



***Thanet District Council  
Updating And Screening  
Assessment 2015***

*Bureau Veritas*



*November 2015*

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# LAQM Updating and Screening Assessment

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Thanet District Council

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November 2015

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## Executive Summary

Part IV of the Environment Act 1995 places a statutory duty on local authorities to review and assess the air quality within their area and take account of Government Guidance when undertaking such work. This Updating and Screening Assessment is a requirement of the Sixth Round of Review and Assessment and is a requirement for all local authorities. The Report has been undertaken in accordance with the Technical Guidance LAQM.TG (09) and associated tools (as updated in 2014).

This Updating and Screening Assessment considers all new monitoring data and assesses the data against the Air Quality Strategy (AQS) objectives. It also considers any changes to emission sources that may have an impact on air quality.

Updated monitoring showed that there were no exceedences of the AQS objectives outside of the existing AQMA. With regards to nitrogen dioxide (NO<sub>2</sub>) passive monitoring has shown four locations where the annual NO<sub>2</sub> objective was exceeded in 2014, all within the existing AQMA. Concentrations at half of the sites showed an increase in 2014 when compared to the previous year. Four sites in 2014 showed the lowest values in the monitoring period, all of them were background sites.

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 in 2014. The background site ZH3 Thanet Airport and ZH4 Thanet Ramsgate Roadside both showed a small increase on 2013 whereas ZH5 Thanet Birchington Roadside showed a small decrease.

Continuous monitoring of Particulate Matter less than 10µg in aerodynamic diameter (PM<sub>10</sub>) has shown a decrease in annual mean concentrations at both monitoring sites from 2013 to 2014.

Three planning applications have been identified as having the potential to impact upon air quality in the Local Authority area, all of them in Ramsgate and within the Thanet AQMA. The Council have made their comments in respect of suitable mitigation/offsetting measures for these developments.

Proposed actions arising from the 2015 Updating and Screening Assessment are as follows:

- Continue NO<sub>2</sub> diffusion tube and continuous monitoring in the district to identify future changes in pollutant concentrations; and

- Proceed to a Progress Report in 2016.

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# 1 Introduction

## 1.1 Description of Local Authority Area

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<sub>2</sub>) were predicted. A second AQMA was declared at High Street, St Lawrence in April 2010. These two AQMAs were incorporated into a single Thanet Urban AQMA (Figure 1.1) in 2011.

## 1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an AQMA and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

### 1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre  $\mu\text{g}/\text{m}^3$  (milligrammes per cubic metre,  $\text{mg}/\text{m}^3$  for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

**Table 1.1: Air Quality Objectives included in Regulations for the purpose of LAQM in England**

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

## **1.4 Summary of Previous Review and Assessments**

### **First Round of Review and Assessment**

Thanet District Council undertook its first round of review and assessment of air quality between 1998 and 2001. The first round concluded that all air quality objectives were likely to be met in Thanet and there was no need to declare any AQMAs.

### **Second Round of Review and Assessment**

The first phase of the second round of review and assessment of air quality, the Updating and Screening Assessment, was completed in July 2003, with the conclusion that all air quality objectives would be met. The 2004 Annual Progress Report, however, highlighted seven areas where exceedences of the nitrogen dioxide and (in five cases) PM<sub>10</sub> annual mean objective may have been occurring. The subsequent 2005 Detailed Assessment concluded that only The Square, Birchington should be declared an AQMA for nitrogen dioxide and PM<sub>10</sub> on the basis of predicted exceedences of the annual mean objectives. An AQMA was declared in March 2006 and a continuous monitoring station was installed in 2007 to more accurately monitor changes in pollution levels.

### **Third Round of Review and Assessment**

The third round Updating and Screening Assessment, completed in June 2006, concluded that a Detailed Assessment was required for nitrogen dioxide due to emissions from road traffic on Hereson Road, Ramsgate and on High Street, St Lawrence. The Detailed Assessment 2008 predicted that the annual mean objective for nitrogen dioxide was likely to be met at all receptors at Hereson Road, Ramsgate but there were a small number of exceedences predicted at receptors on High Street, St Lawrence. It was recommended that the Council considered declaration of an AQMA along High Street in St Lawrence, along with a recommendation to install continuous monitoring of the nitrogen dioxide annual mean objective to provide more robust and accurate data for further review and assessment.

### **Fourth Round of Review and Assessment**

Thanet District Council published its fourth Updating and Screening Assessment in April 2009. It confirmed the need for declaration of an AQMA at High Street, St Lawrence which was finalised in April 2010. A Detailed Assessment undertaken in Oct 2009 concluded that there was also risk of an exceedence of the 24hr mean PM<sub>10</sub> objective at Boundary Road, Ramsgate. However, additional monitoring of PM<sub>10</sub> and nitrogen dioxide showed that concentrations of both pollutants had returned to typical levels and period elevated levels can

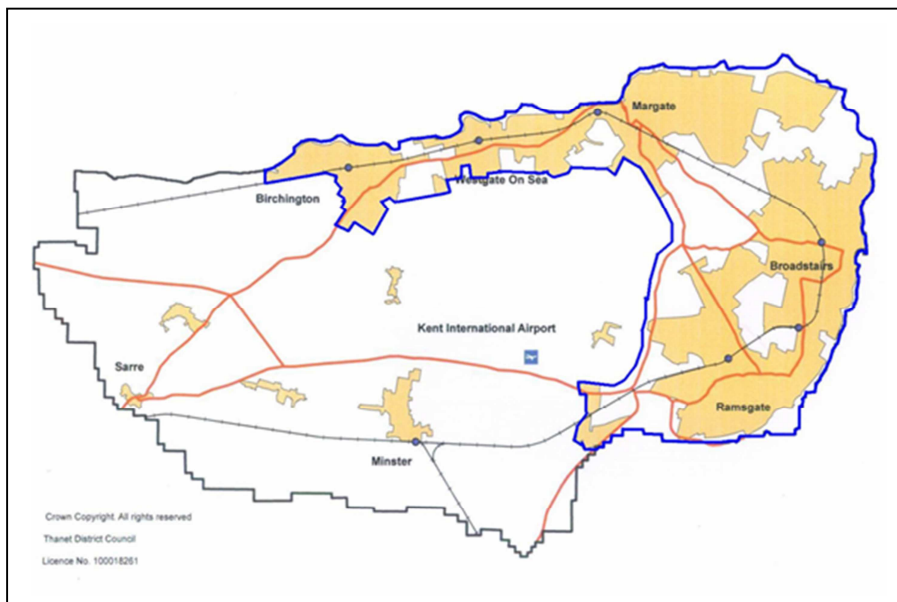
be attributed to extensive but short-term development work being undertaken during 2008/09. No new exceedence areas were identified in the 2010 Annual Progress Report. The Further Assessment of the High Street, St. Lawrence AQMA, completed in May 2011, concluded that the AQMA is still required, and that measures being formulated for the Air Quality Action Plan should aim to reduce nitrogen oxides emissions by at least 21% to bring concentrations below the objective.

The Birchington and St. Lawrence AQMAs were both revoked in November 2011 and replaced by a single Thanet Urban AQMA (Figure 1.1). This new AQMA gives the Council an opportunity to consider air quality in the entire urban area in a holistic manner. The Air Quality Action Plan (Thanet District Council, 2012) includes measures aimed at improving air quality throughout the new AQMA.

### Fifth Round of Review and Assessment

The 2012 Updating and Screening Assessment confirmed that there were no exceedences of the annual and 1-hr mean nitrogen dioxide objectives measured outside of the AQMA. An exceedence of the daily mean PM<sub>10</sub> objective was measured but it was also within the AQMA. Since there were no changes to pollutant concentrations in the following year, Thanet Council deferred the submission of the 2013 Progress Report. The 2014 report provided a review of local air quality for the years 2012-2013, showing a decrease in the annual mean NO<sub>2</sub> concentrations at the majority of monitoring sites. With regards to PM<sub>10</sub>, the number of exceedences of the 24-hour mean decreased from 2011 at both monitoring locations.

**Figure 1.1: Map of Thanet District Council showing the Thanet Urban Air Quality Management Area (2011).**



## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

#### 2.1.1 Automatic Monitoring Sites

Thanet District Council operated three automatic monitoring stations in 2014. Two were roadside sites, ZH4 Thanet Ramsgate Roadside and ZH5 Thanet Birchington Roadside. The other was a suburban background site (ZH3 Thanet Airport).

The Council had previously undertaken automatic monitoring at the ZH2 Thanet Margate Background site, however, this was removed at the end of March 2013.

The stations ZH4 Thanet Ramsgate Roadside and ZH5 Thanet Birchington Roadside measure nitrogen dioxide and PM<sub>10</sub>. The background site (ZH3 Thanet Airport) measures nitrogen dioxide only. All sites were within the new Thanet Urban AQMA boundary. Table 2.1 and Figure 2.1 give details of the automatic monitoring sites located in Thanet district.

