Thanet District Council
Annual Status Report 2016

Bureau Veritas

September 2016

Move Forward with Confidence

Document Control Sheet

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2016 Air Quality Annual Status Report (ASR)

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

September 2016

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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].

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 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 people/vehicular movements grow considerably in the summer months. There is a small international airport situated west of Ramsgate at Manston which ceased operating on 16th May 2014, Ramsgate also has a freight and passenger ferry port.

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 exceedences of the annual mean objective for nitrogen dioxide (NO_2) were predicted.

[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

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.

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

Updated monitoring showed that there were no exceedences of the AQS objectives outside of the existing AQMA. With regards to nitrogen dioxide (NO_2) passive monitoring has shown two locations where the annual NO_2 objective was exceeded in 2015, both within the existing AQMA.

The applications received by Thanet District Council since 2015 are detailed in Appendix A.

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) that was declared in 2011 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 AQMAs in Thanet are dominated by emissions from transport, a partnership arrangement between the District and County Councils for the development of this Action Plan has been used. Kent County Council has put forward proposed actions, which they themselves can implement in pursuit of the air quality objectives;
- 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. The Air Quality Technical Planning Guidance has been produced by Thanet District Council in August 2016 (Appendix F). The Local Plan also provides the policies in relation to new development and air quality; and

- Formation of steering group - A steering group was established to develop the Action Plan, which included officers from Environmental Protection and Development Planning within Thanet District Council and Transport Planning manager at Kent County Council.

Local Priorities and Challenges

There is an AQMA declared within the District for the exceedances of annual mean NO_2 objective with road traffic being the major source. Given the need to meet the NO_2 annual mean objective, the focus will need to be on reducing the annual mean concentrations of NO_2.

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 the way they usually travel.

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

- Use public transport where available – This reduces the number of private vehicles in operation reducing pollutant concentration through the number of vehicles and reducing congestion;
- Walk or cycle if your journey allows – 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. In addition many of the cycle routes are off-road meaning you are not in close proximity to emissions from road traffic sources;
- 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. To view the locations of publicly available electric

vehicle charging points in Thanet and elsewhere, 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 2015. 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 Strategy (AQS) 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 any progress that has been made.

The statutory AQS 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 when there is an exceedance or likely exceedance of an AQS objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of 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.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	One Line Description	Action Plan
Thanet Urban AQMA	NO_2 annual mean	Thanet	An area encompassing a number of urban areas within Thanet	Air Quality Action Plan 2013[4]

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

Thanet District Council has taken forward a number of measures during the current reporting year of 2015 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. More detail on these measures can be found in the Action Plan. Key completed measures are:

- The first Quality Bus Partnership in East Kent was formed in Thanet and helped to pioneer the development of these in the rest of the county. The Thanet Quality Bus Partnership provided the framework for the introduction of 'The Loop' service linking Margate, Westwood Cross, Ramsgate, Broadstairs and Margate, which was supported with Kickstart funding from the Department for Transport and Kent County Council;

[4] https://www.thanet.gov.uk/publications/environmental-health/air-quality-action-plan-2013/

- Thanet District Council published a walking strategy back in 2005 called 'Feet First– enabling and promoting walking in Thanet'. The strategy recognises that walking has health benefits; is socially inclusive and contributes to reduced congestion and improved air quality; and
- The Air Quality Technical Planning Guidance (Appendix F) for Thanet District Council has been prepared and updated in conjunction with the Kent and Medway Air Quality Air Quality Partnership

Thanet District Council's priorities for the coming year are:

- Continue the partnership with Kent County Council in the implementation of Local Transport 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; and
- Encourage the public to use sustainable transportation including public transport, car sharing, cycling and walking.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Air Quality Guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	TDC	-	On-going	-	-	Completed in August 2016	-	Copy included in Appendix F
2	Investigate Traffic Signal and Junction Configuration to improve traffic flows	Traffic Management	UTC(1), Congestion management, traffic reduction	KCC /TDC	2011/12	2012-2015	Peak queue lengths	-	On-going	-	-
3	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%		-	-
4	Encouragement of Public Transport	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	KCC /TDC	2012	2012-2015	Number of Euro IV or above buses, bus patronage, number of bus infrastructure improvement projects	5%	On-going	-	Measure update with KCC
5	Car Sharing and Travel Planning	Promoting Travel Alternatives	School Travel Plans Workplace Travel Planning	KCC/ TDC	2011/12	2012-2013	Number of registered users of scheme or travel plan	2%	On-going	-	-
6	Promotion of Cycling and Walking Measures	Promoting Travel Alternatives	Promotion of cycling and walking	TDC/KCC	2011/12	2012	Number of cyclists/walkers	1%	On-going	-	-
7	Promotion of air quality issues	Public Information	Via the Internet	TDC	2011/12	2012	Number of press releases, reports on website	-	On-going	-	Always on-going

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
8	Parking Enforcement	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	TDC	2012	2013	Number of Penalty Charge Notices served	-	On-going	-	Measure update with TDC Parking Enforcement Manager

Note: TDC = Thanet District Council – KCC = Kent County Council

(1) Urban Traffic Control

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.

The Public Health Outcomes Framework indicator for the percentage of deaths attributable to $PM_{2.5}$ in Thanet is 5.2%, which is just below the national average of 5.3%.

Thanet District Council does not currently undertake any monitoring of $PM_{2.5}$, and consequently there are currently no measures in place to specifically address $PM_{2.5}$ concentrations within the District.

LAQM.TG16 Table A.1 Action Toolbox provides a list of measures that can be implemented to tackle $PM_{2.5}$.

Thanet District Council will review these actions with Kent County Council's Public Health Team in 2016 to consider whether any specific actions specifically targetting $PM_{2.5}$ could be implemented.

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 the air quality monitoring that has taken place across the District, and how results compare with the AQS objectives.

Thanet District Council undertook automatic (continuous) monitoring at three sites during 2015. All three sites included NO_2 monitoring, whilst only two of the sites (ZH4 and ZH5) included PM_{10} monitoring. 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 has been adjusted, where relevant, are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Thanet District Council undertook non- automatic (passive) monitoring of NO_2 at 24 sites during 2015. 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) and bias adjustment for the diffusion tubes are included in Appendix C.

There were two more diffusion tube sites locations installed in 2015 compared to 2014.These are TH59 (Church Street in St Peters) and TH76 “Buenos Ayres” in Margate).

There were eight triplicate sites in 2015, these were:

- TH13/46/47 - The Square, Birchington;
- TH37/38/45 - Kentmere Avenue, Ramsgate (co-located with ZH3);
- TH50/61/62 - 63 Hereson Road, Ramsgate;
- TH51/52/53 - Boundary Road, Ramsgate (co-located with ZH4);
- TH54/64/65 - High Street, St. Lawrence;
- TH67/68/69 - 20 Hereson Road, Ramsgate;
- TH70/71/72 - 9 High Street, St. Lawrence; and
- TH73/74/75 - 3 Hereson Road, Ramsgate.

Triplicate co-located NO_2 diffusion tubes are installed at the automatic monitoring sites, respectively ZH3 Thanet Airport (Kentmere Avenue, Ramsgate) and ZH4 Thanet Ramsgate (Boundary Road, Ramsgate) sites.

3.2 Individual Pollutants

The air quality monitoring results presented in this section have been, where relevant, adjusted for bias. 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 at both continuous and passive diffusion tube sites for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2015 dataset of monthly mean values is also provided in Appendix B.

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.

Data capture was above 75% for all sites in 2015, meaning that there was no requirement for annualisation of the dataset.

Automatic monitoring results indicate that both annual mean objective and 1-hour objectives continued to be met at all three monitoring locations in 2015.

Figure 3.1 shows the trend in annual mean concentrations at the continuous monitoring locations between 2011 and 2015. This shows generally stable concentrations at Thanet Airport and Thanet Ramsgate sites. Site ZH5 Thanet Birchington has shown a decrease in the recent years following a peak in 2012.

Figure 3.1 – Trends in Annual Mean NO_2 Concentrations

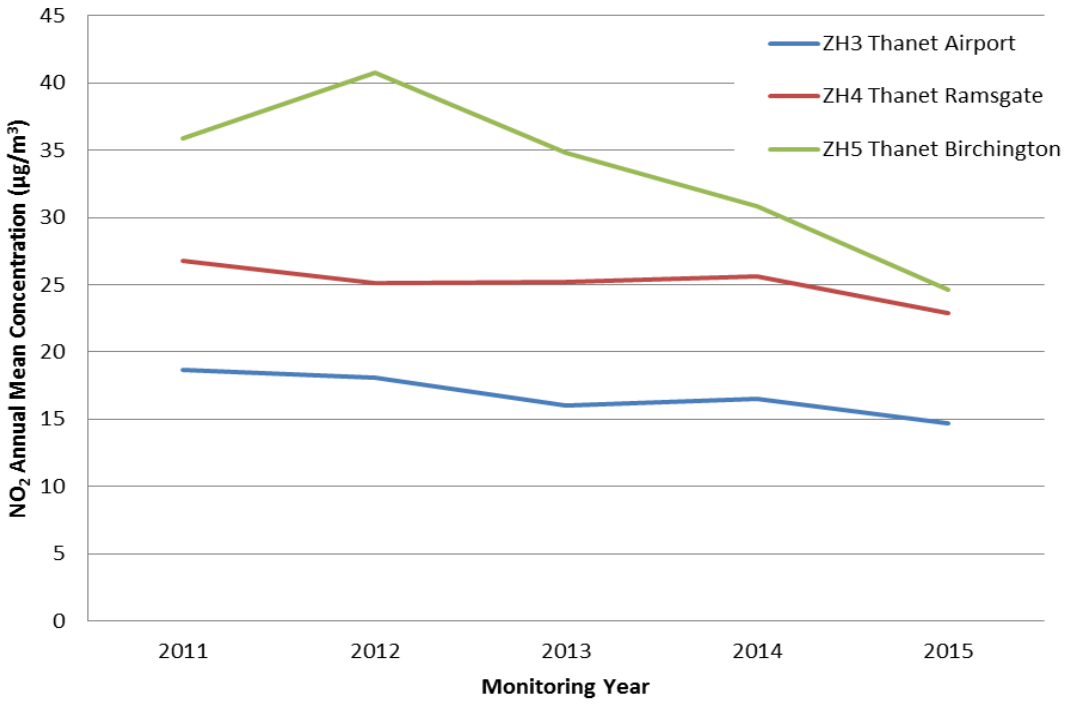


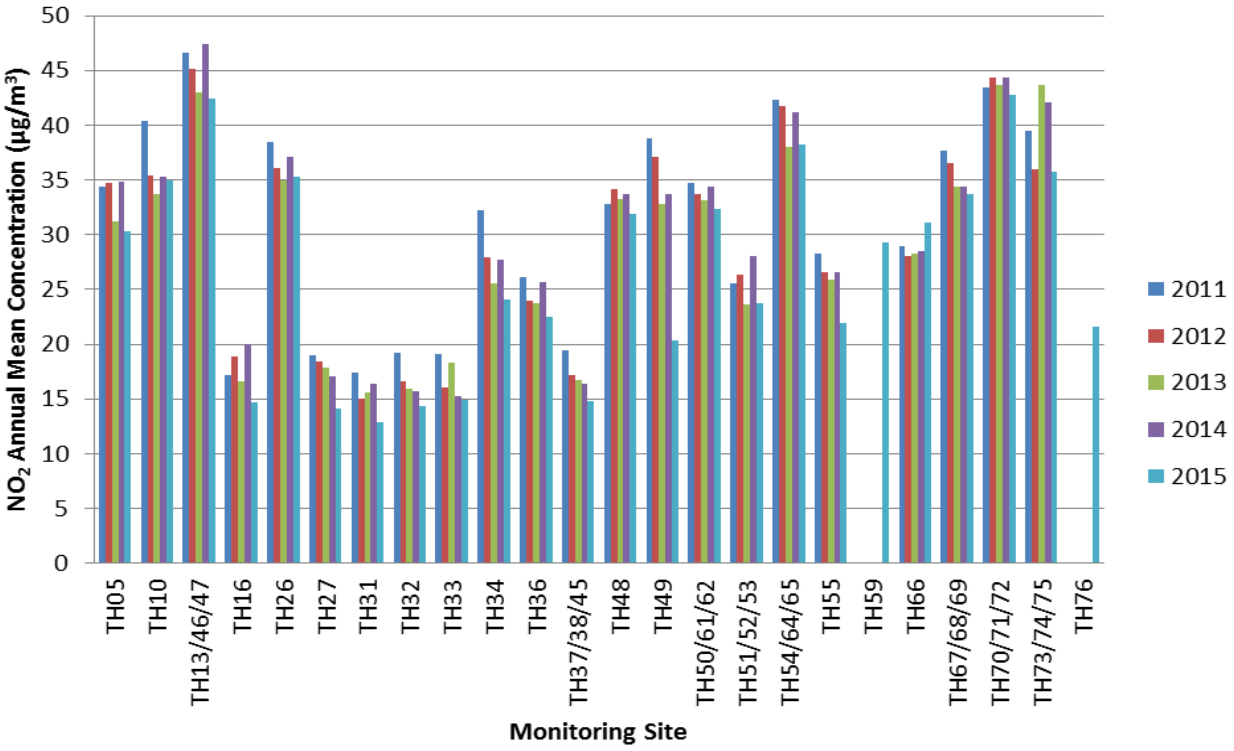
Figure 3.2 shows the trend in annual mean NO_2 concentrations at the diffusion tube monitoring sites between 2011 and 2015. The annual mean NO_2 concentration in 2015 has decreased compared to previous years for all sites except at site TH66 located on High Street, St Lawrence. For the 2015 data set, there were two locations where the annual mean AQS objective was exceeded, both located within the AQMA:

