2019 Air Quality Annual Status Report (ASR)

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

June 2019

Local Authority Officer	Amanda Berry
Department	Environmental Health
Address	Thanet District Council Offices, Cecil Street, Margate, Kent CT9 1XZ
Telephone	01843 577422
E-mail	amanda.berry@thanet.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in Thanet

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

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

Mortality indicators made available for comparison by Public Health England indicate that Thanet has the highest rate of the fraction of mortality attributable to particulate air pollution in Kent (over a 5 year period 2012 -2016) at 20.1 per 100,000 population.

This is in part due to air pollution but is also due to Thanet being a less affluent area than the Kent average and our population is therefore disproportionately affected by other long-term conditions which may increase vulnerability to air pollutants. Consequently, improving air quality will support a reduction in health inequalities.

The Local Air Quality Management (LAQM) system, as set out in Part IV of the Environment Act 1995, 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 exceedances are considered likely, the local authority must declare an Air Quality Management Area (AQMA) and prepare an Action Plan setting out the measures it intends to put in place in pursuit of the objectives.

The district of Thanet is located on the eastern side of Kent, in the south-east of England. It has a combination of coastal, urban and rural environments and includes

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013
[4] Kent Public Health Observatory, Air Quality, April 2018

the main towns of Margate, Ramsgate and Broadstairs. It is a popular holiday and day trip destination and, as a result, sees the number of vehicular movements grow considerably in the summer months. There is also a working port at Ramsgate.

The main source of air pollution in the district is road traffic emissions from major roads, notably the A28, A299, A254, A255 and A256. An Air Quality Management Area (AQMA) was declared in March 2006 for The Square, Birchington, where exceedances of the annual mean objective for nitrogen dioxide (NO_2) were predicted.

A second AQMA was declared at High Street, St Lawrence in April 2010. These two AQMAs were incorporated into a single Thanet Urban AQMA in 2011 (see https://uk-air.defra.gov.uk/aqma/details?aqma_ref=1514 for details).

Monitoring results from continuous sites for 2018 indicate that the annual mean objective and the 1-hour objective for nitrogen dioxide were met at both monitoring locations and there were no exceedances of the annual mean and 24-hour mean PM_{10} objectives at either monitoring location.

Passive NO_2 monitoring undertaken in 2018 showed no exceedances of the AQS objectives within Thanet.

Thanet District Council collaborates with other local authorities across Kent through the Kent and Medway Air Quality Partnership. The partnership manage the Kent and Medway Air Quality Monitoring Network, promote improvement of air quality within the region and prepare Kent wide guidance (such as on planning and air quality). More information can be found at http://www.kentair.org.uk/.

Actions to Improve Air Quality

Thanet District Council has an Air Quality Action Plan (AQAP) to address the Thanet Urban Air Quality Management Area (AQMA), where air quality fails to meet required standards. Policies and actions were subsequently identified and divided into the following broad subjects, based on the area and type of effects that may be achieved:

- Partnership between Thanet District Council and the Local Transport Authority (Kent County Council) - Kent County Council is responsible for overall transport strategy. As the AQMA in Thanet is dominated by emissions from transport, a partnership arrangement between the District and County

Councils for the development of the Action Plan was used. Kent County Council has put forward proposed actions, which they themselves can implement in pursuit of the air quality objectives. The Thanet Transport Strategy (currently in draft format) contains a proposal to have an inner circuit in Birchington, effectively bypassing The Square, which is the site of the longest standing AQMA;

- Thanet District Council as part of the Kent and Medway Air Quality Partnership has been working with KCC on the development of the Kent and Medway Energy and Low Emissions Strategy. Its purpose is to identify an evidence-based approach to deliver clean growth. This includes strategies and actions to reduce carbon emissions, eliminate poor air quality, reduce fuel poverty and deliver an affordable, clean and secure energy supply. The Kent and Medway Energy and Low Emissions Strategy is out for public consultation until 23rd September 2019 and may be viewed at https://consultations.kent.gov.uk/consult.ti/energyandlowemissionconsultation/consultationHome
- Partnership with Development Planning - Planning is an effective tool to improve air quality. It can be used to locate development to reduce emissions overall, and reduce the direct impacts of new development, through policy requirements. Air Quality Technical Planning Guidance was produced by Thanet District Council in August 2016. The Local Plan also provides policies in relation to new development and air quality;
- Thanet District Council are proposing to phase out older diesel cars in the draft Hackney Carriage and Private Hire Licensing Policy 2020 – 2023; and
- Continuing to work with Kent County Council's on a successful application for DfT funding for ULEV taxis (2018-2020).

Conclusions and Priorities

Monitoring in 2018 showed that there were no exceedances of the AQS objectives. Road transport is the dominant source of pollution within Thanet's AQMA, and reducing road traffic emissions within the AQMA is therefore the key air quality priority. This will also contribute to reducing $PM_{2.5}$ concentrations across the district.

The 2020 ASR will review monitoring data across the AQMA and assess whether the AQMA needs to be reduced in size, or revoked.

Local Engagement and How to get Involved

As the main source of air pollution within Thanet is road transport emissions, the easiest way for the public to get involved with helping improving air quality in the District would be to find alternatives to travelling by private vehicle. The following are suggested alternatives to private travel that would contribute to improving air quality within the District:

- Use public transport where available – this reduces the number of private vehicles in operation, which will in turn reduce congestion, both of which will help to reduce pollutant concentrations;
- Walk or cycle if your journey allows –choosing to walk or cycle for your journey will reduce the number of private vehicles on the roads, and there is the added benefit of keeping fit and healthy. In addition, many of the cycle routes and footpaths are off-road, meaning you will not be exposed to the higher concentrations that occur close to roads;
- 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 reduces congestion and overall emissions. Car sharing 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. To view the locations of publicly available electric vehicle charging points in Thanet and nearby, please visit: www.evsoutheast.net/

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1 Local Air Quality Management

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

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

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Thanet District Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=280. Alternatively, see Appendix D: Maps of Monitoring Locations and AQMAs, which provides maps of air quality monitoring locations in relation to the AQMA.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Thanet Urban AQMA	17/11/2011	NO_2 Annual Mean	Thanet	An area encompassing a number of urban areas within Thanet	No	47	µg/m^3	38.6	µg/m^3	Air Quality Action Plan	2013	https://democracy.thanet.gov.uk/documents/s30405/Annex%201%20-%20Thanet%20AQAP%202013%20v2.pdf

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

2.2 Progress and Impact of Measures to address Air Quality in Thanet District Council

Defra's appraisal of last year's ASR confirmed that the conclusions reached in the 2018 ASR are acceptable for all sources and pollutants. It was again noted that monitoring is showing that there only appears to be a single exceedance point. The declared AQMA, however, covers a much wider area. Thanet District Council's view that a wider AQMA should be retained, which provides greater flexibility for the Council to request mitigation measures through the development control process is accepted. There was also a comment about the Action Plan table showing only minimal changes. It is acknowledged that many of the measures in the Action Plan are ongoing, but these are complemented by other improvements, such as the production of a Low Emissions Strategy across Kent in 2018 and the completion of the Thanet Transport Strategy, which provides a framework to guide the development of transport based improvements and interventions within the Thanet District for the period up to 2031.

Details of all the Action Plan measures completed, in progress or planned are set out in Table 2.2 including those that supersede the AQAP. More detail on these measures can be found in the Action Plan. The key completed measure is a successful ULEV bid for taxis electric charging infrastructure and the Kent and Medway Energy and Low Emissions Strategy which is now out for public consultation.

Thanet District Council expects the new charging points and accompanying Taxi Licensing Policy, which will introduce an age limit on diesel vehicles, as well as the publication of Kent and Medway Energy and Low Emission Strategy, to be completed in 2020. Many of the other measures require continual work as their implementation is on-going. Thanet District Council's priorities for the coming year are:

- Continue the partnership with Kent County Council on the implementation of Local Transport Plan;
- Support the development of draft Thanet Transport Strategy which has been prepared to identify a framework of transport policies to support the growth identified in the draft Thanet Local Plan.

- Keep engaging with land-use and transport planners to ensure the actions are supported by all parts of the authority;
- Keep raising awareness of air quality issues within the District;
- Continue to work with Kent County Council to undertake identified feasibility studies of measures to tackle air pollution, to determine more robustly the effectiveness and cost of options;
- Encourage the public to use sustainable transportation including public transport, car sharing, cycling and walking.

The principal challenges and barriers to implementation that Thanet District Council faces is a lack of resources.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Thanet District Council anticipates that further additional measures are likely to be implemented through the Kent Local Transport Plan and the Thanet Transport Strategy. Particularly as the latter is adopted, air quality will be a key consideration in measures implemented.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Air Quality Guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	TDC	2015/2016	On-going	-	-	Completed in August 2016	August 2016	. All development in urban AQMA >10units is required to have EV charge points and low NOx boilers. In 2018 a major development yielded nearly £600k in emissions offsetting measures.
2	Energy and Low Emissions Strategy	Policy Guidance and Development Control		Kent and Medway	2018/2019	Consultation	-	-	Currently out for consultation	September 2019	Identifies an evidence-based approach to deliver clean growth.
3	Investigate Traffic Signal and Junction Configuration to improve traffic flows	Traffic Management	UTC, Congestion management, traffic reduction	KCC /TDC	2011/12	urban wide area On-going	Peak queue lengths	-	On-going		Measure update with KCC. New inner circuit has been proposed within the Transport Plan. The circuit will see significant reduction in traffic congestion at various pinch points throughout the district. The plan is still draft and accompanies the draft Local Plan which is at the examination stage. It may be viewed: https://www.thanet.gov.uk/info-pages/local-plan-updates/
4	Improving Movement of Freight	Vehicle Fleet Efficiency	Driver training and ECO driving aids	KCC /TDC	2011/12	2012-2013	% HGV on roads through AQMA	2%	On-going	-	TDC draft local Plan Policy TP08 – Freight and Service Delivery seeks to adequate off-street parking for freight to encourage a smoother flow of traffic. The Local Plan is at examination stage and may be viewed: https://www.thanet.gov.uk/info-pages/local-plan-updates/

5	Encouragement of Public Transport	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	KCC /TDC/QBP	2012	2012-2015	Number of Euro IV or above buses, bus patronage, number of bus infrastructure improvement projects	5%	On-going	-	Stagecoach Thanet has invested £4million on 24 new buses to operate on the 'Thanet Loop' service. The bio-diesel single deckers are equipped with 'Euro 6' engines that meet the Government's Low Carbon Emission Bus specification and London's new Ultra Low Emission Zone standard. TDC draft local Plan Section 18 containseveral transport policies which seek to encourage public transport. The Local Plan is at examination stage and may be viewed: https://www.thanet.gov.uk/info-pages/local-plan-updates/
6	Car Sharing and Travel Planning	Promoting Travel Alternatives	Workplace Travel Planning	KCC /TDC	2011/12	2012-2013	Number of registered users of scheme or travel plan	2%	On-going	-	TDC draft local Plan Policy SP41 – safe and Sustainable Travel and SP43 – Transport Infrastructure. The Local Plan is at examination stage and may be viewed: https://www.thanet.gov.uk/info-pages/local-plan-updates/
7	Promotion of Cycling and Walking Measures	Promoting Travel Alternatives	Promotion of cycling	KCC /TDC	2011/12	2012	Number of cyclists/walkers	1%	On-going	-	TDC draft local Plan Policy TP02 – walking and TP03 Cycling policies specifically encourage these measures. The Local Plan is at examination stage and may be viewed: https://www.thanet.gov.uk/info-pages/local-plan-updates/
8	Promotion of air quality issues	Public Information	Via the Internet	TDC	2011/12	2012	Number of press releases, reports on website	-	On-going	-	Always ongoing. Promoted National Clean Air Day via website. K&MAQP now have communication sub group develop to raise AQ public information.

