(6)]	616186	157320	20.1	13.7	13.3	14.5	10.0	10.4	8.0	10.4	14.2	-	-	17.7	13.2	10.2		
DT3	614675	158219	45.9	34.7	34.1	34.6	23.3	27.4	21.5	36.0	34.8	-	-	38.5	33.1	25.4		
DT4	614410	157702	66.3	55.7	41.4	37.9	37.7	50.3	38.7	56.6	61.4	-	-	47.4	49.3	38.0	24.5	
DT27	615295	158030	60.9	43.3	48.8	49.6	39.5	39.4	33.3	54.2	-	-	-	-	46.1	38.3	31.5	
DT12	615390	158180	54.6	-	-	35.1	26.4	34.6	33.2	41.7	44.7	-	-	45.5	39.5	30.6		
DT14	614065	156976	52.5	44.5	36.1	38.5	-	39.4	34.7	47.8	49.3	-	-	36.9	42.2	32.5		
DT15	613902	156851	60.8	-	43.1	38.1	33.0	35.1	-	45.9	47.6	-	-	49.5	44.1	33.6		
DT16[(6)]	615401	158169	33.2	26.1	29.8	28.9	19.4	21.7	16.4	27.1	30.4	-	-	29.5	26.3	20.2		
DT17	616169	159067	53.3	38.0	35.5	38.4	28.6	39.9	29.0	-	43.8	44.5	50.5	45.7	40.7	31.3		
DT18	615106	157382	38.0	27.9	27.9	33.0	26.1	31.6	23.2	36.8	36.3	-	-	36.6	31.7	24.4		
DT19	614454	158180	52.9	44.7	29.2	29.4	23.0	32.5	29.6	39.7	45.4	-	-	42.1	36.9	28.3		
DT20	614479	157857	44.6	-	-	30.7	24.5	-	24.3	-	40.6	-	-	36.6	33.6	24.7		
DT21	614688	158251	34.8	-	-	30.4	-	24.7	16.6	27.7	-	-	-	31.9	27.7	20.5		
DT22	615851	157672	-	-	30.1	26.8	23.0	31.8	24.8	41.3	36.8	-	-	-	30.7	27.3		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT23	614501	157338	62.9	32.7	41.8	31.8	28.1	34.7	42.6	48.3	54.3	-	-	51.1	42.8	32.9		
DT24	617748	160331	39.7	35.2	25.1	25.9	22.1	30.1	24.4	34.8	33.0	30.7	35.0	33.9	30.8	23.7		
DT26	618242	165948	33.7	28.7	27.5	24.6	14.8	28.6	19.3	28.0	29.9	21.1	36.4	29.6	26.9	20.7		
DT28	618241	165928	57.5	45.9	38.6	35.2	25.2	43.2	-	-	-	-	-	-	40.9	32.0		
DT29	618125	166309	29.6	22.6	15.4	19.5	-	18.7	17.5	21.3	21.7	19.9	26.8	24.1	21.6	16.6		
DT31	617217	167155	36.3	31.1	25.8	25.9	20.3	-	-	-	-	-	-	-	27.9	21.1		
DT32	614055	158242	40.3	33.4	27.2	24.2	18.0	20.3	16.7	25.6	32.5	-	-	28.0	26.6	20.5		
DT30	618073	167085	37.7	25.8	22.9	23.2	17.3	24.4	20.4	-	28.3	26.6	38.6	29.9	26.8	20.6		
DT34	614541	158137	37.4	30.6	29.8	28.9	18.7	25.2	19.5	28.9	36.8	-	-	31.2	28.7	22.1		
DT35	615645	157192	46.7	-	30.3	23.8	-	29.1	24.4	33.4	39.5	-	-	34.3	32.7	25.1		
DT36	614522	158240	36.3	-	-	25.6	17.7	22.9	16.2	25.6	30.7	-	-	28.2	25.4	19.7		
DT37	613621	158073	34.7	-	-	19.5	-	17.6	16.1	18.5	23.7	-	-	27.4	22.5	16.9		
DT38	613722	156784	33.8	-	24.6	26.0	18.2	23.9	14.1	23.2	25.7	-	-	31.3	24.5	18.9		
DT39	612923	156682	-	-	23.4	22.5	17.6	20.7	18.2	25.7	27.2	24.8	26.4	28.4	23.5	18.1		