- TH13/46/47 at Birchington Square; and
- TH70/71/72 at 9 High Street, St Lawrence.

These two sites have shown consistent exceedances of the annual mean objective for all years since 2011.

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.

Figure 3.2– Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



3.2.2 Particulate Matter (PM_{10})

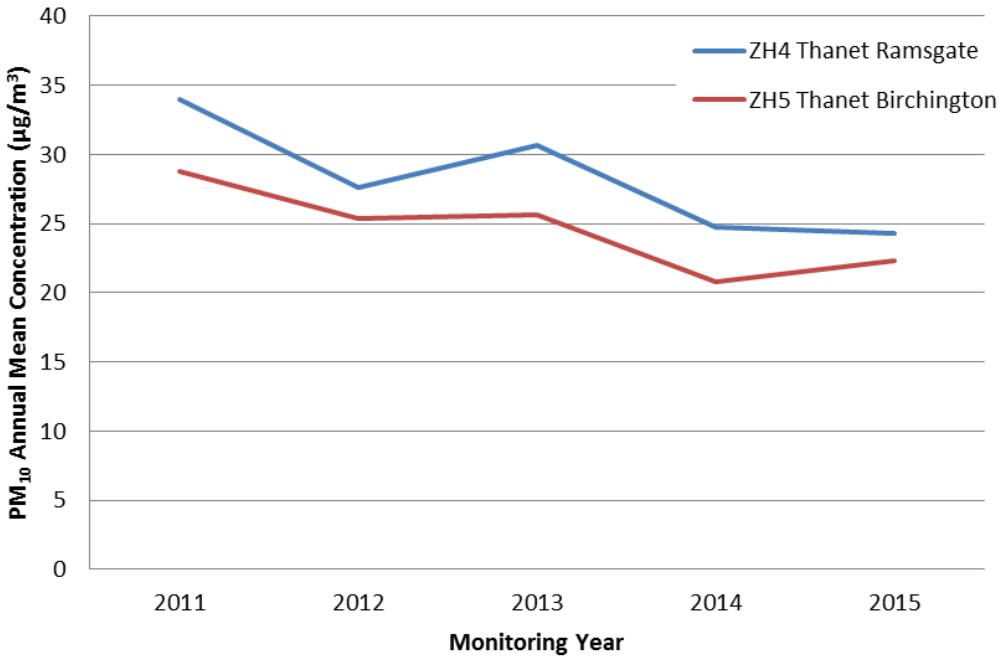
Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the AQS objective of 40µg/m^3.

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

The 2015 results show that both annual mean and 24-hour mean objectives were met at both monitoring sites during 2015. The number of exceedances of the 24-hour mean in 2015 decreased at ZH4 Thanet Ramsgate and increased at ZH5 Thanet Birchington when compared to 2014 values.

Figure 3.3 shows the trend in annual mean PM_{10} concentrations at the two continuous monitoring sites ZH4 and ZH5 between 2011 and 2015. The result shows that, through the monitoring period, the ZH4 Thanet Ramsgate site consistently monitored higher PM_{10} concentrations than the ZH5 Thanet Birchington site. There appears to be a generally decreasing trend at both sites since 2011.

Figure 3.3 – Trends in Annual Mean PM_{10} Concentrations



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) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
ZH3 Thanet Airport	Kentmere Avenue, Ramsgate (near Manston Airport)	Suburban Background	635931	165331	NO_2	Yes	Chemiluminescence	13 m	N/A	2
ZH4 Thanet Ramsgate	Boundary Road, Ramsgate	Roadside	638483	165430	NO_2, PM_{10}	Yes	Chemiluminescence, beta attenuation	16 m	4 m	2
ZH5 Thanet Birchington	The Square, Birchington	Roadside	630284	169052	NO_2, PM_{10}	Yes	Chemiluminescence, beta attenuation	4 m	3 m	2

(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

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,	Y	N	2.5	N	2.5
TH10	College Road, Margate	Kerbside	635539	169840	NO_2	Y	0	2	N	2.5
TH13/ 46/47	The Square, Birchington	Kerbside	630254	169037	NO_2	Y	2	<1	Triplicate	2.5
TH16	Earlsmede Crescent, Cliffend	Background	634445	164416	NO_2	Y	3	N/A	N	2.5
TH26	King Street, Ramsgate	Kerbside	638492	165410	NO_2,	Y	0	3	N	2.5
TH27	Avebury Avenue, Ramsgate	Urban Background	639097	165971	NO_2	Y	7	N/A	N	2.5
TH31	High Street, Manston	Urban Background	634662	166026	NO_2,	N	9	N/A	N	2.5
TH32	Bell-Davies Drive, Manston	Urban Background	632994	166428	NO_2,	N	10	N/A	N	2.5
TH33	Hill-House Drive, Minster	Urban Background	631161	165486	NO_2	N	9	N/A	N	2.5
TH34	Pizza Hut, Westwood Road, Broadstairs	Roadside	636570	167894	NO_2	Y	N	14	N	2.5
TH36	Star Lane, Ramsgate Road, Margate	Kerbside	636405	168227	NO_2	Y	0	2	N	2.5
TH37/ 38/45	Kentmere Avenue,	Kerbside	635932	165333	NO_2	Y	10	N/A	Triplicate and Co-located	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)
	Ramsgate								(ZH3)	
TH48	Canterbury Rd, Birchington (A28) (Yew Tree)	Kerbside	630438	169111	NO_2	Y	6.5	2.5	N	2.5
TH49	Kent Gardens, Canterbury Road (A28), Birchington	Roadside	630186	168983	NO_2	Y	3	3.5	N	2.5
TH50/ 61/62	63 Hereson Road, Ramsgate	Roadside	638616	165564	NO_2	Y	5	<1	Triplicate	2.5
TH51/ 52/53	Boundary Road, Ramsgate	Roadside	638472	165432	NO_2	Y	>20	4.1	Triplicate and Co-located (ZH4)	2.5
TH54/ 64/65	High Street, St. Lawrence	Roadside	637135	165354	NO_2	Y	7	<1	Triplicate	2.5
TH55	Coxes Lane, Margate Road, Ramsgate	Roadside	636815	167297	NO_2	Y	3	10	N	2.5
TH59	Church Street, St Peters	Kerbside	638220	168614	NO_2	Y	3	2	N	2
TH66	High Street, St. Lawrence,Façade	Roadside	637112	165331	NO_2	Y	0	3	N	2.5
TH67/ 68/69	20 Hereson Road, Ramsgate	Roadside	638536	165465	NO_2	Y	0	2	Triplicate	2.5
TH70/ 71/72	9 High Street, St. Lawrence	Roadside	637092	165340	NO_2	Y	0	1.5	Triplicate	2.5
TH73/ 74/75	3 Hereson Road, Ramsgate	Roadside	638529	165427	NO_2	Y	0	2	Triplicate	2.5
TH76	Buenos Ayres, Margate	Roadside	634752	170679	NO_2	Y	9.5	2.4	N	2

(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 2015 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2011	2012	2013	2014	2015
ZH3 Thanet Airport	Suburban Background	Automatic	96.0	96.0	18.7	18.1	16.0	16.5	14.7
ZH4 Thanet Ramsgate	Roadside	Automatic	99.5	99.5	26.8	25.1	25.2	25.6	22.9
ZH5 Thanet Birchington	Roadside	Automatic	98.5	98.5	35.9	40.8	34.8	30.8	24.6
TH05	Kerbside	Diffusion Tube	100	100	34.4	34.7	31.2	34.8	30.3
TH10	Kerbside	Diffusion Tube	100	100	**40.4**	35.4	33.7	35.3	34.9
TH13/46/47	Kerbside	Diffusion Tube	100	100	**46.6**	**45.1**	**43.0**	**47.4**	**42.4**
TH16	Background	Diffusion Tube	100	100	17.2	18.9	16.6	20.0	14.7
TH26	Kerbside	Diffusion Tube	100	100	38.5	36.1	34.9	37.1	35.3
TH27	Urban Background	Diffusion Tube	100	100	19.0	18.4	17.9	17.1	14.1
TH31	Urban Background	Diffusion Tube	100	100	17.4	15.0	15.6	16.4	12.9
TH32	Urban Background	Diffusion Tube	100	100	19.2	16.6	15.9	15.7	14.4
TH33	Urban Background	Diffusion Tube	100	100	19.1	16.1	18.3	15.2	14.9
TH34	Roadside	Diffusion Tube	100	100	32.2	27.9	25.5	27.7	24.1
TH36	Kerbside	Diffusion Tube	100	100	26.1	24.0	23.8	25.7	22.5

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2011	2012	2013	2014	2015
TH37/38/45	Kerbside	Diffusion Tube	100	100	19.4	17.2	16.7	16.4	14.8
TH48	Kerbside	Diffusion Tube	100	100	32.8	34.2	33.3	33.7	31.9
TH49	Roadside	Diffusion Tube	100	100	38.8	37.1	32.8	33.7	20.3
TH50/61/62	Roadside	Diffusion Tube	100	100	34.7	33.7	33.1	34.4	32.3
TH51/52/53	Roadside	Diffusion Tube	100	100	25.5	26.4	23.6	28.1	23.7
TH54/64/65	Roadside	Diffusion Tube	100	100	**42.3**	**41.7**	38.0	**41.2**	38.2
TH55	Roadside	Diffusion Tube	92	92	28.3	26.6	25.9	26.6	21.9
TH59	Kerbside	Diffusion Tube	92	92	-	-	-	-	29.3
TH66	Roadside	Diffusion Tube	100	100	29.0	28.1	28.3	28.5	31.1
TH67/68/69	Roadside	Diffusion Tube	100	100	37.7	36.5	34.4	34.4	33.7
TH70/71/72	Roadside	Diffusion Tube	100	100	**43.4**	**44.3**	**43.7**	**44.4**	**42.8**
TH73/74/75	Roadside	Diffusion Tube	100	100	39.5	36.0	**43.7**	**42.1**	35.7
TH76	Roadside	Diffusion Tube	100	100	-	-	-	-	21.6

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

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

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

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

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

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

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2011	2012	2013	2014	2015
ZH3 Thanet Airport	Suburban Background	Automatic	96.0	96.0	0	0	0	0	0
ZH4 Thanet Ramsgate	Roadside	Automatic	99.5	99.5	0	0	0	0	0
ZH5 Thanet Birchington	Roadside	Automatic	98.5	98.5	0	1	0	0	0

Notes: 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.**

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

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	PM_{10} Annual Mean Concentration (µg/m^3) (3)				
				2011	2012	2013	2014	2015
ZH4 Thanet Ramsgate	Roadside	93.7	93.7	34.0	27.6	30.7	24.7	24.3
ZH5 Thanet Birchington	Roadside	100	100	28.8	25.4	25.6	20.8	22.3

Notes: Exceedances of the PM_{10} 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) All means have been "annualised" as per Technical Guidance LAQM.TG16 if valid data capture for the full calendar year was less than 75%. See Appendix C for details.