9	Parking Enforcement	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	TDC	2012	2013	Number of Penalty Charge Notices served	-	On-going	-	The number of penalty charge notices issued in 2018 was 26,700 TDC Parking Policy available at https://www.thanet.gov.uk//wp-content/uploads/2018/03/Parking-Policy-2015-20.pdf–
10	OLEV funding application	Promoting Low Emission Transport	Other	KCC / TDC	2014	2015	Number of charge connections	-	Completed March 2015	-	4 Charging points installed and operational as of March 2015
11	Phasing out older diesel taxis Taxi Licensing Policy	Promoting Low Emission Transport	Taxi Licensing Conditions	TDC	2018	2019-2022	Number of licensed diesel vehicles	-	On-going	-	Unforeseen delays with draft licensing policy given staffing issues
12	ULEV funding application EV charging points for taxis	Promoting Low Emission Transport	Taxi Emission Incentives	KCC / TDC	2018	2019	Number of chargers installed	-	On-going	-	Successful bid. Awaiting final details.
13	Thanet Transport Strategy	Transport Planning and Infrastructure	Other	KCC/TDC	2018	2015-2031	Inner Circuit Road, Thanet Parkway station	-	Draft Thanet Transport Strategy	-	Draft Transport Strategy to accompany the draft Local Plan which is now at examination stage. The proposed inner circuit will alleviate a number of congested pinch points on existing road network.
14	Ensure that all TDC EV Points are maintained and available for the public	Promoting Low Emission Transport	Other	TDC	2017	2017	Number of charges	-	Ongoing	-	

Note: TDC = Thanet District Council; KCC = Kent County Council; UTC = Urban Traffic Control
Measures underway or completed not in AQAP

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Thanet District Council does not currently undertake any monitoring of $PM_{2.5}$. There are currently no measures in place to specifically address $PM_{2.5}$ concentrations within the District. However, Thanet District Council's existing air quality action plan measures will address $PM_{2.5}$ as well as nitrogen dioxide.

Thanet District Council is part of the Kent Health and Wellbeing Board, which brings together County and District Councillors, senior offices from the NHS Area Team, Clinical Commissioning Groups, Social Care and Public and members of the Local Healthwatch. The board produced the Kent Joint Health and Wellbeing Strategy, which sets out how the multidisciplinary teams can align their plans to improve public health and tackle key health issues over the coming years.

Thanet District Council is working with Public Health colleagues to prioritise action on air quality in its local area to help reduce the health burden from air pollution. The Public Health Outcomes Framework is a Department of Health data tool for England, intended to focus public health action on increasing healthy life expectancy and reducing differences in life expectancy between communities. The PHOF includes an indicator, based on the effect of particulate matter ($PM_{2.5}$) on mortality. The approach used in partnership with Public Health colleagues includes the encouragement of active travel, which will also have wider public health benefits captured in other indicators such as increased physical activity (indicator 2.13) and reducing excess weight at various ages (indicators 2.6 & 2.12).

The Local Transport Plan for Kent sets out a 20 year transport delivery plan for the county. The Local Transport Plan sets out a number of strategies to improve the transport infrastructure to support future growth and specifically targets AQMAs and congestion hotspots for improvements. These transport improvements are expected to reduce $PM_{2.5}$ emissions, especially through the AQMAs where health is of key

concern, but also on a wider basis. The draft Thanet Transport Strategy includes a high level appraisal of the transport network and addresses the local and wider transport and infrastructure implications arising from associated development sites with development options being tested. It identifies strategic transport issues, key infrastructure requirements, and specific transport improvement and initiatives, whilst taking account of relevant policy at both a local and national level.

Thanet District council is part of the Kent and Medway Air Quality Partnership (K&MAQP), which aims to deliver a consistent approach to tackling air pollution across the County, sharing knowledge and information between Kent County Council, district council, health authorities, Highways England, the Environment Agency, Public Health England and various consultants and research partners. The Kent and Medway Air Quality Monitoring Network (K&MAQMN) contains a number of sites monitoring pollution across the County, allowing concentrations of $PM_{2.5}$ to be continuously monitored. Data for the network is reported through its dedicated website, KentAir, which can be found at www.kentair.org.uk. Thanet District Council has been working with members of K&MAQP and KCC on the production of a Kent and Medway Low Emissions Strategy/Action Plan.

Planning is also particularly important for reducing concentrations of $PM_{2.5}$ and Thanet District Council is focused through its planning policy on preventing particulate matter concentrations being inadvertently increased. Thanet District Council submitted their draft Local Plan to 2031 on 30th October 2018. This includes the updated Air Quality Policy which states that:

Policy SE05 - Air Quality

All major development schemes should promote a shift to the use of sustainable low emission transport to minimise the impact of vehicle emissions on air quality, Development will be located where it is accessible to support the use of public transport, walking and cycling.

New development must ensure that users are not significantly adversely affected by the air quality and include mitigation measures where appropriate.

All developments which either individually or cumulatively are likely to have a detrimental impact on air quality, will be required to submit an Air Quality and/or

Emissions Mitigation Assessment, in line with the Air Quality Technical Planning Guidance 2016 and any subsequent revisions.

The Air Quality Assessment should address the cumulative effect of further emissions.

The Emission Mitigation Assessment should address any proposed mitigation measures through good design and offsetting measures that would prevent the National Air Quality Objectives being exceeded or reduce the extent of the air quality deterioration. These will be of particular importance within the urban AQMA, associated areas and areas of lower air quality.

Proposals that fail to demonstrate these will not be permitted.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with the air quality objectives.

Thanet District Council undertook automatic (continuous) monitoring at two sites during 2018. Table A.1 in Appendix A shows the details of the sites.

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 have been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Thanet District Council undertook non- automatic (passive) monitoring of NO_2 at 34 sites during 2018, increased from 26 following Defra advice for 2018. Table A.2 in Appendix A shows the details of the 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.

There were eight triplicate sites in 2018, these were:

- TH13/46/47 – The Square Birchington
- TH37/38/45 – Kentmere Ave
- TH50/61/62 – Hereson Road (removed in March 2018)
- TH51/52/53 – Boundary Road, Ramsgate (Co-located with ZH4)
- TH54/64/65 – High Street St Lawrence, Ramsgate
- TH67/68/69 – 20 Hereson Road, Ramsgate
- TH70/71/72 – 9 High Street, St Lawrence
- TH73/74/75 – 3 Hereson Road, Ramsgate (removed in March 2018)

Triplicate co-located NO_2 diffusion rubes are installed at ZH4 Thanet Ramsgate (Boundary Road, Ramsgate) and ZH5 (Birchington) automatic monitoring sites.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B. Data capture was below 75% for diffusion tubes TH49, TH82, TH83 and TH84 (67%), therefore an annualisation adjustment was applied. It is stated in the Local Air Quality Management Technical Guidance (Defra, 2018) that if background monitoring sites are unavailable for the annualistion, then it is permissible to use roadside monitoring sites, which this report has done.

Data capture for diffusion tubes TH50/61/62, TH73/74/75, TH85 and TH86 was less than three months. Therefore these results have not been bias adjusted or annualised. The monthly mean values are provided in Table B.1

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Automatic monitoring results indicate that both the annual mean objective and 1-hour objectives continued to be met at both monitoring locations in 2018.

Figure A.1 shows the trend in annual mean NO_2 concentrations at the continuous monitoring locations between 2013 and 2018. Thanet Ramsgate has continued to gradually decline since 2013. Thanet Birchington has shown a slight decline after the increase in NO_2 concentrations in 2016.

Figure A2 shows the trend in annual mean NO_2 concentrations at the diffusion tube monitoring sites between 2013 and 2018. The annual mean NO_2 concentration in 2018 has either stayed the same or decreased compared to 2017 for all sites except TH10, TH36 and TH48, which have all increased since 2017.There are no sites

exceeding 60µg/m^3, which would be an indication of a potential exceedance of the hourly NO_2 objective. Consequently, the 1-hour mean objective is unlikely to be exceeded at any monitoring site.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

Figure A.1 shows the 2018 results for the annual mean.

The 2018 results show that both annual mean and 24-hour mean objectives were met at both monitoring sites during 2018. The number of days with concentrations above 50µg/m^3 in 2018 has shown a decline at both ZH4 Thanet Ramsgate, but has increased at ZH5 Thanet Birchington; however neither comes close to the objective of 35.

Figure A.2 shows the trend in annual mean PM_{10} concentrations at the two continuous monitoring sites between 2013 and 2018, and Figure A.4 shows the year-on-year numbers of days with concentrations above 50µg/m^3. Neither figure shows a clear trend for either monitor.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Inlet Height (m)
ZH4 Thanet Ramsgate	Boundary Road, Ramsgate	Roadside	638483	165430	NO_2; PM_{10}	YES	Chemiluminescent; beta attenuation	16	4	2
ZH5 Thanet Birchington	The Square, Birchington	Roadside	630284	169052	NO_2; PM_{10}	YES	Chemiluminescent; beta attenuation	4	3	2

.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
TH05	The Broadway, Broadstairs	Kerbside	639020	167982	NO_2	YES	N	2.5	NO	2.5
TH10	College Road, Margate	Kerbside	635539	169840	NO_2	YES	0	2	NO	2.5
TH13/46/47	The Square, Birchington	Kerbside	630254	169037	NO_2	YES	2	1	NO	2.5
TH16	Earlsmede Crescent, Cliffend	Urban Background	634445	164416	NO_2	YES	3	N/A	NO	2.5
TH26	King Street, Ramsgate	Kerbside	638492	165410	NO_2	YES	0	3	NO	2.5
TH27	Avebury Avenue, Ramsgate	Urban Background	639097	165971	NO_2	YES	7	N/A	NO	2.5
TH31	High Street, Manston	Urban Background	634662	166026	NO_2	NO	9	N/A	NO	2.5
TH32	Bell-Davies Drive, Minster	Urban Background	632994	166428	NO_2	NO	10	N/A	NO	2.5
TH33	Hill-House Drive, Minster	Urban Background	631161	165486	NO_2	NO	9	N/A	NO	2.5
TH34	Pizza Hut, Westwood Road, Broadstairs	Roadside	636570	167894	NO_22	YES	N	14	NO	2.5
TH36	Star Lane, Ramsgate Road, Margate	Kerbside	636405	168227	NO_2	YES	0	2	NO	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
TH37/38/45	Kentmere Avenue, Ramsgate	Kerbside	635932	165333	NO_2	YES	10	N/A	YES	2.5
TH48	Canterbury Rd Birchington nr Y	Kerbside	630419	169092	NO_2	YES	1	0.5	YES	2
TH49	Kent Gardens, Canterbury Road (A28), Birchington	Roadside	630186	168983	NO_2	YES	3	3.5	NO	2.5
TH50/61/62	63 Hereson Road, Ramsgate	Roadside	638616	165564	NO_2	YES	5	1	NO	2.5
TH51/52/53	Boundary Road, Ramsgate	Roadside	638742	165432	NO_2	YES	16	4.1	YES	2.5
TH54/64/65	High Street, St. Lawrence	Roadside	637135	165354	NO_2	YES	7	1	NO	2.5
TH55	Coxes Lane, Margate Road, Ramsgate	Roadside	636815	167297	NO_2	YES	3	10	NO	2
TH59	Church Street, St Peters	Kerbside	638220	168614	NO_2	YES	3	2	NO	2.5
TH66	High Street, St. Lawrence, Façade	Roadside	637112	165331	NO_2	YES	0	3	NO	2.5
TH67/68/69	20 Hereson	Roadside	638536	165465	NO_2	YES	0	1	NO	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
	Road, Ramsgate									
TH70/71/72	9 High Street, St. Lawrence	Roadside	637092	165340	NO_2	YES	0	1	NO	2.5
TH73/74/75	3 Hereson Road, Ramsgate	Roadside	638529	165427	NO_2	YES	0	1.5	NO	2.5
TH76	Buenos Ayres, Margate	Roadside	634752	170679	NO_2	YES	9.5	12	NO	2
TH77	72 High Street, Minster	Kerbside	630968	164710	NO_2	NO	2.5	1	NO	1.5
TH78	Manston Way Walk, Ramsgate	Roadside	636049	167727	NO_2	YES	8	2.5	NO	2
TH79	Canterbury Rd, Sarre	Roadside	625641	165002	NO_2	NO	0	6.5	NO	2.5
TH80	Newington Rd, Ramsgate	Roadside	636909	165780	NO_2	YES	0	1	NO	2.5
TH81	Margate Rd, Ramsgate	Roadside	637097	166799	NO_2	YES	0	7.8	NO	2.5
TH82	Westwood Road nr School, Broadstairs	Roadside	637271	167873	NO_2	YES	7	7.9	NO	2.5
TH83	Ramsgate Rd (nr car wash) Margate	Roadside	635907	169266	NO_2	YES	0	9.5	NO	2.5
TH84	Northdown	Roadside	635997	171095	NO_2	YES	0	6	NO	3

