THURROCK COUNCIL

Thurrock Council

Air Quality and Action Plan Progress Report

October 2011

Executive Summary

This is the Air Quality and Action Plan Progress Report 2011 for Thurrock Council ("the Council"). This report is the latest report produced by the Council to fulfil this part of the continuing commitment to the Local Air Quality Management (LAQM) process. This Report provides the most recent annual update of recent air quality issues in Thurrock, based on its air quality monitoring results in the Borough, as well as a focus on the Council's progress on reducing air pollution through its Air Quality Action Plan.

The Council's previous Review and Assessments of air quality confirmed that there were locations across the Borough with relevant public exposure where the Government's air quality objectives might be exceeded.

The Council's monitoring results for sulphur dioxide indicate that the objectives for this pollutant are not being exceeded. However the more up to date monitoring of nitrogen dioxide and PM_{10} in this report confirms that the Government's air quality objectives are still being exceeded widely at locations with relevant public exposure. The Council will therefore maintain its Air Quality Management Areas (AQMAs) for these two pollutants.

The report also includes a section on the Council's ozone monitoring. The monitored results for this pollutant confirm that the ozone objective was not exceeded in 2010, or 2009 but for previous years it was exceeded in the Borough. Although the annual mean over the period of monitoring has shown increases.

The purpose of the Council's Air Quality Action Plan is to ensure that air quality is considered corporately and to seek to reduce air pollution within the Borough, in pursuit of the Government's air quality objectives. The Council is however limited in its abilities to influence local air quality, firstly as a result of pollution arising elsewhere in London (and beyond) and secondly because it has limited responsibility for the main sources of emissions within the Borough. The major roads in the Borough are the responsibility of the Highways Agency and the oil refinery the responsibility of the Environment Agency. The action plan however includes measures to seek to reduce traffic flow and emissions that are consistent with other Council policies.

The Council's progress on the individual actions is given in Table 15 within the report. As referred to above the Council is maintaining, as well as seeking to enhance, both its monitoring and dissemination of data for planning and assessment purposes. The Action Plan originally included 35 actions. The report confirms from the last progress report that 5 actions were recently completed or no longer relevant from when the Action plan was published in 2004. The remaining actions are all on going no actions were completed in 2010 period. However in relation to this there are additional measures the Council are either implementing or in the process of implementing, which could bring some benefits in air quality specifically in relation to AQMA 2 & 23 as reduction of HGV's using the London Road will be re-routed along Devonshire Road.

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1.1 Overview

This is the Air Quality and Action Plan Progress Report 2011 for the Thurrock Council. This report fulfils this part of the Council's continuing commitment towards the Local Air Quality Management (LAQM) process.

1.2 Background – national level

The LAQM process forms a key part of the Government's Air Quality Strategy to achieve the air quality objectives prescribed in the Air Quality (England) Regulations 2000 and 2002. Air quality progress reports were introduced following a detailed evaluation of the first round of local authority Review and Assessment. This evaluation identified a need both to develop a longer-term vision for LAQM and encourage the integration of air quality into the routine work of local authorities.

Local Authorities are required by section 88 (2) of the Environment Act 1995 to have regard to the Government's guidance documents when carrying out their LAQM duties. To assist local authorities and provide guidance for the overall LAQM process, the Department for Environment, Food and Rural Affairs (Defra) issued the following policy and technical guidance documents: LAQM PG (03), LAQM PG (S) (03), LAQM TG (03) and LAQM.PGA (05), these have now been super-ceded and replaced in 2009 by the technical guidance: LAQM TG (09).

The Government published a revised Air Quality Strategy for England, Scotland, Wales and Northern Ireland in July 2007. In formulating the new strategy a review was undertaken which included comprehensive environmental studies. The review also proposed potential new policy measures to improve air quality, and examined their costs and benefits, impact on exceedences of the strategy's air quality objectives, effect on ecosystems and qualitative impacts. The new Air Quality Strategy identifies the key measures to consider and where further work is needed.

The new strategy affirms that the quality of air has improved and that despite this there is still more to do as objectives for some pollutants are still exceeded. The areas of exceedence are relatively small, although significant numbers of people are likely to be exposed, as the exceedences tend to be in highly populated areas. The updated strategy provides a clear, long-term vision for improving air quality in the UK and offers options for further consideration to reduce the risk to health and the environment from air pollution. The strategy retains existing air quality objectives and includes a new objective for $PM_{2.5}$ in recognition of recent reviews by the WHO and the Committee on the Medical Effects of Air Pollutants (COMEAP) that suggested exposure to $PM_{2.5}$ gives a stronger association with the observed ill-health effects of particles.

LAQM TG (09) supplemented the above guidance and assists in the production of air quality progress reports. Based on this, local authorities are required to produce Progress Reports in those years when they are not carrying out an Updating and Screening Assessment (USA) or a Detailed Assessment of air quality.

The guidance also advises that the Progress Report is not designed to represent a further USA, although it states that, if at any time a risk is identified that an air quality objective might be exceeded, a Detailed Assessment should be carried out without delay.

1.3 Background – local level

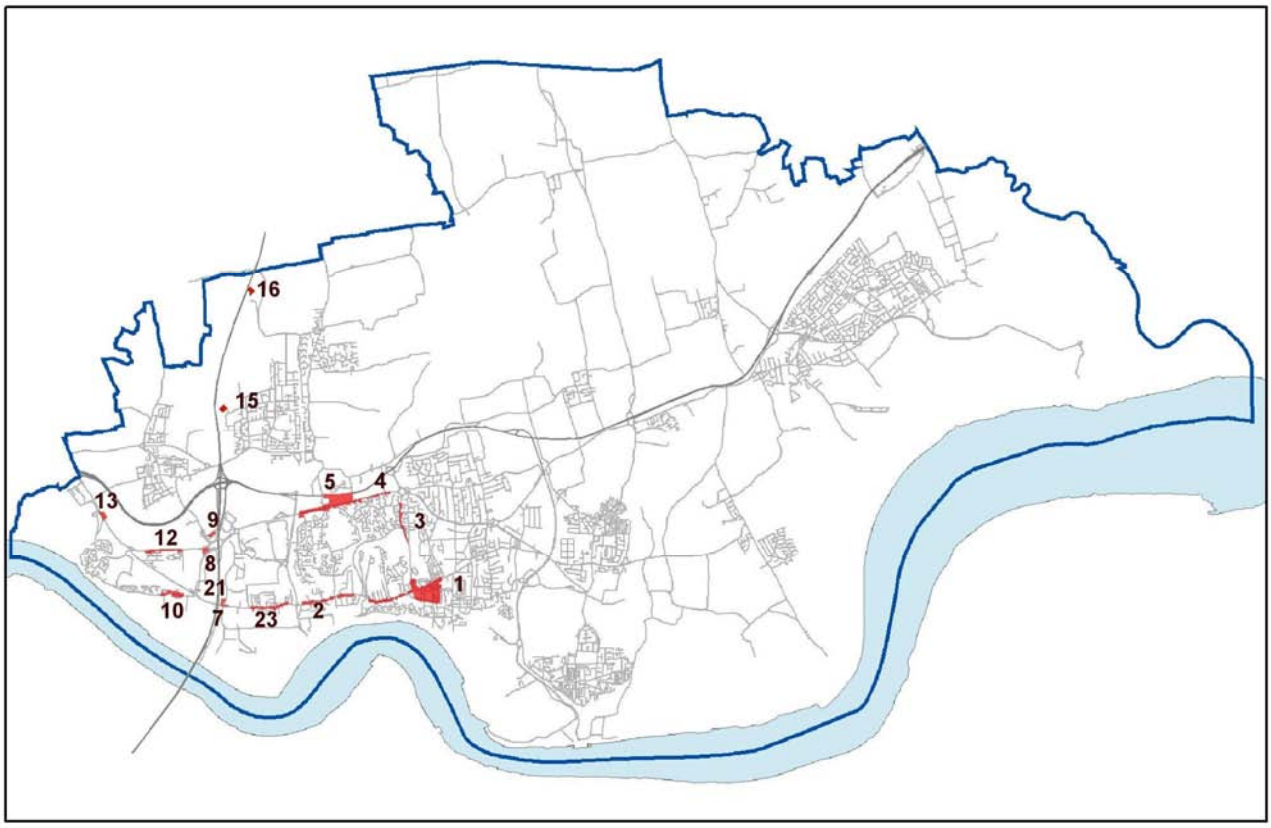
In earlier rounds of review and assessment (R&A) of local air quality management, the Council identified areas where objectives were exceeded and where there was relevant public exposure. As a consequence, it designated parts of its area as Air Quality Management Areas (AQMA) for the annual mean nitrogen dioxide objective and daily mean PM_{10} objective and produced an Air Quality Action Plan.

The Council also completed the third round of review and assessment. A summary of the existing AQMAs for nitrogen dioxide and PM_{10} within the Council's area is given in Table 1

Table 1 Summary of existing Thurrock AQMAs

AQMA No.	Pollutant	Description of Air Quality Management Area
1	NO_2	Grays town centre and London Road Grays
2	NO_2	London Road South Stifford and adjoining roads
3	NO_2	East side of Hogg Lane and Elizabeth Road
4	NO_2	West of Chafford Hundred Visitor Centre
5	NO_2 and PM10	Warren Terrace, A13 and A1306
7	NO_2 and PM10	Hotels next to M25
8	NO_2 and PM10	Hotel next to Junction 31 of the M25
9	NO_2	Hotel next to Junction 31 of the M25
10	NO_2 and PM10	London Road Purfleet near to Jarrah Cottages
12	NO_2	Watts Wood estate next to A1306
13	NO_2	London Road Aveley next to A1306
15	NO_2	Near to M25 on edge of Irvine Gardens, South Ockendon
16	NO_2	Next to M25 off Dennis Road
21	NO_2	Hotel on Stonehouse Lane
23	NO_2	London Road West Thurrock

Figure 1 Map of AQMAs in Thurrock



The overall aim of the Progress Report is to report on progress on implementing LAQM and report progress in achieving, or maintaining concentrations below the air quality objectives. The guidance considers that these aims can be best achieved by reporting on new results and on progress with implementation of the Action Plan. This, the 2011 progress report, provides the latest update for Thurrock.

The guidance further suggests that those local authorities monitoring ozone use this report to outline the results. (Note – ozone is not one of the identified seven LAQM pollutants, although it is included within the Government's Air Quality Strategy).

2 New monitoring results in Thurrock

2.1 Outline of monitoring undertaken

The Council continued monitoring, nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particles (PM_{10}) and ozone (O_3) in its area. The Government's adopted air quality objectives for each of these pollutants as shown in Table 2 below.

Table 2 Air quality strategy objectives for CO, NO_2, SO_2, PM_{10}, ozone and provisional objectives for $PM_{2.5}$

Pollutant	Objective		Date to be achieved by
	Concentration	Measured as	
Carbon Monoxide	10 mg m^{-3}	Daily Maximum Running 8 hour mean	31 Dec 2003
Nitrogen Dioxide (provisional)	200 µg m^{-3} not to be exceeded more than 18 times a year 40 µg m^{-3}	1 hour mean Annual Mean	31 Dec 2005 31 Dec 2005
Sulphur Dioxide (SO_2)	350 µg m^{-3} not to be exceeded more than 24 times a year 125 µg m^{-3} not to be exceeded more than 3 times a year 266 µg m^{-3} not to be exceeded more than 35 times a year	1 hour mean 24 hour mean 15 minute mean	31 Dec 2004 31 Dec 2004 31 Dec 2005
Particles (PM_{10})	50 µg m^{-3} not to be exceeded more than 35 times a year 40 µg m^{-3}	Daily Mean Annual Mean	31 Dec 2004 31 Dec 2004
Particles (PM2.5) (gravimetric) * All authorities	25 µg m^{-3} (target)	Annual mean	2020
	15% cut in urban background exposure	Annual mean	2010 - 2020
Ozone (O_3)	100 µg m^{-3} not to be exceeded more than 10 times a year	Daily maximum of 8 hour running mean	31 Dec 2005

** Not included in regulations at present*

The Council undertakes continuous monitoring at four fixed long-term sites:

- Thurrock 1 - an urban background site in Grays in the middle of the Borough. This site has been operating since January 1995 and is part of the Government's Automated Urban Rural Network (AURN).

- Thurrock 2 – a roadside site in Purfleet in the west of the Borough (this site started operating in May 2003 and closed in April 2008). The sample inlet was located 2m from the road.

- Thurrock 3 – a roadside site in Stanford Le Hope towards the east of the Borough (monitoring at this site commenced in August 2003).

- Thurrock 4 – Was set up in Tilbury Calcutta Road to monitor NO_2, as the diffusion tube close to the station went above the objective, so more sophisticated monitoring was required. This site has been operating since January 2010.

- Thurrock 8 – a roadside site in Purfleet. This site replaced the Thurrock 2 site that had to be relocated approximately 40m to the west of the previous site for access reasons. It opened in April 2008.

2.2 Summary of monitoring undertaken at Thurrock's automatic sites

Site	NOx*	PM_{10}	$PM_{2.5}$	SO_2	Ozone
Thurrock 1	√	√ (TEOM FDMs)		√	√
Thurrock 2	√	√ (BAM)			
Thurrock 3	√	√ (TEOM FDMs)	√ (TEOM FDMs)	√	
Thurrock 4	√				
Thurrock 8	√	√ (BAM)			

(* Includes NO_2)

The above sites are also representative of relevant exposure. All the sites are part of the London Air Quality Network except for Thurrock 4, but they all conform to the standards of QA/QC which are similar to those of the Government's AURN sites. The Thurrock 1 and Thurrock 3 sites are also part of the Government's AURN network. Regular calibrations are carried out, with subsequent data ratification undertaken by the ERG at King's College London. In all cases the data are fully ratified unless reported otherwise. Details of the sites can be found at www.londonair.org.uk

The Council also undertook the non-continuous monitoring of nitrogen dioxide in its area using diffusion tubes.
(please note the latter part of 2010 uses provisional data for all continuous monitoring, for all pollutants NO_2, PM_{10} $PM_{2.5}$, SO_2 and O_3 listed in this report).

2.3 NO_2 Monitoring

The Council has continued to monitor nitrogen dioxide (NO_2) during 2010 using both diffusion tubes and continuous chemiluminescence analysers at Thurrock 1, Thurrock 3, Thurrock 4 & Thurrock 8 monitoring stations.

2.3.1 Continuous NO_2 and NOx monitoring in Thurrock

NO_2 Annual Mean Results

The annual mean results for the continuous monitoring sites are presented in Table 3 and Figure 1. The data capture for 2010 exceeded 90% at Thurrock 3 and Thurrock 8 sites (see Appendix 1). However Thurrock 1 was just below (90)%

Table 3 Annual mean NO_2 concentrations in Thurrock (2003 – 2010 inclusive)(µg m^{-3})

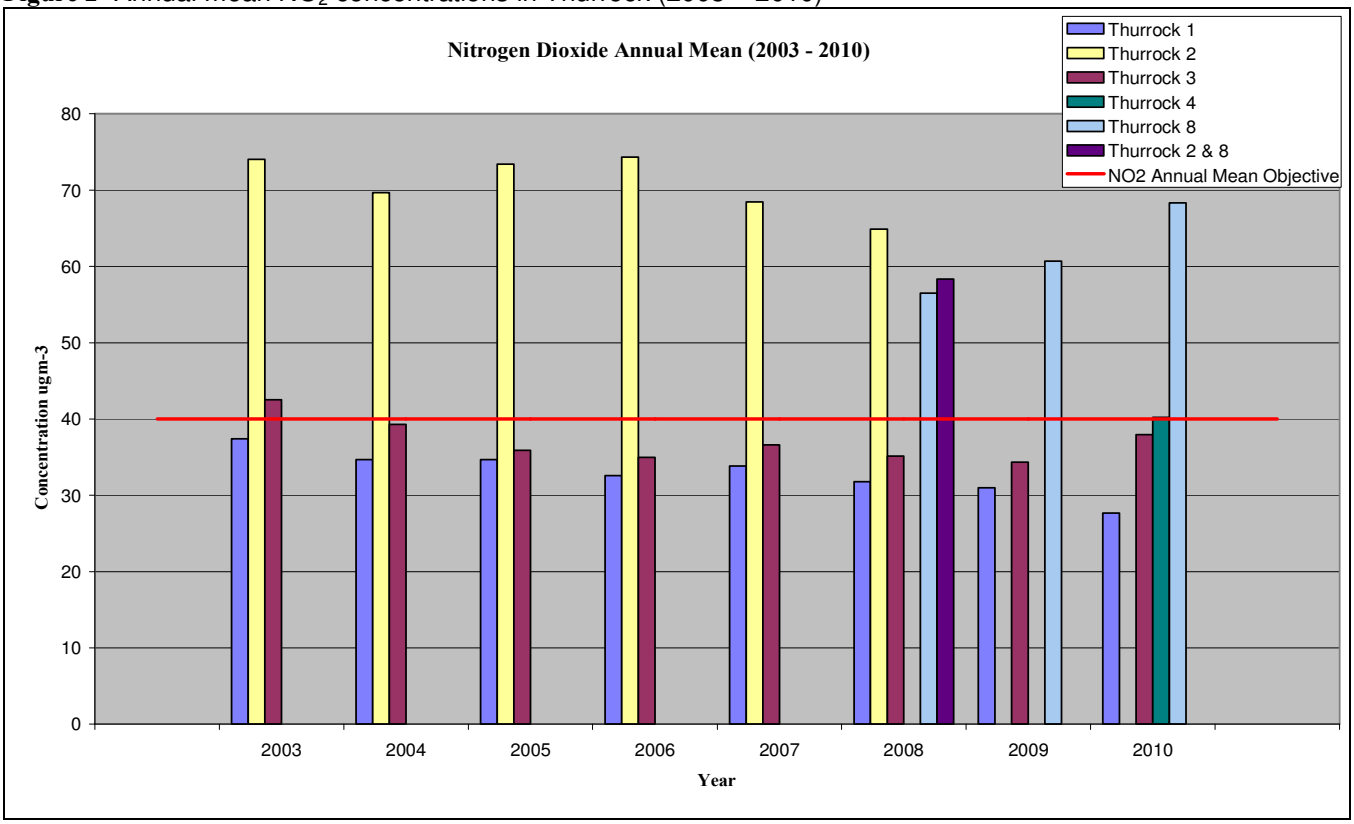
LAQN site	Type	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	U	37.41	34.64	*34.65*	32.57	*33.83*	31.78	30.98	*29.2*
Thurrock 2	R	***74.04***	**69.66**	**73.39**	**74.31**	**68.44**	***64.87****		
Thurrock 3	R	***42.5***	39.27	35.88	34.96	36.59	35.1	34.34	37.93
Thurrock 4	R								**40.2**
Thurrock 8	R						***56.5****	**60.67**	**68.29**
Thurrock 2 & 8	R						***58.34****		

(Note - italics indicates < 90% data capture; bold indicates > annual mean objective)

* (Green indicates that for 2008 both results for Thurrock 2 and Thurrock 8 were combined as there was a relocation of Thurrock 2 to Thurrock 8 by 35 metres along the same road

The monitoring results for Thurrock 2 (formerly and now Thurrock 8 consistently exceed the annual mean objective by a considerable margin, these exceedences are showing a relative decrease in concentrations year on year, with 2003 at 74.04 µg m^{-3} and 2009 at 60.67 µg m^{-3}, however for 2010 the levels have increased to 68.29 µg m^{-3}. Based on the concentrations from 2003 and 2010 the overall decrease year on year for NO_2 is approximately 0.72 µg m^{-3}. The Thurrock 1 background has shown a lesser decline over the same period, with concentrations below the annual mean air quality objective, in 2003 they were 37.41 µg m^{-3} and in 2010 were 27.68 µg m^{-3}, this indicates a yearly decrease of 1.22 µg m^{-3}. Thurrock 3 roadside has mirrored the background site Thurrock 1 in previous years, but for 2010 concentrations actually increased and were 37.93 µg m^{-3}, over the period of 2003 to 2010 the yearly decreases in NO_2 were 0.57 µg m^{-3}. Thurrock 4 site in 2010 was found to be above the annual mean objective, with concentrations measuring 40.2 µg m^{-3}, so for this reason automatic monitoring will continue into 2011 and will declare an AQMA later this year, once the Detailed Assessment has been completed this year.