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2011	2012	2013	2014	2015
ZH4 Thanet Ramsgate	Roadside	100	100	49	16	9 (39.5)	15	9
ZH5 Thanet Birchington	Roadside	100	100	31	11	16 (41.5)	6	6

Notes: 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.**

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

Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2015

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 (1)
TH05	41.0	45.5	31.0	36.9	25.3	35.6	32.4	36.5	34.5	22.1	33.5	38.4	34.4	30.3
TH10	39.4	45.1	38.0	44.9	33.1	36.7	39.0	43.2	40.6	43.5	37.9	33.9	39.6	34.9
TH13/46/47	51.7	56.7	49.3	43.6	41.8	41.7	50.0	58.7	48.1	51.2	49.0	36.2	48.2	42.4
TH16	18.6	21.0	17.0	18.0	13.9	13.5	13.2	17.5	16.0	20.8	16.9	14.6	16.8	14.7
TH26	39.3	47.0	41.7	39.9	37.7	34.8	36.6	44.1	38.8	43.7	41.3	36.2	40.1	35.3
TH27	21.2	20.2	15.6	13.2	12.4	11.5	13.9	15.9	15.3	18.4	17.9	16.4	16.0	14.1
TH31	19.8	20.3	17.4	11.7	12.2	9.7	12.4	12.9	14.3	19.5	12.9	13.4	14.7	12.9
TH32	20.3	19.9	20.1	15.8	11.9	10.6	14.6	15.7	14.2	20.2	17.8	15.9	16.4	14.4
TH33	22.1	23.2	18.6	14.7	12.8	11.1	13.4	14.9	17.7	23.8	16.4	13.8	16.9	14.9
TH34	34.8	35.4	31.0	22.6	14.9	20.8	25.0	28.2	28.0	32.3	26.9	28.5	27.4	24.1
TH36	28.0	25.2	29.2	24.5	21.6	20.8	22.3	26.3	22.3	31.4	22.8	32.9	25.6	22.5
TH37/38/45	20.0	21.9	20.1	15.2	13.5	12.3	15.4	16.1	14.2	18.9	17.3	16.2	16.8	14.8
TH48	43.3	42.9	44.4	59.5	15.4	21.2	33.0	35.4	34.6	42.4	31.5	31.3	36.2	31.9
TH49	27.1	26.1	27.5	18.3	22.1	15.8	16.5	23.8	23.7	30.0	22.7	22.8	23.0	20.3
TH50/61/62	43.5	43.7	37.9	35.8	29.3	32.2	30.3	37.9	34.8	40.0	35.8	38.9	36.7	32.3
TH51/52/53	30.2	30.1	30.1	22.6	23.1	20.5	24.2	27.7	24.9	35.7	26.9	26.8	26.9	23.7
TH54/64/65	64.4	49.6	48.6	36.8	35.8	31.3	34.5	36.2	49.8	41.6	50.3	42.0	43.4	38.2
TH55	31.2	34.8	30.1	19.0	-	23.2	18.9	24.0	24.2	33.3	30.9	29.7	24.9	21.9
TH59	32.7	41.5	47.2	28.0	29.7	29.8	37.1	35.3	38.5	-	43.2	35.9	33.2	29.3
TH66	37.1	32.7	30.1	29.5	35.4	34.0	41.3	50.8	32.0	54.0	27.1	19.5	35.3	31.1
TH67/68/69	39.9	39.8	41.9	43.3	34.6	37.6	35.4	43.1	43.5	49.1	29.0	22.7	38.3	33.7
TH70/71/72	59.1	49.8	51.2	49.7	42.9	42.5	46.9	47.8	53.2	59.1	45.5	35.6	48.6	42.8
TH73/74/75	35.9	44.2	40.4	51.5	43.5	38.4	37.1	45.8	41.3	48.2	28.8	31.5	40.5	35.7
TH76	35.2	33.4	29.8	22.6	22.7	20.3	25.8	22.1	25.1	18.2	13.9	25.3	24.5	21.6

(1) See Appendix C for details on bias adjustment

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

Diffusion Tube Bias Adjustment Factors

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

With regard to the application of a bias adjustment factor for diffusion tubes, the Defra Technical Guidance LAQM.TG16 and the LAQM Helpdesk[5] recommend the use of a local bias adjustment factor where available and relevant to diffusion tube sites.

Factor from National Co-location Studies

The diffusion tubes are supplied and analysed by Environmental Scientifics Group (ESG) Didcot, utilising the 50% triethanolamine (TEA) in acetone preparation method. A bias adjustment of 0.79 for the year 2015 (based on 26 studies) has been derived from the national bias adjustment calculator.

Factor from Local Co-location Studies

There are two co-location studies in Thanet. Triplicate co-located NO_2 diffusion tubes are installed at the automatic monitoring sites:

- TH37/38/45 - Kentmere Avenue, Ramsgate (co-located with ZH3);
- TH51/52/53 - Boundary Road, Ramsgate (co-located with ZH4).

[5] Laqm.defra.gov.uk

The local bias correction factors are presented below.

Both monitoring sites had good data capture in 2015 (see Table C.1).

Figure C.1 shows that the diffusion tubes co-located at ZH3 Thanet Airport had twelve periods of good precision in 2015 and 11 periods of good data capture; as such the local bias factor was calculated using 11 periods of good precision data. The diffusion tubes co-located at ZH4 Thanet Ramsgate had one period of poor precision in 2015; as such the local bias factor was calculated using 11 periods of good precision data (see Figure C.2). The overall local bias factor of 0.88 for 2015 has been calculated from the orthogonal regression of the two bias factors.

Table C.1– Local Bias Factors

Location	Diffusion Tube Data Capture	Continuous Monitor Data Capture	Diffusion Tube Annual Mean (µg/m^3)	Continuous Monitor Annual Mean (µg/m^3)	Ratio
ZH3 Thanet Airport	100%	98%	17	15	0.88
ZH4 Thanet Ramsgate	100%	100%	26	23	0.87

Figure C.1 – ZH3 Thanet Airport

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
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	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	07/01/2015	04/02/2015	18.4	19.2	22.5	20	2.2	11	5.4	16	99.7	Good	Good
2	04/02/2015	04/03/2015	22.9	21.6	21.3	22	0.9	4	2.1	19	99.9	Good	Good
3	04/03/2015	01/04/2015	19.9	21.4	18.9	20	1.3	6	3.1	19	99.3	Good	Good
4	01/04/2015	29/04/2015	16.2	15.1	14.3	15	1.0	6	2.4	17	99.1	Good	Good
5	29/04/2015	27/05/2015	13.6	11.7	15.1	13	1.7	13	4.2	12	99.7	Good	Good
6	27/05/2015	01/07/2015	12.9	12.8	11.3	12	0.9	7	2.2	13	97.7	Good	Good
7	01/07/2015	29/07/2015	16.1	15.4	14.7	15	0.7	5	1.7	13	83.2	Good	Good
8	29/07/2015	26/08/2015	17.3	15.4	15.7	16	1.0	6	2.5	12	70.9	Good	r Data Captur
9	26/08/2015	30/09/2015	12.5	15.1	15.1	14	1.5	11	3.7	12	99.5	Good	Good
10	30/09/2015	28/10/2015	18.1	21.1	17.5	19	1.9	10	4.8	16	99.7	Good	Good
11	28/10/2015	02/12/2015	18.8	16.8	16.3	17	1.3	8	3.3	14	99.6	Good	Good
12	02/12/2015	07/01/2016	14.7	17.7	16.2	16	1.5	9	3.7	11	99.9	Good	Good
13													
											Overall survey -->	Good precision	Good Overall

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

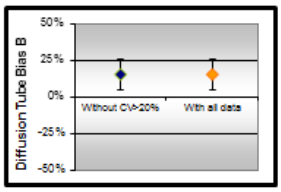
Site Name/ ID:

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

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 11 periods of data	
Bias factor A	0.88 (0.8 - 0.96)
Bias B	14% (4% - 25%)
Diffusion Tubes Mean:	17 µgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	15 µgm^{-3}
Data Capture for periods used:	98%
Adjusted Tubes Mean:	15 (13 - 16) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 11 periods of data	
Bias factor A	0.88 (0.8 - 0.96)
Bias B	14% (4% - 25%)
Diffusion Tubes Mean:	17 µgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	15 µgm^{-3}
Data Capture for periods used:	98%
Adjusted Tubes Mean:	15 (13 - 16) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Figure C.2 – ZH4 Thanet Ramsgate

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
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	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	07/01/2015	04/02/2015	31.9	28.7	30.0	30	1.6	5	4.0	25	99.4	Good	Good
2	04/02/2015	04/03/2015	30.4	29.0	31.0	30	1.0	3	2.5	28	99.7	Good	Good
3	04/03/2015	01/04/2015	33.2	28.8	28.4	30	2.7	9	6.6	27	99.7	Good	Good
4	01/04/2015	29/04/2015	21.9	21.4	24.6	23	1.7	8	4.3	25	99.7	Good	Good
5	29/04/2015	27/05/2015	20.0	24.3	25.0	23	2.7	12	6.7	20	99.9	Good	Good
6	27/05/2015	01/07/2015	22.5	20.7	18.4	21	2.1	10	5.1	21	97.7	Good	Good
7	01/07/2015	29/07/2015	24.7	23.3	24.5	24	0.8	3	1.9	20	99.9	Good	Good
8	29/07/2015	26/08/2015	27.5	28.6	26.9	28	0.9	3	2.1	23	99.7	Good	Good
9	26/08/2015	30/09/2015	24.4	25.3	25.1	25	0.5	2	1.2	19	99.6	Good	Good
10	30/09/2015	28/10/2015	28.8	23.5	54.7	36	16.7	47	41.5	23	99.7	Poor Precision	Good
11	28/10/2015	02/12/2015	25.6	27.4	27.7	27	1.1	4	2.8	22	99.2	Good	Good
12	02/12/2015	06/01/2016	27.7	26.4	26.3	27	0.8	3	1.9	21	99.8	Good	Good
13													
											Overall survey -->	Good precision	Good Overall

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

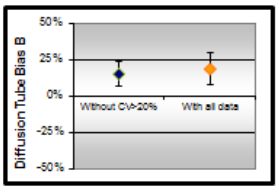
Site Name/ ID:

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

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 11 periods of data	
Bias factor A	0.87 (0.81 - 0.94)
Bias B	14% (6% - 23%)
Diffusion Tubes Mean:	26 µgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	23 µgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	23 (21 - 25) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.85 (0.78 - 0.94)
Bias B	18% (7% - 29%)
Diffusion Tubes Mean:	27 µgm^{-3}
Mean CV (Precision):	9
Automatic Mean:	23 µgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	23 (21 - 25) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Discussion of Choice of Factor to Use

It was decided to use the local bias adjustment factor derived from the ZH3 and ZH4 co-location studies (0.88) for the year 2015, as it provides more conservative results than if using the national bias adjustment factor of 0.79. Data capture was good for the two co-location studies used to calculate the bias factor. The bias factor was calculated using data periods with good diffusion tube precision, which included 11 periods of data for both the ZH3 Thanet Airport site and the ZH4 Thanet Ramsgate site.

For previous data, years 2011 to 2014, the bias adjustment factors have been taken from the Council's previous LAQM annual reports. The factors used were 0.89 (2011), 0.82 (2012), 0.82 (2013) and 0.81 (2014).