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
	Rd, Margate									
TH85	143 Boundary Rd, Ramsgate	Roadside	638026	165442	NO_2	YES	0	0	NO	3
TH86	26 Margate Rd, Ramsgate	Roadside	637747	165713	NO_2	YES	2	1.5	NO	3

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2014	2015	2016	2017	2018
ZH4 Thanet Ramsgate	Roadside	Automatic	98.7	81.7	25.6	22.9	22.6	22.6	21.3
ZH5 Thanet Birchington	Roadside	Automatic	97.1	97.1	30.8	24.6	33.6	32.4	31
TH05	Kerbside	Diffusion Tube	91.7	91.7	34.8	30.3	33.6	28.6	28.5
TH10	Kerbside	Diffusion Tube	91.7	91.7	35.3	34.9	35	31.0	32.3
TH13/46/47	Kerbside	Diffusion Tube	100.0	100.0	**47.4**	**42.4**	**44.1**	**40.6**	37.3
TH16	Urban Background	Diffusion Tube	91.7	91.7	20	14.7	16.7	16.4	14.4
TH26	Kerbside	Diffusion Tube	100.0	100.0	37.1	35.3	36	33.0	32.4
TH27	Urban Background	Diffusion Tube	100.0	100.0	17.1	14.1	16.3	16.4	14.2
TH31	Urban Background	Diffusion Tube	100.0	100.0	16.4	12.9	14.7	15.8	12.2
TH32	Urban Background	Diffusion Tube	91.7	91.7	15.7	14.4	15.4	16.7	14.0
TH33	Urban Background	Diffusion Tube	91.7	91.7	15.2	14.9	16.5	16.1	15.0
TH34	Roadside	Diffusion Tube	100.0	100.0	27.7	24.1	25.8	23.7	21.8
TH36	Kerbside	Diffusion Tube	83.3	83.3	25.7	22.5	28.6	23.9	26.5
TH37/38/45	Kerbside	Diffusion Tube	83.3	83.3	16.4	14.8	16	16.1	14.4
TH48	Kerbside	Diffusion	100.0	100.0	33.7	31.9	31.2	27.9	29.9

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2014	2015	2016	2017	2018
		Tube							
TH49	Roadside	Diffusion Tube	66.7	66.7	33.7	20.3	20.7	22.0	20.8
TH50/61/62	Roadside	Diffusion Tube	16.7	16.7	34.4	32.3	33	30.8	N/A
TH51/52/53	Roadside	Diffusion Tube	100.0	100.0	28.1	23.7	23.7	21.4	20.2
TH54/64/65	Roadside	Diffusion Tube	100.0	100.0	**41.2**	38.2	**40.9**	38.0	32.7
TH55	Roadside	Diffusion Tube	83.3	83.3	26.6	21.9	29	27.0	22.7
TH59	Kerbside	Diffusion Tube	91.7	91.7	N/A	29.3	33.3	31.9	28.9
TH66	Roadside	Diffusion Tube	100.0	100.0	28.5	31.1	27.2	26.3	24.7
TH67/68/69	Roadside	Diffusion Tube	100.0	100.0	34.4	33.7	35.6	32.2	31.8
TH70/71/72	Roadside	Diffusion Tube	100.0	100.0	**44.4**	**42.8**	**44.9**	**41.6**	38.6
TH73/74/75	Roadside	Diffusion Tube	16.7	16.7	**42.1**	35.7	35.7	33.6	N/A
TH76	Roadside	Diffusion Tube	91.7	91.7	N/A	21.6	25.5	25.8	21.3
TH77	Kerbside	Diffusion Tube	91.7	91.7	N/A	N/A	N/A	23.3	20.9
TH78	Roadside	Diffusion Tube	83.3	83.3	N/A	N/A	N/A	19.9	16.9
TH79	Roadside	Diffusion Tube	75.0	75.0	N/A	N/A	N/A	N/A	21.4
TH80	Roadside	Diffusion Tube	83.3	83.3	N/A	N/A	N/A	N/A	21.0

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2014	2015	2016	2017	2018
TH81	Roadside	Diffusion Tube	83.3	83.3	N/A	N/A	N/A	N/A	21.2
TH82	Roadside	Diffusion Tube	50.0	50.0	N/A	N/A	N/A	N/A	25.1
TH83	Roadside	Diffusion Tube	58.3	58.3	N/A	N/A	N/A	N/A	19.4
TH84	Roadside	Diffusion Tube	66.7	66.7	N/A	N/A	N/A	N/A	19.1

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

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

Notes:

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

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

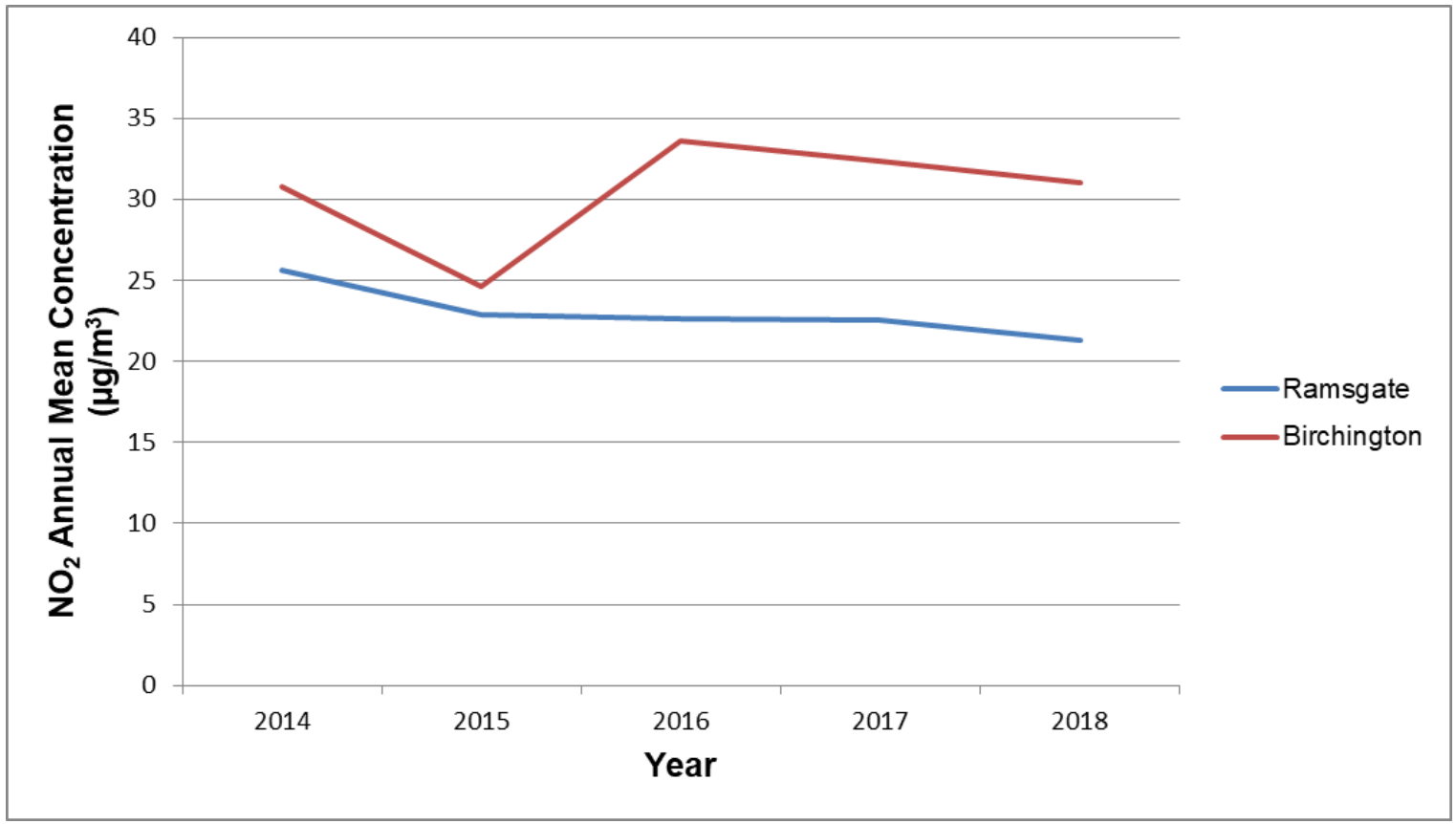


Figure A.2 – Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites

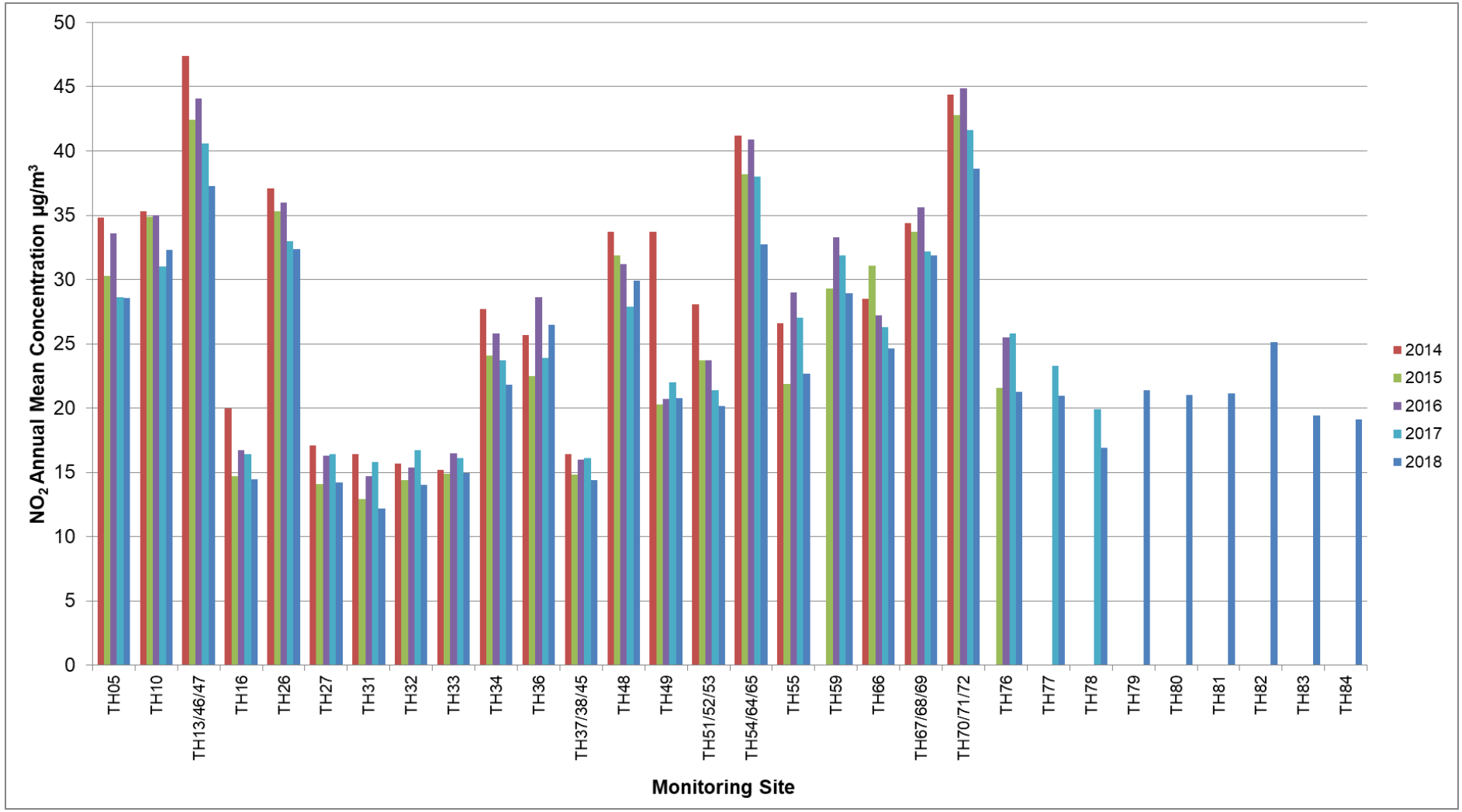


Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2018 (%)	NO_2 1-Hour Means > 200µg/m^3				
					2014	2015	2016	2017	2018
ZH4 Thanet Ramsgate	Roadside	Automatic	98.7	81.7	0	0	0	0	0
ZH5 Thanet Birchington	Roadside	Automatic	97.1	97.1	0	0	0	0	0