Figure 2 Annual mean NO_2 concentrations in Thurrock (2003 – 2010)



NO_2 Hourly Peak Results

The highest hourly concentrations at the Thurrock sites in 2007 also arose during episodes in November/ December and also February and April/ May. The monitoring results for the hourly objective are given in Table 4.

Table 4 Hourly mean NO_2 periods > 200 µg m^{-3} in Thurrock (2003 – 2010 inclusive)

LAQN site	Type	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	U	1	0	*0*	0	*3*	0	0	0
Thurrock 2	R	*4*	3	12	**26**	**48**	*7**		
Thurrock 3	R	*0*	0	0	0	0	0	0	0
Thurrock 4	R								0
Thurrock 8	R						*0**	1	12
Thurrock 2 & 8	R						*7**		

(Note- italics indicates < 90% data capture; bold indicates > hourly mean objective)

* (Green indicates that for 2008 both results for Thurrock 2 and Thurrock 8 were combined as there was a relocation of Thurrock 2 to Thurrock 8 by 35 metres along the same road

During 2010 only Thurrock 8 had any exceedences above 200 µg m^{-3} hourly objective for NO_2 with 12 in total, this is a large increase, from 2009 with only 1 exceedence, but it still remains below the air quality objective with a total of 18 permitted exceedences. In previous years this standard has been breached, most notably during 2006 and 2007. There was also an increase in the number of sites exceeding this objective in London during 2005 - 2006, compared to 2002, when there was only one London site that exceeded. (ERG, 2006). Eleven sites exceeded in 2005 and 14 exceeded in 2006, these included sites at both kerbside and roadside locations. No background locations exceeded in either year, although a number of sites exceeded the 200 µg m^{-3} standard. The rises in direct emissions of NO_2 are thought to be implicated in this, as indicated by recent research (Carslaw D.C and Beevers, S. D, 2005 and AQEG, 2007).

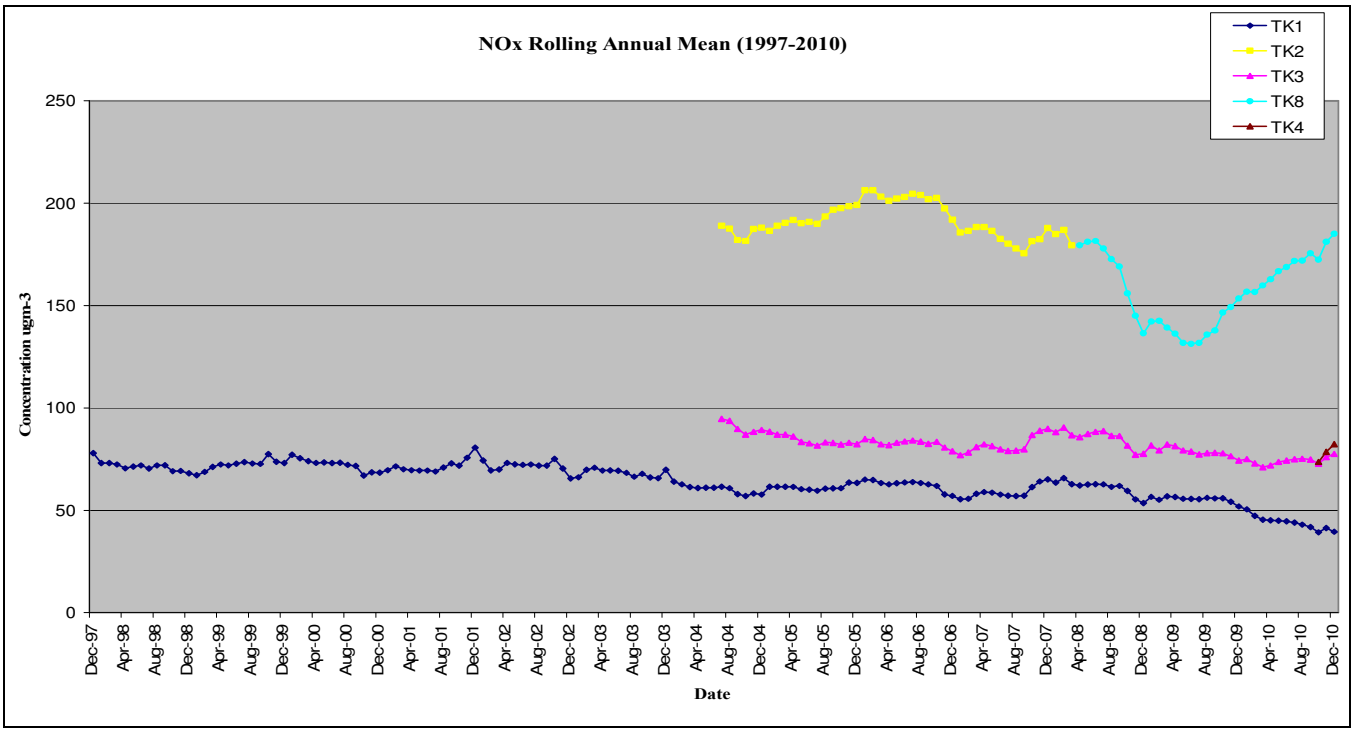
A widespread primary pollution episode arose in early December 2007. At this time weather conditions were cold and calm, with very light winds. Initial analysis suggests that this was the most significant nitrogen dioxide incident for 10 years, when NO_2 was elevated across the region, the hourly mean AQS objective of not more than 18 hours per year above 200 µg m^{-3} was breached at 9 sites, and equalled at 2 sites, on the basis of measurements during this episode alone. Parts of west and central London saw the most elevated levels of pollution. 2008 and 2009 were not exceptionally special years for extreme meteorological conditions, and have reflected this in the numbers of hourly exceedences, which are much less than on previous years. 2010, has seen some more unusual meteorological conditions, with more prolonged easterly winds, which have led to more stable conditions and thus higher pollution events but not on the scale of 2007.

2.3.2 NO_2 and NOx trends in Thurrock

Rolling annual mean plots can be used to indicate changing concentrations over time. The use of rolling annual mean concentrations, based on hourly averaged data, largely removes seasonal influences and provides a guide to changing trends. Plots have been produced for both NOx and NO_2.
NO_2 is a mainly secondary pollutant formed by chemical reactions in the atmosphere from NOx emissions produced by combustion sources. These reactions also involve ozone, which is scavenged by NO. The relationship between NOx and NO_2 is non-linear and it is also further complicated by changes in direct emissions of NO_2 from some road vehicles.

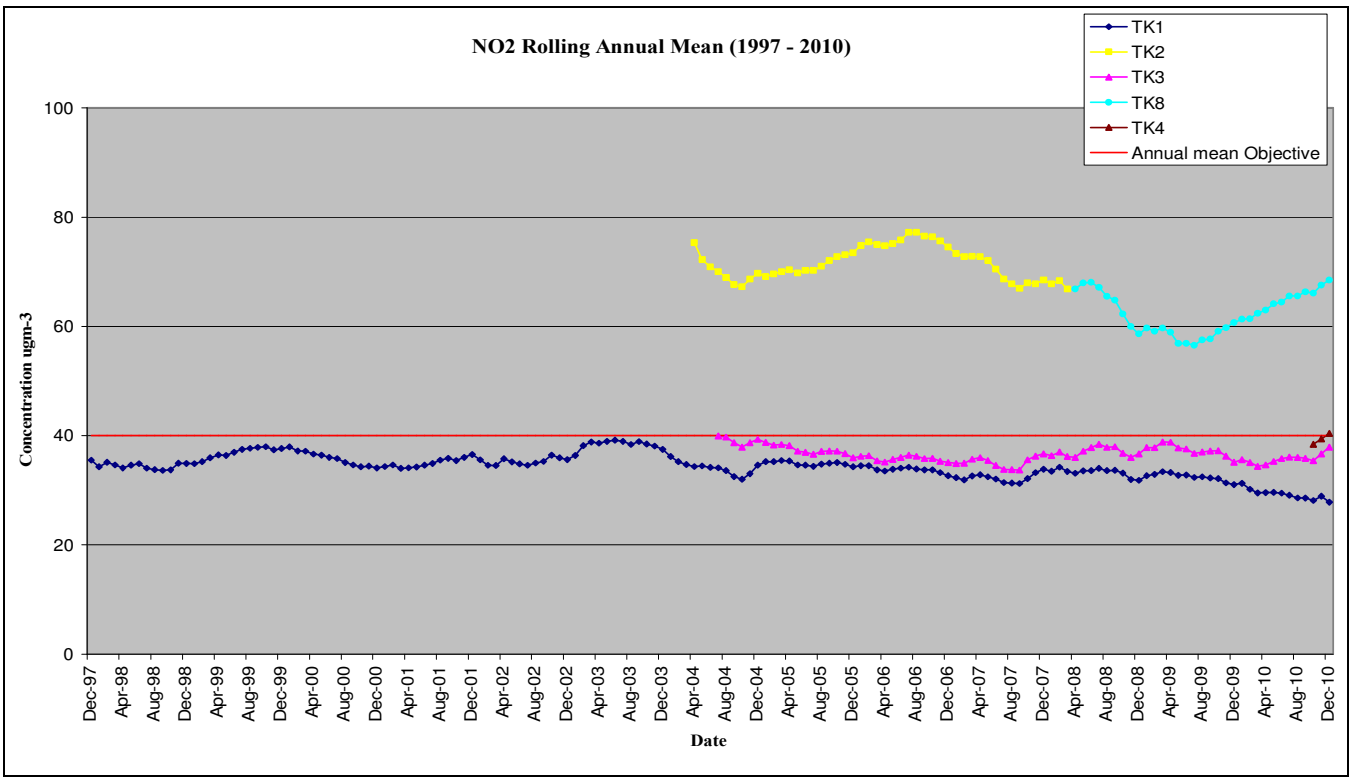
The rolling annual mean plots for both NOx and NO_2 concentrations at all three Thurrock sites are shown. This analysis is for an extended length of time from 1997 to the end of 2010.

Figure 3 Rolling annual mean NOx concentrations for continuous monitoring sites in Thurrock



The rolling annual mean concentrations of NOx indicated a very slight downward trend at the Thurrock 1 urban background site over time in line with reductions in emissions. The downward trend for NOx as the primary pollutant at the site decreased, by approximately 38.4 µg m^{-3}, from the end of 1997 to the end of 2010. From the start of 2010 to the end of 2010 the levels decreased by 12.37µg m^{-3}, this level of decrease is not reflected in the other sites. The reduction of NOx at Thurrock 2 now known as Thurrock 8, showed little variation from 2004 to early 2008 with less than 10µg m^{-3} decrease. From mid 2008 to the end of 2009 however there was much greater variation with an overall decrease over this period of 26.1 µg m^{-3}, this margin was much greater over the latter part of 2008, but has shown to be increasing in concentrations over the latter part of 2009. In 2010 however these levels have again shown increases, to 185 µg m^{-3} at the end of 2010. This increase could be due to meteorological conditions, seasonal variations, with more prolonged stable conditions leading to a build up of NO_x. There has been no noticeable change in traffic operation along this road over this time which could explain the increase. For Thurrock 3 site, it has a similar pattern of change to the Thurrock 1 site from 2004 to the end of 2009, but for 2010 where Thurrock 1 has shown decreases, Thurrock 3 has remained relatively stable. From 2004 to the end of 2010 it has seen a steady decrease in NOx of approximately 17 µg m^{-3} over this period.

Figure 4 Rolling annual mean NO_2 concentrations for continuous monitoring sites in Thurrock



The reductions for NO_2 were smaller than for NOx for all the sites. For Thurrock 1 concentrations reduced by approximately 7.7 µg m^{-3} from December 1997 at 35.5 µg m^{-3} to December 2010 at 28.4 µg m^{-3}, which is a decrease of 20% over 13 years and 1.54% decrease per year. The decrease in the last year has been more pronounced with reductions in NO_2 at the end of 2009 of 31 µg m^{-3} to 28.4 µg m^{-3} at the end of 2010.

The Thurrock 2 & (Thurrock 8 roadside sites as it is now known) has showed a different trend to the urban background site at Thurrock 1. The concentrations show much more variation with two major dips in concentrations in 2004 and 2008, However this has been accompanied by two large increases in 2005 and 2010. The levels for 2010 are roughly in-line with the levels of 2004, so overall there has been no noticeable improvement in air quality at this location. Currently concentrations of NO_2 at the end of 2010 are 68.4 µg m^{-3} well above the annual mean objective for NO_2.

For the Thurrock 3 roadside site the decrease, has been less pronounced that for Thurrock 1. From July 2004 to December 2010 NO_2 concentrations decreased by approximately 2 µg m^{-3} and decreased by 5% over this period, with an average decrease per year of 0.83%. These levels however have changed little over the last 3 years, most of this decrease occurred during 2004, and for 2010 levels has shown a slight increase.

2.3.3 Diffusion tube monitoring of NO_2 in Thurrock

The Council continued its programme of monitoring using diffusion tubes located at sites across the Borough. It also continued co-location studies at two of the Council's continuous sites (Thurrock 1 and Thurrock 3). The diffusion tubes were sited at 19 roadside sites and 9 background locations across the Borough, both inside and outside of the Council's AQMAs. The sites mostly represented locations relevant for public exposure.

Additional diffusion tube sites were set up in 2010 with 3 new sites. The new sites are shown in Figure 5, 6, 7 & 8 marked by (blue stars), the grid references for these new sites are listed in Appendix 1.

Figure 5 Existing (red) & New (blue) & Tilbury (green) diffusion tube locations with site numbers in Thurrock