PM Monitoring Adjustment

Thanet District Council undertook monitoring of PM_{10} based on beta attenuation at two locations during 2015. The measured results for the monitors have been adjusted by dividing the data by 1.2 prior to reporting in accordance with LAQM TG (16) Paragraph 7.150.

Short to Long Term Adjustment

There were no monitoring sites requiring annualisation in 2015.

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 NO_x 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.

QA/QC of Diffusion Tube Monitoring

ESG Didcot 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 results, AIR-PT AR007 (April to May 2015), AIR-PT AR 009 (July to August 2015) and AR010 (October to November 2015) ESG Didcot have scored 100% apart from AIR-PT AR006 (January to February 2015) when 87.5% was scored. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ± 2. Based on 26 studies from ESG Didcot utilising the 50% TEA, 77% of all local Authority co-location studies in 2015 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%).

Planning Applications received since January 2015

The following applications had air quality requirements prior to consent in accordance with Thanet's Air Quality Technical Planning Guidance.

OL/TH/15/0788

Full air quality assessment report was submitted for the outline application for the erection of 153 dwellings at Westwood Lodge Poorhole Lane Broadstairs, Kent, CT10 2PP with all matters reserved, but application was refused.

OL/TH/15/1303

Emission Mitigation Assessment was required for outline application for the erection of 166 dwellings at St Lawrence College, College Road Ramsgate, Kent CT11 7AF with associated open space and parking provision, with consideration of access and scale. Total damage cost (5 year period) of £106,256.72 is to be incorporated into the development to offset impacts.

OL/16/0394

Outline application with some matters reserved (appearance, landscaping & scale) for mixed development of 140 houses, 70 bedroom residential care home, scout hut and recreational facilities. The proposed development is located at Former British Gas Site Northdown Road Broadstairs, Kent CT10 2UW. In terms of air quality, the proposed site falls within the urban AQMA, and in accordance with our local air quality guidance, a full air quality assessment and an emission mitigation scheme are required, particularly, the impact on air quality along Church Street which already experiences levels close to the objective for nitrogen dioxide.

F/TH/16/0400

The proposed development of erection of 4 restaurant units (Use Class A3) is located at Antolin Way, Ramsgate, Kent CT12 5GR.

Given the scale of the proposed development is greater than 800m^2, an Emission Mitigation Assessment will be required in accordance with the Air Quality and Planning Guidance.

OL/TH/16/0550

Comprehensive redevelopment of the site involves the demolition of existing buildings and structures and removal of hard standing and associated infrastructure, and provision of mixed use development. Application submitted in hybrid form (part-outline and part-detailed). The outline element comprises an outline planning application (with all matters except access reserved for future determination) for the provision of buildings/floorspace for the following uses; Employment (Use Classes B1a-c/B2/B8), Residential (Use Classes C3/C2), Retail (Use Classes A1-A5), Education and other non-residential institutions (Use Class D1), Sport and Recreation (Use Class D2), Hotel (Use Class C1), Open Space/Landscaping (including outdoor sport/recreation facilities), Car Parking, Infrastructure (including roads and utilities), Site Preparation and other associated works. The full/detailed element of the application comprises change of use of retained existing buildings and development of Phase 1 comprising four industrial units (Use Class B1c/B2/B8) with ancillary car parking and associated infrastructure and access. The proposed development is located at Manston Airport, Manston Road, Manston, Ramsgate, Kent.

Full air quality assessment of impacts and emissions mitigation assessment are required.

F/TH/16/0867

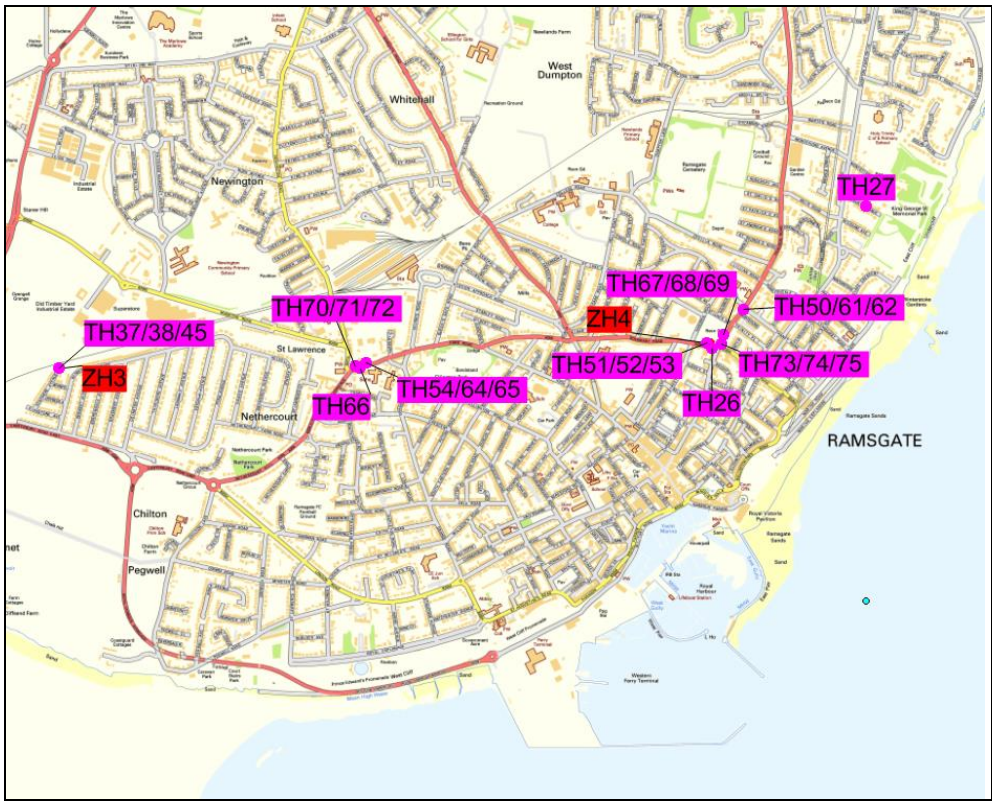
Erection of a primary school is to provide up to 420 school places for children aged 4 to 11 years. The proposed development is located at 140-144 Newington Road Ramsgate, Kent, CT12 6PP. Emissions Mitigation Assessment is required and the costs offset within mitigation measures are applied to the development (e.g. travel plans, low NOx boilers, EV charging points) if the on-site mitigation is not possible. The wider air quality mitigation measures are sought through a section 106 agreement to offset any worsening of air quality at St Lawrence.

R/TH/16/0960

Emissions mitigation assessment and statement are required for the application for approval of reserved matters of outline application F/TH/12/0781 for the erection of retail superstore (Use Class A1) (Approximately 14,400 m^2 GEA), petrol filling station and public open space with associated landscaping, servicing, car parking, access and link road, together with outline application for 1 and 2 storey buildings for non-food retail, restaurants and or take away uses (Use Classes A1, A3-A5) with associated parking and open space, following demolition of existing buildings. The proposed development is located at Land and Buildings South of Westwood Cross and between New Haine Road and Margate Road, Broadstairs.

Appendix D: Maps of Monitoring Locations

Figure D.1 – Map of Monitoring Sites: Ramsgate



Legend

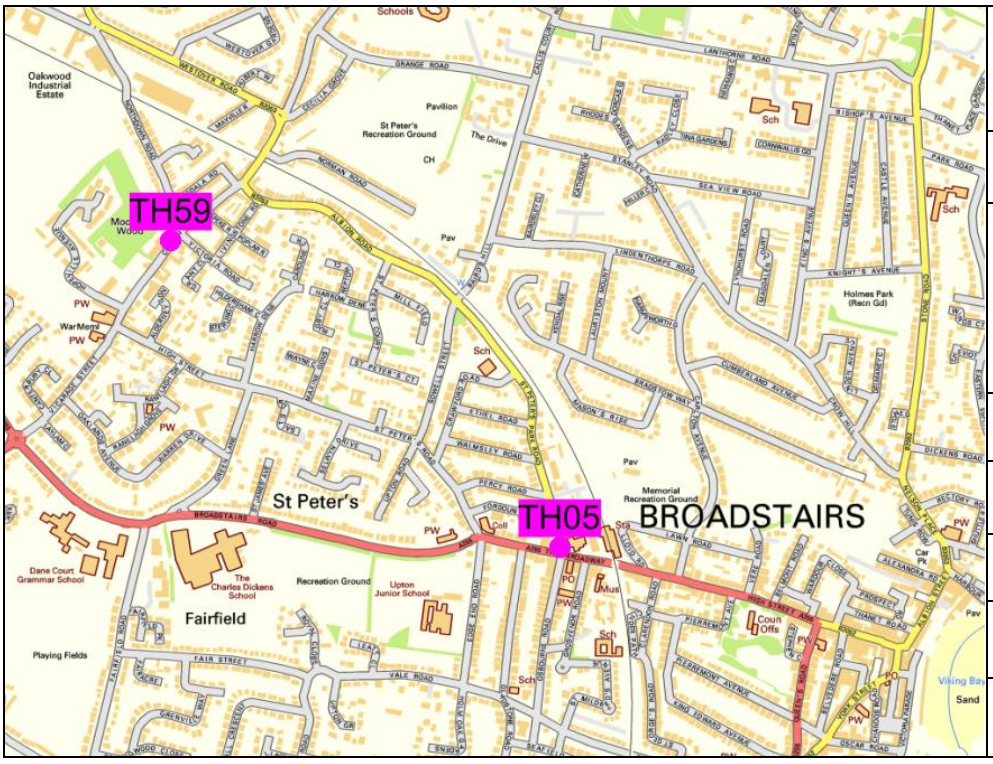
THXX Diffusion Tube Location

ZHX Automatic Monitoring Location

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

Location	
Ramsgate	
Title	
Monitoring Locations	
By	**Approved**
FL	JC
Scale	**Job Ref**
Not To Scale	6369742
Date	**Figure No.**
August 2016	D.1

Figure D.2 – Map of Monitoring Sites: Broadstairs



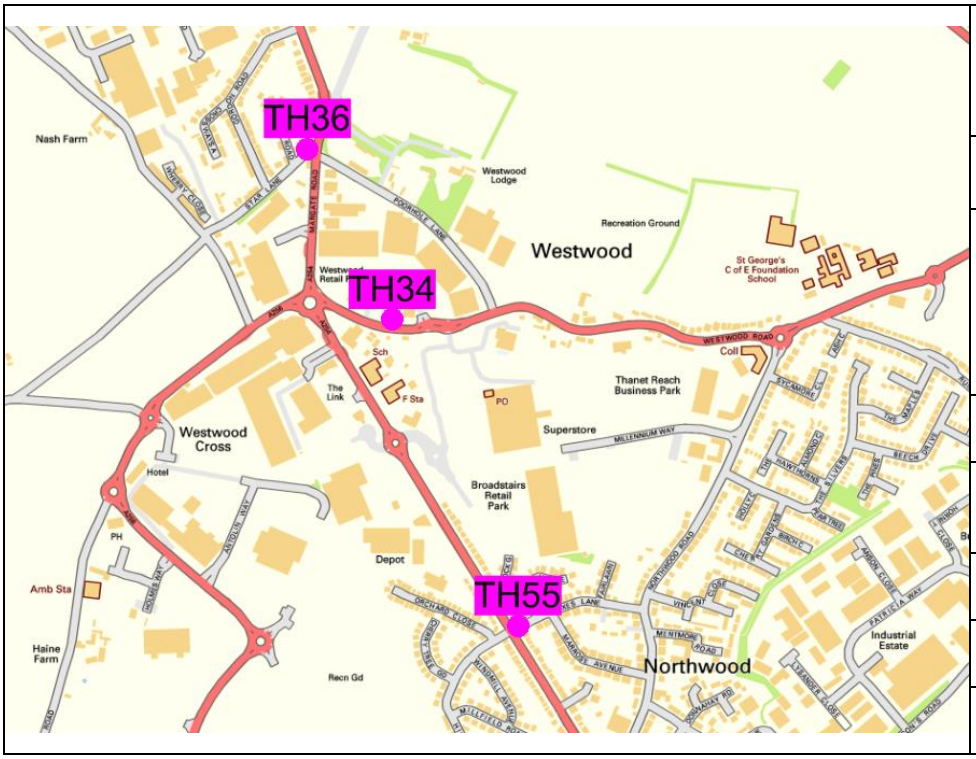
Legend

THXX Diffusion Tube Location

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

Location	
Broadstairs	
Title	
Monitoring Locations	
By	**Approved**
FL	JC
Scale	**Job Ref**
Not To Scale	6369742
Date	**Figure No.**
August 2016	D.2