**Figure 2.1: Map of Automatic Monitoring Sites**

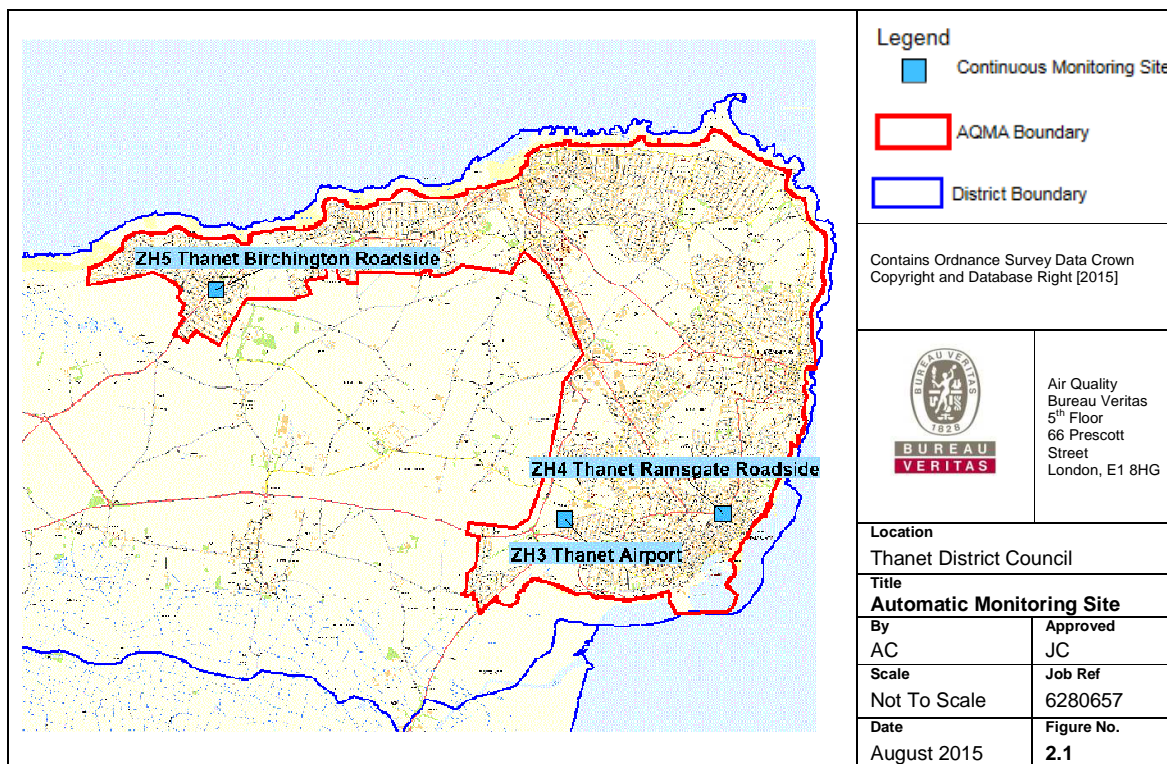


Table 2.1: Details of Automatic Monitoring Sites

Site ID	Site Details	Site Type	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Does this Location Represent Worst-Case Exposure?
ZH3 Thanet Airport	Kentmere Avenue, Ramsgate (near Manston Airport)	Suburban Background	635931	165331	NO <sub>2</sub>	Yes	Chemiluminescence	Y (13 m)	N/A	No
ZH4 Thanet Ramsgate Roadside	Boundary Road, Ramsgate	Roadside	638483	165430	NO <sub>2</sub> , PM <sub>10</sub>	Yes	Chemiluminescence, beta attenuation	Y (16 m)	4 m	No
ZH5 Thanet Birchington Roadside	The Square, Birchington	Roadside	630284	169052	NO <sub>2</sub> , PM <sub>10</sub>	Yes	Chemiluminescence, beta attenuation	Y (4 m)	3 m	Y

### 2.1.2 Non-Automatic Monitoring

Thanet District Council undertook monitoring at 22 nitrogen dioxide diffusion tube sites (including eight triplicate sites) in 2014. Details of the monitoring sites are shown in Table 2.2, whilst their location is provided in Figure 2.2 through to Figure 2.6.

There have not been any changes to the site locations during 2014. One additional site was operating between November and December 2014: TH76 Buenos Ayres Margate, however the results were not reported due to the limited time that the survey was carried out for at that site.

There were eight triplicate sites in 2014, 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<sub>2</sub> diffusion tubes are installed at the automatic monitoring sites at the ZH3 Airport site (Kentmere Avenue, Ramsgate) and ZH4 Ramsgate Roadside (Boundary Road, Ramsgate).



Table 2.2: Details of Non- Automatic Monitoring Sites

Site ID	Site Name / Location	Site Type	OS Grid Ref (x, y)		Pollutants Monitored	In AQMA?	Triplicate or Co-located Tube? (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to Kerb of Nearest Road (N/A if not applicable)	Worst-case Location?
TH05	The Broadway, Broadstairs	Kerbside	639019	167981	NO <sub>2</sub> , Benzene	Y	N	N	2.5 m	N
TH10	College Road, Margate	Kerbside	635539	169840	NO <sub>2</sub>	Y	N	Y (0 m)	2 m	N
TH13/46/47	The Square, Birchington	Kerbside	630254	169037	NO <sub>2</sub>	Y	Triplicate	Y (2 m)	<1 m	Y
TH16	Earlsmede Crescent, Cliffend	Background	634445	164416	NO <sub>2</sub>	Y	N	Y (3 m)	N/A	N
TH26	King Street, Ramsgate	Kerbside	638492	165410	NO <sub>2</sub> , Benzene	Y	N	Y (0 m)	3 m	N
TH27	Avebury Avenue, Ramsgate	Urban Background	639097	165971	NO <sub>2</sub>	Y	N	Y (7 m)	N/A	N
TH31	High Street, Manston	Urban Background	634662	166026	NO <sub>2</sub> , Benzene	N	N	Y (9 m)	N/A	N
TH32	Bell-Davies Drive, Manston	Urban Background	632984	166419	NO <sub>2</sub> , Benzene	N	N	Y (10 m)	N/A	N
TH33	Hill-House Drive, Minster	Urban Background	631161	165486	NO <sub>2</sub> , Benzene	N	N	Y (9 m)	N/A	N
TH34	Pizza Hut, Westwood Road,	Roadside	636570	167894	NO <sub>2</sub>	Y	N	N	14 m	N

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Site ID	Site Name / Location	Site Type	OS Grid Ref (x, y)		Pollutants Monitored	In AQMA?	Triplicate or Co-located Tube? (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to Kerb of Nearest Road (N/A if not applicable)	Worst-case Location?
	Broadstairs									
TH36	Star Lane, Ramsgate Road, Margate	Kerbside	636405	168227	NO2	Y	N	Y (0 m)	2 m	N
TH37/38/45	Kentmere Avenue, Ramsgate	Kerbside	635932	165333	NO2, Benzene	Y	Triplicate and Co-located (ZH3)	Y (10 m)	N/A	N
TH48	Canterbury Rd, Birchington (A28) (Yew Tree)	Kerbside	630438	169111	NO2	Y	N	Y (6.5 m)	2.5 m	N
TH49	Kent Gardens, Canterbury Road (A28), Birchington	Roadside	630186	168983	NO2	Y	N	Y (3 m)	3.5 m	N
TH50/61/62	63 Hereson Road, Ramsgate	Roadside	638616	165564	NO2	Y	Triplicate	Y (5 m)	<1 m	Y
TH51/52/53	Boundary Road, Ramsgate	Roadside	638472	165432	NO2	Y	Triplicate and Co-located (ZH4)	N (>20 m)	4.1 m	N
TH54/64/65	High Street, St. Lawrence	Roadside	637135	165354	NO2	Y	Triplicate	Y (7 m)	<1 m	Y

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Site ID	Site Name / Location	Site Type	OS Grid Ref (x, y)		Pollutants Monitored	In AQMA?	Triplicate or Co-located Tube? (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to Kerb of Nearest Road (N/A if not applicable)	Worst-case Location?
TH55	Coxes Lane, Margate Road, Ramsgate	Roadside	636815	167297	NO2	Y	N	Y (3 m)	10 m	N
TH66	High Street, St. Lawrence-Façade	Roadside	637112	165331	NO2	Y	N	Y (0 m)	3 m	N
TH67/68/69	20 Hereson Road, Ramsgate	Roadside	638536	165465	NO2	Y	Triplicate	Y (0 m)	2 m	N
TH70/71/72	9 High Street, St. Lawrence	Roadside	637092	165340	NO2	Y	Triplicate	Y (0 m)	1.5 m	Y
TH73/74/75	3 Hereson Road, Ramsgate	Roadside	638528	165426	NO2	Y	Triplicate	Y (0 m)	2 m	Y