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2018 (%)	PM_{10} Annual Mean Concentration ($\mu g/m^3$)				
				2014	2015	2016	2017	2018
ZH4 Thanet Ramsgate	Roadside	95.7	79.4	24.7	24.3	25.8	24.8	24.6
ZH5 Thanet Birchington	Roadside	98.4	98.4	20.8	22.3	24.8	23.2	25.2

Figure A.3 – Trends in Annual Mean PM_{10} Concentrations

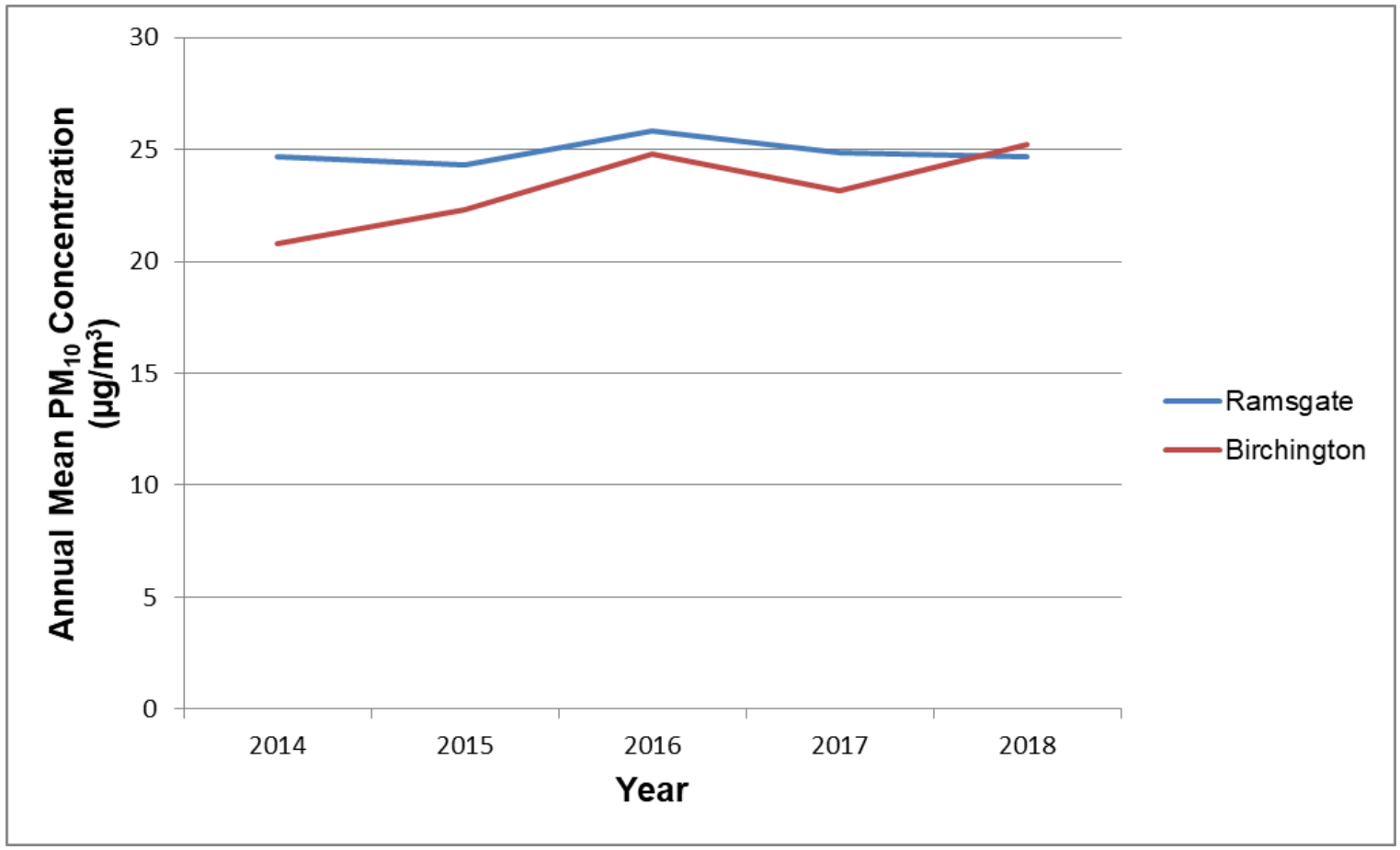


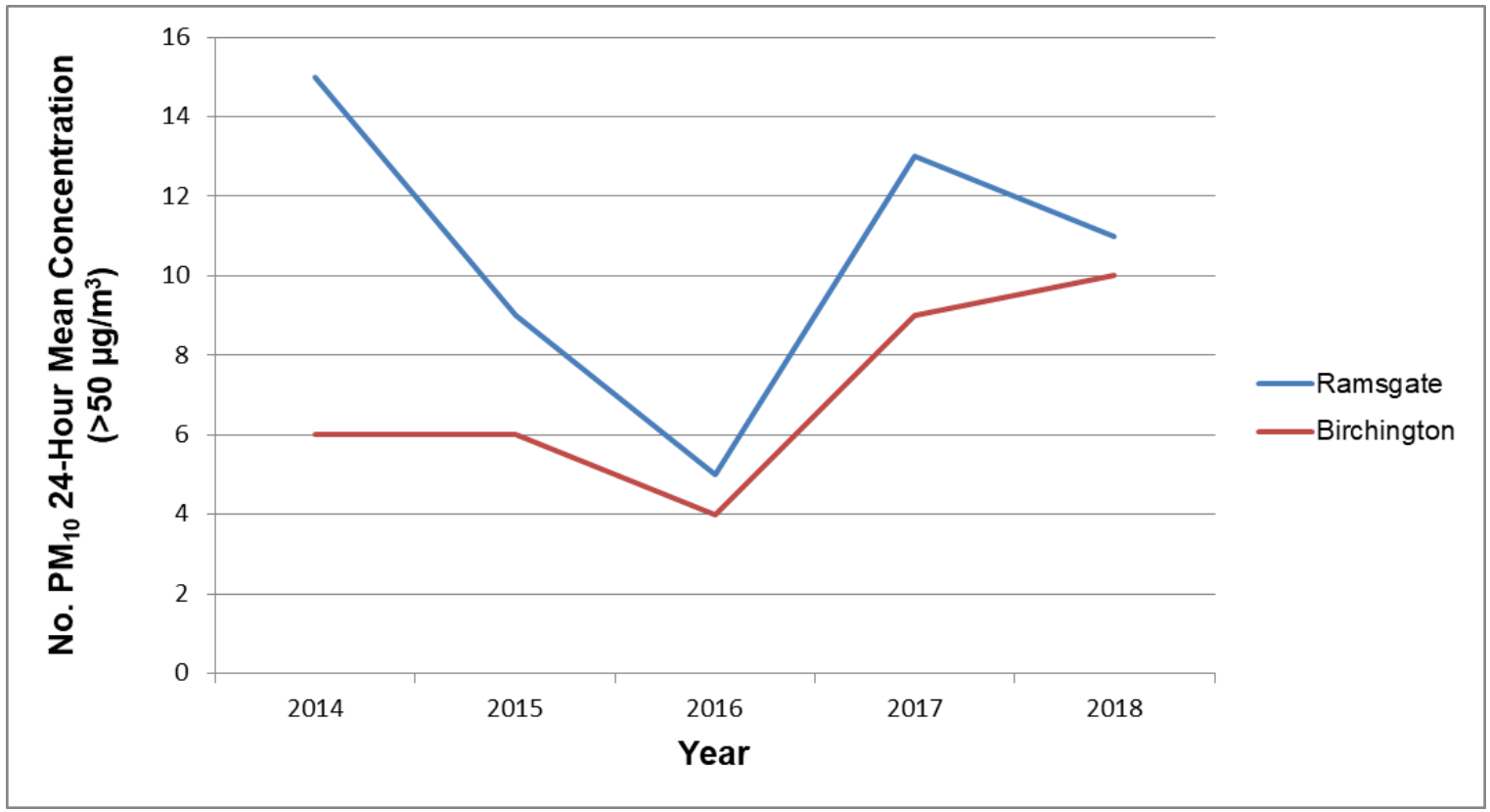
Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2018 (%)	PM_{10} 24-Hour Means > 50µg/m^3 (1)				
				2014	2015	2016	2017	2018
ZH4 Thanet Ramsgate	Roadside	95.7	79.4	15	9	5	13	11
ZH5 Thanet Birchington	Roadside	98.4	98.4	6	6	4	9	10

Notes:

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

Figure A.4 – Trends in Number of 24-Hour Mean PM_{10} Results >50µg/m^3



Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO_2 Monthly Diffusion Tube Results – 2018

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.76) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
TH05	**42.1**	-	21.2	**43.4**	39.0	27.6	**43.5**	34.6	32.5	**40.5**	**49.4**	39.3	37.6	28.5	28.5
TH10	**45.7**	40.0	**53.6**	**42.5**	**42.2**	37.1	**49.6**	37.9	36.2	**41.4**	-	**41.2**	**42.5**	32.3	32.3
TH13/46/47	**56.3**	**43.3**	**55.8**	**54.3**	**46.3**	34.3	**55.9**	**47.4**	**47.6**	**48.9**	**48.6**	**50.1**	**49.1**	37.3	31.4
TH16	-	19.4	25.0	19.0	18.1	11.2	22.2	14.9	14.5	19.7	21.9	23.0	19.0	14.4	14.4
TH26	**43.2**	32.2	**47.5**	**43.5**	**42.1**	**45.2**	**45.7**	38.4	39.9	**49.9**	**41.7**	**41.8**	**42.6**	32.4	32.4
TH27	19.1	16.3	22.3	20.1	17.5	11.8	20.1	15.3	13.8	23.5	21.3	23.2	18.7	14.2	14.2
TH31	18.7	16.8	13.6	16.4	13.6	10.4	16.3	13.0	12.2	18.6	23.0	20.2	16.1	12.2	12.2
TH32	20.2	18.8	19.4	22.1	17.6	11.6	19.1	15.5	12.5	-	25.6	20.7	18.5	14.0	14.0
TH33	19.3	20.9	26.6	22.0	18.8	13.9	20.7	12.6	15.1	-	24.2	22.4	19.7	15.0	15.0
TH34	35.3	24.5	34.1	30.6	25.4	18.2	28.9	23.4	24.3	31.5	36.5	32.0	28.7	21.8	21.8
TH36	-	32.6	**45.4**	36.2	29.9	-	38.5	30.3	27.7	34.8	**40.1**	32.8	34.8	26.5	26.5
TH37/38/45	20.6	19.4	20.6	21.4	16.4	11.7	18.9	12.5	26.9	-	-	20.9	18.9	14.4	14.4
TH48	**49.4**	**40.2**	**42.3**	**42.3**	37.9	32.9	**41.3**	32.7	34.5	38.3	**41.2**	39.2	39.4	29.9	26.2
TH49	-	30.3	33.3	27.1	-	-	23.8	-	21.6	24.2	33.6	27.0	27.6	20.8	19.0