Figure D.3 – Map of Monitoring Sites: Westwood and Northwood



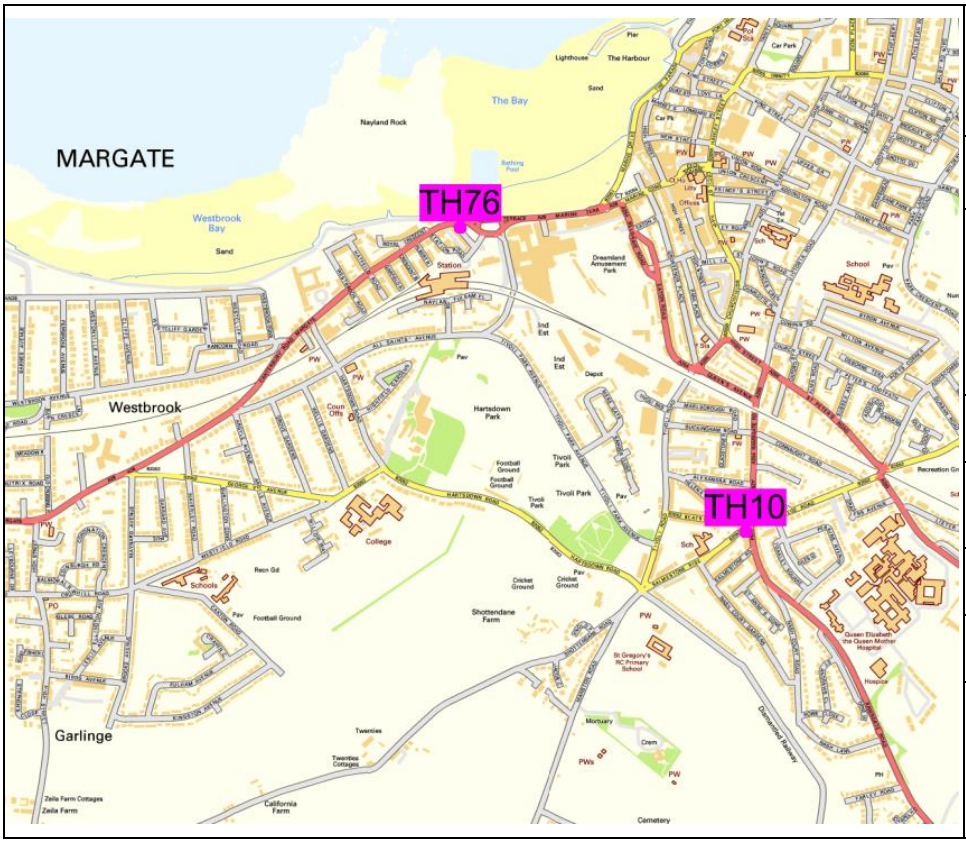
Legend

THXX Diffusion Tube Location

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

Location	**Westwood and Northwood**
Title	**Monitoring Locations**
By FL	**Approved** JC
Scale Not To Scale	**Job Ref** 6369742
Date August 2016	**Figure No.** D.3

Figure D.4 – Map of Monitoring Sites: Margate



Legend

THXX Diffusion Tube Location

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

Location	**Margate**
Title	**Monitoring Locations**
By FL	**Approved** JC
Scale Not To Scale	**Job Ref** 6369742
Date August 2016	**Figure No.** D.4

Figure D.5 – Map of Monitoring Sites: Manston

Legend

THXX Diffusion Tube Location

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

Location	**Manston**
Title	**Monitoring Locations**
By FL	**Approved** JC
Scale Not To Scale	**Job Ref** 6369742
Date August 2016	**Figure No.** D.5

Figure D.6 – Map of Monitoring Sites: Cliffs End

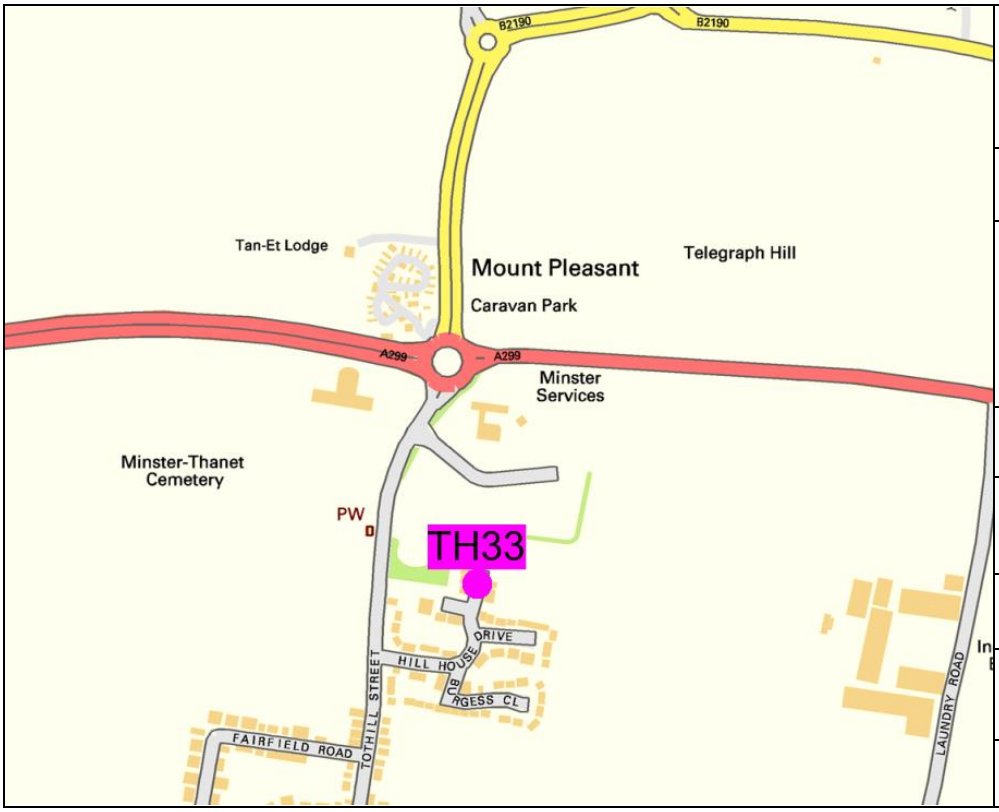
Legend

THXX Diffusion Tube Location

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

Location	**Cliffs End**
Title	**Monitoring Locations**
By FL	**Approved** JC
Scale Not To Scale	**Job Ref** 6369742
Date August 2016	**Figure No.** D.6

Figure D.7 – Map of Monitoring Sites: Hill House Drive Minister



Legend

THXX Diffusion Tube Location

ZHX Automatic Monitoring Location

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

Location	**Hill House Drive Minister**
Title	**Monitoring Locations**
By FL	**Approved** JC
Scale Not To Scale	**Job Ref** 6369742
Date August 2016	**Figure No.** D.7

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[6]	
	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

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

Appendix F: Thanet Air Quality Technical Planning Guidance August 2016

Thanet District Council

Air Quality Technical Planning Guidance

August 2016

Summary

This technical planning guidance for Thanet District Council has been prepared in conjunction with the Kent and Medway Air Quality Air Quality Partnership has been developed in response to the changes in national planning policy, through the National Planning Policy Framework (NPPF). This guidance will be reviewed and updated in light of any specific future national and local policy changes.

The guidance is available to download from the Council's website. In addition a template document on which this has been based on is available on the Kent and Medway Air Quality Partnership website www.kentair.org.uk.

This document has been developed to improve air quality across Kent and Medway and encourage emissions reductions to improve the environment and health of the population. In addition it aims to provide consistency as far as is practicable across the Kent and Medway area in the approach to air quality in the planning regime. In producing this document the Council also aims to provide developers with clear information as to what it will require and consistency in how it will approach planning applications in terms of air quality, which should help to speed up the planning process.

The document deals primarily with the air quality impacts from traffic emissions, although the increasing use of biomass boilers is now becoming an important local planning issue. The assessment and control of dust impacts during demolition and construction is also considered, as dusts contribute to airborne particulate matter. Greenhouse gas emissions are not addressed explicitly, as they are covered by other initiatives, but synergies exist between measures to minimise climate change and local air quality impacts.

It is recognised that development will in the main inherently increase road transport emissions, both during the construction and operational phases. However, it is also recognised that sustainable development can be a positive force for change. The approach in this document seeks to minimise road transport emissions wherever practicable to sustainable levels, by securing reasonable emission mitigation while also seeking to counter the cumulative impacts arising from all developments.

A key theme of the National Planning Policy Framework (NPPF) is that developments should enable future occupiers to make green vehicle choices and it explicitly states that low emission vehicle infrastructure, including electric vehicle re-charging, should be provided. This document seeks to develop consistent EV re-charging standards for new developments across Kent.

The air quality assessment process follows a staged process:

1. Using the 'Screening checklist' to determine whether the proposal qualifies as a 'major development'

2. Determining whether the development requires an air quality assessment or emissions assessment using the 'Air Quality and emission mitigation assessment checklist';

3. Determining whether an air quality assessment is required to assess the impact on public health and/or the local environment as well as the significance of a development on local air quality;

4. Determining whether an application should be refused on air quality grounds or what mitigation measures are required to make the development acceptable on air quality grounds;

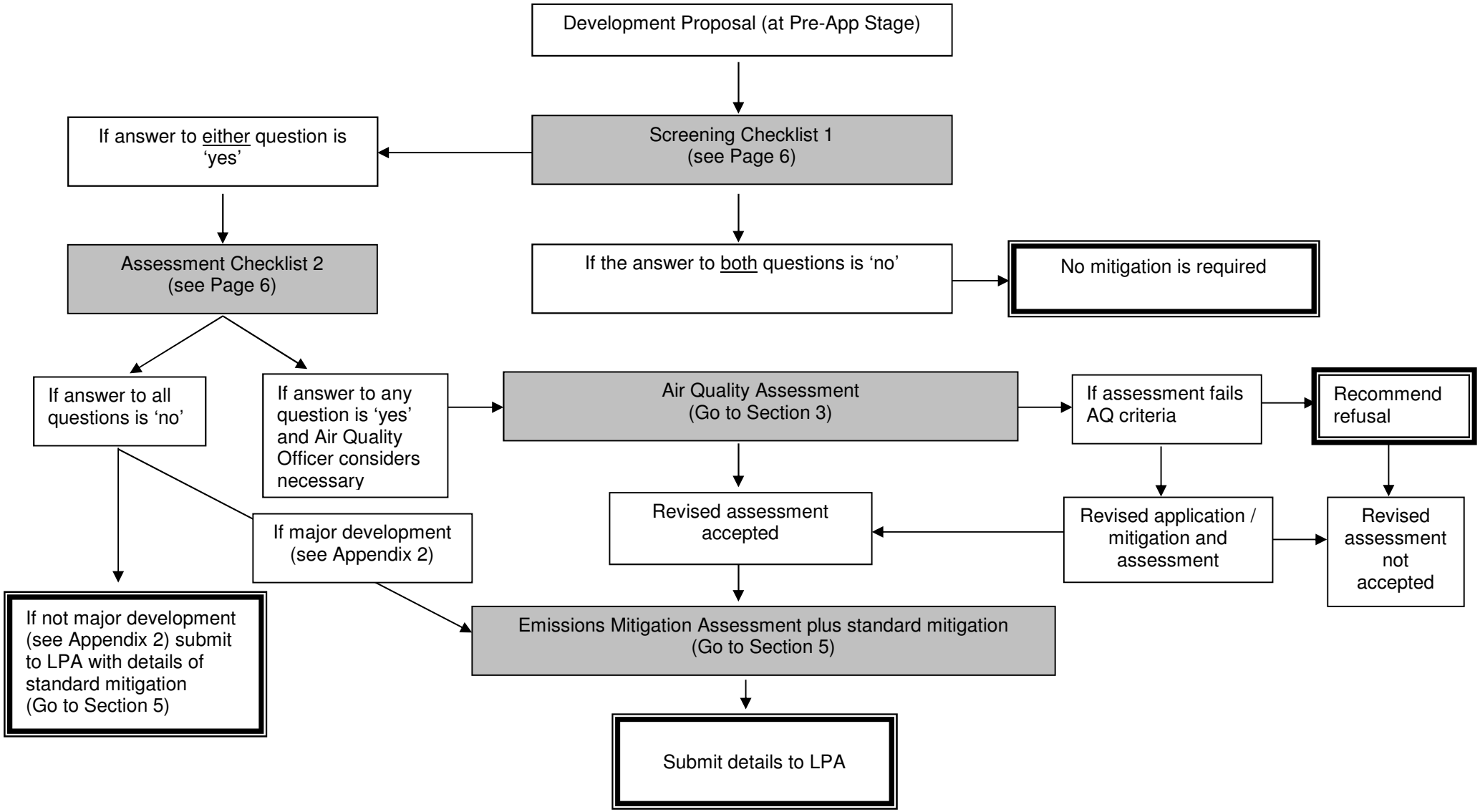
The assessment process is summarised in the flow chart on page 3.