Figure 2.2: Map of Non-Automatic Monitoring Sites: Thanet District

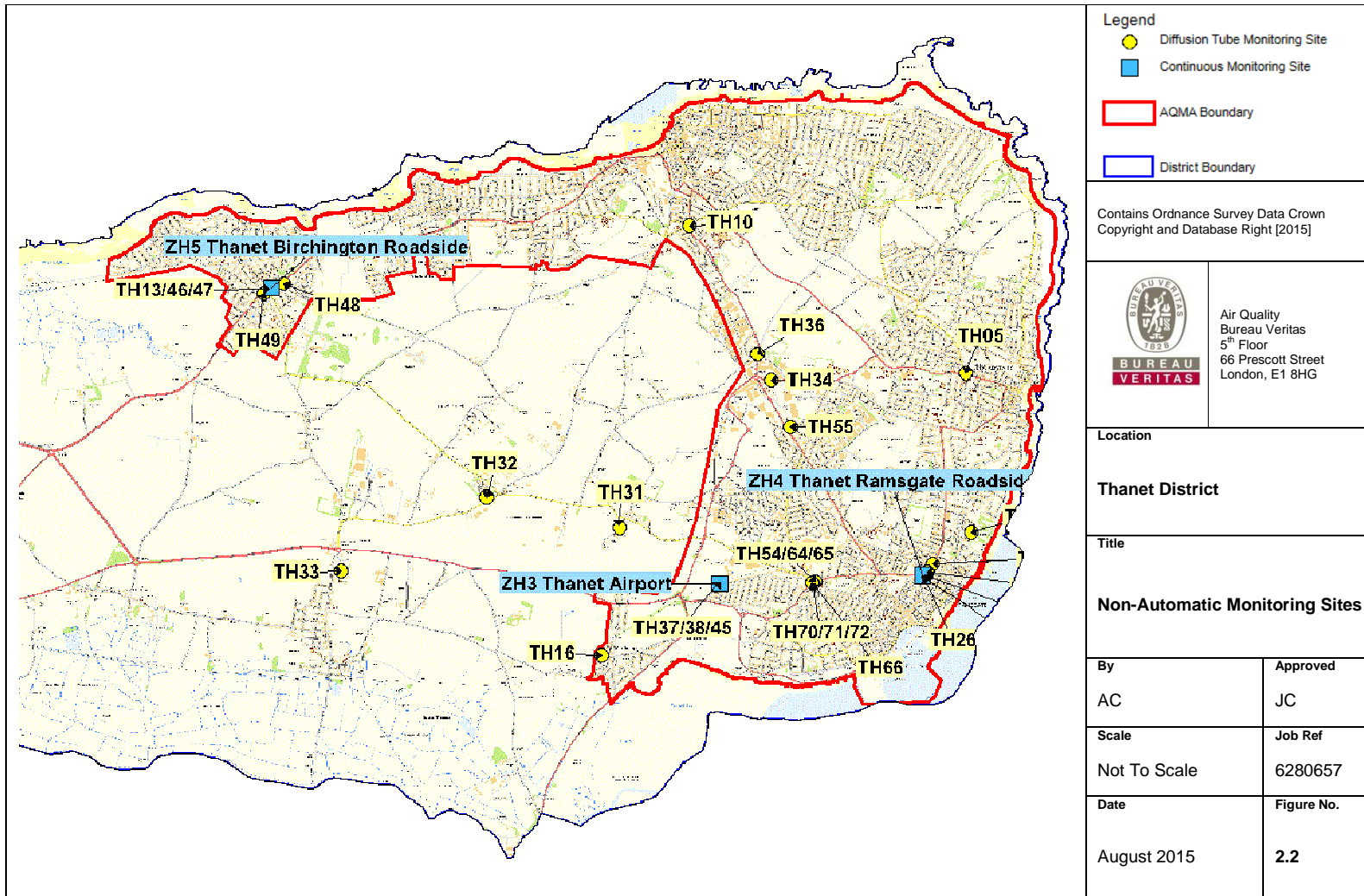


Figure 2.3: Map of Non-Automatic Monitoring Sites: Birchington

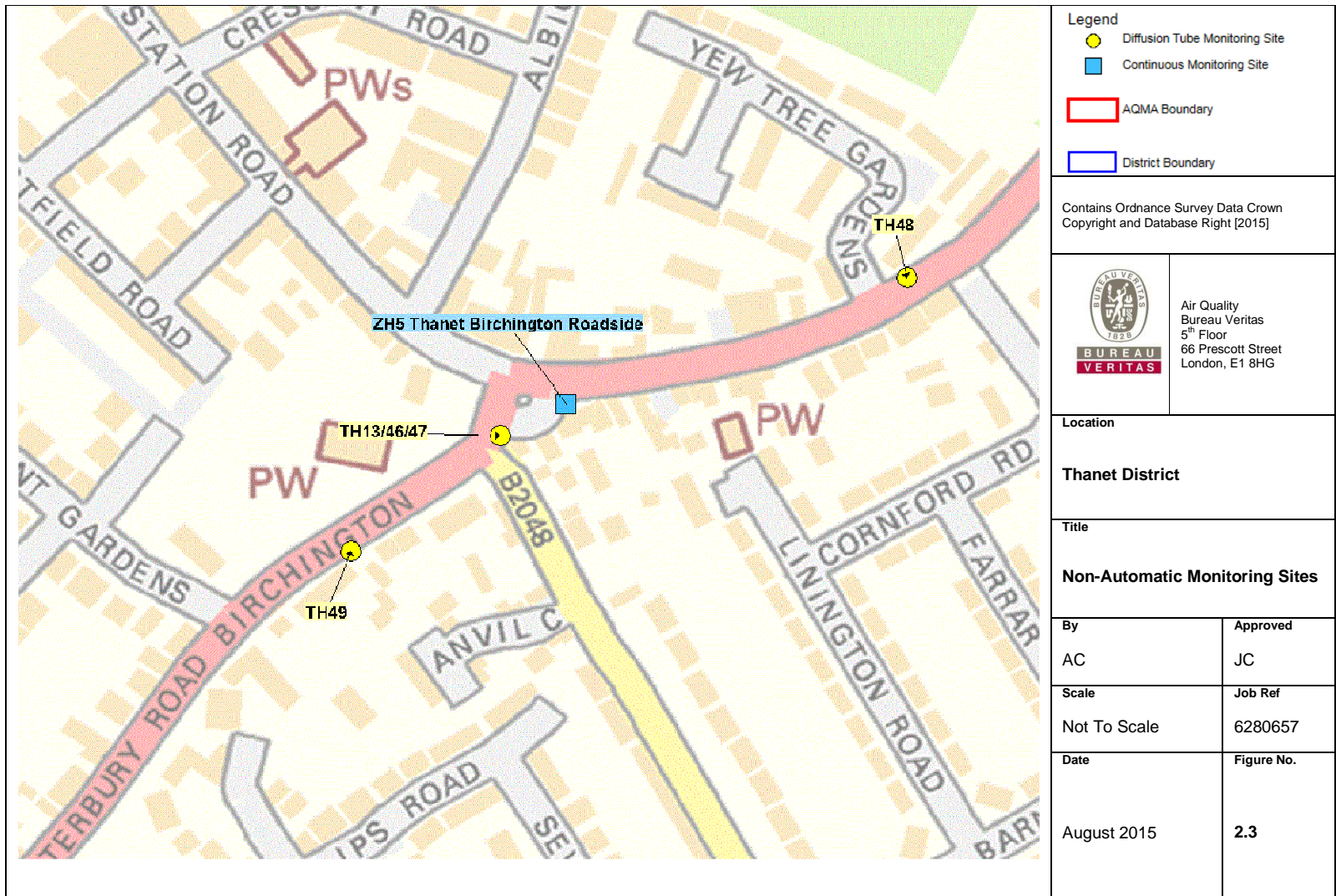


Figure 2.4: Map of Non-Automatic Monitoring Sites: Margate, Westwood & Broadstairs