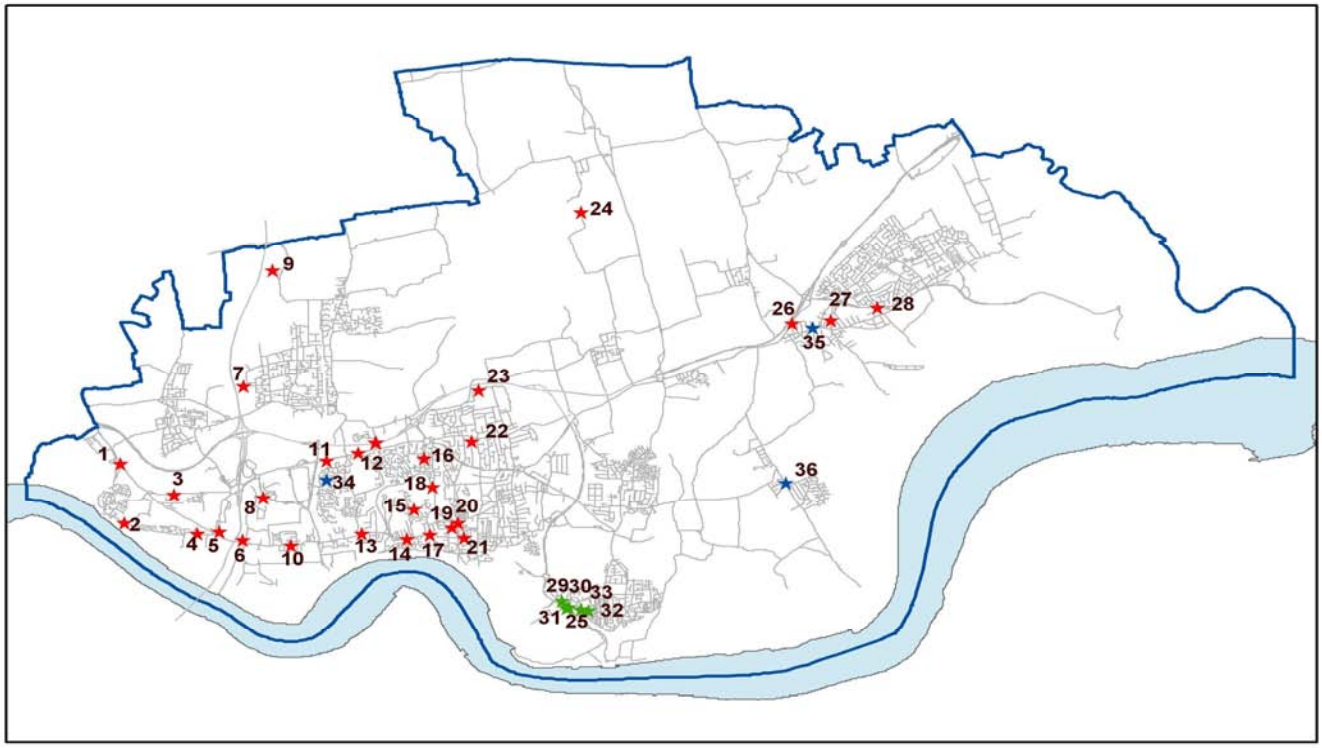


Figure 6 New Diffusion Tube site map of Francisco Close, Chafford Hundred

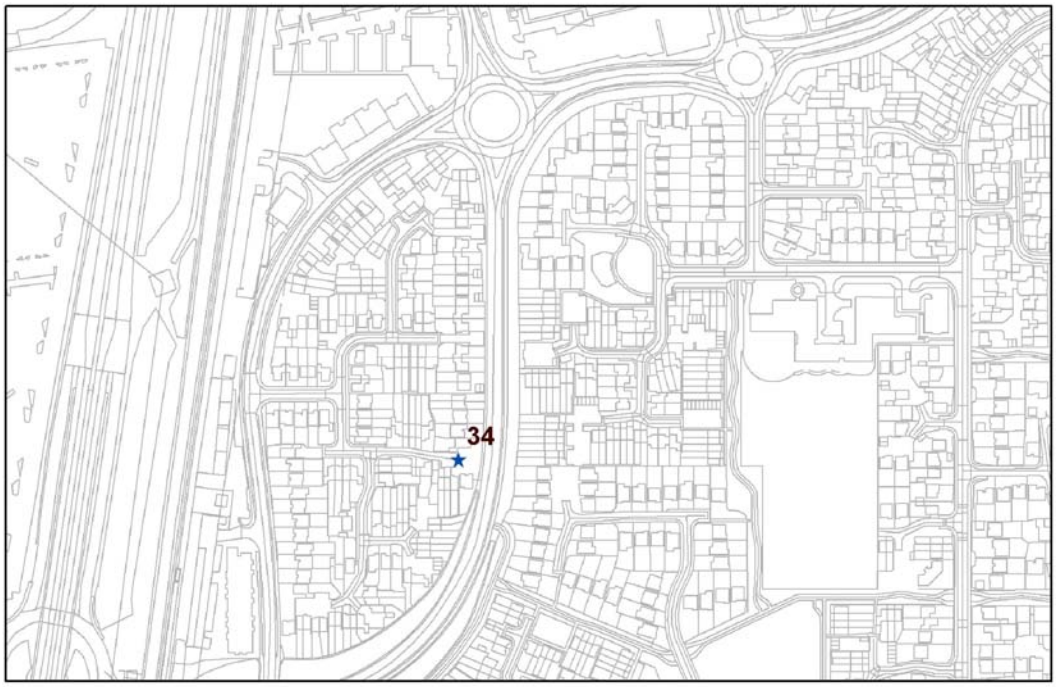


Figure 7 New Diffusion Tube site map of Stanford-le-Hope Rail Station, Stanford-le-Hope

Figure 8 New Diffusion Tube site map of East Tilbury Rail Station, East Tilbury

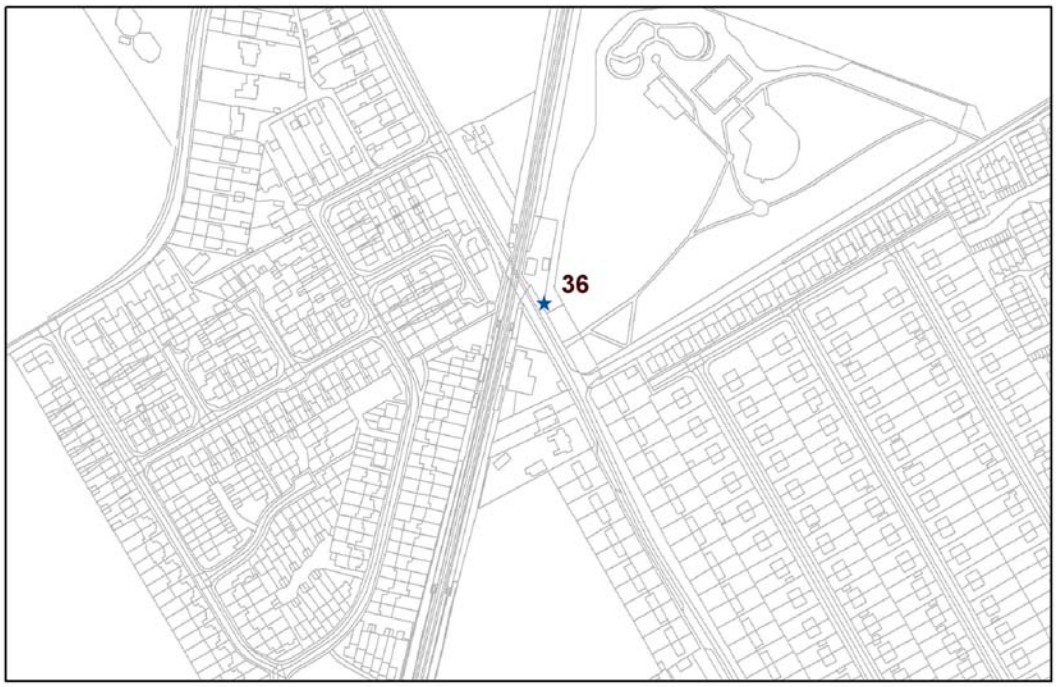
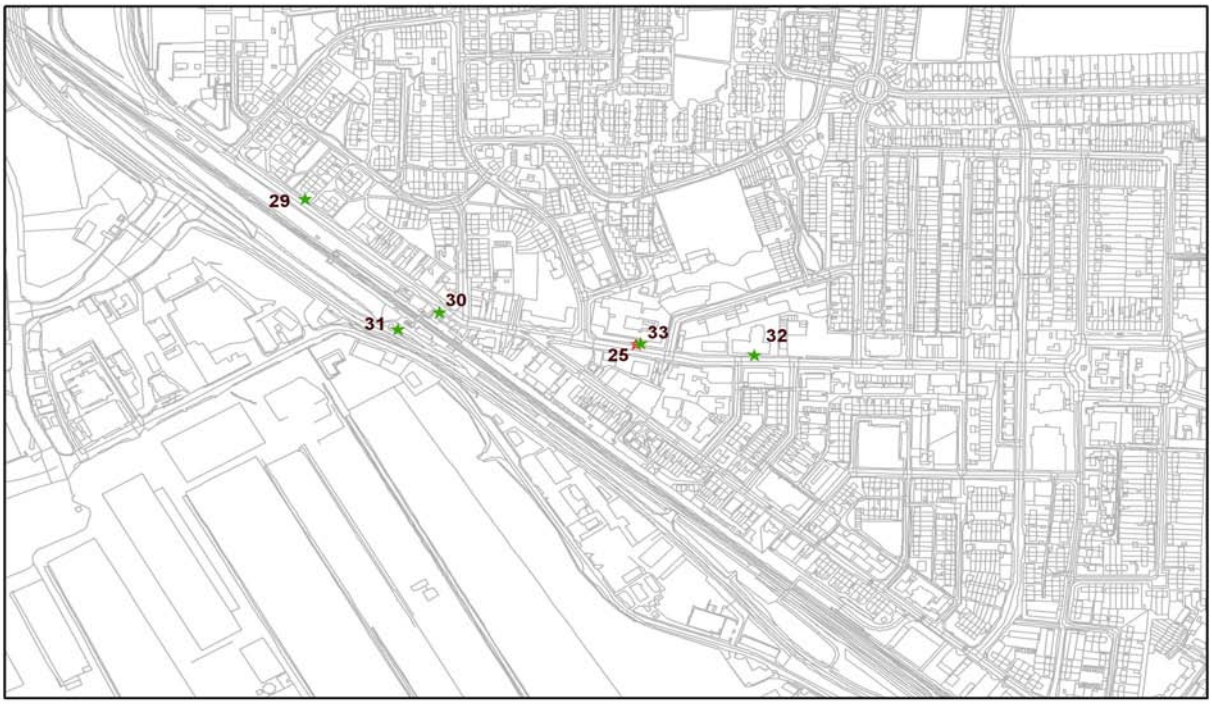


Figure 9 Diffusion Tube locations with site numbers in Tilbury



All the sites had greater than 75% data capture. The locations of the sites of the diffusion tubes and reference number are given in
Table **5** and in the Appendix. Gradko supplied and analysed the diffusion tubes using a preparation method of 50% TEA in water, but as of February 2009 the diffusion tubes were prepared with 20% TEA in water method.

Table 5 Diffusion tube locations in Thurrock

Site	Designation	Type	Site Number	AQMA No
London Road Arterial Road (R)	LRAR	R	1	13
Purfleet Rail Station (R)	PRS	R	2	No
Watts Crescent (R)	WC	R	3	12
Jarrah Cottages (R)	JC	R	4	10
Stonehouse Lane (R)	STON	R	5	21
Ibis Hotel (UB)	IBIS	UB	6	7
Gatehope Drive (UB)	GDSO	UB	7	15
Lakeside Tesco Roundabout (R)	LT	R	8	No
Kemps Cottage (UB)	KCNO	UB	9	16
London Road W Thurrock (R)	WT	R	10	23
Howard Road (R)	HR	R	11	5
A1306 (R)	NAS2	R	12	5
London Road South Stifford (R)	LRSS	R	13	2
London Road Grays (R)	LRG	R	14	1
Wingfield Grays (UB)	NAS4	UB	15	No
Elizabeth Road (R)	ER	R	16	3
Poison Store AURN Site (UB)	PS	UB	17	1
Hogg Lane (R)	HL	R	18	3
Queensgate Centre Grays (R)	NAS1	R	19	1
Cromwell Road Grays (I)	CR	I	20	1
Stanley Road Grays (R)	SRG	R	21	1
Chestnut Avenue Grays (UB)	NAS3	UB	22	No
William Edwards School (R)	WES	R	23	No
Bulphan (RB)	B	RB	24	No

Calcutta Road Tilbury (R)	TL	R	25	No
Park Road (R)	PKSL	R	26	No
Stanford Library (UB)	SL	UB	27	No
Manorway Monitoring Station	M	R	28	No
Tilbury Sites				
Dock Road (Tilbury) (R)	TILA	R	29	No
Broadway Intersection (Tilbury) (R)	TILB	R	30	No
St Andrews Road (Tilbury) (R)	TILC	R	31	No
Calcutta Road East (Tilbury) (R)	TILD	R	32	No
Calcutta Road North (Tilbury) (R)	TILE	R	33	No
New Sites				
Francisco Close (Chafford Hundred) (I)	FRC	I	34	No
Stanford-le-Hope Railway Station (R)	SLHRS	R	35	No
East Tilbury Rail Station (R)	ETRS	R	36	No

Co-location studies to determine suitable local bias factors were undertaken at the Council's automatic sites. One tube was co-located at the Thurrock 1 background site and three tubes were co-located at the Thurrock 3 roadside site. The local bias factors were derived from these (see table 6) and the results compared to the default bias adjustment factor for 2009 of 0.93 (obtained from the Defra helpdesk v09/08). The comparison indicates reasonable agreement between this factor and the locally derived factors for the two co-located studies.

Table 6 2010 Thurrock bias correction factors

	TK1 (Background)	TK3 (Roadside)	TK8 (Roadside)
Cm	**28.43**	**37.72**	**68.57**
		38.25	
		42.14	
	31.73	38.66	53.38
Mean Dm	**31.73**	**39.68**	**53.38**
Bias factor = Cm/ mean Dm	**0.90**	**0.95**	**1.28**

(Bias results for 2010 are based on 11 months only Jan - Nov)

The derived mean local bias factor for background and roadside sites indicates that the diffusion tube result over reads slightly in comparison with continuous monitoring in 2010 at Thurrock 1 & 3 sites. But Thurrock 8 the diffusion tube data under predicts the continuous data.

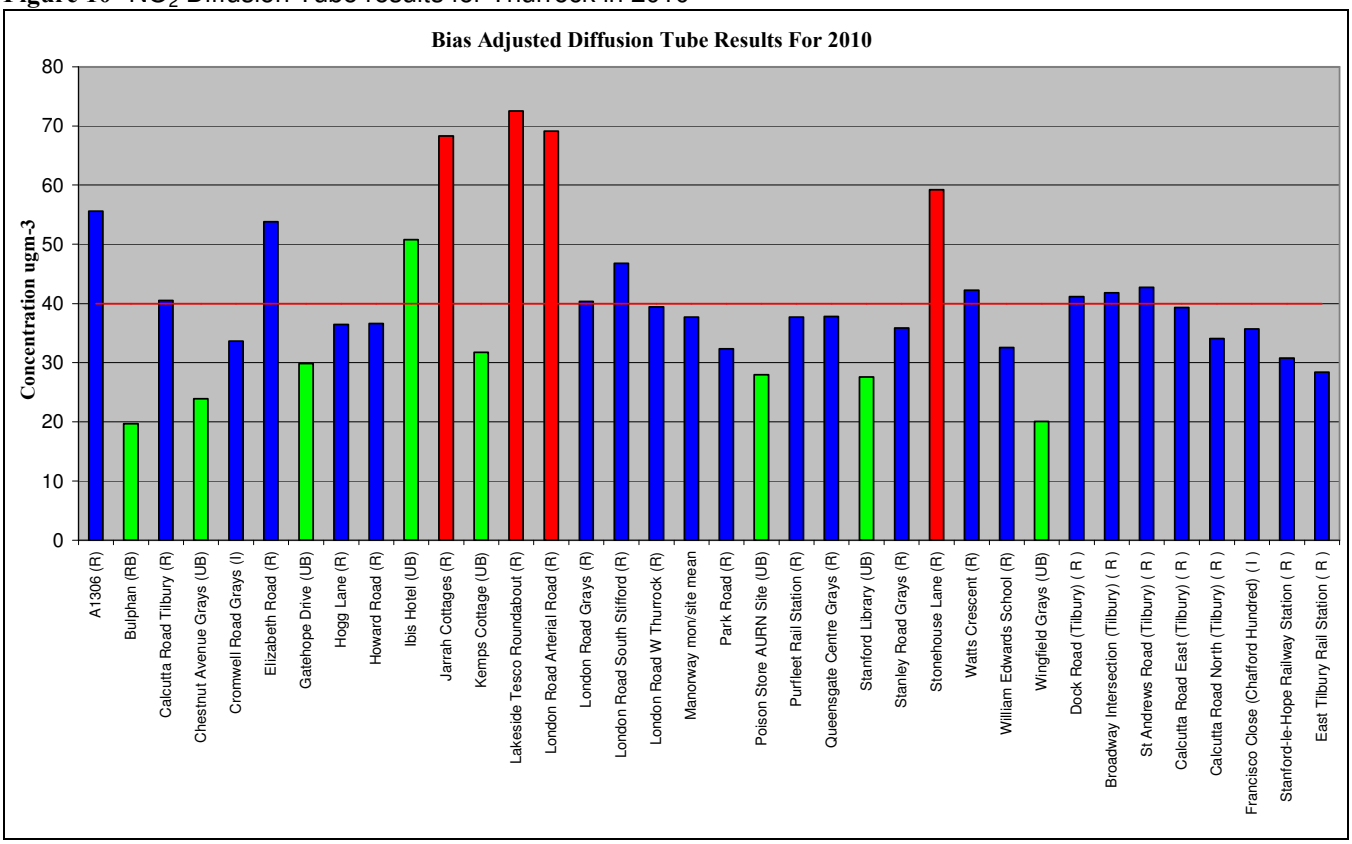
***** PLEASE NOTE: That some diffusion tube sites i.e. Jarrah Cottages (JC), London Road Arterial Road (LRAR), Lakeside Tesco Roundabout (LT) and Stonehouse Lane (STON) now have TK8 bias adjusted factors applied to them, as this location is more representative than the TK3 bias adjustment. This has subsequently led to an increase in the concentrations at these locations. The TK8 bias has been calculated for all previous years back to 2003 this can be seen in the Table 7 below.***

Table 7 Thurrock 8 bias adjustment factors for 2003-2010

Thurrock 8 (Roadside)			
	Cm	Dm	Bias factor
2003	74.99	54.76	**1.33**
2004	69.42	62.89	**1.1**
2005	73.55	57.54	**1.28**
2006	74.38	61.04	**1.22**
2007	68.42	56.73	**1.21**
2008	59.31	54.41	**1.09**
2009	60.56	51.34	**1.18**
2010	68.57	53.38	**1.28**

The adjusted 2010 results using these factors are presented in Figure 10 (note the blue bars indicate the roadside sites (TK3) bias adjusted, the green background sites (TK1 bias adjusted, and red bars (TK8 bias adjusted).

Figure 10 NO_2 Diffusion Tube results for Thurrock in 2010



(The blue bars indicate TK3 bias roadside locations, green bars indicate TK1 bias background locations and red bars indicate TK8 bias roadside location)

The 2010 bias adjusted results in Figure 10 indicated that one background site exceeded 40 µg m^{-3} objective at the Ibis Hotel. While Kemps cottage has remained below the objective. Both of these sites are currently in AQMA's. All the other background sites were below the objective limit, with the lowest concentrations found at the rural background site at Bulphan which had concentrations of 19.68 µg m^{-3}. Thirteen roadside sites exceeded the objective in 2010, as apposed to 6 sites in 2009, Overall diffusion tube results increased over 2010. The worst roadside site is the lakeside Tesco roundabout at 72.54 µg m^{-3}, this site however is not representative to public exposure. Closely following Tesco Lakeside Roundabout site is the London Road Arterial Road at 69.11 µg m^{-3} for 2010 and Jarrah Cottages at 68.33 µg m^{-3}. Further monitoring is planned for London Road Arterial Road in 2011, two new diffusion tube sites will be set at residential facades to determine public exposure in AQMA 13 and in addition to this an Osiris Particulate analyser will be set up to assess PM_{10} concentrations in this AQMA as there is a busy road with a high proportion of Heavy Goods Vehicles (HGV's) using it.