DT40	611070	166555	26.4	19.4	18.3	20.4	11.9	16.1	-	17.1	19.5	17.4	25.2	21.1	19.3	14.9		
DT41	610696	164570	43.2	31.7	21.2	23.7	19.2	30.9	27.0	33.7	33.4	-	-	37.2	30.1	23.2		
DT42	613484	166687	35.6	27.4	19.8	21.2	16.8	23.5	18.2	24.2	26.7	24.7	30.7	29.7	24.9	19.1		
DT43	617091	165749	17.8	11.0	8.7	16.3	12.2	12.2	7.5	12.7	13.7	11.8	17.6	15.8	13.1	10.1		
DT44	615445	157408	43.8	34.6	27.6	28.4	18.6	-	25.7	37.4	43.9	-	-	35.4	32.8	25.2		
DT47	610665	166785	27.7	22.9	15.8	20.9	13.3	18.6	13.6	20.2	19.0	19.3	25.4	19.6	19.7	15.1		
DT48	610647	166658	29.5	-	17.6	27.6	17.2	28.3	19.0	31.7	29.6	22.6	35.8	29.0	26.2	20.1		
DT49	610670	166252	26.2	19.0	-	23.2	15.1	21.2	14.2	23.9	-	19.1	26.4	23.9	21.2	16.3		
DT50	616728	161469	28.4	19.4	18.2	21.0	15.2	18.6	15.7	23.5	24.3	24.1	31.4	26.5	22.2	17.1		
DT52	620633	162100	31.9	25.9	22.0	21.7	-	-	15.2	20.4	21.6	24.9	29.0	25.0	23.8	18.3		
DT53	617674	160475	53.2	43.8	32.5	27.8	25.3	41.1	35.2	45.1	44.4	43.4	45.7	39.0	39.7	30.5		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT57	614927	158813	43.6	34.2	26.4	22.3	16.3	22.0	19.8	25.7	-	-	-	36.6	27.4	21.1		
DT58	614867	158899	36.2	24.9	20.8	23.4	15.2	16.2	15.0	21.2	-	-	-	29.6	22.5	17.3		
DT60	615044	157557	-	-	-	24.2	17.7	25.1	22.9	24.1	43.8	-	-	-	26.3	23.3		
DT61	618285	165902	39.1	31.3	27.5	29.0	25.0	30.4	26.3	35.2	38.5	32.0	37.6	33.3	32.1	24.7		
DT62	618311	165865	42.5	33.4	-	34.1	-	35.0	25.4	39.6	38.5	36.9	37.9	35.0	35.8	27.6		
DT63	618314	165821	45.3	33.4	32.2	33.4	27.7	34.1	29.4	40.5	39.7	34.0	43.8	35.3	35.7	27.5		
DT64	618292	165801	57.1	52.0	-	29.5	26.6	43.0	39.0	47.1	-	-	50.7	41.2	42.9	33.0		
DT65	615618	158367	40.0	34.9	28.3	23.5	17.0	21.3	22.3	26.3	31.2	-	-	28.2	27.3	21.0		
DT66	615177	158623	25.4	21.6	16.4	13.2	-	11.7	11.9	13.9	17.8	-	-	24.0	17.3	13.3		
DT67	617840	160482	-	35.0	27.8	30.8	26.6	36.9	27.0	38.0	37.3	30.5	41.6	37.2	33.5	25.8		
DT68	615327	157495	-	-	-	-	29.0	41.4	40.9	49.2	58.5	-	-	47.7	44.5	38.2	30.1	
DT69	617693	168177	33.5	26.0	20.1	25.4	16.4	20.2	15.9	21.5	23.2	-	31.6	27.0	23.7	18.2		
DT70	617691	160045	-	-	33.4	27.4	26.8	31.3	24.7	37.8	38.2	-	-	38.8	32.3	26.9		
DT71	617747	160101	-	25.8	21.3	22.8	15.3	26.1	20.8	26.8	28.9	28.5	23.8	30.7	24.6	18.9		
DT72	617753	160089	-	40.3	32.3	23.6	20.1	26.4	26.0	31.5	36.1	25.9	34.9	36.6	30.3	23.3		
DT73	618006	166914	36.1	28.9	23.3	25.4	17.9	23.9	20.0	25.7	30.7	27.9	36.4	26.4	26.9	20.7		
DT74	616476	167240	-	-	-	-	-	31.2	24.5	-	36.6	-	44.5	-	34.2	26.9		