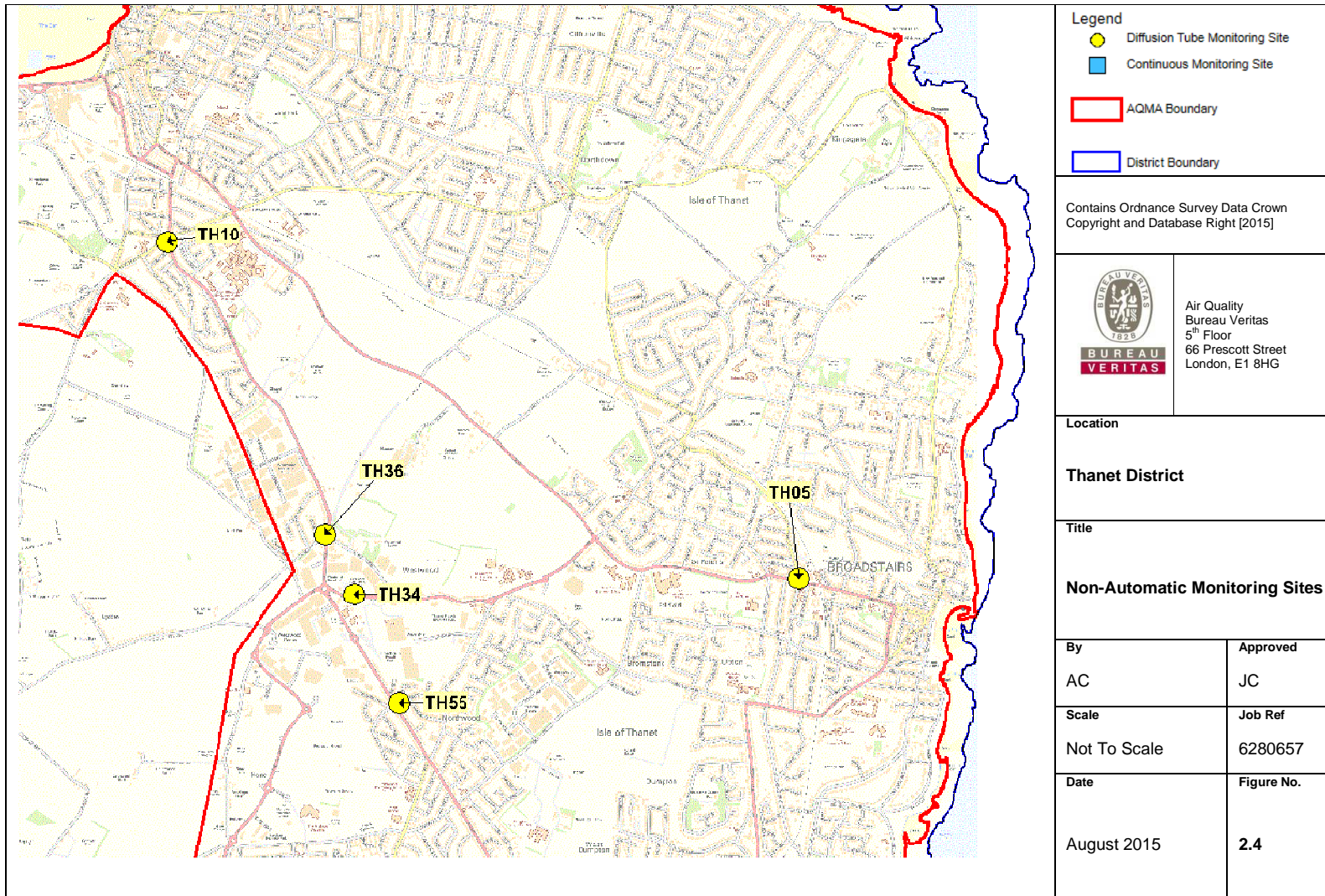


Figure 2.5: Map of Non-Automatic Monitoring Sites: Ramsgate

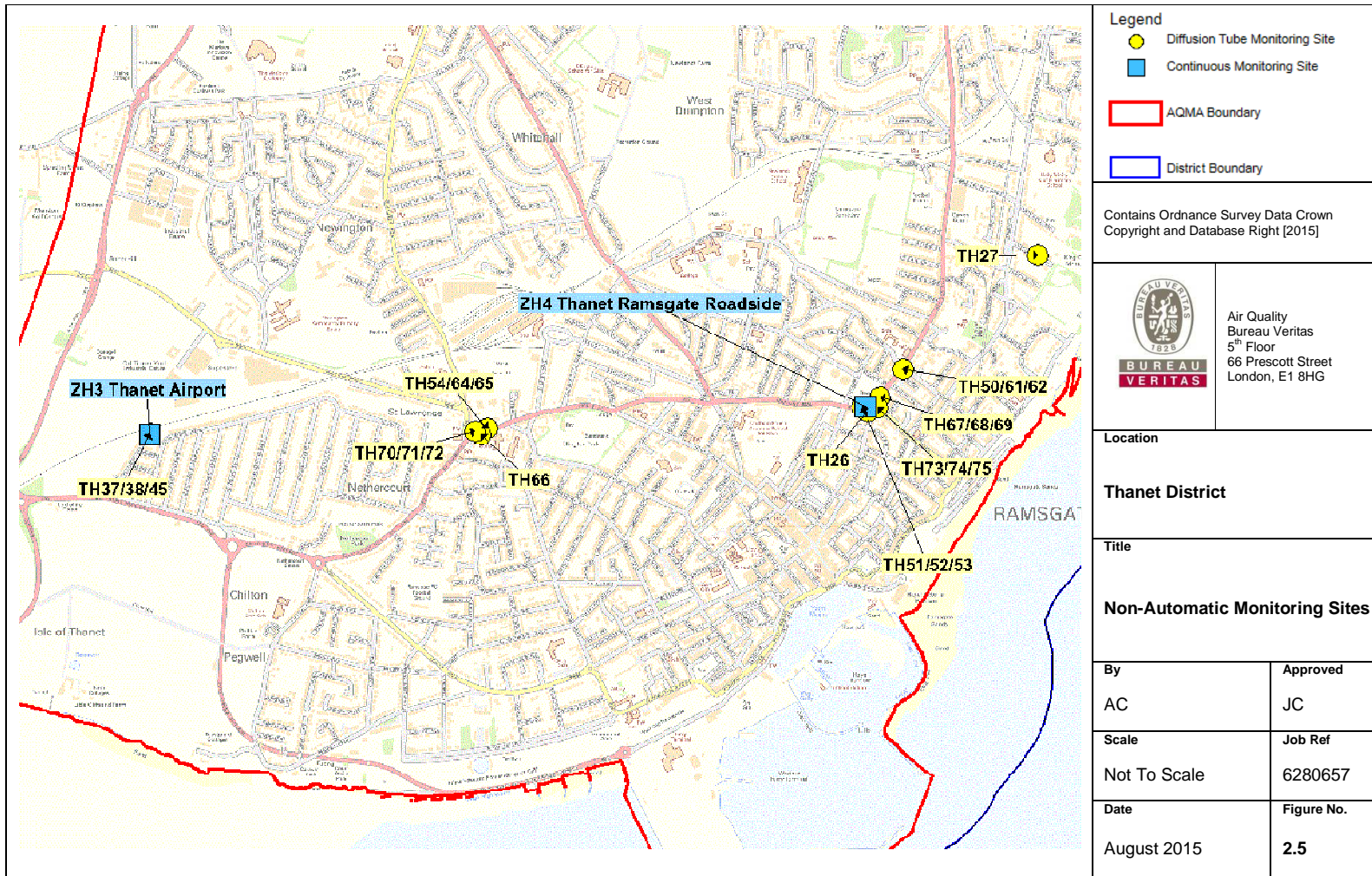
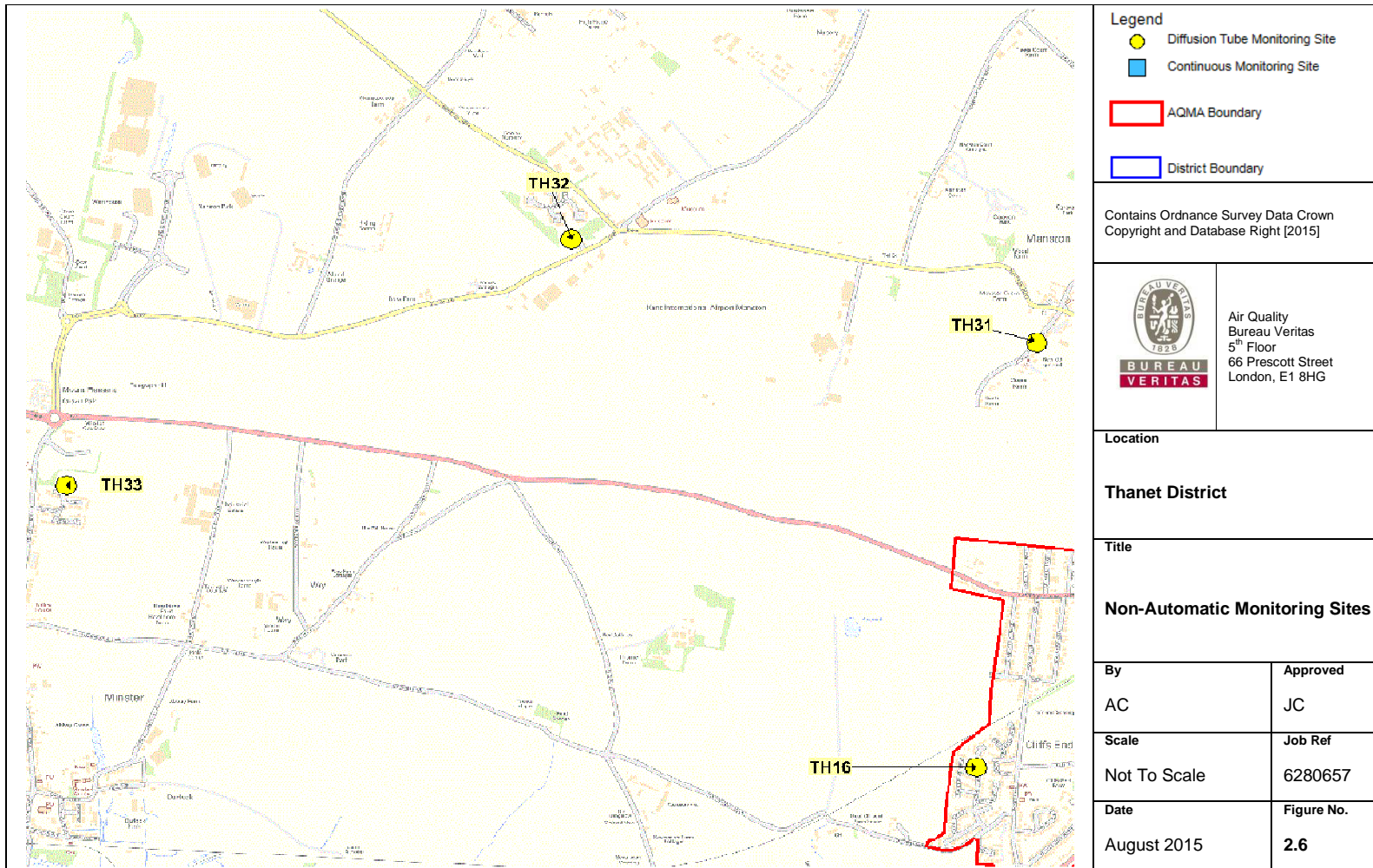


Figure 2.6: Map of Non-Automatic Monitoring Sites: Cliffs End, Manston, Minster





## **2.2 Comparison of Monitoring Results with Air Quality Objectives**

### **2.2.1 Nitrogen Dioxide**

There are two Air Quality Objectives for NO<sub>2</sub>, namely:

- the annual mean of 40µg/m<sup>3</sup>, and
- the 1-hour mean of 200µg/m<sup>3</sup> not to be exceeded more than 18 times a year.

#### **Automatic Monitoring Data**

The monitoring data can be seen in Table 2.3 and Table 2.4 below. Full details of the QA/QC procedure are provided in Appendix A.

Data capture was above 75% for all sites in 2014 meaning that there was no requirement for annualisation of the dataset.

Monitoring results indicate that the annual mean objective and the 1-hour objective were met at all three monitoring locations in 2014.

The 2014 results show that the annual mean and the 24-hour mean continue to be met within the district. The background site ZH3 Thanet Airport and ZH4 Thanet Ramsgate Roadside both showed a small increase compared to the previous year whereas ZH5 Thanet Birchington Roadside showed a small decrease (Table 2.3).