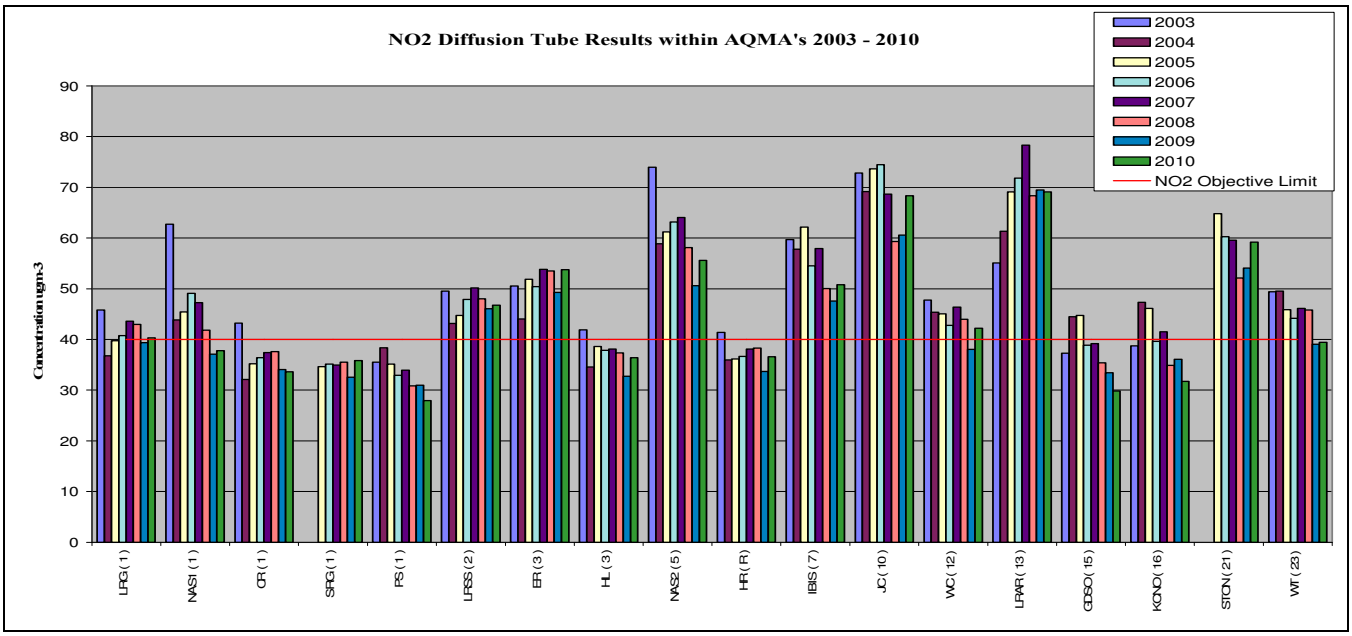
Table 8 Bias adjusted results for all Thurrock sites 2003 to 2010 (µg m^{-3})

Site	BIAs Factor	2003	2004	2005	2006	2007	2008	2009	2010
A1306 (R)	TK3	**73.95**	**58.95**	**61.25**	**63.17**	**64.04**	**58.12**	**50.62**	**55.58**
Bulphan (RB)	TK1	21.29	24.07	27.15	22.37	22.98	20.57	20.88	20.13
Calcutta Road Tilbury (R)	TK3	37.64	32.92	32.24	33.32	**42.53**	**43.24**	39.61	**40.50**
Chestnut Avenue Grays (UB)	TK1	39.08	37	36.15	34.64	33.38	26.07	25.91	24.47
Cromwell Road Grays (I)	TK3	**43.25**	32.14	35.21	36.43	37.39	37.62	34.07	33.63
Elizabeth Road (R)	TK3	**50.55**	**44.08**	**51.86**	**50.43**	**53.82**	**53.51**	**49.28**	**53.77**
Gatehope Drive (UB)	TK1	37.33	**44.49**	**44.72**	38.85	39.17	35.41	33.43	30.53
Hogg Lane (R)	TK3	**41.86**	34.6	38.59	37.85	38.09	37.35	32.72	36.43
Howard Road (R)	TK3	**41.38**	35.97	36.17	36.64	38.11	38.28	33.72	36.61
Ibis Hotel (UB)	TK1	**59.73**	**57.82**	**62.2**	**54.53**	**57.94**	**50.07**	**47.56**	**51.96**
Jarrah Cottages (R)	TK8	**72.84**	**69.18**	**73.65**	**74.46**	**68.64**	**59.30**	**60.58**	**68.33**
Kemps Cottage (UB)	TK1	38.76	**47.31**	**46.12**	39.61	**41.51**	34.88	36.11	32.48
Lakeside Tesco Roundabout (R)	TK8	**59.51**	**56.94**	**61.33**	**65.29**	**70.37**	**54.76**	**63.83**	**72.54**
London Road Arterial Road (R)	TK8	**55.10**	**61.33**	**69.13**	**71.85**	**78.31**	**68.36**	**69.48**	**69.11**
London Road Grays (R)	TK3	**45.84**	36.75	39.75	**40.8**	**43.61**	**42.99**	39.36	**40.33**
London Road South Stifford (R)	TK3	**49.49**	**43.14**	**44.76**	**47.86**	**50.19**	**48**	**46.08**	**46.78**
London Road W Thurrock (R)	TK3	**49.42**	**49.54**	**45.91**	**44.17**	**46.12**	**45.82**	39.04	39.43
Manorway mon/site mean	TK3	37.4	38.8	35.97	34.88	37.03	35.79	34.33	37.70
Park Road (R)	TK3	35.23	32.09	32.82	33.12	35.85	34.39	31.26	32.32
Poison Store AURN Site (UB)	TK1	35.53	38.34	35.13	32.93	33.91	30.83	31.01	28.55
Purfleet Rail Station (R)	TK3	**40.28**	36.52	35.65	37.49	39.31	36.73	35.68	37.67
Queensgate Centre Grays (R)	TK3	**62.72**	**43.86**	**45.45**	**49.07**	**47.23**	**41.81**	37.12	37.78
Stanford Library (UB)	TK1	33.54	39.47	36.18	32.67	33.09	29.93	30.27	28.19
Stanley Road Grays (R)	TK3			34.67	35.11	34.97	35.53	32.55	35.85
Stonehouse Lane (R)	TK8			**64.80**	**60.30**	**59.57**	**52.10**	**54.08**	**59.20**
Watts Crescent (R)	TK3	**47.73**	**45.39**	**45.05**	**42.79**	**46.37**	**43.97**	38.06	**42.22**
William Edwards School (R)	TK3	39.2	37.54	37.19	37.15	38.99	39.05	32.67	32.56
Wingfield Grays (UB)	TK1	32.05	30.38	30.86	29.43	29.71	23.94	23.68	20.51
Tilbury Sites	-								
Dock Road (Tilbury) (R)	TK3							36.21	**41.16**
Broadway Intersection (Tilbury) (R)	TK3							39.17	**41.80**
St Andrews Road (Tilbury) (R)	TK3							35.95	**42.71**
Calcutta Road East (Tilbury) (R)	TK3							34.42	39.31
Calcutta Road North (Tilbury) (R)	TK3							28.65	34.04
New Sites	-								
Francisco Close (Chafford Hundred) (I)	TK3								35.71
Stanford-le-Hope Railway Station (R)	TK3								30.77
East Tilbury Rail Station (R)	TK3								28.37

(Orange indicates results are for less than 9 months data capture for site location)

Table 8 shows that many diffusion tube locations have not declined over 2010, some sites have however such as Bulphan, Cromwell Road, Chesnut Avenue, Gatehope Drive, Kemps Cottage, Wingfield Road and Stanford Library, most of these sites are background sites. The main sites showing increases are the A1306, Jarrah Cottages and the IBIS Hotel being the most noticeable increases. Other sites remain high and above the annual mean objective for NO_2, such as London Road Arterial Road, Lakeside Tesco Roundabout, London Road South Stifford, Stonehouse Lane, Watts Crescent, Calcutta Road Tilbury, Dock Road Tilbury, Broadway Intersection Tilbury and St Andrews Road Tilbury.

Figure 11 Bias adjusted results for all Thurrock sites 2003 to 2010 (µg m^{-3}) within AQMAs

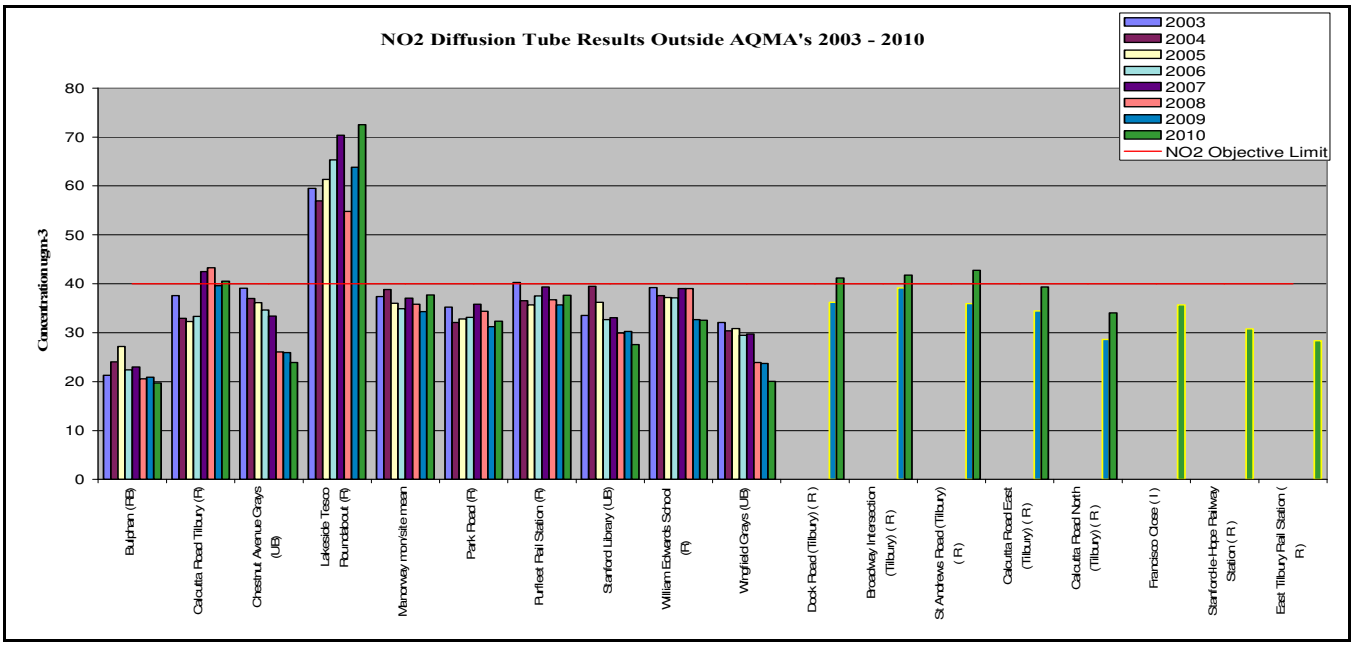


The brackets () with the numbers inside indicates each AQMA location with the diffusion tube designation

The results in Figure 11 indicate that the concentrations regularly exceed the Government's objectives in all the Council's AQMAs, although not always at every site monitored within the AQMA.

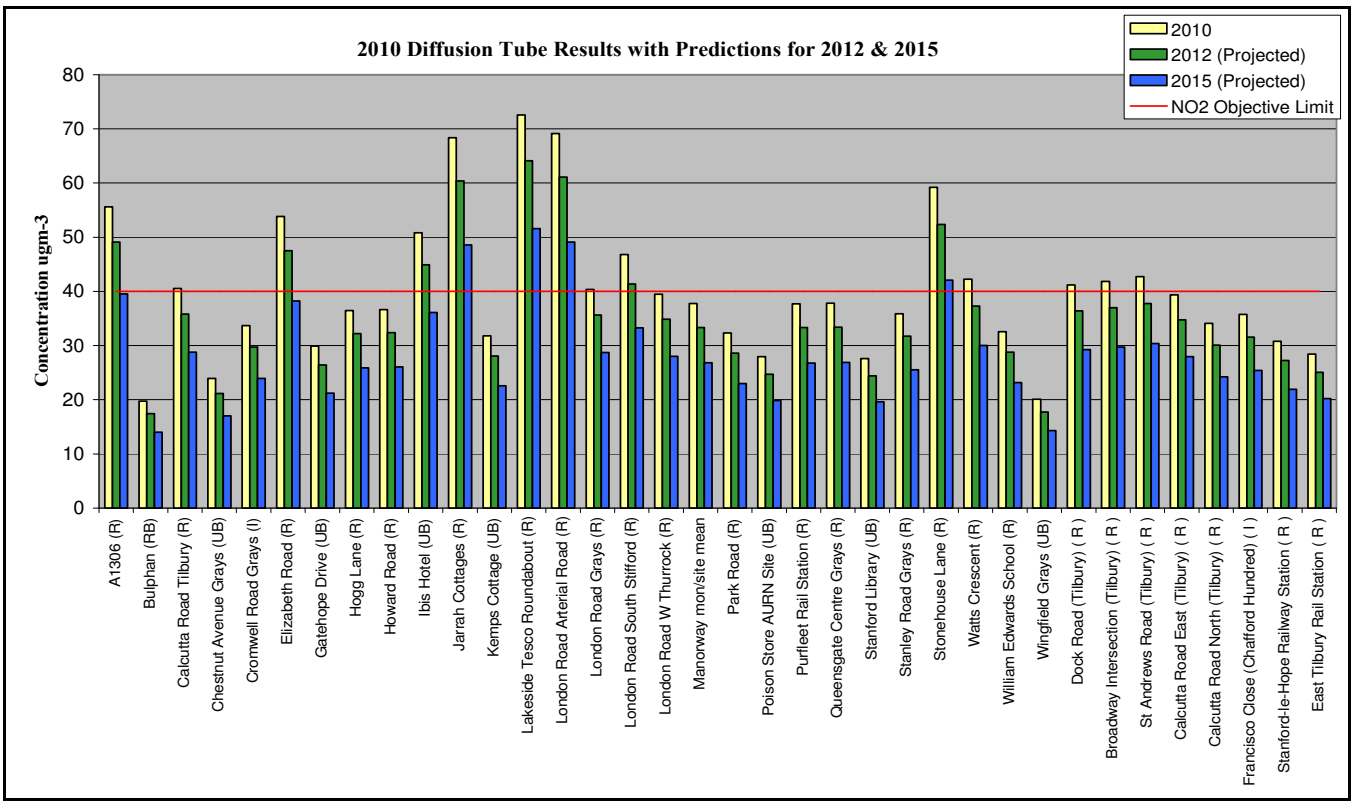
For those sites outside of AQMAs Figure 12, the AQS objective of 40 µg m^{-3} was exceeded consistently at the Lakeside Tesco roundabout, although as reported in previous Council progress reports this site does not represent relevant exposure. The only other sites outside of AQMAs that exceeded the objective were Calcutta Road Tilbury, Dock Road Tilbury, Broadway Intersection Tilbury, and St Andrews Road Tilbury. The continuous analyser (Thurrock 4) located in Tilbury was put in place to try and determine more accurately the NO_2 concentrations, these revealed it to just above the objective in 2010. For this reason the Continuous analyser has continued monitoring into 2011 in order to establish a more long term trend for NO_2. A Detailed Assessment will follow this Progress Report, to determine to what extent a new AQMA should be declared in this area, based on the Thurrock 4 analyser and diffusion tube results.

Figure 12 Bias adjusted results for all Thurrock sites 2003 to 2010 (µg m^{-3}) outside of AQMAs



(Yellow outlined bars) indicate data capture is less than 9 months of the year for specific locations in a given year

Figure 13 NO_2 Diffusion Tube results for sites in Thurrock (2010 and & estimated 2012 & 2015 concentrations)



Predictions of post 2010 concentrations were made using the Defra year adjustment factors, based on 2010 measurements. These are shown in Figure 13, with the 2012 predictions (in green) & 2015 predictions (in blue). For 2010 there are fourteen sites still exceeding the annual mean objective. The estimates indicate that despite the predicted reduction in concentrations, of the same fourteen locations four are predicted to be exceeding the annual mean objective in 2015, which are Jarrah Cottages, Lakeside Tesco Roundabout, London Road Arterial Road and Stonehouse Lane. This prediction must be taken with some scepticism as the diffusion tube results have not shown this level of decrease in previous years and are unlikely to follow this trend, so hence more sites are likely to still exceed the annual mean objective in 2015.

2.4 PM_{10} Monitoring

During 2009 the particulate monitors at Thurrock 1 & 3 were upgraded from standard Tapered Element Oscillating Microbalances (TEOM's) to TEOM Filter Dynamic Measurement System (FDMS) which are equivalent to the EU reference method. During the years 2006 to 2008 the Volatile Correction Model (VCM) created by Kings College London, Environmental Research Group (ERG) was used which converts normal TEOM measurements by combining measurements from 3 local FDMS, which makes the TEOM measurements equivalent to the EU reference method, the previous years pre-dating 2006 were not converted using this method as there were not enough FDM's measurements to do the correction and hence these results are based on the old 1.3 correction factor.

The monitoring results for these sites are given in Table 9. Not all the sites meet the 90% data capture for 2010, Thurrock 3 the data capture was only 89.5%, this was due mainly to issues with the new FDMs upgrades. Thurrock 1 maintained a high level of data capture over 2010 at 95.42% with the FDMs upgraded analyser performing reliably at this site. Thurrock 8 was much improved for 2010 with data capture at 92.12%.