x**All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

x**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

x**Local bias adjustment factor used**

☐**National bias adjustment factor used.**

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

x**Canterbury City Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

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**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Canterbury City Council During 2020

Canterbury City Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Canterbury City Council During 2020

Canterbury City Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by SOCOTEC (previously known as ESG Didcot) using the 50% triethanolamine (TEA) in acetone preparation method.

Monitoring was completed in adherence with the 2020 Diffusion Tube Monitoring Calendar.

SOCOTEC is a UKAS accredited laboratory and participates in the in the new AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) for NO_2 tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. In the latest available AIR-PT results, AIR-PT AR 036 (January to February 2020), AIR-PT AR037 (May to June 2020), AIR-PT AR039 (July to August 2020) and AIR-PT AR040 (September to October 2020). SOCOTEC scored 100% for the January - February period and 100% for the September - October period. The remaining periods were cancelled due to the pandemic. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ± 2. Based on 24 studies, 96% of all local Authority co-location studies in 2020 were rated as ‘good’ (tubes are

considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%).

Diffusion Tube Annualisation

Data capture at all sites which recorded less than 75% data capture during 2020 has been annualised according to the method set out in LAQM TG(16) box 7.9. The details of the annualisation have been provided in Table C.2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 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.

Canterbury City Council have applied a local bias adjustment factor of 0.77 to the 2020 monitoring data. A summary of bias adjustment factors used by Canterbury City Council over the past five years is presented in Table C.1.

Canterbury City Council has triplicate tubes located at CM1 Chaucer Technology School (DT13) and CM3 Military Road (DT16) for the purpose of calculating a local combined bias adjustment factor.

A factor of 0.76 was produced from the Military Road co-location survey using ten periods of data with good diffusion tube precision and good data capture for the 2020 monitoring period (see Figure C.1).

A factor of 0.78 was produced from the Chaucer Technology School co-location survey using ten periods of data with good diffusion tube precision and good data capture for the 2020 monitoring period (see Figure C.2).

The overall bias adjustment factor has been derived by averaging the B values from both local collocation studies:

The average of 32% and 28% is 30%. This is expressed as a factor, e.g. 25% is 0.25. Next 1 is added to this value, e.g. 0.3 + 1.00 = 1.3. Finally, the inverse is used to give the bias adjustment factor, e.g. 1/1.3 = 0.77.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	Local	-	0.77
2019	Local	-	0.76
2018	Local	-	0.74
2017	Local	-	0.78
2016	Local	-	0.77

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

A total of four monitoring sites were within 10% of exceeding the NO2 AQS objective of 40µg/m3. All four sites (DT1, DT4, DT27 and DT68) inside the Canterbury 3 AQMA reported concentrations within 10% of the annual mean NO2 AQS objective.

The NO2 fall-off with distance calculator was used to estimate the NO2 concentration at the nearest locations with relevant exposure for these diffusion tube monitoring sites. The NO2 fall-off with distance correction calculation for these locations is shown in Figure C.4. Annualisation has been undertaken but no bias adjustment has been carried out on the values shown.

QA/QC of Automatic Monitoring

The Council is the Local Site Operator (LSO) for the AURN site at Chaucer and has adopted Defra's quality control procedures. Officers have been trained by Defra in the operation and maintenance of the AURN air quality monitoring equipment and they adhere

to AEA Technology's Site Operator's Manual for the AURN. The AURN is calibrated on a monthly basis by LSOs and serviced at six monthly intervals by Ricardo-AEA. Data from the AURN are quality controlled and ratified by Bureau Veritas. The rest of the continuous monitoring sites are as well operated by the council and are serviced and maintained by ET.

The QA/QC procedures for the Military Road site are those of the Kent and Medway Air Quality Monitoring Network (K&MAQMN). The K&MAQMN procedures are equivalent to the UK Automatic Urban and Rural Network (AURN) procedures, with the exception of the following:

- Fortnightly calibration of NOx analysers with NO gas (AURN also use NO_2);
- Data checks are done once daily and downloads are done twice daily (AURN are hourly); and
- Independent audits of the stations are undertaken annually (AURN are 6 monthly). K&MAQMN managers AEA ratify the data for these sites.
- Live and historic data is available via the Kentair.org website.

The monitoring data presented from both sites is ratified.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The Council undertook monitoring for PM_{10} based on TEOM analysers at one location during 2020. The monitoring results for the TEOM have been using the Volatile Correction Model (VCM) prior to reporting.