**Table 2.3: Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA ?	Valid Data Capture for Monitoring Period in 2014, %	Valid Data Capture 2014, %	Annual Mean Concentration (µg/m <sup>3</sup> )							
					2007	2008	2009	2010	2011	2012	2013	2014
ZH3 Thanet Airport	Suburban	Y	99.3	99.3	18	19	21	18	18.7	18.1	16.0	16.5
ZH4 Thanet Ramsgate Roadside	Roadside	Y	99.1	99.1	25	26	30	26	26.8	25.1	25.2	25.6
ZH5 Thanet Birchington Roadside	Roadside	Y	94.1	94.1	37	39	40	35	35.9	<b>40.8</b>	34.8	30.8

**Table 2.4: Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with 1-hour Mean Objective**

Site ID	Site Type	Within AQMA ?	Valid Data Capture for Monitoring Period in 2014, %	Valid Data Capture 2014, %	Number of Hourly Means > 200µg/m <sup>3</sup>							
					2007	2008	2009	2010	2011	2012	2013	2014
ZH3 Thanet Airport	Suburban	Y	99.3	99.3	0	0	0	0	0	0	0	0
ZH4 Thanet Ramsgate Roadside	Roadside	Y	99.1	99.1	0	0	0	0	0	0	0	0
ZH5 Thanet Birchington Roadside	Roadside	Y	94.1	94.1	0	0	0	0	0	1	0	0

If the period of valid data is less than 90%, the 99.8<sup>th</sup> percentile of hourly means is included in brackets

Figure 2.7: Trends in Annual Mean NO<sub>2</sub> Concentrations Measured at Automatic Monitoring Locations

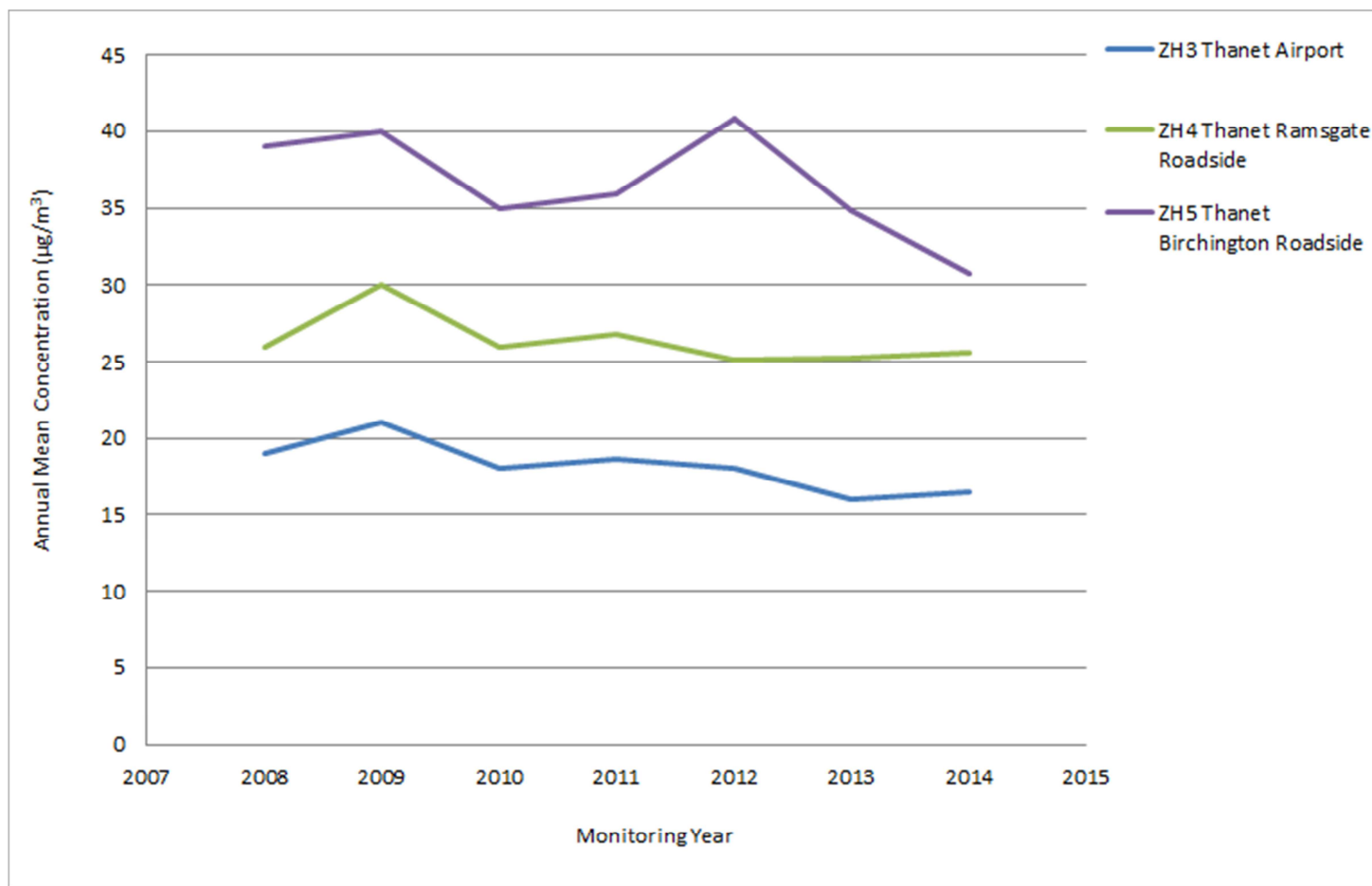


Figure 2.7 shows the trend in annual mean concentrations at the continuous monitoring locations.

This shows generally stable concentrations at Thanet Airport and Thanet Ramsgate Roadside.

The site ZH5 Thanet Birchington Roadside has shown a decrease in the recent years following a peak in 2012.

## Diffusion Tube Monitoring Data

The NO<sub>2</sub> diffusion tube data are summarised in Table 2.5. The full dataset for 2014 (monthly mean values) is included in Appendix A. Outlying values were removed prior to processing to increase accuracy; the removed results have been marked in the dataset. Data capture for 2014 was 75% or greater at all sites and so considered good, consequently no sites required short to long term adjustment (annualisation).

The diffusion tube annual mean results in 2014 have been corrected using the bias correction factor of 0.90, as calculated from local co-location studies. The results adjusted using a National Bias Adjustment factor of 0.81, based on 22 studies, have also been presented in Appendix C for comparison.

For the 2014 data set there were four sites where the annual mean AQS objective was exceeded; all were located within existing AQMA:

- TH13/46/47 - The Square, Birchington;
- TH54/64/65 - High Street, St. Lawrence;
- TH70/71/72 - 9 High Street, St. Lawrence; and
- TH73/74/75 - 3 Hereson Road, Ramsgate.

Sites TH13/46/47, TH54/64/65 and TH70/71/72 have shown consistent exceedences of the annual mean objective since for all years since 2009. The site TH73/74/75 exceeded the objective in 2013 and had been close to the objective in the preceding years. This demonstrates that the AQMA is still required for these areas.

There are no sites exceeding 60µg/m<sup>3</sup>, which would be an indication of a potential exceedence of the hourly NO<sub>2</sub> objective.

A comparison with previous results (Table 2.6) shows that the concentrations showed peak values in 2009 and the lowest values in 2013 for the majority of sites. The concentrations in 2014 showed an increase at half of the sites when compared to the previous year.

Table 2.5: Results of NO<sub>2</sub> Diffusion Tubes 2014

Site ID	Site Name/Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (Number of Months)	2014 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) – Bias Adjustment factor = 0.90
TH05	The Broadway, Broadstairs	Kerbside	Y	N	10	34.8
TH10	College Road, Margate	Kerbside	Y	N	10	35.3
TH13/46/47	The Square, Birchington	Kerbside	Y	Triplicate	11,11,10	<b>47.4</b>
TH16	Earlsmede Crescent, Cliffend	Background	Y	N	12	20.0
TH26	King Street, Ramsgate	Kerbside	Y	N	11	37.1
TH27	Avebury Avenue, Ramsgate	Urban Background	Y	N	12	17.1
TH31	High Street, Manston	Urban Background	N	N	12	16.4
TH32	Bell-Davies Drive, Manston	Urban Background	N	N	12	15.7
TH33	Hill-House Drive, Minster	Urban Background	N	N	11	15.2
TH34	Pizza Hut, Westwood Road, Broadstairs	Roadside	Y	N	12	27.7
TH36	Star Lane, Ramsgate Road, Margate	Kerbside	Y	N	10	25.7
TH37/38/45	Kentmere Avenue, Ramsgate	Kerbside	Y	Triplicate and co-located (ZH3)	11,11,10	16.4
TH48	Canterbury Rd, Birchington (A28) (Yew Tree)	Kerbside	Y	N	10	33.7

Site ID	Site Name/Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (Number of Months)	2014 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) – Bias Adjustment factor = 0.90
TH49	Kent Gardens, Canterbury Road (A28), Birchington	Roadside	Y	N	9	33.7
TH50/61/62	63 Hereson Road, Ramsgate	Roadside	Y	Triplicate	11,12,11	34.4
TH51/52/53	Boundary Road, Ramsgate	Roadside	Y	Triplicate and Co-located (ZH4)	11,11,9	28.1
TH54/64/65	High Street, St. Lawrence	Roadside	Y	Triplicate	11	<b>41.2</b>
TH55	Coxes Lane, Margate Road, Ramsgate	Roadside	Y	N	11	26.6
TH66	High Street, St. Lawrence- Façade	Roadside	Y	N	9	28.5
TH67/68/69	20 Hereson Road, Ramsgate	Roadside	Y	Triplicate	12	34.4
TH70/71/72	9 High Street, St. Lawrence	Roadside	Y	Triplicate	11	<b>44.4</b>
TH73/74/75	3 Hereson Road, Ramsgate	Roadside	Y	Triplicate	10,9,10	<b>42.1</b>

Table 2.6: Results of NO<sub>2</sub> Diffusion Tubes (2009 to 2014)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m <sup>3</sup> ) – Adjusted for Bias					
			2009 (Bias Adjustment Factor = 0.92)	2010 (Bias Adjustment Factor = 0.81)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor =0.82)	2013 (Bias Adjustment Factor =0.82)	2014 (Bias Adjustment Factor =0.90)
TH05	Kerbside	Y	40	31	34.4	34.7	31.2	34.8
TH10	Kerbside	Y	<b>43</b>	37	<b>40.4</b>	35.4	33.7	35.3
TH13/46/47	Kerbside	Y	<b>49</b>	<b>41</b>	<b>46.6</b>	<b>45.1</b>	<b>43.0</b>	<b>47.4</b>
TH16	Background	Y	21	18	17.2	18.9	16.6	20.0
TH26	Kerbside	Y	<b>42</b>	36	38.5	36.1	34.9	37.1
TH27	Urban Background	Y	22	19	19.0	18.4	17.9	17.1
TH31	Urban Background	N	19	17	17.4	15.0	15.6	16.4
TH32	Urban Background	N	22	19	19.2	16.6	15.9	15.7
TH33	Urban Background	N	22	18	19.1	16.1	18.3	15.2
TH34	Roadside	Y	33	26	32.2	27.9	25.5	27.7
TH36	Kerbside	Y	26	24	26.1	24.0	23.8	25.7
TH37/38/45	Kerbside	Y	21	19	19.4	17.2	16.7	16.4
TH48	Kerbside	Y	37	31	32.8	34.2	33.3	33.7
TH49	Roadside	Y	<b>43</b>	36	38.8	37.1	32.8	33.7
TH50/61/62	Roadside	Y	38	35	34.7	33.7	33.1	34.4
TH51/52/53	Roadside	Y	30	26	25.5	26.4	23.6	28.1
TH54/64/65	Roadside	Y	<b>45</b>	40	<b>42.3</b>	<b>41.7</b>	38.0	<b>41.2</b>
TH55	Roadside	Y	30	28	28.3	26.6	25.9	26.6
TH66	Roadside	Y	31	29	29.0	28.1	28.3	28.5
TH67/68/69	Roadside	Y	<b>42</b>	38	37.7	36.5	34.4	34.4
TH70/71/72	Roadside	Y	<b>47</b>	42	43.4	<b>44.3</b>	<b>43.7</b>	<b>44.4</b>
TH73/74/75	Roadside	Y	-	37	39.5	36.0	<b>43.7</b>	<b>42.1</b>