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.76) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
TH50/61/62 (3)	38.0	34.6	-	-	-	-	-	-	-	-	-	-	-	-	-
TH51/52/53	28.8	23.6	37.3	29.7	24.1	16.8	29.4	23.0	20.8	27.5	30.3	27.2	26.5	20.2	19.8
TH54/64/65	**56.0**	**41.5**	34.7	**40.7**	**42.6**	29.8	**45.2**	37.5	**42.2**	**49.0**	**45.5**	**52.4**	**43.1**	32.7	24.4
TH55	38.5	21.3	-	33.5	27.3	20.7	32.2	24.7	-	36.7	28.3	35.5	29.9	22.7	21.7
TH59	**44.1**	39.0	**51.4**	**41.6**	31.2	30.6	31.5	30.8	-	31.1	**43.5**	**43.7**	38.0	28.9	25.4
TH66	31.0	35.5	37.5	33.5	30.6	22.7	36.4	28.3	29.2	39.3	31.6	33.9	32.5	24.7	24.7
TH67/68/69	36.7	37.3	**42.5**	**43.3**	**52.5**	**42.3**	**48.4**	37.3	**40.4**	**46.4**	35.7	**40.1**	**41.9**	31.8	31.8
TH70/71/72	**52.8**	**51.0**	**47.4**	**52.1**	**54.1**	**44.5**	**58.0**	**45.8**	**48.5**	**57.6**	**45.8**	**51.6**	**50.8**	38.6	38.6
TH73/74/75 (3)	**52.6**	**42.9**	-	-	-	-	-	-	-	-	-	-	-	-	-
TH76	32.1	27.0	35.8	-	25.2	19.5	31.7	25.3	25.3	23.9	31.3	30.9	28.0	21.3	19.0
TH77	29.8	29.0	35.3	27.1	25.6	18.1	28.4	22.1	25.4	-	30.0	32.2	27.5	20.9	18.0
TH78	-	23.6	35.5	21.9	-	16.3	10.1	17.6	14.6	24.0	34.6	24.5	22.3	16.9	15.4
TH79	-	-	30.4	27.4	28.3	23.6	30.9	26.2	26.8	28.7	-	31.3	28.2	21.4	21.4
TH80	-	-	**44.7**	29.1	30.0	20.0	31.0	19.3	19.4	25.5	29.2	28.0	27.6	21.0	21.0
TH81	-	-	**55.4**	29.4	23.5	20.9	29.0	20.6	19.5	24.7	27.1	28.3	27.8	21.2	21.2
TH82	-	-	**41.9**	-	-	19.3	36.5	-	-	30.8	35.5	32.4	32.7	25.1	22.6
TH83	-	-	-	22.4	27.3	-	27.7	19.5	19.2	26.2	28.6	-	24.4	19.4	19.4

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.76) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
TH84	-	-	17.8	-	23.9	15.6	27.8	23.8	24.2	-	33.3	28.7	24.4	19.1	19.1
TH85 (3)	-	-	-	-	-	-	-	-	-	-	37.9	**45.7**	-	-	-
TH86 (3)	-	-	-	-	-	-	-	-	-	-	38.0	35.4	-	-	-

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

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

☒ **Where applicable, data has been distance corrected for relevant exposure**

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure. Diffusion Tubes TH16, TH27, TH31, TH32, TH33 are all background sites and have not been distance corrected and TH37/38/45 is close to a railway line and hence not relevant for distance adjustment based on roadside factors.

(3) Data capture less than 3 months. Results have not been annualised, bias adjusted or distance corrected.

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

Supporting Technical Information

Changed and new sources of pollution have been investigated. There have been no new sources of pollution, or changes to existing sources for any of the following categories:

- Narrow congested streets with residential properties close to the kerb
- Busy Streets where people may spend 1-hour close to traffic
- Roads with a high flow of buses and/ or HGVs
- Junctions
- New roads
- Roads with significantly changed traffic flows
- Bus and coach stations
- Railway (diesel and steam trains)
- Ports
- Industrial installations
- Major petrol storage depots
- Petrol stations, poultry farms
- Commercial and domestic sources
- Fugitive or uncontrolled sources (quarries, landfill sites, opencast coal mining, waste transfer sites, materials handling etc)

There have been a number of new developments in 2018. All major developments were required to carry out an Emissions Mitigation Assessment and assess air quality where new exposure as introduced, or where the development is causing a significant change in traffic. Developments which have has air quality conditions applied are listed in Table C.1 below.

Table C.1–Planning Applications with air quality conditions (2018)

Location	Description	Planning Status	Comment
Manston Research Centre, Manston Road, Margate	Erection of single storey building to accommodate biomass boiler with associated flue	Awaiting Decision	No significant impact. Emissions Mitigation Assessment undertaken.
Land On The West Side Of Tothill Street, Tothill Street, Minster	Outline application for 214 dwellings, cemetery extension and associated works including access, open space, drainage and services with all other matters reserved	Awaiting Decision	No significant impact
Aldi Stores Limited, Zion Place, Margate	Erection of building for use as retail foodstore (A1) and associated car park, service arrangement and altered access following demolition of the existing foodstore	Granted	No significant impact. Emissions Mitigation Assessment undertaken.
Strasbourg Street, Westwood Industrial Estate, Margate	Erection of a 20MW Short Term Operating Reserve ('STOR') generating plant building with auxiliary equipment, substation, 8 radiator coolers, transformer compound, gas kiosk, HV switchboard and LV transformer enclosure, car parking, security fence and associated works	Granted	No significant impact

Location	Description	Planning Status	Comment
Manston Court Road, Ramsgate, Kent.	Outline application for a mixed development of up to 900 dwellings together with a mix of use classes A1 (retail) A2 (Financial and professional services) A3 (restaurants and cafe) A4 (drinking establishments) A5 (hot food takeaways) B1 (business) C1 (Hotel) D1 (non-residential institution) D2 (assembly and leisure) and a two form entry primary school	Awaiting Decision	No significant impact. Emissions Mitigation Assessment undertaken.
Jentex Engineering Ltd, Canterbury Road West, Ramsgate	Outline application for the erection of a 3 storey 61 unit extra-care facility, 14No single storey bungalows and 34No two storey dwellings and 8No Maisonettes including access and scale following removal of existing structures	Awaiting Decision	Emissions Mitigation Assessment undertaken.
St Lawrence College, College Road, Ramsgate	Application for reserved matters application for the approval of ' layout, scale, landscaping and appearance' for the erection of 166no. dwellings with associated open space and parking provision	Granted	Emissions Mitigation Assessment undertaken.
Land Adjacent Birchingto Vale Caravan Park, Shottendane Road, Birchington	Change of use of land for the stationing of static holiday caravans and associated works	Granted	Emissions Mitigation Assessment undertaken.
8 Beach Avenue, Birchington, Kent	Erection of a three storey building to provide 12 No two-bedroom flats with access and parking following demolition of existing bungalow	Granted	Electric vehicle charging points included within development
Select Healthcare Group, Norfolk House, 39-41 Sea Road	Change of use of existing care home building to 8 No 2 bedroom flats, 1 No 6 bedroom dwelling and 26 No bedroom supported living accommodation (C2) with ancillary creche	Granted	Electric vehicle charging points included within development
Land Rear Of 163 To 173, Pegwell Road, Ramsgate	Erection of 9 No 4 bedroom houses and 1 No 5 bedroom house with associated parking and access	Granted	Electric vehicle charging points included within development
Land Adjacent 15, Southall Close, Minster	Outline Application for the erection of 12 detached dwellings, with access via Southall Close including access, layout and scale	Granted	Electric vehicle charging points included within development
Budgens Local, Gulf Petrol Station, 36-42 High Street, St Lawrence	Garage installation of rapid electric charging point	Granted	-

Diffusion Tube Bias Adjustment Factors

The diffusion tube data have been corrected using a bias adjustment factor, which is an estimate of the difference between diffusion tube meaurements and those from continuous monitoring, the latter assumed to be a more accurate method of monitoring. The Defra Technical Guidance 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 NOx/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Factor from National Co-location Studies

Thanet's diffusion tubes are supplied and analysed by Socotec Didcot, utilising the 50% triethanolamine (TEA) in acetone preparation method. A bias adjustment factor of 0.76 for the year 2018 (based on 28 studies) has been derived from the national bias adjustment spreadsheet (version 06/19).

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/19

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of September 2019

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data [2]

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision [4]	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2018	R	Cambridge City Council	12	42	30	40.2%	G	**0.71**
Socotec Didcot	50% TEA in acetone	2018	R	Canterbury City Council	11	38	28	35.8%	G	**0.74**
Socotec Didcot	50% TEA in acetone	2018	UB	Canterbury City Council	12	16	12	36.3%	G	**0.73**
Socotec Didcot	50% TEA in acetone	2018	R	Hambleton District Council	12	21	18	20.8%	G	**0.83**
Socotec Didcot	50% TEA in acetone	2018	R	Ipswich Borough Council	12	34	28	20.4%	G	**0.83**
Socotec Didcot	50% TEA in acetone	2018	R	City of York Council	12	41	27	54.2%	G	**0.65**
Socotec Didcot	50% TEA in acetone	2018	UB	City of York Council	11	22	15	52.0%	G	**0.66**
Socotec Didcot	50% TEA in acetone	2018	R	City of York Council	12	34	26	30.8%	G	**0.76**
Socotec Didcot	50% TEA in acetone	2018	R	City of York Council	11	30	23	32.9%	G	**0.75**
Socotec Didcot	50% TEA in acetone	2018	R	Dumfries and Galloway Council	12	36	30	19.7%	G	**0.84**
Socotec Didcot	50% TEA in acetone	2018	R	Knowsley MBC	12	47	38	26.5%	G	**0.79**
Socotec Didcot	50% TEA in acetone	2018	R	Suffolk Coastal DC	11	44	33	32.4%	G	**0.76**
Socotec Didcot	50% TEA in acetone	2018	R	Thanet District Council	10	26	21	25.4%	G	**0.80**
Socotec Didcot	50% TEA in acetone	2018	R	Horsham District Council	11	33	23	42.2%	G	**0.70**
Socotec Didcot	50% TEA in acetone	2018	R	Horsham District Council	12	33	29	17.2%	G	**0.85**
Socotec Didcot	50% TEA in acetone	2018	R	Horsham District Council	12	30	26	16.1%	G	**0.86**
Socotec Didcot	50% TEA in acetone	2018	UB	Slough Borough Council	10	38	31	25.6%	G	**0.80**
Socotec Didcot	50% TEA in acetone	2018	SU	Slough Borough Council	11	32	22	46.7%	G	**0.68**
Socotec Didcot	50% TEA in acetone	2018	R	Slough Borough Council	11	39	32	22.5%	G	**0.82**
Socotec Didcot	50% TEA in acetone	2018	R	Vale of Glamorgan	12	39	25	57.8%	G	**0.63**
Socotec Didcot	50% TEA in acetone	2018	KS	Marylebone Road Intercomparison	12	95	85	11.3%	G	**0.90**
Socotec Didcot	50% TEA in acetone	2018	B	Gravesham Borough Council	12	37	30	22.1%	G	**0.82**
Socotec Didcot	50% TEA in acetone	2018	B	Gravesham Borough Council	12	28	24	18.8%	G	**0.84**
Socotec Didcot	50% TEA in acetone	2018	UI	North Lincolnshire Council	12	24	16	53.5%	G	**0.65**
Socotec Didcot	50% TEA in acetone	2018	R	Swansea Council	12	33	24	39.0%	G	**0.72**
Socotec Didcot	50% TEA in acetone	2018	UB	Swansea Council	10	19	16	23.4%	G	**0.81**
Socotec Didcot	50% TEA in acetone	2018	R	Sevenoaks District Council	12	34	25	34.8%	G	**0.74**
Socotec Didcot	50% TEA in Acetone	2018	R	Wrexham County Borough Council	11	21	18	16.1%	G	**0.86**
SOCOTEC Didcot	50% TEA in acetone	2018		**Overall Factor[3] (28 studies)**				Use		**0.76**

For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone.
For Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins/ use Environmental Scientific Groups.
From 2011 for Environmental Scientific Groups use ESG Glasgow.
From 2011 for Harwell Scientific Services use ESG Didcot.
For 2017 for SOCOTEC use ESG Didcot, as name changed mid year.