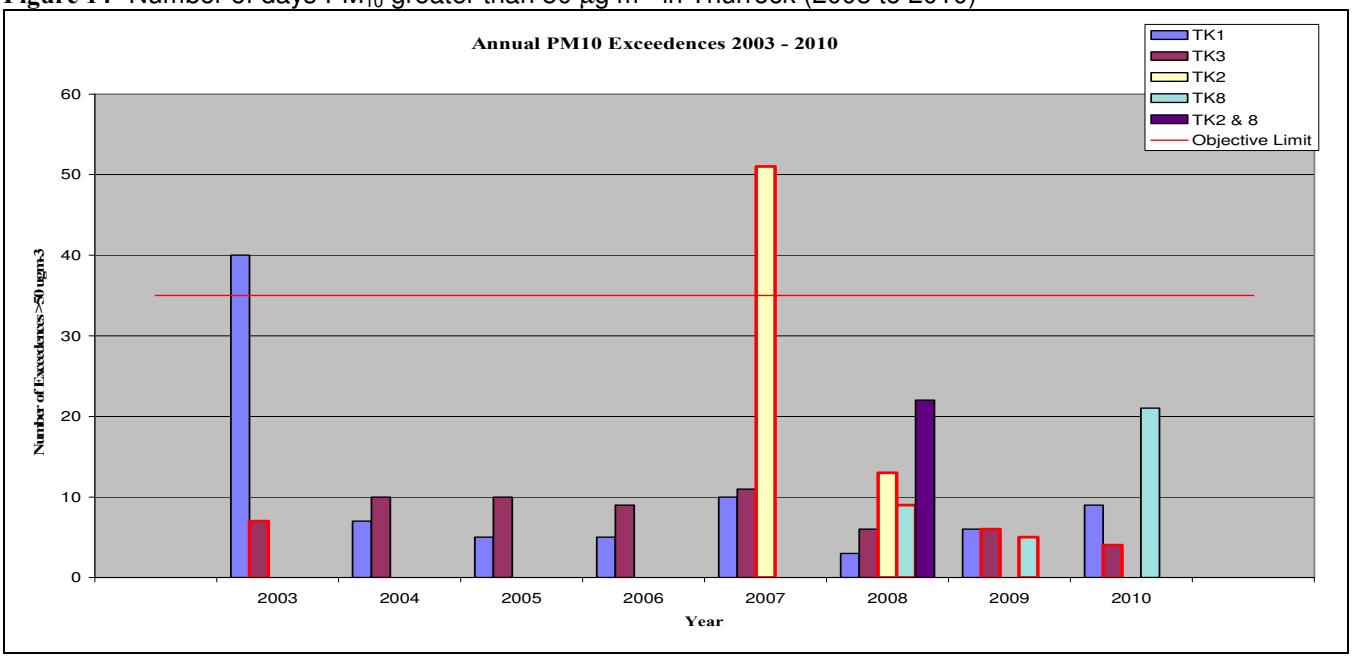
Table 9 PM_{10} monitoring in Thurrock (2003 – 2010)

Site		2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	Annual mean	29.9	24.9	23.4	19.9	18.92	18.88	21.26	24.3
	Data capture %	98.1	95.3	94.56	97.38	98.16	97.79	96.63	95.42
	Maximum 1 hr	720	489	191	244.8	152.5	115	117	331
	Maximum 24 hr	135.7	79.7	72.3	77.6	83.1	71	83	76
	Days > 50 µg m^{-3}	**40**	7	5	5	10	3	6	9
Thurrock 3	Annual mean	*27.69*	26.3	26.53	22.28	20.84	21	*21.3*	*20.69*
	Data capture %	*32.78*	99.64	99.04	98.72	97.82	99.68	*79.89*	*89.5*
	Maximum 1 hr	*241*	220	236	252.1	406.2	129.2	*153*	*217*
	Maximum 24 hr	*61.9*	73.4	63.6	85.8	80.8	85	*77*	*57*
	Days > 50 µg m^{-3}	*7*	10	10	9	11	6	*6*	*4*
Thurrock 2	Annual mean					*36.52*	*34.81**		
	Data capture %					*70.1*	*20.34**		
	Maximum 1 hr					*356.3*	*354.4**		
	Maximum 24 hr					*96.2*	*92.3**		
	Days > 50 µg m^{-3}					***51***	*14**		
Thurrock 8	Annual mean						*24.43**	*25.85*	29.43
	Data capture %						*70.41**	*80.61*	92.12
	Maximum 1 hr						*356.3**	*201*	408
	Maximum 24 hr						*73**	*79*	113
	Days > 50 µg m^{-3}						*8**	*5*	21
Thurrock 2 & 8	Annual mean						29.62*		
	Data capture %						90.75*		
	Maximum 1 hr						356.3*		
	Maximum 24 hr						92.3*		
	Days > 50 µg m^{-3}						22*		

(Note- italics indicates < 90% data capture; bold indicates > daily mean objective)
(Pink indicates TEOM FDMs Data)
(Blue indicates that ERG's VCM was used in order to meet equivalence for TEOM data)
* (Yellow indicates that for 2008 both results for Thurrock 2 and Thurrock 8 were combined as there was a relocation of Thurrock 2 to Thurrock 8 by 35 metres along the same road

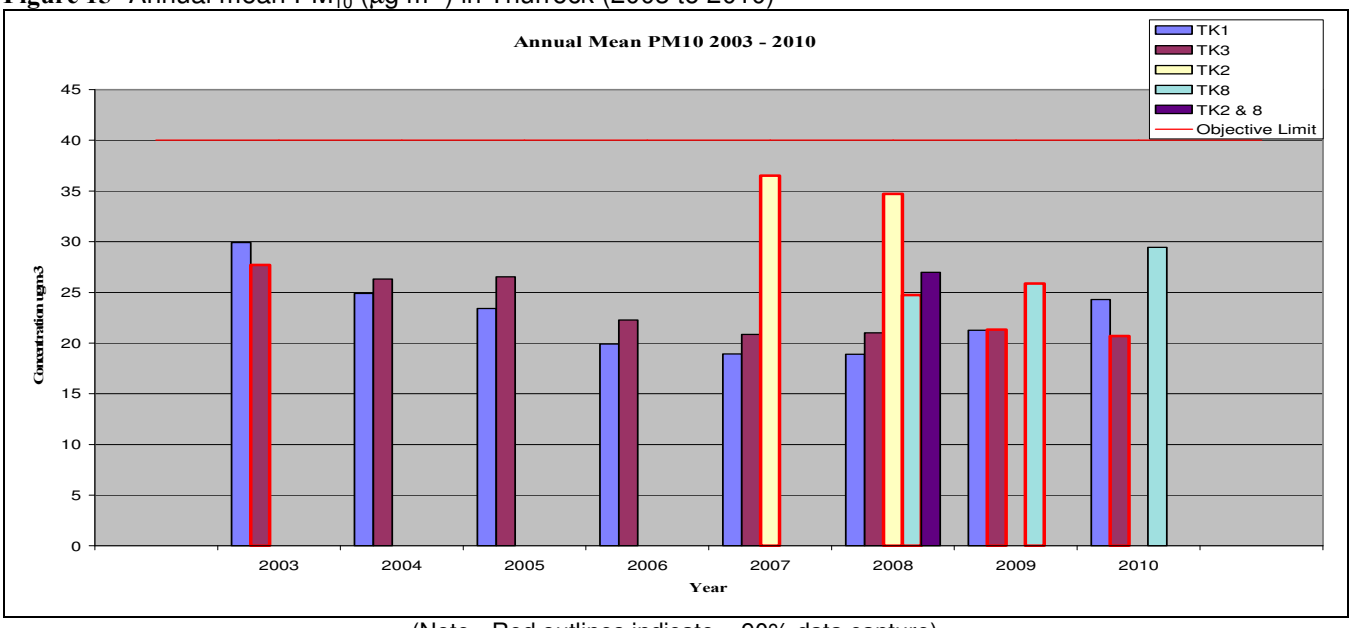
The monitoring results are also presented in Figure 14 and Figure 15 (note – those results with less than 90% data capture are indicated with red outlines).
The results for 2010 show that there were days the daily mean air quality threshold for PM_{10} of 50 µg m^{-3} was exceeded. Although the air quality daily mean objective was not breached at any of the monitoring sites. An important thing to note for Thurrock 8 formerly Thurrock 2 site, is the decreasing trend of exceedences during 2008 to 2009, but for 2010 this trend has reversed with a subsequent increase in exceedences to 21, this still remains below the daily mean objective of 35 exceedences.

Figure 14 Number of days PM_{10} greater than 50 µg m^{-3} in Thurrock (2003 to 2010)



(Note – Red outlines indicate < 90% data capture)

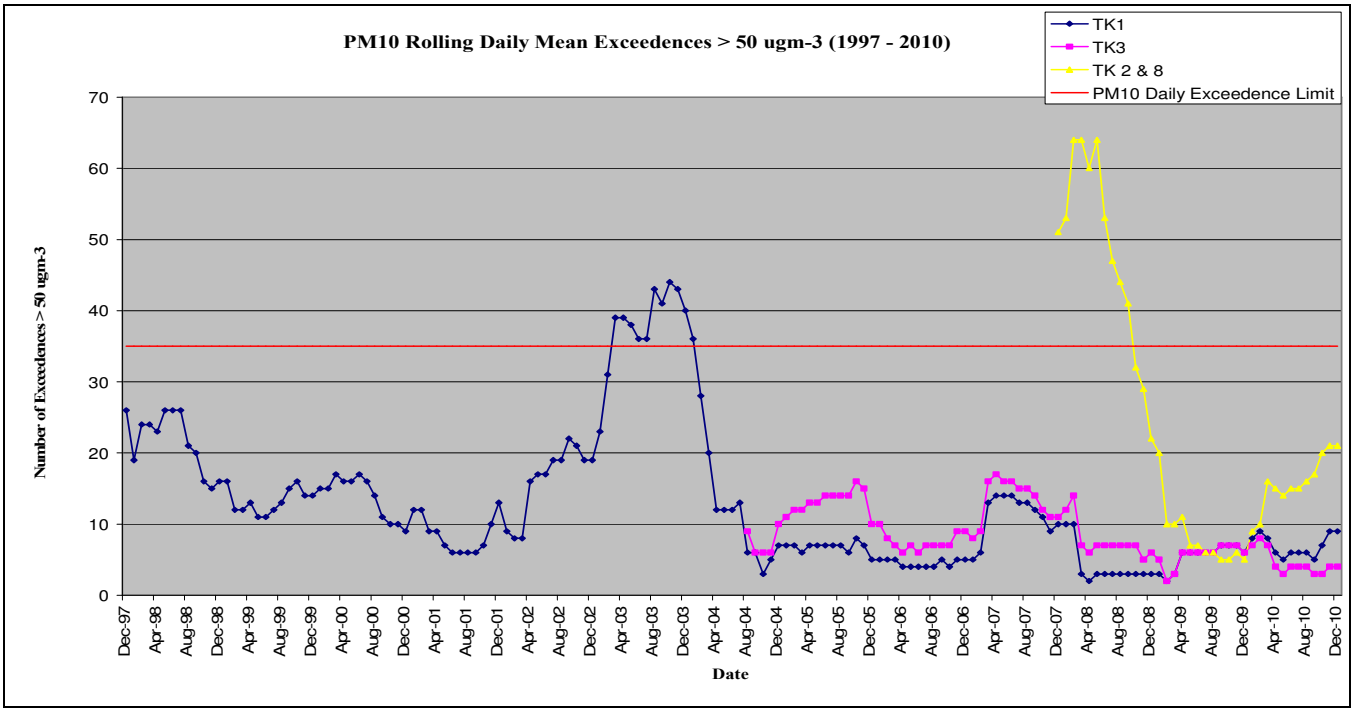
Figure 15 Annual mean PM_{10} (µg m^{-3}) in Thurrock (2003 to 2010)



(Note - Red outlines indicate < 90% data capture)

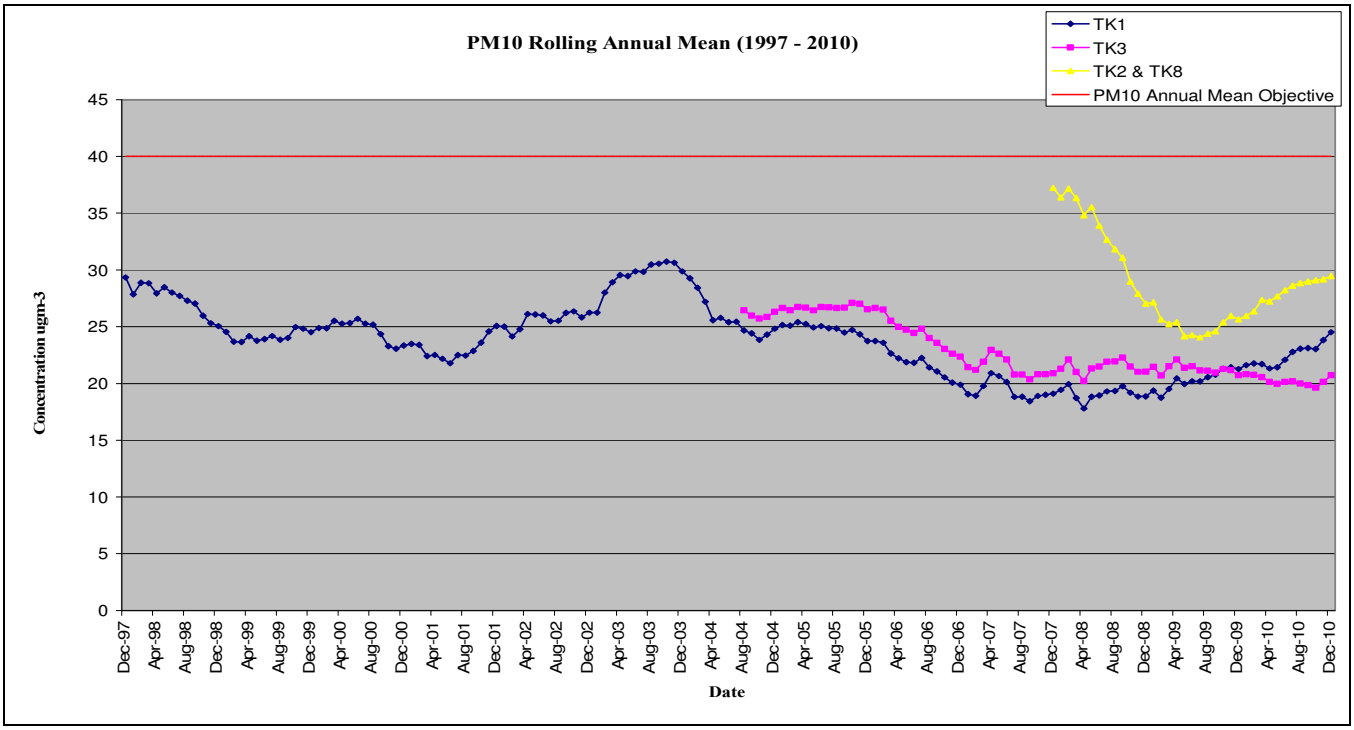
The annual mean PM_{10} concentrations in 2010 for all the monitoring sites in Figure 15, show that levels have changed very little since 2008. The urban background site Thurrock 1 has actually increased slightly, the roadside site at Thurrock 3 shows little variation in recent years. For the Thurrock 8 site in 2010 when compared to the 2008 and 2009 results show an increase in concentrations by approximately 5 µg m^{-3}, this level of increase mirrors the NO_2 increase at this location as well.

Figure 16 Rolling number of days PM_{10} > 50 µg m^{-3} in Thurrock (1997 to 2010)



The number of rolling annual daily mean exceedences greater than 50 µg m^{-3} in Figure 16, for Thurrock 1 & 3 sites have stayed largely the same for 2010. But for Thurrock 8 a resurgence of exceedences has occurred in 2010 totalling 21, this is up considerably from 2009, but not as high as in previous years such as in early 2008 where there were 64. There has been some seasonal episodes occurring over 2010 unlike in previous years, but these events tended to be moderate compared to 2003 and 2007.

Figure 17 Rolling annual mean PM_{10} trends in Thurrock (1997 to 2010)



The rolling annual mean PM_{10} trends in Figure 17 have, shown very little change over recent years for Thurrock 1 however in 2010. PM_{10} levels have remained fairly stagnant for Thurrock 3 site, and are now lower than Thurrock 1 for the first time. For Thurrock 2 & 8 the decrease over 2008 and early 2009 has been dramatic, by over 10 µg m^{-3}, this trend has tailed off by the end of 2009, and has over 2010 been steadily increasing again. The latest published (London Air Quality Network (LAQN) report 2006-07) carried out by Kings College London, Environmental Research Group shows a similar trend in the rolling annual mean PM_{10} concentrations across all sites within the LAQN.

2.5 $PM_{2.5}$ Monitoring

During the Spring of 2009 Thurrock 3 was upgraded with a $PM_{2.5}$ TEOM FDMs analyser, which was funded by Defra as under its obligations to the EU it needed to increase the number of $PM_{2.5}$ monitoring locations across the UK, Thurrock 3 was selected as one of those new sites.

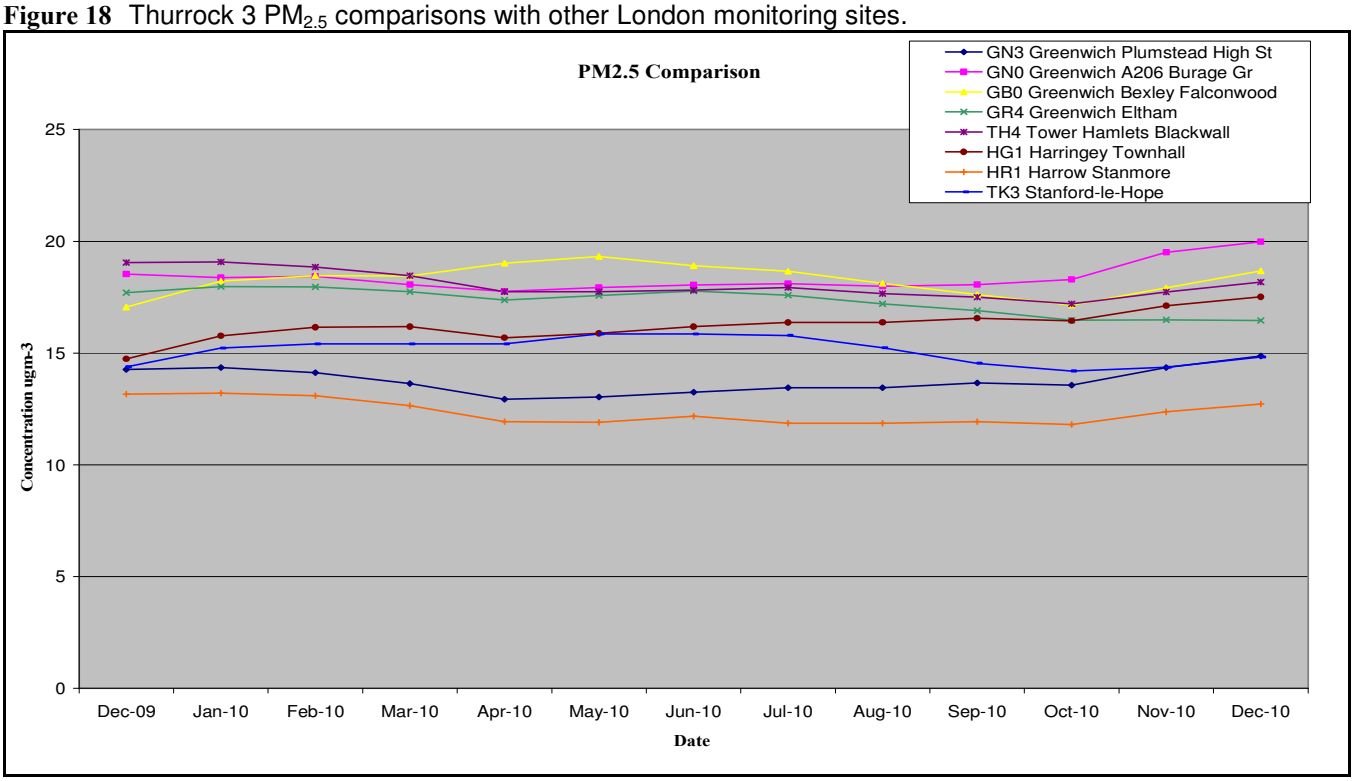
There are 2 years of results gathered thus far. Results for 2010 & 2009 have been outlined below in Table 10, these results however are associated with very low data capture of 58.66% for 2010 and 44.43% for 2009. The low data capture is due mainly to the late installation of the analyser, and also from problems with the analyser after it was installed, the data should be analysed with caution as it has higher concentrations than expected in relation to the PM_{10} monitor at the same location, the issues with the monitor may not be completely resolved, and hence the data may not give a true representation of the actual levels.