### 2.2.2 Particulate Matter (PM<sub>10</sub>)

There are two Air Quality Objectives for PM<sub>10</sub>, namely:

- the annual mean of 40µg/m<sup>3</sup>; and
- the 24-hour mean of 50µg/m<sup>3</sup> not to be exceeded more than 35 times a year.

The Council undertook monitoring of PM<sub>10</sub> based with Beta Attenuation Monitors (BAM) instruments at two locations during 2014: the ZH4 Ramsgate Roadside site and ZH5 Birchington Roadside site. The data are summarised in Table 2.7 and Table 2.8.

Data capture was good (above 75%) in 2014 meaning that there was no requirement for annualisation of the dataset.

The 2014 results show that the annual mean and the 24-hour mean objectives were met at both monitoring sites during 2014. Both sites have displayed similar concentration trends since 2011 (Figure 2.8). The concentrations increased at both sites in 2011 and 2013. Both sites have shown a decrease in 2012 and 2014. The 2014 concentrations are the lowest in the monitoring period.

The number of exceedences of the 24-hour mean in 2014 increased at Thanet Ramsgate and decreased at Thanet Birchington when compared to 2013 values.



**Table 2.7: Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period in 2014, %	Valid Data Capture 2014, %	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m <sup>3</sup> )					
						2009	2010	2011	2012	2013	2014
ZH4 Thanet Ramsgate	Roadside	Y	93.4	93.4	Y	29	28	34.0	27.6	30.7*	24.7
ZH5 Thanet Birchington	Roadside	Y	84.9	84.9	Y	23	24	28.8	25.4	25.6*	20.8

\* Results were annualised.

**Figure 2.8: Trends in Annual Mean PM<sub>10</sub> Concentrations**



Figure 2.8 shows the trend in annual mean PM<sub>10</sub> concentrations at the two monitoring sites between 2009 and 2014. This shows that throughout the monitoring period the ZH4 Ramsgate Roadside site has had consistently higher concentrations of PM<sub>10</sub> than the ZH5 Birchington Roadside location. There appears to be a generally decreasing trend at both sites since 2011.

**Table 2.8: Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-hour Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period in 2014, %	Valid Data Capture 2014, %	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m <sup>3</sup>					
						2009	2010	2011	2012	2013	2014
ZH4 Thanet Ramsgate	Roadside	Y	93.4	93.4	Y	15	16	<b>49</b>	16	9 (39.5)	15
ZH5 Thanet Birchington	Roadside	Y	84.9	84.9	Y	10	6	31	11	16 (41.5)	6

If the period of valid data is less than 90%, the 90.4<sup>th</sup> percentile of 24-hour means is included in brackets

### **2.2.1 Benzene**

Monitoring of benzene in the district took place at five diffusion tube sites until 2013. In June 2014 the laboratory used for supply and analysis of benzene tubes ceased providing a service because Thanet was the only Local Authority monitoring the pollutant which meant it was no longer viable. With the closure of the airport and consistently low levels since monitoring began the decision was taken to discontinue benzene analysis. All previous LAQM reports have identified that there is no likely exceedence of the benzene AQS objectives.

### **2.2.2 Summary of Compliance with AQS Objectives**

Thanet District Council has examined the results from monitoring in the district. Concentrations outside of the AQMAs are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

### 3 Road Traffic Sources

The Council has considered three major planning applications since the last progress report, which may have the potential to impact air quality:

***Planning Application Ref. TH/15/0187 - Flambeau Europlast Manston Road Ramsgate - redevelopment of the site to construct 122 residential dwellings***

The application has not yet been decided. The site falls within the Thanet AQMA so to help mitigate cumulative impacts it is considered that the proposal should incorporate the use of low emission technologies. The Council requested that all residential units with dedicated parking are fitted with electric charging points and that 10% of unallocated parking is also fitted with the charging stations. The Council is currently awaiting the applicant's response to the comments made regarding this application.

***Planning Application Ref. TH/14/0050 - Former car storage site, Manston Road, Ramsgate – Mixed use development of 47 residential dwellings with associated parking (71 spaces) and a commercial unit***

The application has not yet been decided. The site falls within the Thanet AQMA and is only away from the A255 High Street St Lawrence where the annual mean NO<sub>2</sub> objective has been exceeded for several years so to help mitigate cumulative impacts it is considered that the proposal should incorporate the use of low emission technologies. The Council requested that all residential units with dedicated parking are fitted with electric charging points and that 10% of unallocated parking is also fitted with the charging stations. The Council is currently awaiting the applicant's response to the comments made regarding this application.

***Planning Application Ref. TH/14/0050 – Manston Green, Haine Road – development of 785 residential dwellings, primary school and community hall***

The application has not yet been decided. An air quality assessment was submitted in support of this application. Both the impact of increased pollution concentrations on public exposure and the effects on new residential units were assessed. Background concentrations for NO<sub>2</sub> were taken from the Kentmere (Thanet Airport) continuous monitoring site. The assessment assumes no future declining baseline pollution projections in line with technology advancement - and therefore, provides a worst case approach. Overall, the assessment is considered to be satisfactory and the Council has agreed with both the assessment methodology and conclusions drawn from the report. Although the proposed

development shows that air quality will not impact on health objectives for local or future residents within the application site it is considered essential that the applicant produces a travel plan, the purpose of which is to minimise potential wider impacts on Thanet's air quality by encouraging sustainable travel and that contributions are made to offsetting schemes that improve road design, reduce congestion and encourage public transport.

### **3.1 Narrow Congested Streets with Residential Properties Close to the Kerb**

Thanet District Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

### **3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic**

Thanet District Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

### **3.3 Roads with a High Flow of Buses and/or HGVs.**

Thanet District Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

### **3.4 Junctions**

Thanet District Council confirms that there are no new/newly identified busy junctions/busy roads.

### **3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment**

Thanet District Council confirms that there are no new/proposed roads.

### **3.6 Roads with Significantly Changed Traffic Flows**

Thanet District Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

### **3.7 Bus and Coach Stations**

Thanet District Council confirms that there are no relevant bus stations in the Local Authority area meeting the criteria for bus / coach stations.

## **4 Other Transport Sources**

### **4.1 Airports**

Thanet District Council confirms that there are no airports in the Local Authority area.

### **4.2 Railways (Diesel and Steam Trains)**

#### **4.2.1 Stationary Trains**

Thanet District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

#### **4.2.2 Moving Trains**

Thanet District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

### **4.3 Ports (Shipping)**

Thanet District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

## **5 Industrial Sources**

### **5.1 Industrial Installations**

#### **5.1.1 New or Proposed Installations for which an Air Quality Assessment has been carried out**

Thanet District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

#### **5.1.2 Existing Installations Where Emissions Have Increased Substantially or New Relevant Exposure Has Been Introduced**

Thanet District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

#### **5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment**

Thanet District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

### **5.2 Major Fuel (Petrol) Storage Depots**

There are no major fuel (petrol) storage depots within the Local Authority area.

### **5.3 Petrol Stations**

Thanet District Council confirms that there are no petrol stations meeting the specified criteria.

### **5.4 Poultry Farms**

Thanet District Council confirms that there are no poultry farms meeting the specified criteria.



## **6 Commercial and Domestic Sources**

### **6.1 Biomass Combustion – Individual Installations**

Thanet District Council confirms that there are no biomass combustion plants in the Local Authority area.

### **6.2 Biomass Combustion – Combined Impacts**

Thanet District Council confirms that there are no biomass combustion plants in the Local Authority area requiring combined assessment.

### **6.3 Domestic Solid-Fuel Burning**

Thanet District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

## 7 Fugitive or Uncontrolled Sources

Thanet District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

## **8 Conclusions and Proposed Actions**

### **8.1 Conclusions from New Monitoring Data**

The review of the diffusion tube monitoring data for 2014 has identified four locations where the annual mean NO<sub>2</sub> objective was exceeded during that period, all within the existing AQMA. Three of these sites showed consistent exceedences of the annual mean objective in previous years and one exceeded the objective in 2013 and had been close to the objective in the preceding years. This demonstrates that the AQMA is still required for these areas. Compared to the previous year, half of sites showed an increase in concentrations during 2014.

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 in 2014. The background site ZH3 Thanet Airport and ZH4 Thanet Ramsgate Roadside both showed a small increase on 2013 whereas ZH5 Thanet Birchington Roadside showed a small decrease.

With regards to PM<sub>10</sub> monitoring, the 2014 results show that the annual mean and the 24-hour mean objectives were met at both monitoring sites during that period. The 2014 annual mean concentrations have decreased at both sites in 2014 showing the lowest values in the monitoring in the last six years. The number of exceedences of the 24-hour mean in 2014 increased at Thanet Ramsgate and decreased at Thanet Birchington when compared to the 2013 values.