Factor from Local Co-location Studies

Co-located NO_2 diffusion tubes are installed at the automatic monitoring site TH51/52/53 - Boundary Road, Ramsgate (co-located with ZH4).

The local bias correction factor is shown below in Table C.2.

Table C.2– Local Bias Factors

Location	Diffusion Tube Data Capture	Continuous Monitor Data Capture	Diffusion Tube Annual Mean (µg/m3)	Continuous Monitor Annual Mean (µg/m3)	Ratio
ZH4 Thanet Ramsgate	97%	81.7%	26.5	21.3	0.80

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	04/01/2018	31/01/2018	28.7	30.4	27.3	29	1.6	5	3.9
2	31/01/2018	28/02/2018	22.9	23.4	24.6	24	0.9	4	2.2
3	28/02/2018	28/03/2018	46.2	35.0	30.6	37	8.0	22	20.0
4	28/03/2018	03/05/2018	30.4	30.5	28.1	30	1.4	5	3.4
5	03/05/2018	06/06/2018	25.1	24.4	22.7	24	1.2	5	3.1
6	06/06/2018	05/07/2018	17.0	16.8	16.6	17	0.2	1	0.5
7	05/07/2018	30/08/2018	29.9	27.8	30.5	29	1.4	5	3.5
8	30/08/2018	06/09/2019	21.8	23.6	23.5	23	1.0	4	2.5
9	06/09/2018	02/10/2018	20.0	21.0	21.3	21	0.7	3	1.7
10	02/10/2018	30/10/2018	28.9		26.0	27	2.1	7	18.4
11	30/10/2018	05/12/2018	29.9	31.7	29.3	30	1.2	4	3.1
12	05/12/2018	09/01/2019	25.7	29.6	26.4	27	2.1	8	5.2
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
23	99.9	Good	Good
20	99.6	Good	Good
27	99.7	Poor Precision	Good
25	98.9	Good	Good
22	97.1	Good	Good
14	99.6	Good	Good
22	98	Good	Good
16	100	Good	Good
19	99.8	Good	Good
20	93.8	Good	Good
7	1	Good	r Data Capture
	0	Good	r Data Capture
		Good precision	Poor Overall

Overall survey -->

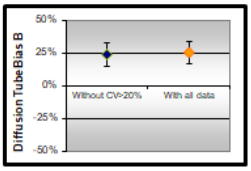
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Thanet ZH4 TH51/52/53

Precision 11 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 9 periods of data
Bias factor A 0.81 (0.75 - 0.87)
Bias B 24% (14% - 33%)
Diffusion Tubes Mean: 25 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 20 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 20 (19 - 22) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 10 periods of data
Bias factor A 0.8 (0.75 - 0.86)
Bias B 25% (17% - 34%)
Diffusion Tubes Mean: 26 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 21 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 21 (20 - 22) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

Discussion of Choice of Factor to Use

It was decided to use the national bias adjustment factor (0.76) for 2018, as the data capture for the continuous monitor had relatively low data capture, and the national factor is based on 28 studies (including Thanet), making it more robust.

Short to Long Term Adjustment

For diffusion tube monitoring where data capture for the year was less than 75%, data have been annualised using a ratio factor derived from measured NO_2 concentrations at AURN roadside automatic monitoring stations located at Birchington (ZH5) and Canterbury Military Road (CM3). In 2018, these stations had data capture of over 90%. The annual mean and associated period mean concentrations for each of the monitoring stations are outlined in Table C.2 below. The factor applied has then been determined from the average of the ratios from both monitoring stations.

Details of the annualisation factor used for diffusion tubes TH49, TH82, TH83 and TH84 are presented in Table C.3.

Table C.3: Determination of Annualisation Factors

Diffusion Tube ID		Thanet Birchington Roadside	Canterbury Military Rd Roadside
TH49	Annual Mean (µg/m^3)	31.0	27.0
	Period Mean (µg/m^3)	32.1	26.6
	Ratio	0.97	1.01
	Annualisation Factor	**0.99**	
TH82	Annual Mean (µg/m^3)	31.0	27.0
	Period Mean (µg/m^3)	30.6	26.8
	Ratio	1.01	1.01
	Annualisation Factor	**1.01**	
TH83	Annual Mean (µg/m^3)	31.0	27.0
	Period Mean (µg/m^3)	31.4	24.4
	Ratio	0.99	1.11
	Annualisation Factor	**1.05**	
TH84	Annual Mean (µg/m^3)	31.0	27.0
	Period Mean (µg/m^3)	30.3	26.0
	Ratio	1.03	1.04
	Annualisation Factor	**1.03**	

Distance Adjustment

The Defra NO_2 Fall-Off with Distance Calculator (version 4.2) was used for the following diffusion tubes:

- TH13/46/47
- TH48
- TH49
- TH51/52/53
- TH54/64/65
- TH55
- TH59
- TH76
- TH77

- TH78
- TH82.

Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration ($\mu g/m^3$)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
TH13/46/47	1.0	3.0	10.8	37.3	31.4	
TH48	0.5	1.5	10.8	29.9	26.2	
TH49	3.5	6.5	10.1	20.8	19.0	
TH55	10.0	13.0	12.5	22.7	21.7	
TH59	2.0	5.0	12.5	28.9	25.4	
TH76	12.0	21.5	11.4	21.3	19.0	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
TH77	1.0	3.5	9.4	20.9	18.0	
TH78	2.5	10.5	12.5	16.9	15.4	
TH82	7.9	14.9	13.5	25.1	22.6	
TH54/64/65	1.0	8.0	12.9	32.7	24.4	
TH51/52/53	4.1	5.0	13.4	20.2	19.8	

QA/QC of Automatic Monitoring

The QA/QC procedures for the sites 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:

- Calibration of NOx analysers with NO gas only (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). Ricardo AEA ratify the data for both the AURN and K&MAQMN sites.

QA/QC of Diffusion Tube Monitoring

Socotec Didcot is a UKAS accredited laboratory and participates 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 caliber. The lab follows the procedures set out in the Harmonisation Practical Guidance. In the latest available results, AIR-PT AR024, AIR-PT AR025, AIR-PT AR027, AIR-PT AR028 and AIR-PT AR030. Socotec Didcot have scored 100%. The percentage score reflects the results deemed to be satisfactory based upon the zcore of <+/- 2. Based on 28 studies from Socotec Didcot utilizing the 50% TEA, 100% of all local Authority co-location studies in 2018 were rated as ‘good’ (tubes are considered to have “good” where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%).