Table 10: $PM_{2.5}$ monitoring in Thurrock at Thurrock 3 Stanford-le-Hope Roadside monitoring station

$PM_{2.5}$	2009	2010
Annual Mean	14.54	15.77
1 Hour Maximum	145	229
24 Hour Maximum	47	50
Data Capture	44.43%	58.66%

The low data capture results at 58.66% show an annual mean value of 15.77 µg m^{-3} for $PM_{2.5}$, as opposed to the PM_{10} results at Thurrock 3 with an annual mean of 20.69µg m^{-3} with a slightly higher data capture of 89.5%. The very fine particle element ($PM_{2.5}$) as a fraction of PM_{10} is approximately 76.2% for 2010 and was 68.3% for 2009.

Figure 18 Thurrock 3 $PM_{2.5}$ comparisons with other London monitoring sites.



The $PM_{2.5}$ concentrations measured at Thurrock 3 site, tend to fall in line with those measured across other monitoring locations within the LAQN as shown in figure 18, and has so far followed the same trends, levels remain fairly consistent over this time period, (albeit it relatively short time-fame).

2.6 SO_2 monitoring

The Council has continued to monitor SO_2 at two of its automatic monitoring sites (Thurrock 1 urban background and Thurrock 3 roadside). Details of data capture for the period 1996 to 2010 are given in Appendix 1.
The results indicated that the 15-minute mean standard of 266 µg m^{-3} was not exceeded at the site during 2010, although this standard was exceeded occasionally in previous years at Thurrock 1 site. The most recent exceedence was in 2004. The Maximum values for the 15-minute mean for each year of monitoring are shown in Table 11 and the number of 15-minute exceedences in a given year shown in Table 12.

Table 11 Maximum 15-minute mean concentrations of SO_2 monitoring (µg m^{-3}) (2003-2010)

LAQN Site	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	1041.3	280.3	192.2	237.6	101.5	144	237	296
Thurrock 3	*133.3*	187	148.6	248.7	136	192	*101*	*117*

(Note - italics indicates < 90% data capture)

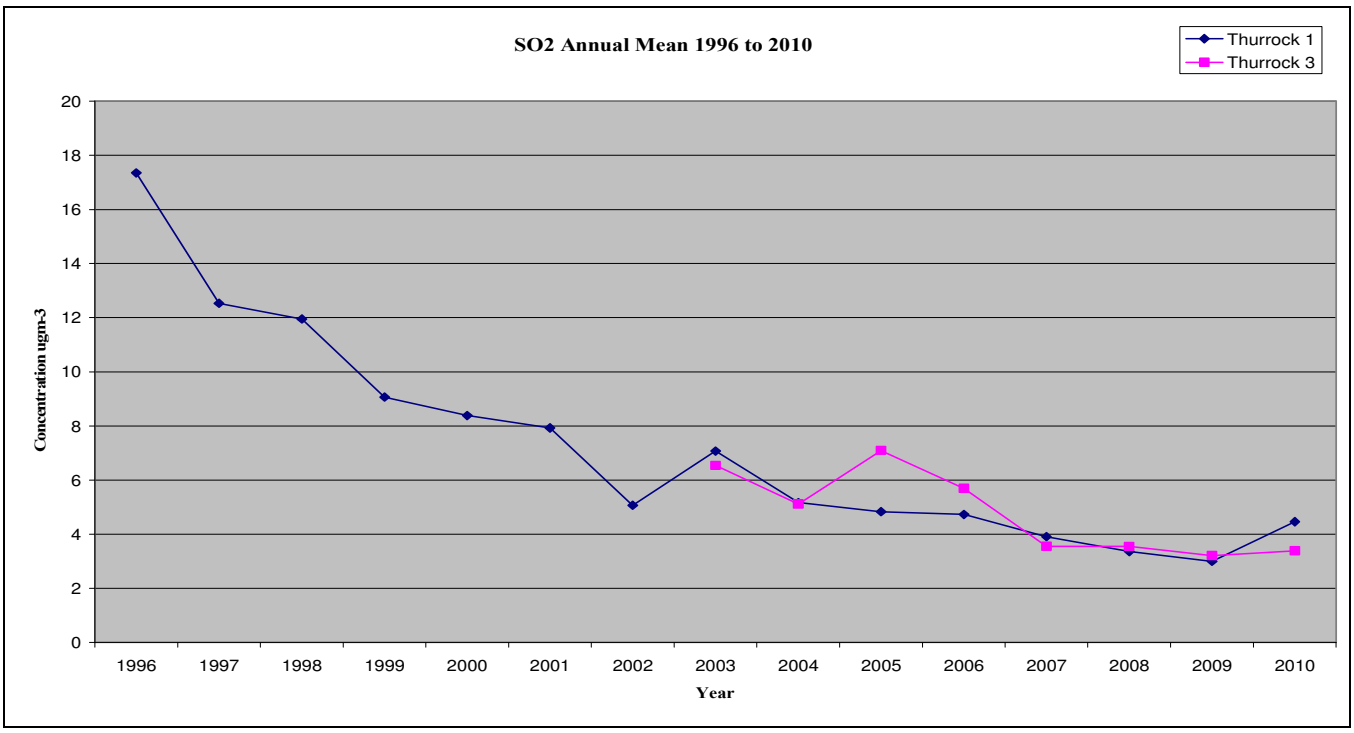
Table 12 Number of 15 minute periods > 266 µg m^{-3} at the Thurrock monitoring sites (2003 - 2010)

LAQN Site	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	9	2	0	0	0	0	0	1
Thurrock 3	*0*	0	0	0	0	0	*0*	0

The 15-minute mean objective is the most stringent of the three SO_2 objectives; and there were no recorded periods where the hourly or daily mean standards were exceeded at either site. The results confirm that all the SO_2 objectives have been met during 2010, as in all previous years for both Thurrock's monitoring sites.

The SO_2 objectives and standards relate to short periods with high concentrations based on the impact of episodes of high pollution on human health. An examination of annual mean concentrations over time however can provide an insight to changes that are taking place, although it should be noted that the relationship between annual mean concentrations and the standards is not straightforward. Figure 19 shows the annual mean concentrations for both monitoring sites have mainly reduced over the past 14 years as a result of reductions in SO_2 emissions. This has arisen from the burning of gas rather than oil in industrial/ commercial and domestic settings, as well as reductions in S levels in the petrol and diesel fuels used by road vehicles.

Figure 19 Annual mean SO_2 concentrations monitored at Thurrock sites (1996 – 2010)



2.7 Ozone monitoring

The continuous measurement of ozone during 2010 in the Borough was undertaken at the Thurrock 1 urban background monitoring site in Grays.

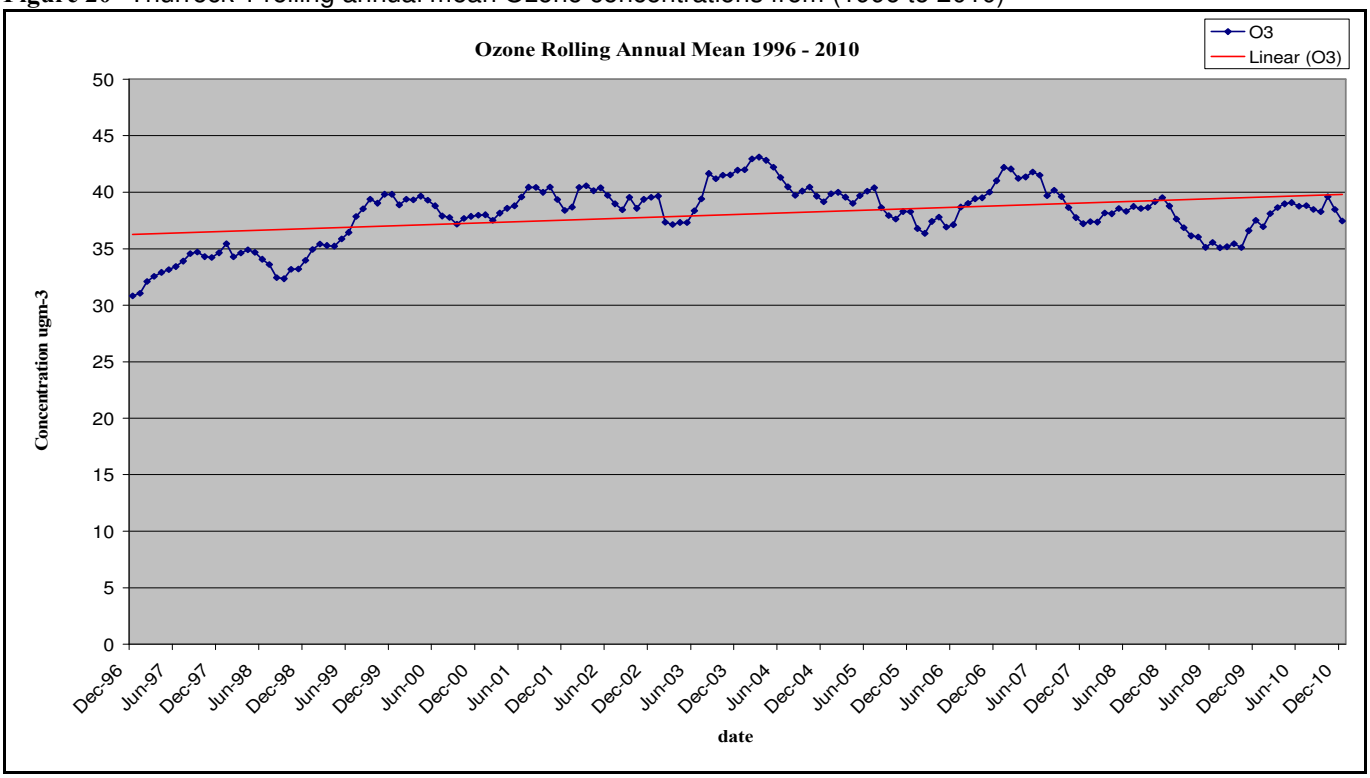
The results for the period 2003 – 2010 are given in Table 13 the data capture for all years exceeded 90% at the Thurrock 1 site; full details for the site are given in the Appendix.

Table 13 Thurrock 1 Ozone results and statistics for (2003-2010)

	2003	2004	2005	2006	2007	2008	2009	2010
No Exceedences of the Daily Maximum 100 ug/m-3	40	15	13	25	11	12	6	7
Annual Mean	37	38	39	37	41	39	39	42
Annual mean Daily Max 8-hr	55	55	56	55	61	57	58	65

The Government's air quality objective, not to exceed 10 periods in a calendar year, was not exceeded in 2010 at the Thurrock 1 site. The objective was exceeded in all previous years with the exception of 2009 at the site. 2003 in particular was notable for a very hot dry summer conducive to the formation of ozone; hence the much higher of periods during this particular year. In other years, 2004 and 2005, the weather was less conducive to the formation of ozone. In 2008, 2009 and 2010 the summer was notable for being very wet and again these conditions were not conducive to the formation of ozone. However the annual mean for ozone, has shown an increasing tendency in recent years which is reflected the rolling annual mean shown in figure 20 below.

Figure 20 Thurrock 1 rolling annual mean Ozone concentrations from (1996 to 2010)



3 New local developments

This section outlines those local developments that may take place and may affect air quality in the Borough. These are not for consideration now but are listed for a more thorough assessment during the next round of Review and Assessment. The guidance identifies the following developments that should be considered:

- New industrial processes included in the list of Annex 2 of LAQM. (TG 09).
- New developments with an impact on air quality, especially those that will significantly change traffic flows. Only those developments with planning permission granted are included.
- New landfill sites, quarries, etc with planning permission granted and nearby relevant exposure.

Table 14 New Local Developments since 2010

Development	Location
New Part A or B industrial processes	See below
New retail or mixed residential/ commercial development	None
New road scheme	None
New mineral or landfill development	None

3.1 Industrial processes

The Borough regulates Part A2 and Part B installations in its area (see details of the installations permitted by the Council in the Appendix). Recent permits issued include those for a temporary filling station and mineral related industry, these additions however are not considered sufficiently important to require the Council to undertake further LAQM actions, other than to note the change.

Details of the Part A2 installations permitted by the Council are also given in Appendix 2 and no new installations were permitted by the Environment Agency in the Borough during 2010. However the Air Quality Impact report for the Coryton refinery, produced in December 2006 as part of the PPC application for the installation examined air pollution at the site using both screening and modelling techniques (Enviros, 2006). The dispersion modelling undertaken indicated that levels of NO_2 and PM_{10} would not exceed the government's objectives for these pollutants. The modelling further indicated that two of the Government's objectives for SO_2 could however be exceeded when modelling the anticipated future base case. Possible improvements for reducing the impact were outlined in the assessment of Best Available Techniques (BAT) and these were modelled. Six of the options studied were found to indicate compliance with the SO_2 objectives. Further discussions are required with the Environment Agency and operator to confirm the latest position for the installation.

For Part B installations, there were 2 new approved processes. 1 Temporary Filling Station, which lasted approximately 6 weeks, this process is no longer in operation, and 1 mineral related industry, these are listed in Appendix 2 . The new processes are highlighted in (green). There have also been a number of processes which have ceased operating with 10 in total highlighted in (grey), and there are also 2 inactive highlighted in (yellow) these are all listed at the end of appendix 2.

3.2 Thurrock Local development framework (LDF)

The Planning & Compulsory Purchase Act 2004 introduced a new development plan system to streamline the local planning process and enable a Local Development Framework (LDF) to replace previous Unitary Development Plans (UDP). The Council is working on its LDF that will set out the spatial strategy, policies and proposals to guide the future development and use of land in Thurrock up to the year 2021. It will replace the existing adopted Thurrock Borough Local Plan (1997), which is the current statutory plan.

The first stage is the Local Development Scheme (LDS). This is a programme for the preparation of the new Local Development Documents (LDD). Three of these will become statutory plans and they are called Development Plan Documents (DPD); these are:

Core Strategy and Policies for Control of Development (DPD) – these set out a spatial vision, objectives and strategy for the development of the Thurrock area and a framework for development control, minerals and waste.

Site Specific Allocations and Policies (DPD) – which contain detailed policies and site proposals that deliver the core strategy.

Minerals and Waste (DPD) – which contain detailed policies and proposals for the extraction and processing of minerals and the handling of commercial and residential waste.

In addition non-statutory Supplementary Planning Documents (SPD) will be prepared to accompany the above plans. These will be for Affordable Housing, Development Control Standards, Developer Contributions and the Green Grid.

The DPD, together with the Regional Spatial Strategy for the East of England will form the Statutory Development Plan for Thurrock.

The Council produced its first Local Development Scheme (LDS) in 2005. A revised local development scheme was subsequently approved and published in August 2007. The main effects of the changes in the revision to the local development scheme are summarised below:

- The programme for the preparation of the Core Strategy and Policies for Control of Development has been altered with the adoption date now October 2009.
- The stages of the Site Specific Allocations and Policies Development Plan Document have been slipped back and the Examination and Adoption stages have moved to September 2009 and April 2010 to follow on after publication of the Inspector's Report into the Examination of the Core Strategy Development Plan Document.
- The preparation of the Minerals and Waste Development Plan Document has been slipped with Adoption in June 2010.
- The Introduction of Interim Supplementary Planning Documents for Affordable Housing, Green Grid, Developer Contributions and Urban Character linked to "Saved Policies" and to be adopted in 2008.
- A new Urban Character and Design Supplementary Planning Document is added to the programme. The programme of Supplementary Planning Documents linked to Development Plan Documents is altered with adoption in March 2010.

3.3 Thurrock Transport Strategy

The Council's draft Thurrock Transport Strategy describes the transport strategy in Thurrock for the period 2008 to 2021 and will provide the main strategic focus for the third and fourth Local Transport Plans, as well as influence the on-going delivery of the second Local Transport Plan. It was produced in July 2008.

Key aims to meet the Council's vision relate to:

- Delivering Accessibility by improving accessibility by walking, cycling and public transport to services, as well as education, employment and healthcare
- Tackling Congestion by delivering a targeted programme of measures to reduce the need to travel, encourage a modal shift to more sustainable modes of transport such as walking and cycling, particularly in the urban areas, and improve the efficiency of the transport network, especially increasing the capacity of routes providing access to strategic employment hubs
- Improving Air Quality and Addressing Climate Change by seeking to reduce the need to travel and encouraging a modal shift (as per the congestion strategy above).
- Safer Roads – by supporting other strategy areas. The strategy, whilst aiming to reduce casualties where people are killed or seriously injured, will take a broader and proactive approach, aiming to reduce road danger and thereby promote modal shift and community regeneration, even where large numbers of collisions are not apparent. The strategy will also aim to create a safer transport system through implementing measures that will reduce collision severity.