### **8.2 Conclusions from Assessment of Sources**

Three planning applications have been identified as having the potential to impact upon air quality in the Local Authority area, all of them in Ramsgate and within the Thanet AQMA. The Council have made their comments in respect of suitable mitigation/offsetting measures for these developments.

Proposed actions arising from the 2015 Updating and Screening Assessment are as follows:

- Continue NO<sub>2</sub> diffusion tube and continuous monitoring in the district to identify future changes in pollutant concentrations; and
- Proceed to a Progress Report in 2016.

## 9 References

- Department for Environment, Food and Rural Affairs (Defra) (2009) *Local Air Quality Management Technical Guidance LAQM.TG(09)*.
- Department for Environment, Food and Rural Affairs (Defra) (2009) *Local Air Quality Management Policy Guidance LAQM.PG(09)*.
- Flambeau Europlast Limited (2015) *Planning Statement Supporting an outline planning application for the residential redevelopment of the Flambeau Europlast, Manston Road, Ramsgate site*. Prepared by Hume Planning Consultancy Ltd on behalf of Flambeau Europlast Limited.
- Growing the Garden of England (2011) *A strategy for Environment and Economy in Kent*.
- Kent and Medway Air Quality Partnership (2011) *Air Quality and Planning Technical Guidance*.
- Kent County Council (2013) *Kent Environment Strategy Implementation Plan. Monitoring Progress*.
- Kent County Council (2011) *Local Transport Plan for Kent 2011-16*.
- Kent County Council (2010) *Transport Delivery Plan for Kent, Growth without Gridlock*.
- Thanet District Council (2012) *Updating and Screening Assessment*.
- Thanet District Council (2014) *Annual Progress Report*.

## **Appendices**

Appendix A: QA/QC Data

Appendix B: Diffusion Tube Results

Appendix C: 2014 Diffusion Tube Results – National Bias Adjustment Factor

## Appendix A: QA/QC Data

### Diffusion Tube Bias Adjustment Factors

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 0.81 for the year 2014 (based on 30 studies) has been derived from the national bias adjustment calculator<sup>1</sup>.

For previous data, years 2008 to 2013, the bias adjustment factors have been taken from the Council's previous LAQM annual reports. The factors used were 0.92 (2009), 0.81 (2010) and 0.89 (2011), 0.82 (2012) and 0.82 (2013).

### Factor from Local Co-location Studies

There are two co-location studies in Thanet District Council. Triplicate co-located NO<sub>2</sub> diffusion tubes are installed at the automatic monitoring sites:

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

The local bias correction factors are presented below.


Both monitoring sites had good data capture in 2014. The Thanet Airport diffusion tube survey had one period of poor precision in 2014; as such the local bias factor was calculated using 11 periods of good precision data. The Ramsgate Roadside diffusion tube survey had four periods of poor precision in 2014; as such the local bias factor was calculated using 8 periods of good precision data. The overall local bias factor of 0.90 for 2014 has been calculated from the orthogonal regression of the two bias factors.

Location	Diffusion Tube Data capture	Continuous Monitor Data Capture	Diffusion Tube Annual Mean ( $\mu\text{g}/\text{m}^3$ )	Continuous Monitor Annual Mean ( $\mu\text{g}/\text{m}^3$ )	Ratio
ZH3 Thanet Airport	94%	99%	19	16	0.88
ZH4 Thanet Ramsgate Roadside	100%	99%	28	26	0.91

<sup>1</sup> National Diffusion Tube Bias Adjustment Factor Spreadsheet, version 06/15 published in June 2015.

ZH3 Thanet Airport

### Checking Precision and Accuracy of Triplicate Tubes



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 $\mu\text{g m}^{-3}$	Tube 2 $\mu\text{g m}^{-3}$	Tube 3 $\mu\text{g m}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	08/01/2014	05/02/2014	16.2	14.2	18.9	16	2.4	14	5.9	16.8988	100	Good	Good
2	05/02/2014	05/03/2014	20.6	15.7	17.6	18	2.5	14	6.1	14.3517	99.85119	Good	Good
3	05/03/2014	02/04/2014	27.8	33.7		31	4.2	14	37.5	26.7124	99.85119	Good	Good
4	02/04/2014	30/04/2014	19.4		14.6	17	3.4	20	30.5	18.7463	99.702381	Poor Precision	Good
5	30/04/2014	28/05/2014	21.4	18.4	20.2	20	1.5	8	3.8	18	95.833333	Good	Good
6	28/05/2014	02/07/2014	9.2	11.6	12.8	11	1.8	16	4.6	12	99.642857	Good	Good
7	02/07/2014	30/07/2014	13.9	13.2	14.6	14	0.7	5	1.7	11	99.85119	Good	Good
8	30/07/2014	27/08/2014	11.7	13.3	12.7	13	0.8	6	2.0	11	100	Good	Good
9	27/08/2014	01/10/2014	18.7	19.2	16.7	18	1.3	7	3.3	18	99.761905	Good	Good
10	01/10/2014	29/10/2014	18.8	17.5	15.0	17	1.9	11	4.8	14	99.85119	Good	Good
11	29/10/2014	03/12/2014	22.3	32.3	25.9	27	5.1	19	12.6	18.3226	99.642857	Good	Good
12	03/12/2014	07/01/2015	18.7	23.8	18.7	20	2.9	14	7.3	20.937	98.214286	Good	Good
13													

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

Site Name/ ID:

**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 - 0.98)

Bias B 13% (2% - 24%)

---

Diffusion Tubes Mean: 19  $\mu\text{g m}^{-3}$

Mean CV (Precision): 12 **caution**

Automatic Mean: 16  $\mu\text{g m}^{-3}$

Data Capture for periods used: 99%

Adjusted Tubes Mean: 16 (15 - 18)  $\mu\text{g m}^{-3}$

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

**Accuracy** (with 95% confidence interval)  
**WITH ALL DATA**

Bias calculated using 12 periods of data

Bias factor A 0.9 (0.82 - 1)

Bias B 11% (0% - 22%)

---

Diffusion Tubes Mean: 19  $\mu\text{g m}^{-3}$

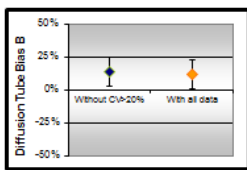
Mean CV (Precision): 12 **caution**

Automatic Mean: 17  $\mu\text{g m}^{-3}$

Data Capture for periods used: 99%

Adjusted Tubes Mean: 17 (15 - 19)  $\mu\text{g m}^{-3}$


Overall survey -> **Good precision** **Good Overall**  
(Check average CV & DC from Accuracy calculations)



Jaume Targa, for AEA  
Version 04 - February 2011

ZH4 Thanet Ramsgate Roadside

### Checking Precision and Accuracy of Triplicate Tubes



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 $\mu\text{g m}^{-3}$	Tube 2 $\mu\text{g m}^{-3}$	Tube 3 $\mu\text{g m}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	08/01/2014	05/02/2014	34.6	23.1	28.3	29	5.8	20	14.3	29.7615	99.85119	Poor Precision	Good
2	05/02/2014	05/03/2014	34.9	34.5	33.9	34	0.5	1	1.3	25.2932	100	Good	Good
3	05/03/2014	02/04/2014	35.8	37.4	35.0	36	1.2	3	3.0	39.6414	100	Good	Good
4	02/04/2014	30/04/2014	28.0	23.9	26.7	26	2.1	8	5.2	25.6269	97.321429	Good	Good
5	30/04/2014	28/05/2014	33.6	29.0	29.3	31	2.6	8	6.4	25	100	Good	Good
6	28/05/2014	02/07/2014	22.3	21.3	22.8	22	0.8	3	1.9	21	100	Good	Good
7	02/07/2014	30/07/2014	21.3	21.6	21.1	21	0.3	1	0.6	19	98.809524	Good	Good
8	30/07/2014	27/08/2014	23.0	22.1	22.0	22	0.6	2	1.4	21	98.809524	Good	Good
9	27/08/2014	01/10/2014	25.6	25.4	45.4	32	11.5	36	28.5	24	99.166667	Poor Precision	Good
10	01/10/2014	29/10/2014	26.8	29.4	43.5	33	9.0	27	22.3	23	99.85119	Poor Precision	Good
11	29/10/2014	03/12/2014	33.3	36.8	28.8	33	4.0	12	10.0	28.5742	99.52381	Good	Good
12	03/12/2014	07/01/2015	21.1	29.5	12.5	21	8.5	40	21.1	29.7224	96.071429	Poor Precision	Good
13													

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

Site Name/ ID:

**Accuracy** (with 95% confidence interval)  
without periods with CV larger than 20%

Bias calculated using 8 periods of data

Bias factor A 0.91 (0.82 - 1)

Bias B 10% (0% - 21%)

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Diffusion Tubes Mean: 28  $\mu\text{g m}^{-3}$

Mean CV (Precision): 5

Automatic Mean: 26  $\mu\text{g m}^{-3}$

Data Capture for periods used: 99%

Adjusted Tubes Mean: 26 (23 - 28)  $\mu\text{g m}^{-3}$

**Precision** 8 out of 12 periods have a CV smaller than 20%

**Accuracy** (with 95% confidence interval)  
**WITH ALL DATA**

Bias calculated using 12 periods of data

Bias factor A 0.91 (0.81 - 1.04)

Bias B 10% (-4% - 23%)

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Diffusion Tubes Mean: 28  $\mu\text{g m}^{-3}$

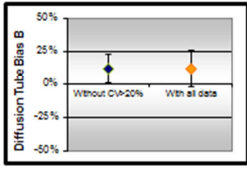
Mean CV (Precision): 14 **caution**

Automatic Mean: 26  $\mu\text{g m}^{-3}$

Data Capture for periods used: 99%

Adjusted Tubes Mean: 26 (23 - 30)  $\mu\text{g m}^{-3}$

Overall survey -> **Poor precision** **Good Overall**  
(Check average CV & DC from Accuracy calculations)



Jaume Targa, for AEA  
Version 04 - February 2011

## Discussion of Choice of Factor to Use

Data have been corrected using a bias adjustment factor, which is an estimate of the difference between diffusion tube concentrations and continuous monitoring, the latter assumed to be a more accurate method of monitoring. The technical guidance LAQM.TG (09) provides guidance with regard to the application of a bias adjustment factor to correct diffusion tubes. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data from NO<sub>x</sub> / NO<sub>2</sub> 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 the diffusion tubes, the technical guidance LAQM.TG (09) and LAQM Helpdesk<sup>2</sup> recommends the use of a local bias adjustment factor where available and relevant to diffusion tube sites.