Acknowledgements:

The Air Quality Technical Planning Guidance has been developed by using guidance documents produced by the Forest of Dean District Council, Sussex Air Quality Partnership and West Yorkshire Low Emissions Strategy Group with their permission.

Contents

Quick Reference Guide: Air Quality Assessment Process



1 Introduction

Clean air is essential for life. The quality of the air impacts on human health, the natural environment and can damage buildings and materials. The aim of this document is to provide advice for developers and their consultants on addressing local air quality when making a planning application in Thanet.

Thanet District Council continues to review and assess the air quality across the district to identify if there are any breaches of the National Objectives. To date this has resulted in the declaration of an urban wide Air Quality Management Areas (Appendix 1). These have been declared based on high nitrogen dioxide (NO_2) levels at several traffic hot spots throughout Thanet.

Air quality is a material planning consideration when a development is considered. The Local Planning Authority (LPA) will require an air quality assessment where certain criteria are met.

This document has been developed to: -

- Introduce a method for assessing the air quality impacts of a development which includes the quantification of impacts, calculation of damage costs and the identification of mitigation measures to be implemented to negate the impact of development on air quality.
- Tackle cumulative impacts.
- Provide clarity and consistency of the process for developers, the local planning authority (LPA) and local communities.

1.1 Planning Policy Framework

1.1.1 National Policy

National planning policy is now set by the National Planning Policy Framework (NPPF). The NPPF places a general presumption in favour of sustainable development, stressing the importance of local development plans. One of its 12 Core Planning Principles states that planning should:

"contribute to conserving and enhancing the natural environment and reducing pollution", by: (paragraph 109) "preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability".

It goes on to state (paragraphs 120 and 124) that:

"To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with local air quality action plans".

1.1.2 Local Planning Policy

Local plans are at the heart of the planning system and the Planning and Compensation Act 2004, as amended by the Localism Act 2011, requires their preparation by local planning authorities. As well as the National Planning Policy Framework (NPPF), guidance for the preparation of Local Plans (formerly known as Local Development Frameworks) is to be found in Planning Practice Guidance prepared by Communities and Local Government and accessible through http://planningguidance.planningportal.gov.uk/. Local plan policies may be further elaborated by Supplementary Planning Documents which provide further detail on specific topics, and increasingly through Neighbourhood Plans introduced by the Localism Act.

1.2 Local Air Quality Management

The Environment Act 1995 established the Local Air Quality Management (LAQM) regime. LAQM requires Local Authorities to review and assess ambient air quality in their areas against health-based standards for a number of specific pollutants prescribed in the Air Quality Regulations 2000 and Air Quality (Amendment) Regulations 2002. If there is a risk that levels of air pollution in any part of the authority's area will be higher than the prescribed objectives, the authority is required to designate an Air Quality Management Area (AQMA). It is then required to produce an Air Quality Action Plan, which sets out the measures it intends to take in pursuit of the objectives.

It is not necessarily the case that a proposed development in an area of poor air quality will have a negative impact. However, it is important to recognise when such development might introduce additional people into an area of poor air quality.

The declaration of an AQMA does not mean that there will be no new development within that area. Rather, it means that greater weight must be given to the consideration of air quality impacts and their mitigation.

In addition, the boundary of an AQMA does not necessarily define the limit of the area of poor air quality. The only constraint on the boundary definition is that it should be at least as large as the area of exceedance, where there is relevant exposure.

The fact that a development is within or close to an AQMA does not mean that it is necessarily affecting an area of exceedance of an Objective, or that it is being affected by air pollution that exceeds the objective. On the other hand, a development could introduce new exposure into an area of poor air quality, which has not been identified and declared as an AQMA, as previously there was no relevant exposure. The presence or potential creation of an AQMA should therefore not prevent development but will mean that development which mitigates its affect on air quality will be expected.

2 What information is required and why

2.1 Pre-application stage

In order to avoid unnecessary delays in the planning process and ensure optimum scheme design and sustainability, it is vital for communication at an early stage. Pre-application discussions with the LPA should flag up if a development is planned in an AQMA or is a major development as stated in Checklist 1.

2.2 Checklist 1: Screening checklist

Screening checklist	Yes	No	Recommendations
Q1. Is the proposed development categorised as a major size development?*			**If Yes, go to Checklist 2** **If No, go to Q2.**
Q2. Is the proposed development within, or close to an Air Quality Management Area (AQMA)**			**If Yes, go to Checklist 2** **If No, no mitigation is required**

Note: * Major sized category defined by Department for Transport indicative thresholds for transport assessments (see Appendix 2)
** AQMA location is available at www.thanet.gov.uk/airquality or Appendix 1

The purpose of Checklist 1 is to screen out developments which are not likely to have a significant effect on local air quality and, therefore, do not require further assessments.

The assessment is quick, simple and can be carried out by a developer, their agent or the LPA. If you need any help in completing the checklists, then please contact the Local Authority Air Quality Officer.

2.3 Checklist 2: Air quality and emissions mitigation assessment checklist

Question (answer all questions)	Yes	No	Recommendations
Q3. Does the development require an Environmental Impact Assessment (EIA)?			**If any question is answered = YES, Go to Section 5 standard mitigation for all developments and contact the Air Quality Officer to confirm whether an air quality (AQ) assessment and / or emission mitigation assessment is also required.** **OR** **If all questions are answered = NO, and the development is a major development then Go to Section 5 standard mitigation for all developments and undertake an emissions mitigation assessment.**
Q4. Will development type likely become large scale major development*? (either on its' own or as part of several separate cumulative planned developments.)			
Q5. Is there vehicle parking in the development: >100 (outside AQMA) or >50 (within or adjacent to AQMA)?			
Q6. For existing roads with >10,000 Annual Average Daily Traffic (AADT) does the development: Introduce extra vehicle movements (>5%), is it likely to cause congestion or introduce > 15 extra heavy duty vehicle movements per day?			
Q7. Will the development introduce new sensitive receptors into an AQMA?			
Q8. Are there any other proposed developments in the vicinity of this development which could have a cumulative effect on air quality?			
Q9. Is the development introducing biomass energy/heating plant into an urban environment?			

Q10. Is the development likely to impact on sensitive environments (i.e. SSSI's, National Parks etc.)			**OR** **If all questions are answered = NO, and the development is not a major development OR the Air Quality Officer determines there is no need for an AQ and/or emissions mitigation assessment = Go to Section 5 standard mitigation for all developments.**

*Large scale major development is one where the number of residential units to be constructed is 200 or more or 1,000 square metres of industrial, commercial or retail floor space. Where the number of residential units or floor space to be constructed is not given in the application a site area of 4 hectares or more should be used as the definition.

The purpose of Checklist 2 is to determine whether a development requires an air quality assessment and/or an emissions mitigation assessment.

The checklist should be carried out in consultation with the Local Authority Air Quality Officer.

Whether or not an assessment is required all development within an AQMA must provide details of standard mitigation to be submitted.

2.4 Air Quality Assessment

The purpose of an air quality assessment is to determine whether the predicted impacts from a development on local air quality will impact on public health and/or the local environment. This section also assesses the significance of the impact of a development on local air quality.

The assessment should be carried out by a developer's air quality consultant.

Guidance on how to carry out an air quality assessment is given in Section 3, with supporting information provided in Appendix 3.

2.5 Planning Requirements and Outcomes

The planning requirements and outcomes section provides information on whether a development should be refused on air quality grounds or if granted planning permission, what measures are required from a developer to make the development acceptable on air quality grounds.
Planning requirements in relation to the effect of a development on air quality are provided in Section 4.

Note: this section does not set out the specific mitigation requirements; these are provided in Section 5: Emissions mitigation assessment.

2.6 Emissions Mitigation Assessment

All major developments, will require an emissions mitigation assessment. The purpose of an emissions mitigation assessment is to determine the appropriate level of mitigation required from a development, by assessing the emission from that development.

The assessment should be carried out by a developer's air quality consultant.

Guidance on how to carry out an emission mitigation assessment is given in Section 5, with supporting information provided in the Appendices.

3 Air quality assessment

Before proceeding with the assessment, please contact the Air Quality Officer to confirm that an assessment is needed. After confirmation and completion of the assessment, proceed to section 5 to produce the emission mitigation assessment.

The purpose of an air quality assessment is to determine whether the predicted impact of a development on local air quality would adversely affect public health and/or the local environment, both to help determine a planning application and to determine the appropriate level of mitigation from a development. The assessment should be carried out by a developer's air quality consultant.

Applicants should always seek the latest information available on local air quality from the Air Quality Officer.

3.1 Air quality assessment process

This section provides the technical elements and methodology for undertaking air quality assessments for developments. This includes:

- Guidance on air quality assessments
- Significance criteria for determining a developments' impact on air quality
- Recommendations for planning decisions.

3.2 Air quality assessment

An air quality assessment should clearly establish the likely change in pollutant concentrations at relevant receptors resulting from the proposed development during both the construction and operational phases. It must take into account the cumulative air quality impacts of committed developments (i.e. those with planning permission). The Council has used similar assessment methods to fulfil the requirements of their detailed Review and Assessment that led to the AQMA designations. For consistency, air quality assessments for developments should, where possible, follow similar methodologies.

- The Council will work with developers by providing guidance on the suitability of such measures which should be incorporated at the early design stage of any proposal.
- Guidance on the methodologies to be used for air quality assessments is also available in the Department for Environment, Food and Rural Affairs (DEFRA) Technical Guidance LAQM TG(16).

Note: Further detail of the air quality assessment requirements can be found in Appendix 3.

3.3 Developments that require an Environmental Impact Assessment (EIA)

The EIA procedure ensures that the likely effects of a new development on the environment are fully understood. The EIA is likely to include a detailed study of the effects of any development upon local air quality as highlighted below.

- Developments that require an EIA include major developments which are of more than local importance; developments which are proposed for particularly environmentally sensitive or vulnerable locations and developments with unusually complex and potentially hazardous environmental effects.
- Most proposals for commercial or industrial installations that have the potential to emit pollution (e.g. Part A1, A2 and B installations) are likely to require an air quality assessment under the EIA regulations but more detailed "screening" may be required before this can be finally determined.

There are likely to be many other situations where developments that do not require a full EIA will nevertheless warrant an air quality assessment as part of the planning application.

- It is advised that developers, as good practice, should check with the LPA to determine whether an air quality assessment is required before submitting a planning application.

Key point:

Planning applications for major developments may require an EIA, which may need to include a more detailed assessment of the likely air quality effects. The Environmental Impact Assessment Directive provides the policy requirement for EIAs.