Automatic Monitoring Annualisation

All automatic monitoring locations within Canterbury City Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the NO_2 fall-off with

distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No automatic NO_2 monitoring locations within Canterbury City Council required distance correction during 2020.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Canterbury	Annualisation Factor Rochester Stoke	Annualisation Factor Southend on Sea	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT1	0.9922	1.0061	1.0292	1.0092	50.5	51.0	
DT7	1.0740	1.1656	1.2154	1.1517	23.0	26.4	
DT12	1.0453	1.0950	1.0946	1.0783	46.1	49.7	
DT15	0.9922	1.0061	1.0292	1.0092	39.5	39.8	
DT20	0.9732	0.9967	1.0004	0.9901	44.1	43.7	
DT21	0.9391	0.9582	0.9737	0.9570	33.6	32.1	
DT22	0.9584	0.9469	0.9839	0.9631	27.7	26.7	
DT27	1.0858	1.1884	1.2019	1.1587	30.7	35.5	
DT28	0.9784	1.0403	1.0314	1.0167	40.9	41.6	
DT31	0.9456	1.0132	0.9932	0.9840	27.9	27.4	
DT35	0.9915	1.0000	1.0005	0.9973	32.7	32.6	
DT36	0.9922	1.0061	1.0292	1.0092	25.4	25.6	
DT37	0.9726	0.9685	0.9879	0.9763	22.5	22.0	

Site ID	Annualisation Factor Canterbury	Annualisation Factor Rochester Stoke	Annualisation Factor Southend on Sea	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT60	1.0740	1.1656	1.2154	1.1517	26.3	30.3	
DT68	1.1089	1.1161	1.1283	1.1178	44.5	49.7	
DT70	1.0434	1.0968	1.1113	1.0839	32.3	35.0	
DT74	1.0398	1.0053	1.0237	1.0229	34.2	35.0	

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	10	10			
Bias Factor A	0.76 (0.69 – 0.84)	0.78 (0.68 – 0.9)			
Bias Factor B	32% (19% - 44%)	28% (11% - 46%)			
Diffusion Tube Mean (µg/m^3)	26.3	12.7			
Mean CV (Precision)	5.4%	4.3%			
Automatic Mean (µg/m^3)	19.9	9.9			
Data Capture	100%	98%			
Adjusted Tube Mean (µg/m^3)	20 (18 – 22)	10 (9 – 11)			

Notes:

A combined local bias adjustment factor of 0.77 has been used to bias adjust the 2020 diffusion tube results.

Table C.4 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
DT1	1.4	1.8	38.9	13.1	37.8	Predicted concentration at Receptor within 10% of the AQS Objective
DT2	0.6	11.6	37.7	13.1	24.5	
DT27	0.6	2.6	38.0	13.1	31.5	
DT68	0.4	2.7	37.9	13.1	30.1	

Appendix D: Map(s) of Monitoring Locations and AQMAs

https://mapping.canterbury.gov.uk/webapps/Air_Quality/

Appendix E: Summary of Air Quality Objectives in England

Table E.1– Air Quality Objectives in England[9]

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

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

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[10] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[11] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean

[10] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

[11] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within Canterbury City Council

Reductions of NO_2 concentrations of between 30 and 50% were experienced at roadside diffusion tube monitoring sites within Canterbury AQMA 3 between April and June 2020. This equated to a 20 to 35% reduction in annual mean concentration relative to 2019. The reduction in NO_2 experienced within 2020 has allowed the Council to provide an evidence base in relation to the annual mean objective being achievable at all but one site.

Reductions of NO_2 concentrations of between 30 and 50% were experienced at roadside diffusion tube monitoring sites within Herne AQMA 1 between April and June 2020. This equated to an 18 to 28% reduction in annual mean concentration relative to 2019. The reduction in NO_2 experienced within 2020 has allowed the Council to provide an evidence base in relation to the annual mean objective being achievable at all sites.

Opportunities Presented by COVID-19 upon LAQM within Canterbury City Council

The St Dunstan's Street, Canterbury Emergency Active Travel trial scheme was implemented in September 2020. The scheme made this busy street in Canterbury a safer environment for cyclists.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Canterbury City Council

The implementation of action plan measure 2: Clean Air for Schools Campaign has been delayed due to schools closing and no longer holding whole school assemblies. Alternative outdoor activities have been planned for 2021. **Large Impact.**

This impact is aligned with the criteria as defined in Table F 1, with professional judgement considered as part of their application.

Table F 1– Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

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	Annual Status Report
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 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

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

- Canterbury City Council 2020 Air Quality Status Report

- Canterbury City Council Air Quality Action Plan 2018 – 2023

- Kent and Medway Energy and Low Emissions Strategy (ELES) https://kccconsultations.inconsult.uk/consult.ti/energyandlowemissionconsultation/consultationHome