It was decided to use a local bias adjustment factor (0.90) for the year 2014. 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 the ZH3 Thanet Airport site and 8 periods of data for the ZH4 Thanet Ramsgate Roadside site. The National Bias Adjustment factor of 0.81, based on 22 studies, has been presented in Appendix C for comparison.

## PM Monitoring Adjustment

The Council undertook monitoring of PM<sub>10</sub> based on beta attenuation at two locations during 2014. The measured results for the monitors have been adjusted by a factor of 1.21 prior to reporting.

## Short to Long Term Adjustment

There were no monitoring sites requiring annualisation in 2014.

## 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<sub>x</sub> analysers with NO gas (AURN also use NO<sub>2</sub>);

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<sup>2</sup> laqm.defra.gov.uk



- 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<sub>2</sub> tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO<sub>2</sub> concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. In the latest available WASP/AIR-PT results, rounds WASP 124 (January to March 2014), AIR-PT AR001 (April to May 2014), AR 003 (July to August 2014) and AR004 (October to November 2014) ESG Didcot have scored 100%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of <  $\pm 2$ . Based on 22 studies from ESG Didcot utilising the 50% TEA, 59% of all local Authority co-location studies in 2014 were rated as 'good' (tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%).

## Appendix B: Diffusion Tube Results

### Monthly Diffusion Tube Results 2014

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	AVERAGE
TH05	46.4	43.0	44.8	35.6	32.8	29.0	30.8		36.7	39.3	48.4		10	38.7
TH10	36.7	45.8	49.2	41.1	45.8	39.1	34.0	32.4			47.7	20.4	10	39.2
TH13	59.8	60.9	61.3	47.8	60.8	40.2		47.4	53.8	56.8	61.6	42.3	11	53.9
TH16	20.3	17.9	28.4	16.6	22.0	13.5	15.9	16.8	53.3	17.8	25.5	19.1	12	22.3
TH26	44.4	47.3	47.2	41.1	43.8	38.4	1.4	67.7	25.6	28.5	44.9	24.8	11	41.2
TH27	23.3	20.6	27.7	15.6	19.7	11.2	11.8	12.1	17.8	18.7	26.3	23.5	12	19.0
TH31	20.0	16.7	25.6	12.3	17.9	10.6	11.4	11.4	17.8	15.1	42.6	17.1	12	18.2
TH32	23.8	14.6	27.6	17.7	19.0	9.9	11.7	11.4	19.3	17.9	24.9	10.9	12	17.4
TH33	20.8	17.3	30.4	10.9	18.0	11.7	14.1	12.5	20.6	14.7		15.2	11	16.9
TH34	36.6	41.0	42.9	23.7	26.3	16.7	18.1	23.2	41.4	35.0	43.5	20.3	12	30.7
TH36	37.9		37.6	20.9	32.5	13.9	22.9	17.4	28.9	31.7	41.8		10	28.6
TH37	16.2	20.6	27.8	19.4	21.4	9.2	13.9	11.7	18.7	18.8	22.3	18.7	11	18.1
TH38	14.2	15.7	33.7		18.4	11.6	13.2	13.3	19.2	17.5	32.3	23.8	11	19.4
TH45	18.9	17.6		14.6	20.2	12.8	14.6	12.7	16.7	15.0	25.9	18.7	10	17.3
TH46	62.1	58.0	59.2	50.3	54.9	39.3		41.8	52.2	52.7	57.7	47.8	11	52.4
TH47	55.1	57.0		51.8	59.6	40.1		46.7	46.0	61.2	54.9	45.7	10	51.8
TH48	41.2	40.8	46.1	36.7			30.1	25.4	42.9	38.4	36.0	37.3	10	37.5
TH49	36.6		47.2	38.6			40.8	32.1	43.2	39.0	24.1	34.9	9	37.4
TH50	44.2	43.5	49.1	37.4	40.9	36.5	29.8	27.9	38.0		43.3	39.2	11	39.1
TH51	34.6	34.9	35.8	28.0	33.6	22.3	21.3	23.0	25.6	26.8	33.3	21.1	11	29.0
TH52	23.1	34.5	37.4	23.9	29.0	21.3	21.6	22.1	25.4	29.4	36.8	29.5	11	27.7
Th53	28.3	33.9	35.0	26.7	29.3	22.8	21.1	22.0	45.4	43.5	28.8	12.5	9	27.5
TH54	44.2	58.1	52.8	35.6	42.9	27.8	39.1	22.8		49.7	56.9	49.8	11	43.6
TH55	34.3	32.7	49.8	27.8	28.2	15.8	19.8	25.3		30.6	38.0	22.5	11	29.5

**Bureau Veritas**

**Thanet District Council**

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	AVERAGE
TH61	39.2	43.2	44.9	40.7	36.4	29.9	24.4	31.7	41.6	41.8	49.8	32.6	12	38.0
TH62	38.5	35.9	46.7	36.1	35.7	37.0	31.5	27.2	39.9		48.6	37.6	11	37.7
TH64	47.8	55.1	54.8	40.6	45.2	26.0	40.5	44.1		49.8	58.1	50.0	11	46.5
TH65	39.4	59.1	71.6	29.7	41.7	22.1	46.1	43.5		51.8	55.6	56.7	11	47.0
TH66	33.3	29.4	40.0	26.4	34.9	27.7		43.0			27.8	22.7	9	31.7
TH67	34.4	31.7	41.6	44.0	48.9	42.6	50.5	35.1	52.2	36.4	40.4	18.2	12	39.7
TH68	35.3	31.9	46.5	41.9	42.6	35.6	46.7	33.3	46.7	35.0	31.2	18.5	12	37.1
TH69	34.5	34.9	46.4	41.1	43.4	36.8	43.7	35.4	50.8	34.2	38.5	15.6	12	37.9
TH70	42.3	48.5	58.9	43.1	51.3	41.8	52.3	48.9	58.4		52.4	22.2	11	47.3
TH71	44.8	50.0	72.4	52.1	42.4	44.1	57.3	49.0	61.4		54.1	31.1	11	50.8
TH72	44.8	48.2	52.2	46.9	52.8	49.2	51.9	46.9	62.7		58.3	34.7	11	49.9
TH73	23.7		55.7	49.9	49.4	45.4	43.3	40.0	52.2	39.6	45.9		10	44.5
TH74	41.9		50.2	1.5	107.5	39.0	40.7	35.7	54.4	34.2	46.9		9	50.1
TH75	40.4		50.9	50.0	51.2	44.3	44.0	36.9	50.3	43.7	46.1		10	45.8
TH76											30.5	17.3	2	23.9

Value = Value removed from the dataset prior to processing

Very low result: TH26, TH74

Poor precision: TH37/38/45, TH51/52/53

## Appendix C: 2014 Diffusion Tube Results – National Bias Adjustment Factor

Site ID	Site Name/Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (Number of Months)	2014 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) – National Bias Adjustment factor = 0.81
TH05	The Broadway, Broadstairs	Kerbside	Y	N	10	31.3
TH10	College Road, Margate	Kerbside	Y	N	10	31.8
TH13/46/47	The Square, Birchington	Kerbside	Y	Triplicate	11,11,10	<b>42.7</b>
TH16	Earlsmede Crescent, Cliffend	Background	Y	N	12	18.0
TH26	King Street, Ramsgate	Kerbside	Y	N	11	33.4
TH27	Avebury Avenue, Ramsgate	Urban Background	Y	N	12	15.4
TH31	High Street, Manston	Urban Background	N	N	12	14.7
TH32	Bell-Davies Drive, Manston	Urban Background	N	N	12	14.1
TH33	Hill-House Drive, Minster	Urban Background	N	N	11	13.7
TH34	Pizza Hut, Westwood Road, Broadstairs	Roadside	Y	N	12	24.9
TH36	Star Lane, Ramsgate Road, Margate	Kerbside	Y	N	10	23.1
TH37/38/45	Kentmere Avenue, Ramsgate	Kerbside	Y	Triplicate and co-located (ZH3)	11,11,10	14.8
TH48	Canterbury Rd, Birchington (A28) (Yew Tree)	Kerbside	Y	N	10	30.4

Site ID	Site Name/Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (Number of Months)	2014 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) – National Bias Adjustment factor = 0.81
TH49	Kent Gardens, Canterbury Road (A28), Birchington	Roadside	Y	N	9	30.3
TH50/61/62	63 Hereson Road, Ramsgate	Roadside	Y	Triplicate	11,12,11	31.0
TH51/52/53	Boundary Road, Ramsgate	Roadside	Y	Triplicate and Co-located (ZH4)	11,11,9	25.3
TH54/64/65	High Street, St. Lawrence	Roadside	Y	Triplicate	11	37.0
TH55	Coxes Lane, Margate Road, Ramsgate	Roadside	Y	N	11	23.9
TH66	High Street, St. Lawrence- Façade	Roadside	Y	N	9	25.7
TH67/68/69	20 Hereson Road, Ramsgate	Roadside	Y	Triplicate	12	31.0
TH70/71/72	9 High Street, St. Lawrence	Roadside	Y	Triplicate	11	39.9
TH73/74/75	3 Hereson Road, Ramsgate	Roadside	Y	Triplicate	10,9,10	37.9