3.4 Thurrock Thames Gateway Development Corporation

The Thurrock Thames Gateway Development Corporation TTGDC was established in October 2003 by Statutory Instrument as a special purpose delivery vehicle introduced to facilitate the realisation of the growth of homes and jobs within the Borough. TTGDC has significant powers to effect change. Specifically it is able to:

- Acquire, hold, manage, reclaim and dispose of land and other property
- Carry out building and other operations
- Seek to ensure the provision of water, electricity, gas, sewerage and other services
- Carry on any business or undertaking for the purposes of regenerating its area

TTGDC recognises that the development of appropriate transport and infrastructure are critical in meeting the growth targets. The Draft East of England Plan targets of 18,500 new homes and 26,000 new jobs to be delivered within Thurrock by 2021, this will clearly impact on a transport network that is already congested on a number of strategic routes (A13, M25 Junction 30 and 31) as well as locally around Lakeside and Grays Town Centre.

The Development Corporation has been developing the policy that will underpin the sustainable development of Thurrock and the realisation of these targets. A number of documents have recently emerged which will shape the way forward.

As from 12th October 2005 TTGDC became responsible for determining certain strategic and other planning applications in Thurrock. TTGDC prepared a 'Regeneration Framework' and a 'Spatial Plan'. In addition TTGDC is preparing local area master plans for (a) Purfleet, (b) Lakeside/West Thurrock, (c) Grays Town Centre, (d) Aveley & South Ockendon and (e) Tilbury.

3.5 London Gateway (Shellhaven)

A 1,500 acre major port and employment development (known as 'London Gateway') is proposed by P&O at the former Shellhaven refinery site, located at the eastern edge of the Borough. The developers of the scheme aim to create 16,500 new jobs, with the first business unit occupied in 2010 and the first container berths operational by 2011. It is envisaged that both the Port and the Business Park will be built in phases to meet market demand and that they will take between 10 and 15 years to complete fully.

The proposed London Gateway port will be capable of handling the largest deep-sea container ships. P&O's proposals include a 2,300 metre long container quay with a fully developed capacity of 3.5 million TEU (standard containers) a year and a roll-on roll-off (ro-ro) freight facility. The Logistics and Business Park will cover a development area of 300 hectares (700 acres) and provide for the distribution, manufacturing and high-tech sectors. The Park will be able to accommodate buildings in excess of 100,000 sq m and will offer linkage to the rail network

3.6 Infrastructure Planning Commission

From 1 March 2010 a new planning body was introduced and will be involved in planning decisions for nationally important infrastructure projects:

The Infrastructure Planning Commission is the independent body that decides applications for nationally significant infrastructure projects. These are the large projects that support the economy and vital public services, including railways, large wind farms, power stations, reservoirs, harbours, airports and sewage treatment works.

IPC Commissioners make these decisions within the framework of National Policy Statements, also weighing the national benefit of proposals against the local impact.

On 1 October 2009, we opened for business providing advice to all parties who are involved in the process. From 1 March 2010, we were switched on to start receiving applications by government Minister John Healey MP.

The IPC was set up under the Government's 2008 Planning Act, alongside other reforms, to make the application process for nationally significant infrastructure projects faster, fairer and easier for people to get involved in.

Proposals for nationally significant infrastructure projects will be submitted to the IPC by applicants (such as energy companies, ports developers, rail and water companies).

4 Action Plan Progress Report

4.1 Introduction

The Council adopted the Thurrock Air Quality Action Plan in 2004 following full consultation with relevant stakeholders. The plan focused on measures to reduce traffic flow and vehicle emissions that are consistent with other Council wide policies, principally in relation to both transport and planning. The main aim was to reduce NO_X and PM_{10} emissions. Other actions include reducing emissions from buildings and industry, measures to raise public awareness of air pollution and greener travel. The Council through its Action Plan, and other policies, also supports other initiatives proposed and undertaken by other authorities to reduce emissions in Thurrock.

4.2 Achievement of objectives

The Council's Action Plan applies to the whole of the Borough, although the Air Quality Management Areas cover only parts of Thurrock. This recognises that, although not everyone in the Borough will be exposed to concentrations that exceed the air quality objectives, it is the intention of the Action Plan is to reduce pollution levels, wherever possible, in pursuit of the achievement of the objectives.

4.3 Summary of key measures

This section provides a brief summary of some of the key measures to be included in the Action Plan and also the Council's progress on these actions.

4.3.1 Monitoring air quality

The Council has maintained its commitment to monitoring air quality in the Borough and reporting to other bodies, including Defra since release of its plan. As reported earlier the Council monitors air quality using real-time monitoring static stations, as well as with nitrogen dioxide passive diffusion tubes which are located around the Borough. The Council is part of the London Air Quality and the AURN monitoring Networks. Current monitoring data and historic data for the sites can be viewed on the www.londonair.org.uk site, or from the newly created Essex Air website: www.essexair.org.uk/Default.aspx or the newly re-vamped Defra website: www.uk-air.defra.gov.uk/. The council has added additional continuous monitoring for NOx at the beginning of 2010 in Tilbury to assess air quality there.

4.3.2 Planning Policy and Control

The Council is using the planning system to bring air quality benefits, through imposing planning conditions and through using section 106 agreements for new developments.

4.3.3 Travel Plans in Thurrock

The Council's supports the provision for School Travel plans and Work travel plans. And has 100% uptake for schools.

4.3.4 Low Emission Zone

The Council in its Action Plan recognised that the London-wide Low Emission Zone (LEZ) could play an important part in determining air quality in the Borough. The Mayor of London has now introduced the LEZ, to cut harmful emissions from the most polluting Lorries, coaches and buses. It was launched in February 2008, with the aim of improving air quality across the capital. From February 2008 the LEZ applied to Lorries over 12 tonnes. Since the beginning of July 2008 the LEZ also applied to lighter Lorries, buses and coaches, and for 2011 further restrictions will apply to LGV's.

4.3.5 Thurrock actions

These are shown in Table 15.

Table 15 Air Quality Actions

No.	Action	Timescale	Progress with measure	Outcome to date	Progress in last 12 months	Comments
Traffic Engineering and Management Schemes						
	Three major road schemes: A) West Thurrock Marshes Relief road, B) Grays Town Centre regeneration, C) Hedley Avenue extension	(2004) Completed Or no further progress	Schemes A and B completed Scheme C has been cancelled			
1	The pollution team will ensure that it is consulted about future traffic management schemes so that the effect on air quality is considered. This will be through attendance of Local Transport Plan and Traffic Liaison meetings	On-going	Improved relations with transport	This is an ongoing action.		
2	The Council will liaise with the Highways Agency to ensure that air quality in the Borough is a consideration in the Environmental Impact Assessment for all relevant strategic road projects.	On-going	Improved relations with HA	Traffic data provided by both HA and DfT		
3	The pollution team will continue to liaise with the strategic transport team to ensure that air quality is an integral part of the local transport plan (LTP).	On-going	The 2006-2011 LTP was published in March 2006 with air quality included in section 4.	Improved liaison between departments		
4	The Council will work towards reducing traffic levels, using the strategies laid out in the Road Traffic Reduction Plan.	On-going	The Road Traffic Reduction Plan has been superseded as a result of Thames Gateway proposals.	Similar measures are incorporated into LTP		
5	The Council will continue to work towards a rail freight terminal in Thurrock.	On-going	A draft Sustainable Distribution Strategy for Freight was produced for Essex.	Thurrock participates in the Essex Freight Forum		
6	The Council will aim to reduce congestion by effectively enforcing parking measures as soon as it has the powers to do so.	Completed	The Council has designated controlled parking areas in Aveley, Chadwell, Corringham, Grays, Purfleet, South Ockendon, Stanford, Tilbury			These have made it safer for drivers and pedestrians, supported town centre needs, and increased Blue Badge benefits.
7	The Passenger Transport Unit will continue to promote sustainable modes of transport by implementing the Council's Local Transport Plan. Details of performance are contained in the Annual Progress Report.	On-going	An integrated system allowing elderly and disabled residents to easily get their free bus passes and library cards was introduced to improve and encourage usage			
8	The Council will continue to implement the cycle network across Thurrock.	On-going	The Thurrock Cycle Strategy was produced in 2007			Increased cycling provides health benefits to cycle users
9	The Council will continue to make walking an attractive option by providing street furniture and a public rights of way map. It will explore the possibility of working with local companies to improve local footpaths.	On-going	LTP introduced a Walking Strategy seeking to increase walking in the Borough			

No.	Action	Timescale	Progress with measure	Outcome to date	Progress in last 12 months	Comments
10	The Council will continue to implement Safer Routes to School as outlined in the Road Safety Plan. It will support schools that are preparing School Travel Plans.	On-going Completed	Every school in Thurrock now has a School Travel Plan.	Thurrock is the first local Authority nationwide to have achieved this.		
11	The pollution control team will continue to work with planning colleagues to ensure that air quality policy in the UDP is updated and relevant. It will continue to develop supplementary planning guidance for air quality assessments.	On-going	Air quality is incorporated into the Council's LTP and LDF		*AQ Information relating to AQMA Trends and Projections for 2011-2016 for next LTP were Submitted in early 2011*	
12	The Council will continue to take into account a development's impact on air quality when considering planning applications, and use conditions to mitigate these impacts where appropriate. It will also investigate the possibilities of using Section 106 agreements for air quality.	On-going	The Council is using the planning system to bring air quality benefits, through imposing planning conditions and through using section 106 agreements for new developments		*No section 106 agreements were required in 2010 for AQ*	
13	We will work with the new Urban Development Corporation to ensure that air quality is considered as a priority in the regeneration of Thurrock	On-going	The Council is working with the TTGDC to bring air quality benefits, through recommending planning conditions and through using section 106 agreements for new developments			*The TTGDC is to be subsumed back Into Thurrock Council for 2011 Onwards. But will function Independently, the Council will Continue to liase on AQ issues.*
14	The Council will continue to promote the Green Grids initiative, to provide non-car access to the countryside	On-going	A new Thurrock Green Infrastructure Framework Plan was prepared in 2007			
15	The Council will assist local businesses in drawing up Green Travel Plans. It will ensure that they are implemented.	On-going	S.106 agreements have been agreed for new developments			
Actions to reduce road vehicle emissions						
16	The Council will publicise the availability of grants for cleaner vehicles to individuals and businesses.	Grants ended March 2005	No grants are available	No plans to reinstate promotion at present		
17	The Council will look at the results of the London-wide LEZ feasibility study. It will make sure the implications For air quality in Thurrock are considered and will make representations as appropriate	2008	The London LEZ was introduced in February 2008.	The LEZ applied to lorries over 12 tonnes initially and from July 2008 it also applies to lighter lorries, buses and coaches.		
18	The Council will continue to lead by example and reduce the emissions from its own fleet of vehicles.	On-going	The fleet contract is currently being tendered and the council is to trial electric vehicles.	Further information on the outcome of the tender process end 2007.		No further progress made
19	The Council will encourage the take-up of alternatively fuelled lease car vehicles by providing information to employees.	Grants ended March 2005	Lease car scheme ended April 2006	This scheme intended use grants		

No.	Action	Timescale	Progress with measure	Outcome to date	Progress in last 12 months	Comments
20	The Council will continue to work towards a Green Travel Plan for its employees.	On-going	A draft was approved but not taken forward			*No further progress made*
21	The Council will continue to use procurement strategies to buy goods and services from providers who show a commitment to the environment.	On-going	Included in conditions of contract where appropriate			
22	The Council will continue to work with businesses. It will provide information on best practise, including using cleaner fuel technologies.	On-going	This is provided on request through information packs			
23	The Council will continue to test emissions on a voluntary basis. It will explore the possibility of using the Vehicle Inspectorate for issuing Fixed Penalty Notices.	On-going	Testing undertaken on 150 cars as part of initiatives such Green Transport Week.			No further progress made
24	The Licensing team will continue to work with the Vehicle Inspectorate to test the emissions of taxis in Thurrock.	On-going				
Actions to reduce emissions from non-road sources						
25	The Council will continue to inspect all of its permitted processes to ensure compliance. Permits will be updated as and when appropriate so that operation conditions are up to date.	On-going	Visits to all relevant industrial installations are undertaken based on risk assessments on a regular basis	Annual returns are sent to Defra		All Processes were inspected on time In 2010
26	The Council will continue to use planning conditions to control dust emissions. The Council will continue to take action to abate nuisance from fugitive dust emissions	On-going	New London-wide guidance has been used with all relevant construction projects in Thurrock.			
27	The Council will continue to work to improve energy efficiency in the Borough. Details of this improvement can be found within the Council's annual HECA (Home Energy Conservation Act) report.	On-going	The Council supports the Thurrock Energy Partnership			
28	The Council will continue to enforce the Clean Air Act 1993 and encourage local businesses to dispose of waste in a responsible manner, so as to prevent dark smoke bonfires.	On - going	This is undertaken as part of the Council's regulatory actions			
29	The Council will continue to educate residents and businesses to use smokeless fuel or an approved appliance for smokeless combustion.	On-going	Thurrock has several Smoke Control Areas		The Council has had many Enquiries on this in 2010, advice is issued.	Advice is issued to residents & Businesses, info is found on www.http://smokecontrol.defra. Gov.u
30	The Council will continue to promote alternatives to domestic bonfires. We will encourage residents to recycle or compost as much waste as possible or dispose of it responsibly at a civic amenity site.	On-going	The Council offers advice and publicises its enforcement policy to try to avoid nuisance	The Council implements fortnightly green waste collection and promotes disposal at civic amenity site to discourage domestic bonfires		
31	The Council will investigate the feasibility of pursuing Environmental Management Systems in other departments. It will also work to disseminate EMS to local businesses and other parts of the public sector.	On-going	The Council retained its ISO 14001 certification in 3 departments in 2005			
32	Air quality will remain an integral part of the Community Strategy.	On-going	The Sustainable Community Strategy for Thurrock was launched in 2007			

No.	Action	Timescale	Progress with measure	Outcome to date	Progress in last 12 months	Comments
33	Achievement of Air Quality Objectives will continue to be included in the Local Health Plan	On-going	Details are forwarded annually			
	Public awareness raising and education					
34	The Council will continue to explore and implement the best ways of working together with schools to improve awareness of air quality issues in Thurrock.	On-going	Information provided on Council website and on request			
35	The Council will continue to promote air quality issues at public awareness events.	On-going	Ensuring Air Quality issues are highlighted at public events.		The Council updated information on its air quality website in 2010 The Council along with other Essex LA's launched a new web-Site in Jan 2011 called EssexAir	New EssexAir website provides the Latest AQ info, as well as learning Tools and games to educate people Of AQ issues

4.4 AQMA prioritisation for action under the LTP

In September 2009 Thurrock's AQMAs were prioritised in order of importance to assign air quality measures to best counteract poor air quality from transport related sources of air pollution. By prioritising each AQMA in terms of importance for air quality actions, this would increase the focus and spending of money in certain AQMAs which have more air quality issues.

A few of the AQMA's were excluded from prioritisation, due to them either having sources attributable from Highways Agency controlled roads, i.e. AQMA's 15 & 16 those along the (M25) motorway, and secondly that some AQMA's may not represent relevant exposure as they are Hotels, this was confirmed with the UWE Review and Assessment Helpdesk, those excluded from the prioritisation in the LTP were AQMA's 7, 8, 9 & 21. However, these Hotels may be in exceedence with regards to the 1-hour NO_2 objective, the council intends early in 2012 to carry out further detailed modelling for NO_2 and PM_{10} over the entire borough to reassess all its AQMAs and these four AQMA's in particular to see if they do represent public exposure in relation to the 1-hour NO_2 objective, if they do not then the Council will revoke these AQMAs.

The prioritisation was determined using a points based system with 1 scoring the lowest and 5 scoring the highest using four criteria, which each score would be multiplied by in order to get an overall score the higher the number the higher the priority, overall scores ranged from 1 to 625.

The four criteria for scoring are listed below:-

Table 16 The four criteria for AQMA prioritisation and assignment of scoring

Score	(1) In Health Deprived Area	(2) Receptor Placement: Metres from NO_2 measurement	(3) 2010 Estimated NO_2 concentration ($\mu g\ m^{-3}$)	(4) Source Apportionment: % Road Transport Contribution
1	No	Roadside: <30m	>40.0	>24.3%
2	Not Applicable	Roadside: 20m-30m	40.1-43.5	24.4%-39.2%
3	Not Applicable	Roadside: 10m-20m	43.6-47.0	39.3%-54.0%
4	Not Applicable	Roadside: >10m	47.1-50.5	54.1%-68.9%
5	Yes	At receptor facade	50.6-54.0	69.0%-83.7%

Table 17 Each AQMA individual and overall scoring under the four criteria

AQMA	In Health Deprived Area	NO2 Measurement Location: Metres from receptor	Highest 2010 Estimated NO2 Concentration ($\mu g\ m^{-3}$)	Source Contributions: % Road Transport	Score Total	Priority #
1	5	4	1	1	**20**	**8**
2	1	4	3	2	**24**	**7**
3	1	3	4	4	**48**	**5**
4	1	2	5	5	**50**	**3**
5	1	2	5	5	**50**	**3**
10	1	4	3	5	**60**	**2**
12	1	1	2	3	**6**	**9**
13	1	4	5	5	**100**	**1**
23	1	4	2	4	**32**	**6**

Table 18 AQMA prioritisation ranking

Prioritisation Rank	AQMA
1	13
2	10
3	4
3	5
5	3

6	23
7	2
8	1
9	12

AQMA 13 was identified as being the most important for air quality improvement measures, the measures suggested for improving air quality with timescales were:-

2010/2011:

- Pollution barrier (AQMA 13)
- D-NOx paint trials (AQMA 10 & 13)
- Urban Traffic Management and Control (AQMA 3, 4, 5 & 13)
- Low Emissions Zone – Feasibility work
- Eco Driver Training for HGV's

2011/2012

- Road System Design Review (AQMAs 2 & 23)
- Retrofit Pollution Reduction Equipment for HGV's
- Low Emissions Zone – Further Feasibility work
- Lakeside Travelling Planning (AQMA 4 & 5)

2012/2013

- Workplace Travel Planning (AQMA 2, 3 & 23)
- Road System Re-Design (AQMA 2 & 23)
- Low Emissions Zone – Design
- Retrofit Pollution Reduction Equipment for HGV's

2013/2014

- Road System Re-design implementation (AQMA 2 & 23)
- Low Emission Zone – Design and/or implementation

It is hoped that these measures will bring about some improvement to air quality locally within the AQMAs, but real overall improvement will result from a national level by improving background concentrations for NO_2 based on better vehicle abatement technology and engine design efficiency for new motor vehicles which will gradually phase out older more polluting vehicles as time goes on.