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 Thanet Urban AQMA

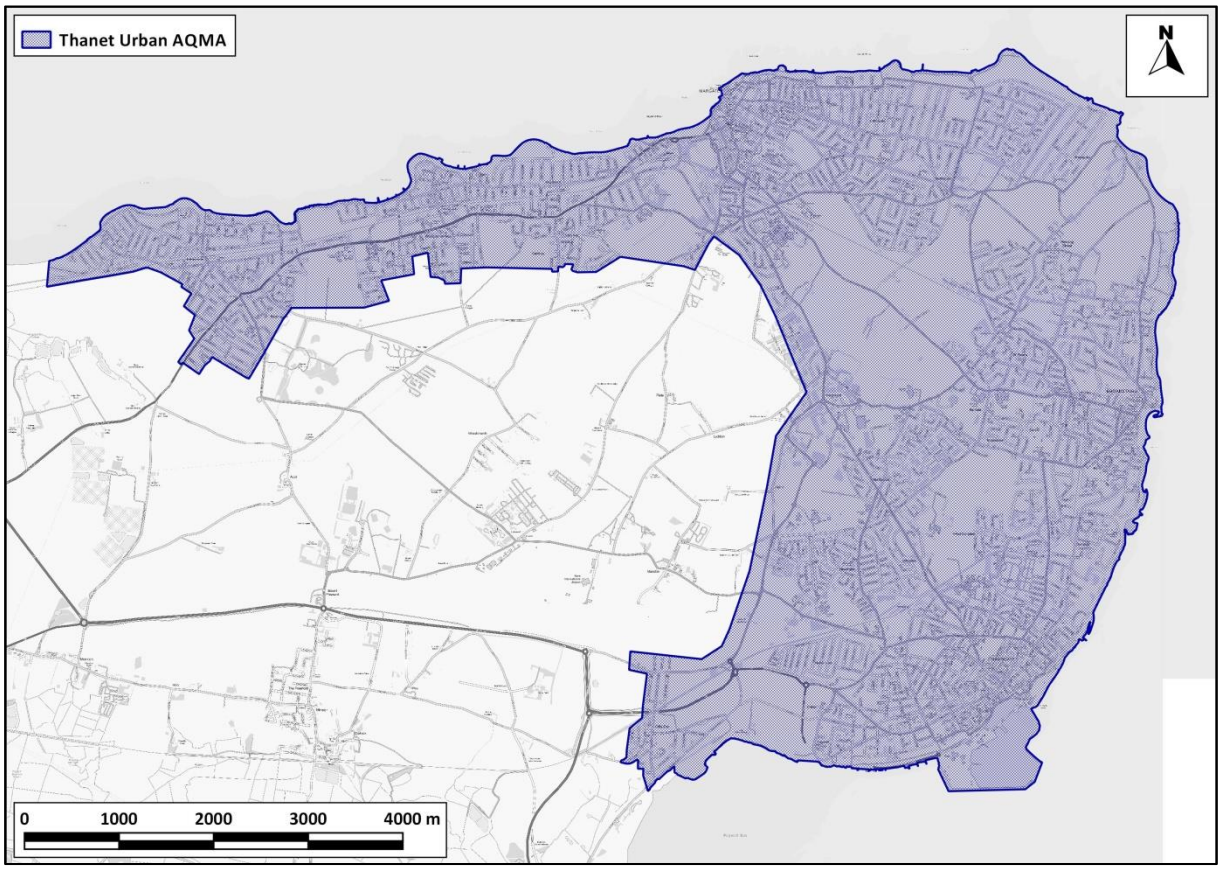


Figure D.2 Overview of Thanet Monitoring Locations

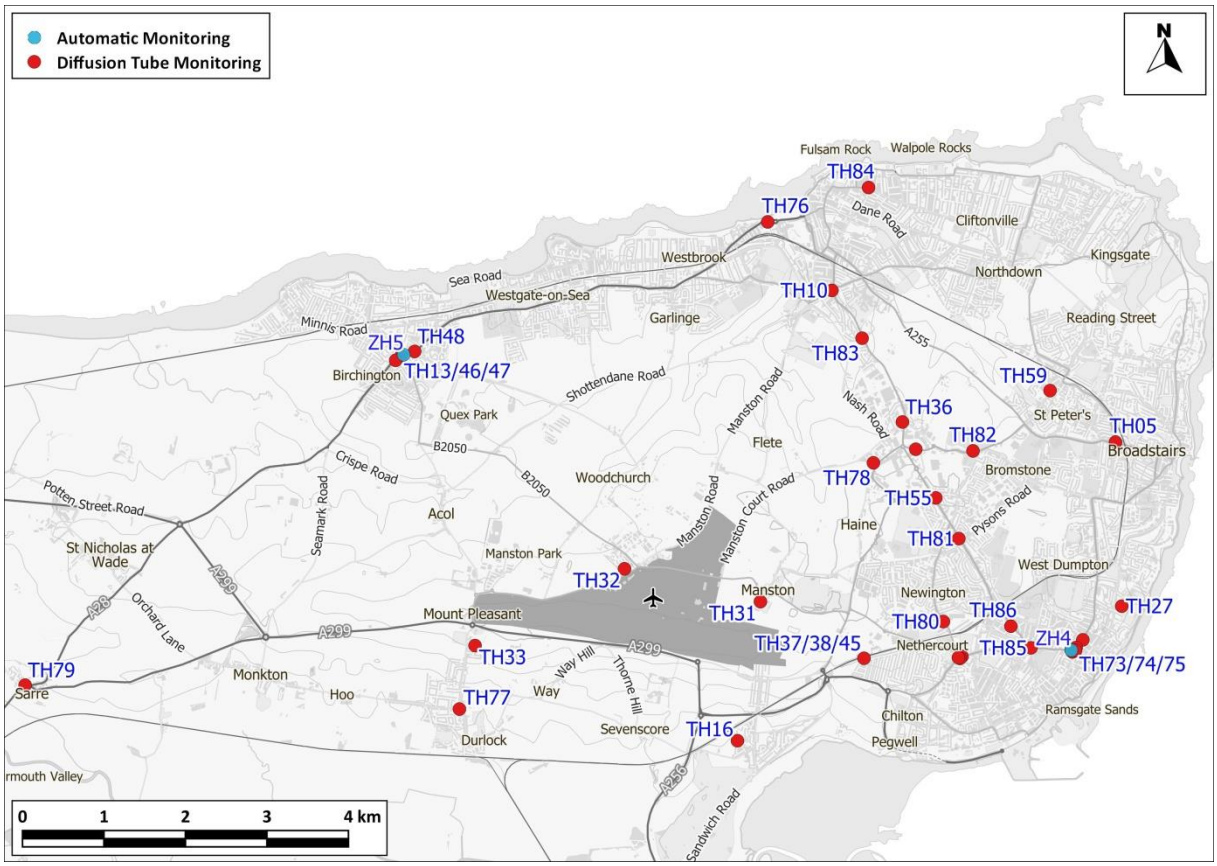


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Figure D.3 Monitoring Locations in Birchington

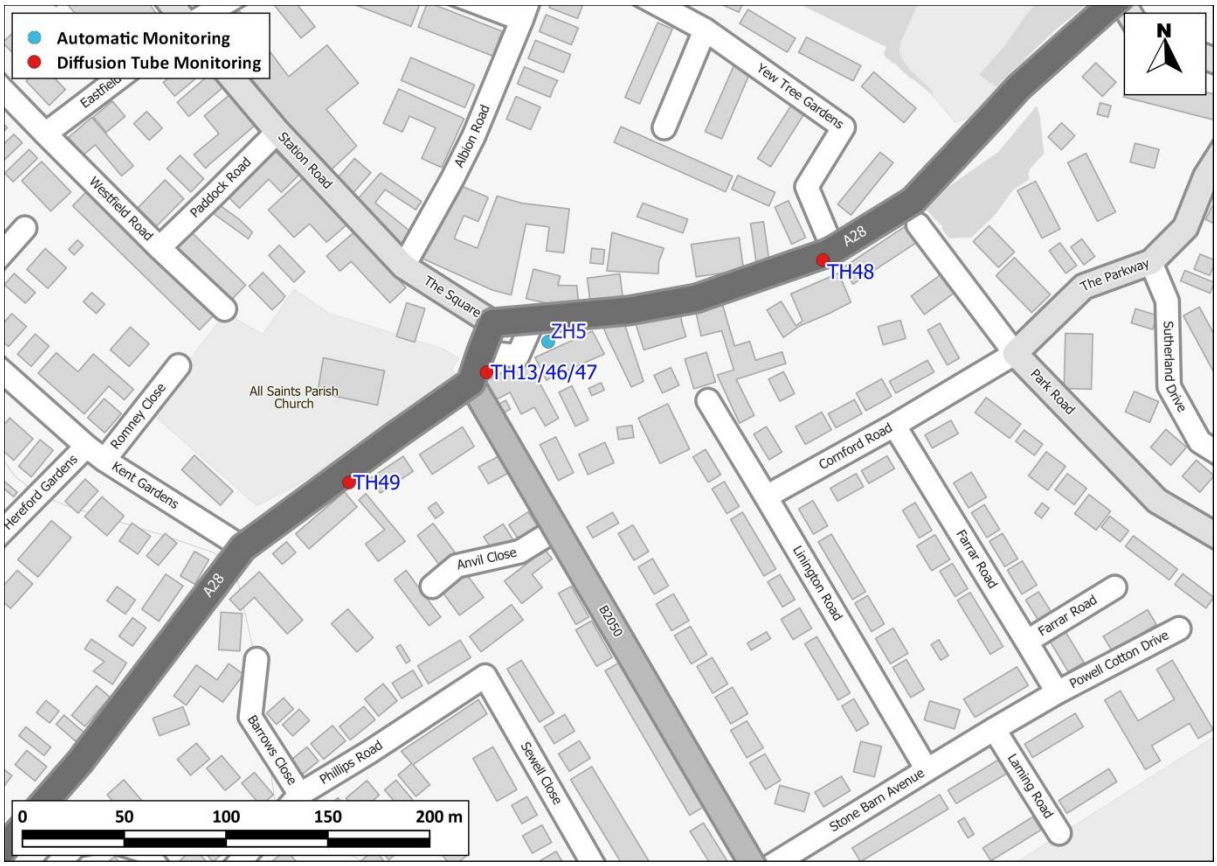

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Figure D.4 Monitoring Locations in Minster

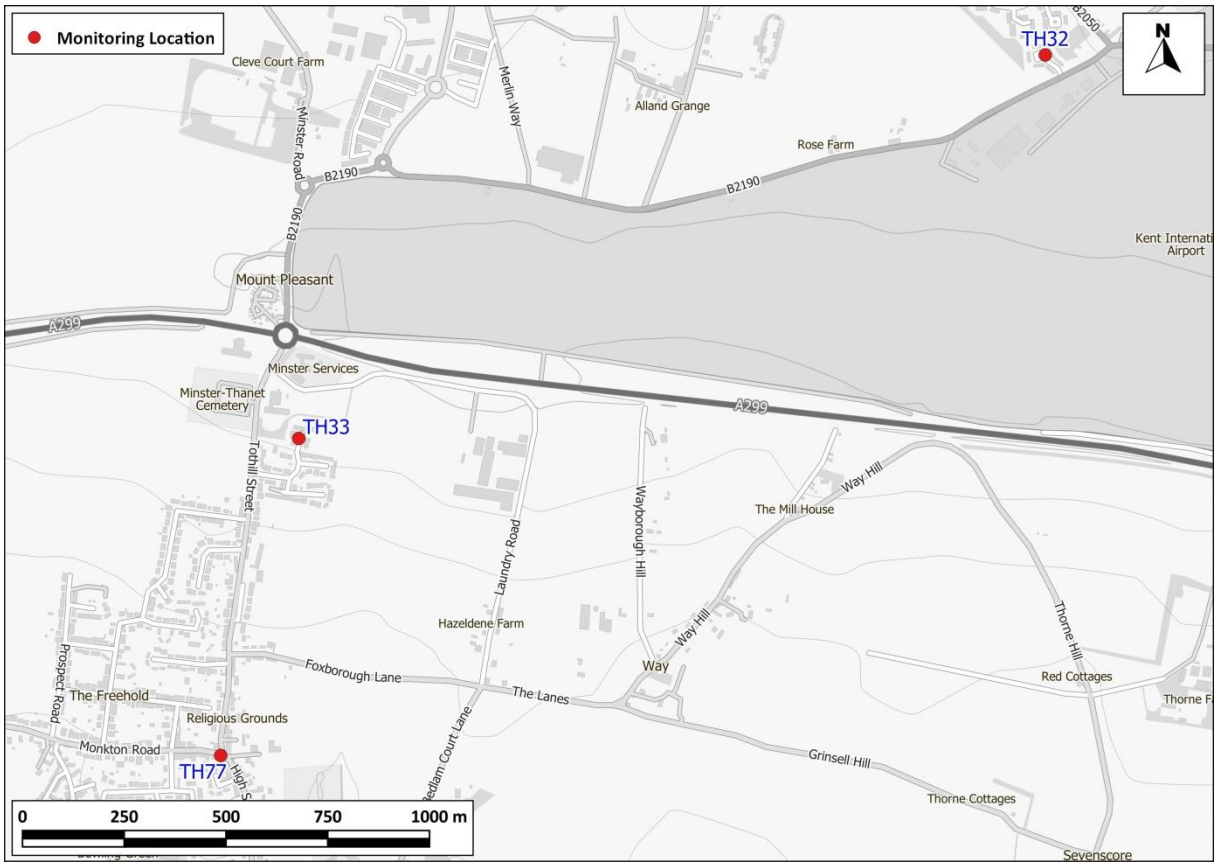

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Figure D.5 Monitoring Locations in Cliffsend, Ramsgate