3.4 Determining the impact of a development on air quality

The key concern with regard to the air quality impacts of a development is the likely effect on human health. It is important that an air quality assessment evaluates modelled air quality in terms of changes in pollution concentrations where there is relevant public exposure.

- The Air Quality Regulations are concerned with areas that exceed air quality objectives and the revised Air Quality Strategy (2007) considers overall exposure reduction.
- This guidance considers that any development that leads to additional air pollution problems, even if it is outside an AQMA, could be significant.
- The local authority will have to make a balanced judgment on the likely impact of each development, based on the results of the air quality assessment and their professional experience. The local authority may also need to consider the impact of the development on air quality in neighbouring authorities.

3.5 Areas where air quality is a concern

There are key areas where the magnitude of change as well as the concentration of pollutants in air caused by proposed development is a concern.
In some cases, any additional contribution of emissions may worsen air quality and cause the creation of a new AQMA and, therefore, a small change in pollutant concentration can be as much a cause for concern as a large one. The areas of concern to consider are:

- AQMAs
- Areas near to or adjacent to AQMAs and candidate AQMAs
- Developments that require an EIA

The process for determining the impacts of a development on air quality is detailed below.

3.6 Assessment of the air quality impacts of a development.

1. The air quality assessment provides modelled predicted concentrations for scenarios (for the year of application and an agreed year of opening): without development (baseline), with development, with development including mitigation measures.

2. A comparison of the scenarios will be presented in the report. Compare scenario “without development (baseline)” with scenario “with development including mitigation measures”.

3. The difference in the compared scenarios is used to determine the classification of the change in air quality concentration.

4. The scale of air quality impact due to changes of concentration or if the additional concentration causes local exposure to approach or breach air quality objectives, determines the planning recommendations.

5. Planning recommendations are then provided.

3.7 Scaling of impacts on air quality from a development

An air quality assessment of a development should include modelling results as part of an air quality assessment for a proposal. These shall include modelled output scenarios “with” and “with-out” mitigation proposals as part of the application, to demonstrate predicted health exposure.

- Once the modelled outputs are agreed by the Air Quality Officer, then the scale or “magnitude” of change in pollutant concentration can be used to determine the significance of the air quality impact from a development.

- The increase in pollutant concentration is compared to National Air Quality Objective (AQO) levels and pollutant increases are expressed as percentages according to Table 1.

- The level of the change or magnitude provides the scale for recommendations for a planning decision (see Table 2, below).

The following table sets the classification of impact to determine their significance.

Table 1 Classification of impacts due to changes in pollutant concentration.

Classification of impact	Concentration change due to development:	Or if development contribution causes:
Very High	Increase > 10%	Worsening of air quality within an existing AQMA Creation of a new AQMA Introduction of new receptors within an existing AQMA
High	Increase > 5 – 10%	Levels to be within 5% AQO
Medium	Increase >1 <5 %	Levels to be within 10% AQO
Low/Imperceptible	Increase < 1%	-

Note: Concentrations are relative to national air quality objective levels (AQO).

4 Planning requirements

If the air quality assessment determines specific changes in air quality due to a single development or from the cumulative effect of several developments; the following determinations will be made by the LPA (see Table 2).

- An overriding consideration will be to ensure that the air quality in existing AQMAs does not worsen by the introduction of a development and/or that there is no additional air pollution burden from a development(s) which could create new AQMAs.

- Each decision must be a balance of all material considerations depending upon the individual merits and circumstances. The weight to be given to the impact on air quality in the consideration of a planning application and the acceptability of proposed mitigation measures lies with the relevant local planning authority. Any agreed measures will be taken forward by condition where possible, or through the use of Section 106 agreements.

- Refusal of a planning application may still result if air quality impacts from a development remain, even after all reasonable means to mitigate the impacts on air quality have been exhausted.

Table 2 Planning requirements and outcomes.

Magnitude of change in air quality	Likely requirements	Likely outcomes
Very High	Require evidence to show that mitigation will cancel out air quality impacts. If impact of development on air quality still very high = strong presumption for recommendation for refusal on air quality grounds.	Recommend refusal
High	Seek mitigation to significantly reduce air quality impacts. Mitigation to include reducing exposure through various measures, emissions reduction technologies and/or development redesign.	Recommend refusal unless significant mitigation measures are implemented.
Medium	Seek mitigation to reduce air quality impacts. Mitigation to include reducing exposure through various measures, emissions reduction technologies and/or development redesign.	Ensure mitigation is implemented.
Low/Imperceptible	Recommend the minimum mitigation for development scheme type.	Ensure minimum mitigation is implemented.

5 Emissions mitigation assessment

5.1 Standard mitigation for all major developments and all developments within or close to an AQMA

Residential:

All gas-fired boilers to meet a minimum standard of <40mgNOx/kWh

1 Electric Vehicle charging point* per dwelling with dedicated parking or 1 charging point per 10 spaces (unallocated parking)

Commercial/Retail/Industrial:
10% of parking spaces to be provided with Electric Vehicle charge points* which may be phased with 5% initial provision and the remainder at an agreed trigger level

Demolition/Construction:
Mitigation in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction

Notes:
* this shall be the best technology available at the time of planning approval

5.2 Emissions mitigation assessment

The purpose of an emissions mitigation assessment is to assess the local emissions from a development and to determine the appropriate level of mitigation required to help reduce the potential effect on health and/or the local environment. In addition the developer will be required to minimise dust emissions during the construction phase in accordance with the IAQM Guidance on the Assessment of Dust from Demolition and Construction.

Where mitigation is not integrated into a scheme, the LPA will require this through a planning condition(s). If on-site mitigation is not possible then the LPA may seek contribution to wider air quality mitigation measures through a section 106 agreement.

Each emissions mitigation assessment should include a brief emissions mitigation statement.

Emissions mitigation statement

The statement must include:

- Development traffic input data for emissions mitigation calculation
- Emissions calculation and totals
- Mitigation proposed to be equivalent to the value of emissions calculation (appropriate to the type and size of development and local policy requirements)
- Statement of provision required to minimise dust emissions in accordance with the IAQM Guidance on the Assessment of Dust from Demolition and Construction.

5.3 Mitigation for minor developments:

If the development is within or close to an AQMA and is considered minor development then it will be at the discretion of the Air Quality Officer to suggest reasonable mitigation options for these types of development.

5.4 Mitigation for all other developments:

The emissions mitigation calculator provides a formula to calculate the emissions resulting from a development and produces an exposure cost value to be spent on mitigation measures.

The assessment should be carried out by a developer's air quality consultant. Please contact the Air Quality Officer for assistance.

5.5 Emissions mitigation calculation

An emissions mitigation calculation inputs the additional number of trips generated by the development into the latest DEFRA Emissions Factor Toolkit (EFT)[1] which calculates the amount of transport related pollutant emissions a development is likely to produce. If the proposal is to include alternative fuels or technology i.e. LPG, EV etc, then there are "advanced options" within the EFT to accommodate this. The output is given in kg of specified pollutant per year and requires converting to tonnes per year. The output is then multiplied by the Interdepartmental Group on Costs and Benefits (IGCB) damage costs[2] for the key pollutants nitrogen oxides (NOx) and particulates (PM10). Finally the emissions total is then multiplied by 5 to provide a 5 year exposure cost value which is the amount (value) of mitigation that is expected to be spent on measures to mitigate those impacts. This value is used for costing the required emissions mitigation for the development.

The emissions mitigation is summarised below: -

Emissions Mitigation Calculation

EFT output x Damage costs x 5 years = 5 year exposure cost value

[1] http://laqm.defra.gov.uk/review-and-assessment/tools/emissions.html
[2] http://www.gov.uk/guidance/air-quality-economic-analysis

5.6 Example emissions mitigation calculation

The following example demonstrates the calculation based on a development with 10 domestic properties within an AQMA using version 6.0.2 of the EFT.

EFT input factors:

10 Household (urban not London) (2015) (NOx and PM10)

27 (trip/traffic ratio for 10 houses)

cars only (0% HGV)

50 kph (average speed)

10km (NTS UK average.)

EFT output = 34.74 kg/annum (NOx) and 3.39 kg/annum (PM10)

= 0.03474 tonnes/annum (NOx) and 0.00339 tonnes/annum (PM10)

x Damage cost £21,044/tonne (NOx) and £58,125/tonne (PM10)

=£731.07 + £197.04

x 5 (years)

= £3655.34 +£985.21

Notes:
- Trip rates can be sourced from transport assessment or local authority/transport authority.
- Trip length uses the 2014 National Travel Survey (NTS)[3] UK average = 7.3miles/10km
- The IGCB damage costs used are the IGCB Air Quality Damage Costs per tonne, 2015 prices (Central estimate: NOx = £21,044/tonne and PM10 £58,125/tonne Transport Average).

[3] https://www.gov.uk/government/collections/national-travel-survey-statistics

5.7 Requirements for mitigation measures

The mitigation options selected for a development should be relevant and appropriate to:

- Any local policies including Air Quality Action Plans, which may determine the mitigation priorities that the local authority may wish to be incorporated within a particular scheme.
- Any local air quality concerns; to assist in the mitigation of potential cumulative air pollution impacts of the development on the local community.
- The type, size and activity of the development.

Scheme mitigation should be provided within the design of the development where possible. Table 3 lists the mitigation measures to be considered.

Table 3 Mitigation measures

Standard mitigation plus: -

Residential
• Travel plan (where required) including mechanisms for discouraging high emission vehicle use and encouraging the uptake of low emission fuels and technologies
• A Welcome Pack available to all new residents online and as a booklet, containing information and incentives to encourage the use of sustainable transport modes from new occupiers
• Eco-driver training and provision of eco-driver aid to all residents
• EV recharging infrastructure within the development (wall mounted or free standing in-garage or off-street points)
• Car club provision within development or support given to local car club/eV car clubs
• Designation of parking spaces for low emission vehicles
• Improved cycle paths to link cycle network
• Adequate provision of secure cycle storage
• Using green infrastructure, in particular trees* to absorb dust and other pollutants

Commercial/Industrial
• As above plus: -
• Differential parking charges depending on vehicle emissions
• Public transport subsidy for employees
• All commercial vehicles should comply with either current or previous European Emission Standard
• Fleet operations should provide a strategy for considering reduced emissions, low emission fuels and technologies
• Use of ultra low emission service vehicles
• Support local walking and cycling initiatives
• On-street EV recharging
• Contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new development

Additional mitigation
• Contribution to low emission vehicle refuelling infrastructure
• Low emission bus service provision or waste collection services
• Bike/e-bike hire schemes
• Contribution to renewable fuel and energy generation projects
• Incentives for the take-up of low emission technologies and fuels

*For guidance on selecting the best air quality species please refer to the Urban Air Quality 2012 Woodland Trust document

The above lists are not exhaustive and further options may be suggested where the Council feels it is appropriate, depending on the scale of development and air quality issues within an area. The developer may also suggest alternative mitigation options not listed above provided that they clearly show the air quality benefits.

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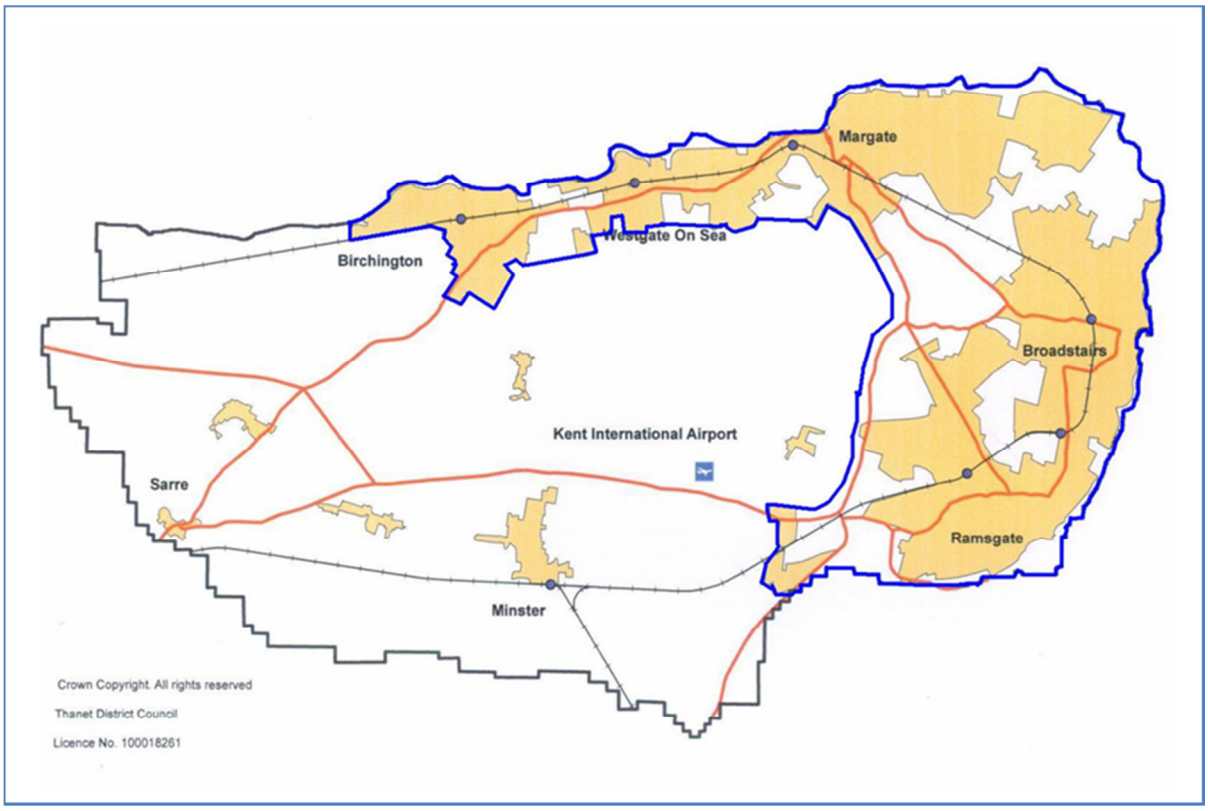
http://www.legislation.gov.uk/uksi/2010/2184/pdfs/uksi_20102184_en.pdf

Appendix 1 – Thanet Urban Air Quality Management Area



Appendix 2 - Criteria for Development Classification

The major sized category is determined using criteria from the Department for Transport indicative thresholds for transport assessments[4].

Table 1: Criteria for Development Classification

Land Use	Description	Further Assessment Required
Food Retail (A1)	Retail sale of food goods to the public - supermarkets, superstore, convenience food store	>800m2
Non-Food Retail (A1)	Retail sale of non-food goods to the public; but includes sandwich bars or other cold food purchased and consumed off site	>1500m2
Financial and professional services (A2)	Banks, building societies and bureaux do change, professional services, estate agents, employment agencies, betting shops	>2500m2
Restaurants and Cafes (A3)	Use for the sale of food consumption on the premises	>2500m2
Drinking Establishments (A4)	Use as a public house, wine-bar for consumption on or off the premises	>600m2
Hot Food Takeaway (A5)	Use for the sale of hot food for consumption on or off the premises	>500m2
Business (B1)	(a) Offices other than in use within Class A2 (financial & professional) (b) Research & Development - laboratories, studios (c) Light industry	>2500m2
General Industrial (B2)	General industry (other than B1)	>4000m2
Storage and Distribution (B8)	Storage and distribution centres - wholesale warehouses, distribution centres and repositories	>5000m2
Hotels (C1)	Hotels, boarding houses and guest houses	>100 bedrooms
Residential Institutions (C2)	Hospitals, nursing homes used for residential accommodation and care	>50 beds
Residential Institutions (C2)	Boarding schools and training centres	>150 students
Residential Institutions (C2)	Institutional hostels, homeless centres	>400 residents
Dwelling houses (C3)	Dwellings for individuals, families or not more than six people in a single household	>50 units
Non-Residential Institutions (D1)	Medical & health services, museums, public libraries, art galleries, non-residential education, places of worship and church halls	>1000m2
Assembly and Leisure (D2)	Cinemas, dance and concert halls, sports halls, swimming, skating, gym, bingo, and other facilities not involving motorised vehicles or firearms.	>1500m2

4 http://webarchive.nationalarchives.gov.uk/+/http:/www.dft.gov.uk/adobepdf/165237/202657/guidanceontaappendixb

Other
1. Any development generating 30 or more two-way vehicle movements in any hour
2. Any development generating 100 or more two-way vehicle movements per day
3. Any development proposing 100 or more parking spaces
4. Any relevant development proposed in a location where the local transport infrastructure is inadequate
5. Any relevant development proposed in a location adjacent to an Air Quality Management Area (AQMA)

Appendix 3 - Air Quality Assessment Protocol to Determine the Impact of Vehicle Emissions from Development Proposals

An air quality assessment should clearly establish the likely change in pollutant concentrations at relevant receptors resulting from the proposed development during both the construction and operational phases. It must take into account the cumulative air quality impacts of committed developments (i.e. those with planning permission).

Key Components of an Air Quality Assessment

The assessment will require dispersion modelling utilising agreed monitoring data, traffic data and meteorological data. The modelling should be undertaken using recognised, verified local scale models by technically competent personnel and in accordance with LAQM TG.16. The study will comprise of:

1. The assessment of the existing air quality in the study area for the baseline year with agreed receptor points and validation of any dispersion model;
2. The prediction of future air quality without the development in place (future baseline or do nothing);
3. The prediction of future road transport emissions and air quality with the development in place (with development or do-something).
4. The prediction of future road transport emissions and air quality with the development (with development or do-something) and with identified mitigation measures in place.

The assessment report should include the following details:

A. A detailed description of the proposed development, including:

- Identify any on-site sources of pollutants;
- Overview of the expected traffic changes;
- The sensitivity of the area in terms of objective concentrations;
- Local receptors likely to be exposed;
- Pollutants to be considered and those scoped out of the process.

B. The relevant planning and other policy context for the assessment.

C. Description of the relevant air quality standards and objectives.

D. The assessment method details including model, input data and assumptions:

For traffic assessment;

- Traffic data used for the assessment;
- Emission data source;
- Meteorological data source and representation of area;
- Baseline pollutant concentration including any monitoring undertaken;
- Background pollutant concentration;
- Choice of base year;
- Basis for $NOx:NO_2$ calculations;
- A modelling sensitivity test for future emissions with and without reductions;

For point source assessments:

- Type of plant;
- Source of emission data and emission assumptions;

- Stack parameters – height, diameter, emission velocity and exit temperature;
- Meteorological data source and representation of area;
- Baseline pollutant concentrations;
- Background pollutant concentrations;
- Choice of baseline year;
- Basis for deriving NO_2 from NOx.

E. Model verification for all traffic modelling following DEFRA guidance LAQM.TG (09):

F. Identification of sensitive locations:

G. Description of baseline conditions:

H. Description of demolition/construction phase impacts:

I. Summary of the assessment results:

- Impacts during the demolition/construction phase;
- Impacts during the operation phase;
- The estimated emissions change of local air pollutants;
- Identified breach or worsening of exceedences of objectives (geographical extent)
- Whether Air Quality Action Plan is compromised;
- Apparent conflicts with planning policy and how they will be mitigated.

J. Mitigation measures.

Air Quality Monitoring
In some case it will be appropriate to carry out a short period of air quality monitoring as part of the assessment work. This will help where new exposure is proposed in a location with complex road layout and/or topography, which will be difficult to model or where no data is available to verify the model. Monitoring should be undertaken for a minimum of six months using agreed techniques and locations with any adjustments made following Defra Technical Guidance LAQM.TG (16).

Assessing Demolition/Construction Impacts
The demolition and construction phases of development proposals can lead to both nuisance dust and elevated fine particulate (PM_{10} and $PM_{2.5}$) concentrations. Modelling is not appropriate for this type of assessment, as emission rates vary depending on a combination of the construction activity and meteorological conditions, which cannot be reliably predicted. The assessment should focus on the distance and duration over which there is a risk that impacts may occur. The Institute of Air Quality Management (IAQM)[5] has produced a number of definitive guidance documents to which this guidance refers. The document `Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance' should be the reference for reporting the construction assessment.

Cumulative Impacts
The NPPF (paragraph 124) recognises that a number of individual development proposals within close proximity of each other require planning policies and decisions to consider the cumulative impact of them. Difficulties arise when developments are permitted sequentially, with each individually having only a relatively low polluting potential, but which cumulatively result in a significant worsening of air quality. This will occur where:

- A single large site is divided up into a series of units, such as an industrial estate or retails park;
- A major development is broken down into a series of smaller planning applications for administrative ease; and
- There are cumulative air quality impacts from a series of unrelated developments in the same area.

[5] IAQM www.iaqm.co.uk

In the first two cases, the cumulative impact will be addressed by the likelihood that a single developer will bring forward an outline application for the whole site which should include an air quality assessment as part of an Environmental Impact Assessment. For major developments that are broken down into a series of smaller planning applications, the use of a `Master or Parameter Plan' that includes an air quality assessment will address the cumulative impact.

Appendix 4 - Electric Vehicle Charging Point Specification:

This shall be the best technology available at the time of planning approval.

EV ready domestic installations

- Cable and circuitry ratings should be of adequate size to ensure a minimum continuous current demand for the vehicle of 16A and a maximum demand of 32A (which is recommended for Eco developments).
- A separate dedicated circuit protected by an RCBO should be provided from the main distribution board, to a suitably enclosed termination point within a garage, or an accessible enclosed termination point for future connection to an external charge point
- The electrical circuit shall comply with the Electrical requirements of BS7671: 2008 as well as conform to the IET code of practice on Electric Vehicle Charging Equipment installation 2012 ISBN 978-1-84919-515-7 (PDF)
- If installed in a garage all conductive surfaces should be protected by supplementary protective equipotential bonding. For vehicle connecting points installed such that the vehicle can only be charged within the building, e.g. in a garage with a (non-extended) tethered lead, the PME earth may be used. For external installations the risk assessment outlined in the IET code of practice must be adopted, and may require an additional earth stake or mat for the EV charging circuit. This should be installed as part of the EV ready installation to avoid significant on cost later.

EV ready commercial installations

Commercial and industrial installations may have private 11,000/400 V substations where a TN-S supply may be available, simplifying the vehicle charging installation design and risk analysis. It is, therefore, essential for developers to determine a building's earthing arrangements before installation.
Commercial vehicles have a range of charge rates and it is appropriate to consider a 3-phase and neutral supply on a dedicated circuit emanating from a distribution board. More than one EV charging station can be derived from a source circuit, but each outlet should be rated for a continuous demand of 63Amps. No diversity should be applied throughout the EV circuitry. 3 phase RCBOs should be installed and the supply terminated in a switched lockable enclosure. If an external application (for example car park or goods yard) is selected, the supply should be terminated in a feeder pillar equipped with a multi-pole isolation switch, typically a 300mA RCD, a sub-distribution board (if more than one outlet is fed from the pillar). If an additional earthing solution is required, the earth stake can be terminated within this pillar. See IET guideline risk assessment[6].

[6] www.theiet.org/resources/standards/ev-charging-cop.cfm

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Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
AURN	Automatic Urban and Rural Network – The UK air quality automatic monitoring network
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
K&MAQMN	Kent and Medway Air Quality Monitoring Network
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
AQ	Air Quality
TDC	Thanet District Council
KCC	Kent County Council

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 2015 Updating and Screening Assessment.
- National Diffusion Tube Bias Adjustment Spreadsheet, version 06/16 published in June 2016.
- http://laqm.defra.gov.uk/documents/LAQM-AIR-PT-Rounds-1-12-(April-2014-February-2016)-NO2-report.pdf
- https://www.thanet.gov.uk/publications/environmental-health/air-quality-action-plan-2013/3-action-plan-development/
- http://www.phoutcomes.info/public-health-outcomes-framework#page/0/gid/1000043/pat/6/par/E12000008/ati/101/are/E07000114