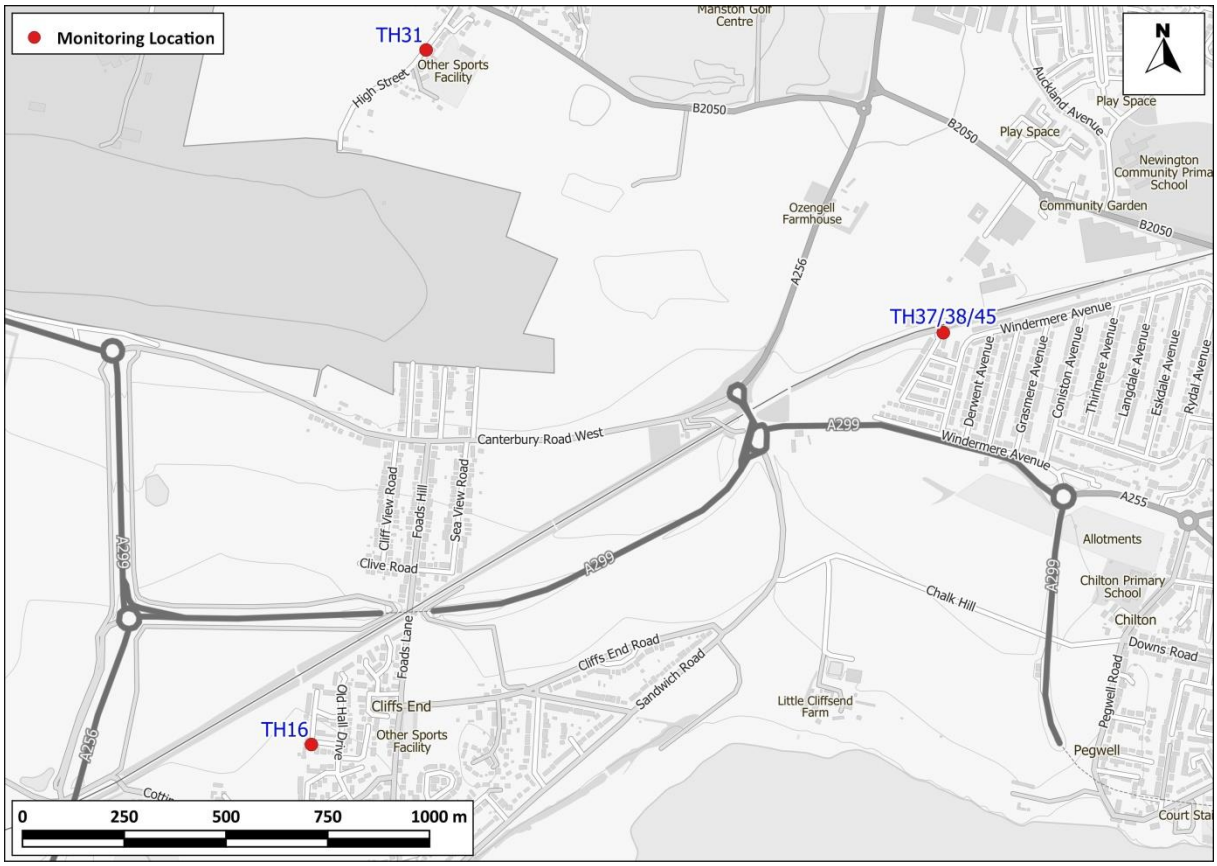

Figure D.6 Monitoring Locations in Westwood

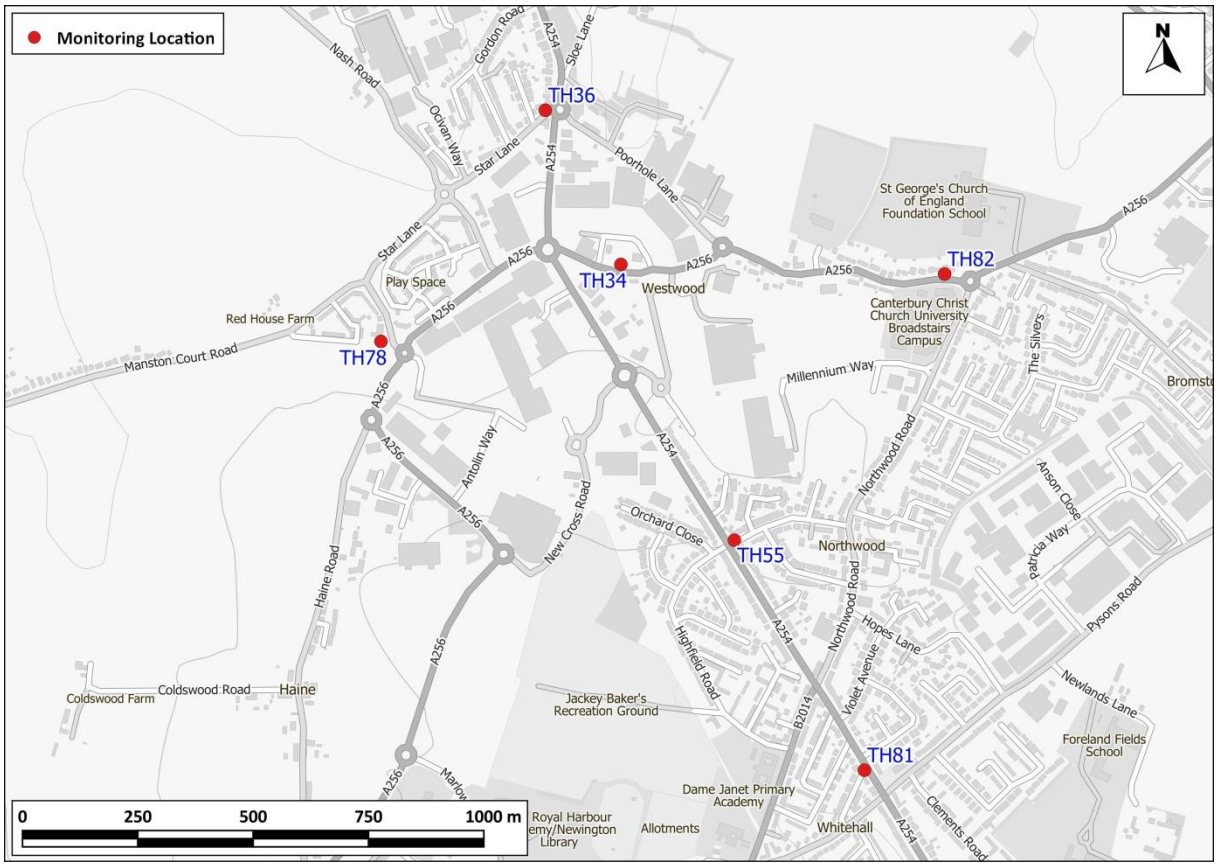

Figure D.7 Monitoring Locations in St Peters, Broadstairs

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Figure D.8 Monitoring Locations in Margate

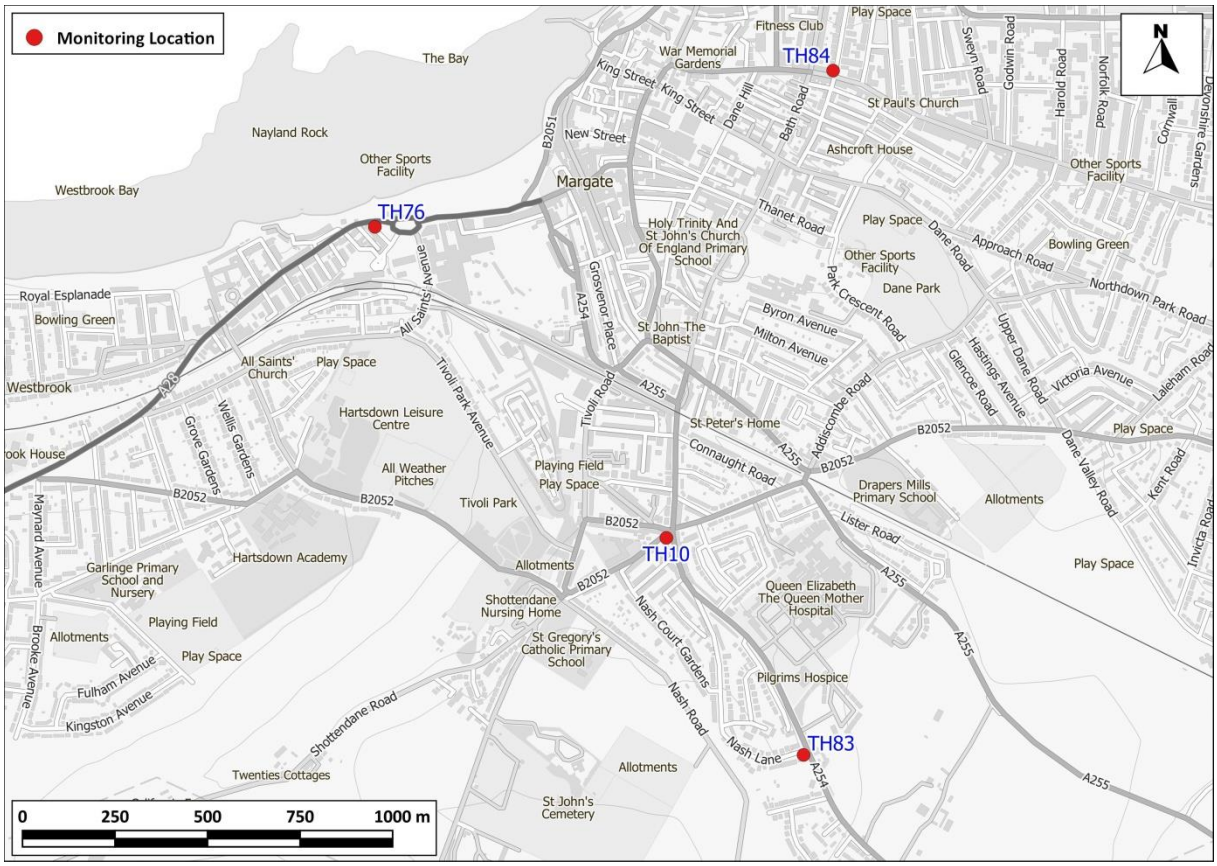

Figure D.9 Monitoring Locations in Ramsgate

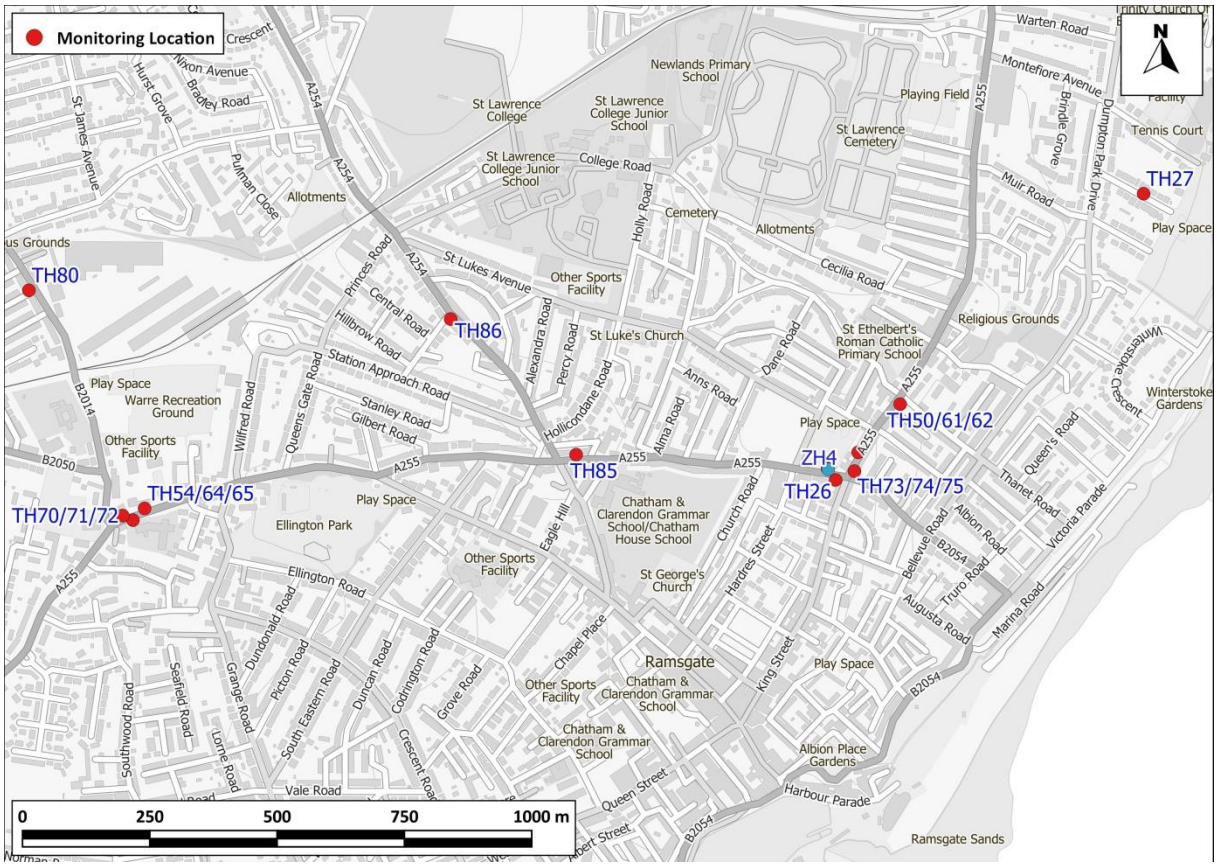

Figure D.10 Monitoring Locations in Sarre

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
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
K&MAQMN	Kent and Medway Air Quality Monitoring Network
K&MAQP	Thanet District council is part of the Kent and Medway Air Quality Partnership
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG16 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. Published by Defra
- Air Quality Technical Planning Guidance 2016. Published by Thanet District Council
- Thanet District Council 2018 Updating and Screening Assessment.
- Thanet District Council Air Quality Action Plan 2013. Published by Thanet District Council.
- National Diffusion Tube Bias Adjustment Spreadsheet, version 06/19 published in June 2019.
- https://laqm.defra.gov.uk/assets/laqmno2performancedatauptofebruary2019v1.pdf
- Environment Act (1995). Published by HMSO.