4.5 Air Quality Action Plan Update for 2011

Highway Improvements

Are progressing a road improvement scheme as a result of the South Stifford Study which proposes to lift the weight restriction on Devonshire Rd. This will allow approx 900 daily HGV movements to utilise Devonshire Rd thereby significantly reducing the HGV movements on London Rd. This is expected to have a significant impact upon AQMA 2 and 23. Democratic approval to progress this scheme is to be provided in November.

Highway Capacity Improvements

The Thameside junction scheme will deliver highway capacity improvements that will impact upon AQMA 1. Proposals will see traffic flows improve at this location, reducing congestion and queuing traffic. These improvements are programmed for delivery within this financial year (RP to chase JD for an update).

Workplace Travel Plans

Workplace Travel Plans continue to be implemented across the borough. These plans have been progressed to deliver a modal shift in transport patterns in order to encourage increased walking cycling, car share and use of public transport. Working in partnership with Lakeside will continue to develop in order to encourage and enable alternative modes of travel.

Air Quality & Climate Change

AQMA 13 - The 2011/12 LTP works programme identifies the provision of a pollution barrier and improved signal phasing to improve AQ at this location. Assessment data is awaited and will inform how this scheme is to be progressed within this financial year.

AQMA 10 - The 2011/12 LTP works programme identifies the delivery / progression of eco-driver training and vehicle retro-fitting for companies and hauliers who have a direct impact upon HGV use in this location. These interventions are to be progressed this year with support from the Council's LSTF bid.

Jarrah Cottages
The Council's Highways Development Control Department are in talks with Cobelfret Freight Company regarding a potential scheme that will remove queuing traffic from London Rd, Purfleet, which could provide a major benefit for air quality to AQMA 10. However, there is no timescale for this work and as yet no application (which would trigger the possibility of this new scheme) has been submitted.

Bus Patronage
Thurrock-based bus journeys have increased to 4.2m following infrastructure and service improvements. Promotional campaigns have also raised awareness of the benefits of bus travel.
Rail Patronage
Thurrock-based rail journeys have increased to 4.2m following infrastructure and service improvements. Promotional campaigns have also raised awareness of the benefits of rail travel.
Cycling data
Cycle trips have increased by 65% since 2006 as a result of network improvements, improved promotion and cycling education at local schools.

Local Sustainable Transport Fund (LSTF)
Thurrock has been successful in its bid for LSTF funding which will enable increased resources to be used to deliver a package of measures. Our LSTF package is focused on enabling a modal shift away from single occupancy car use towards sustainable transport such as walking, cycling and public transport. The dominant element of the package is the delivery of Smarter Choices measures, including workplace travel planning, school travel planning, station travel planning, personalised journey planning, liftsharing, as well as marketing and promotional activities. These measures will be complemented by targeted improvements in sustainable transport infrastructure for walking, cycling and public transport. Furthermore, the council will develop a Freight Quality Partnership and associated measures to improve the economic and environmental performance of local industry in this authority area. The FQP is likely to be the starting point for working with freight partners to deliver eco-driver training and vehicle retro fitting.
The LSTF provides the council with an opportunity to deliver revenue based interventions in a more focused and productive way. Measures such as travel planning, eco-driver training and vehicle retro fitting will receive a focused, expert resource as a result of the LSTF funds. LSTF measures are to be implemented from Aug 2011 over the 4-year LSTF period.

Freight Quality Partnership
The Freight Quality partnership in Thurrock will be focused on those freight corridors with the highest volumes of freight movements, including Purfleet, Tilbury Port and the new London Gateway Port, as well as where freight transport emissions have led to the declaration of an Air Quality Management Area. We will also encourage freight operators to purchase and retrofit pollution abatement equipment to individual freight vehicles through the Freight Quality Partnership. This will help to ensure compliance with the London Low Emission Zone and also work to have immediate effect on reducing both air pollution and greenhouse gas emissions from these vehicles throughout Thurrock.

Also for Action (No 35) the council has continued to promote air quality and awareness for the public.

Firstly information was updated on the Council's air quality website in relation to Air Quality which provides information on Health, Pollution and also information on Air Quality monitoring within the borough.

Secondly the Council along with other local Authorities launched a new Air Quality website called "EssexAir" which provides information on Air Quality, Health, Pollutants and local monitoring networks diffusion tube data as well as learning tools and games for the public to engage and learn about air quality in general.

Thirdly in July 2010. The Council organised an awareness Event at Davy Down on Sustainable Modes of Transport, to which Air Quality information was provided to the Public through advice and from leaflets.

5 Conclusion/ Recommendations

This Air Quality and Action Plan Progress Report for 2011 fulfils the requirements of the Defra LAQM (PG 09) guidance and has updated monitoring results in the Borough and noted new relevant local developments and other initiatives. It also advises on the Council's progress in implementing its Action Plan.

The up to date monitoring results continue to indicate that the Government's current air quality objectives for NO_2 and PM_{10} are exceeded widely at locations across the Borough where there is relevant public exposure. Based on the findings in this report there is a need for the Council to progress to a Detailed Assessment for Calcutta Road Tilbury in order to declare an AQMA for NO_2. As Thurrock 4 monitoring site over 2010 has come in above the annual mean air quality objective at 40.2 µg m^{-3}.

The Council examined a report for the Coryton Refinery and noted that the dispersion modelling has indicated that the Government's sulphur dioxide objectives could be exceeded as a result of emissions from the site. The Council has produced a Detailed Assessment for SO_2 in a draft report, but the modelling undertaken has not showed a good agreement with the monitoring data around the site.
Recently the Environment Agency informed the Council that the installation of an extension to the Sulphur Recovery Unit, designed to improve performance and prevent exceedences of the 15-minute objective, should be completed later this year. In view of this improvement, the Council along with the Environment Agency has liaised with the DEFRA Helpdesk concerning recent developments at the site, in order to extend the deadline for declaring an AQMA around the site. The Refinery must demonstrate by the end of 2012 that it is complying with the air quality objectives for SO_2, if this is not found to be the case, then the Council will then produce further modelling of the 15-minute objective based on more up to data monitoring results from the Refineries monitoring sites in order to establish the extent of exceedence of this air quality objective around the Refinery. Once this has been done the Council will then declare an AQMA which is based on the new modelled results. However if the Refinery demonstrates compliance then a declaration will not be required.

The purpose of the Council's Air Quality Action Plan is to ensure that air quality is considered corporately and to seek to reduce air pollution within the Borough, in pursuit of the Government's air quality objectives. The Council is however limited in its abilities to influence local air quality directly as outlined in its Stage 4 Further Assessment report, partly as a result of pollution arising elsewhere in London (and beyond) and also because it has limited responsibility for the main sources of emissions within the Borough. The major roads in the Borough are the responsibility of the Highways Agency, rather than the Council. The Action Plan does however include measures to seek to reduce traffic flow and vehicle emissions that are consistent with other Council policies.

The Council's progress on the individual actions was given in Table 15. The Action Plan originally included 35 actions. The report confirms that 5 were completed or are no longer relevant, during the last Progress Report. The remaining actions are all on going. The Council does have some Actions outside of the original 35 actions which are all transport related going on which were mentioned in (section 4.5) of this report, these actions should go some way to improving the air quality in some of the Council's AQMA's particularly in AQMA's 1, 2, 10 & 23. The Council has made developments in relation to action 35, information is regularly updated on the Council's Air Quality section of its webpage to help keep the public informed of the latest developments. Also the Council along with other local Authorities launched a new Air Quality website called "EssexAir" which provides information on Air Quality, Health, Pollutants and local monitoring networks diffusion tube data as well as learning tools and games for the public to engage and learn about air quality in general.

The Council will carry out further detailed dispersion modelling in early 2012 for NO_2 and PM_{10} across the entire borough of Thurrock, in order to reassess its current AQMAs and see if some of them still represent relevant public exposure to these pollutants, or if there maybe new areas which may represent public exposure to these two pollutants.

The Council will continue its air quality monitoring programme and prepare for the next round of review and assessment, including the next Updating and Screening Assessment in 2012.

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Appendix 1

(Yellow boxes indicate that the data is below 90%)

Table 19 NO_2 data capture for year (%)

LAQN Site	Type	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	UB	97.14%	97.86%	84.70%	93.68%	87.30%	96.79%	97.48%	84.43%
Thurrock 2	R	56.67%	94.74%	94.41%	94.74%	96.64%	20.46%*		
Thurrock 3	R	35.42%	99.12%	99.10%	97.88%	98.92%	97.21%	96.74%	98.65%
Thurrock 4	R								93.4%
Thurrock 8	R						72.21%*	97.97%	96.45%
Thurrock 2 & 8	R						92.67%*		

Table 20 SO_2 data capture for year (%)

LAQN Site	Type	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	UB	91.10%	97.80%	94%	98.18%	97.66%	95.43%	95.25%	94.37%
Thurrock 3	R	35%	99%	99%	94.92%	99.32%	99.29%	83.35%	87.59%

Table 21 PM_{10} data capture for year (%)

LAQN Site	Type	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	UB	98.10%	95.30%	94.56%	97.38%	98.16%	97.76%	96.63%	95.42%
Thurrock 2	R					70.12%	20.34%*		
Thurrock 3	R	32.78%	99.64%	99.04%	98.72%	97.82%	99.69%	79.89%	89.50%
Thurrock 8	R						70.41%*	80.61%	92.12%
Thurrock 2 & 8	R						90.75%*		

Table 22 $PM_{2.5}$ data capture rate for year (%)

LAQN Site	2009	2010
Thurrock 3	44.43%	58.66%

Table 23 Ozone data capture rate for year (%)

LAQN Site	Type	2003	2004	2005	2006	2007	2008	2009	2010
Thurrock 1	UB	97.51%	98.43%	94.16%	98.17%	96.58%	96.31%	98.64%	94.19%

Table 24 Diffusion Tube referenced locations

Site	Type	Easting	Northing	Site Number	AQMA No
London Road Arterial Road (R)	R	555311	179417	1	13
Purfleet Rail Station (R)	R	555389	178145	2	No
Watts Crescent (R)	R	556314	178765	3	12
Jarrah Cottages (R)	R	556738	177926	4	10
Stonehouse Lane (R)	R	557087	177904	5	21
Ibis Hotel (UB)	UB	557570	177789	6	7
Gatehope Drive (UB)	UB	557595	181060	7	15
Lakeside Tesco Roundabout (R)	R	557959	178698	8	No
Kemps Cottage (UB)	UB	558148	183532	9	16
London Road W Thurrock (R)	R	558483	177678	10	23
Howard Road (R)	R	559130	179471	11	5
A1306 (R)	R	559711	179629	12	5
London Road South Stifford (R)	R	559785	177910	13	2
London Road Grays (R)	R	560623	177810	14	1
Wingfield Grays (UB)	UB	560772	178434	15	No
Elizabeth Road (R)	R	560946	179549	16	3
Poison Store AURN Site (UB)	UB	561066	177894	17	1
Hogg Lane (R)	R	561108	178922	18	3
Queensgate Centre Grays (R)	R	561469	178063	19	1
Cromwell Road Grays (I)	I	561572	178154	20	1
Stanley Road Grays (R)	R	561683	177833	21	1
Chestnut Avenue Grays (UB)	UB	561830	179878	22	No
William Edwards School (R)	R	561958	180967	23	No
Bulphan (RB)	RB	563855	184772	24	No
Calcutta Road Tilbury (R)	R	563864	176308	25	No
Park Road (R)	R	567781	182400	26	No
Stanford Library (UB)	UB	568501	182459	27	No
Manorway Monitoring Station (R)	R	569306	182737	28	No
Tilbury Sites					
Dock Road (Tilbury) (R)	R	563498	176483	29	No
Broadway Intersection (Tilbury) (R)	R	563645	176348	30	No
St Andrews Road (Tilbury) (R)	R	563595	176323	31	No
Calcutta Road East (Tilbury) (R)	R	563995	176291	32	No
Calcutta Road North (Tilbury) (R)	R	563877	176305	33	No
New Sites					
Francisco Close (Chafford Hundred)	I	559137	179082	34	No
Stanford-le-Hope Railway Station (R)	R	568162	182296	35	No
East Tilbury Rail Station (R)	R	567655	179003	36	No

Table 25 2010 Raw NO_2 Diffusion Tube results for Thurrock (µg m^{-3})

Site name	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Bulphan (RB)	35.07	25.69	23.11	17.59	15.89	14.94	13.68	16.48	19.96	22.40	26.45	37.09
Cromwell Road (I)	53.27	44.45	35.68	20.48	32.55	25.00	28.36	27.08	34.51	30.31	46.13	46.95
Elizabeth Road (R)	75.75	69.07	57.19	50.37	53.79	45.27	43.09	46.13	45.67	58.89	73.13	60.83
Gatehope Drive, South Ockendon (UB)	45.23	39.12	32.57	30.60	27.98	29.03	31.42	30.16	37.42	31.69	36.56	35.28
Hogg Lane (R)	50.79	44.50	37.13	36.96	33.46	25.48	29.62	29.51	30.35	41.73	54.42	46.24
Howard Road (R)	55.08	43.07	39.56	MISSING	32.49	28.34	27.39	31.71	39.12	39.25	48.65	39.21
IBIS Hotel (UB)	64.35	56.61	60.34	50.63	45.21	BAD DATA	54.53	53.12	63.70	63.14	67.88	55.52
Jarrah Cottages (R)	71.34	59.69	58.26	55.50	47.69	50.56	48.32	47.79	46.01	48.53	56.77	50.14
Kemps Cottage, North Ockendon (UB)	49.79	42.40	43.83	27.54	30.01	30.22	35.53	37.42	32.28	25.73	39.21	39.06
London Road Arterial Road (R)	61.27	60.80	LOD	61.16	48.48	57.91	38.73	53.80	54.53	40.05	63.74	53.46
London Road Grays (R)	60.22	48.36	LOD	46.57	37.46	32.43	30.41	33.37	34.61	43.64	52.24	47.64
London Road South Stifford (R)	65.72	54.84	43.80	LOD	51.47	47.06	41.94	45.25	40.97	50.83	47.10	52.66
Lakeside Tesco Roundabout (R)	66.47	56.86	MISSING	MISSING	48.86	51.82	41.81	58.52	57.83	59.00	65.07	60.45
Manorway Monitoring Station (R)	57.13	37.26	36.00	BAD DATA	38.39	36.42	27.35	31.78	32.87	34.23	42.00	47.25
Manorway Monitoring Station (R)	62.40	47.64	38.87	41.94	BAD DATA	33.83	28.90	32.41	35.58	38.33	45.86	57.76
Manorway Monitoring Station (R)	54.42	42.15	37.00	32.66	38.45	33.58	26.43	37.34	34.19	33.62	39.94	54.13
Park Road, Stanford-le-Hope (R)	46.74	39.77	36.14	35.47	28.73	34.25	28.86	22.56	26.26	31.97	35.18	42.31
Purfleet Rail Station (R)	52.30	35.66	42.90	BAD DATA	40.34	37.97	23.17	31.86	BAD DATA	37.40	45.40	49.55
Poison Store AURN Site (UB)	45.74	36.82	31.63	29.87	28.36	26.55	20.48	24.09	29.39	27.27	38.52	41.96
Stanford Library (UB)	44.16	38.45	28.08	33.12	28.00	24.98	18.76	21.37	28.63	28.15	38.52	43.62
Stanley Road Grays (R)	58.47	52.16	39.31	30.90	36.73	25.82	23.00	28.38	31.50	38.64	47.69	40.26
Stonehouse Lane (UB)	60.83	55.24	46.62	46.20	41.81	41.91	33.33	35.11	42.88	43.38	57.91	49.81
Calcutta Road, Tilbury (R)	56.57	47.52	33.18	32.30	30.24	38.75	32.07	38.96	52.81	52.20	51.02	45.99
Watts Crescent (R)	63.56	52.03	51.72	42.34	BAD DATA	33.65	26.93	38.54	40.05	36.46	46.76	56.8
William Edwards School (R)	47.69	45.06	36.35	27.35	34.49	32.66	21.91	30.27	29.34	31.78	38.51	35.93
London Road, West Thurrock (R)	56.42	46.28	39.61	43.24	39.79	29.68	32.58	34.00	38.91	39.86	50.54	47.16
Queensgate Centre, Grays (R)	57.05	52.93	41.05	44.24	36.88	39.10	30.14	32.64	27.50	34.00	38.41	43.24
A1306 (R)	67.75	71.03	72.35	BAD DATA	45.78	41.91	54.47	59.32	51.21	56.19	61.14	62.38
Chesnut Avenue, Grays (UB)	42.88	30.90	28.84	25.90	23.09	18.16	17.72	19.88	22.75	24.43	30.67	40.97
Wingfield, Grays (UB)	30.83	25.21	21.97	19.90	18.36	18.16	17.21	16.22	20.15	22.54	28.36	34.53
Dock Road (Tilbury) (R)	53.50	45.49	44.27	BAD DATA	BAD DATA	31.93	36.89	36.66	49.15	46.60	47.95	40.78
Broadway Intersection (Tilbury) (R)	57.90	47.73	34.85	41.26	35.51	41.07	38.84	BAD DATA	47.26	NO DATA	53.32	42.25

St Andrews Road (Tilbury) (R)	62.89	52.28	52.00	43.04	35.30	35.01	36.49	37.66	47.18	NO DATA	51.06	41.6
Calcutta Road East (Tilbury) (R)	52.28	49.50	35.90	37.12	28.65	32.56	29.10	MISSING	47.46	45.10	51.92	45.55
Calcutta Road North (Tilbury) (R)	57.92	MISSING	39.08	35.03	MISSING	28.70	30.79	28.66	34.23	29.94	33.59	40.42
Francisco Close (Chafford Hundred) (R)					29.34	33.5	26.79	32.29	38.41	42.53	51.97	45.86
Stanford-le-Hope Railway Station (R)					29.7	25.94	27.89	26.57	38	31.55	39.04	40.42
East Tilbury Rail Station (R)					25.53	26.14	22.55	23.11	29.79	31.5	37.29	42.99

Figure 21 Diffusion Tube rolling annual mean NO_2 trends from 2002 to 2010 in Thurrock AQMAs sites

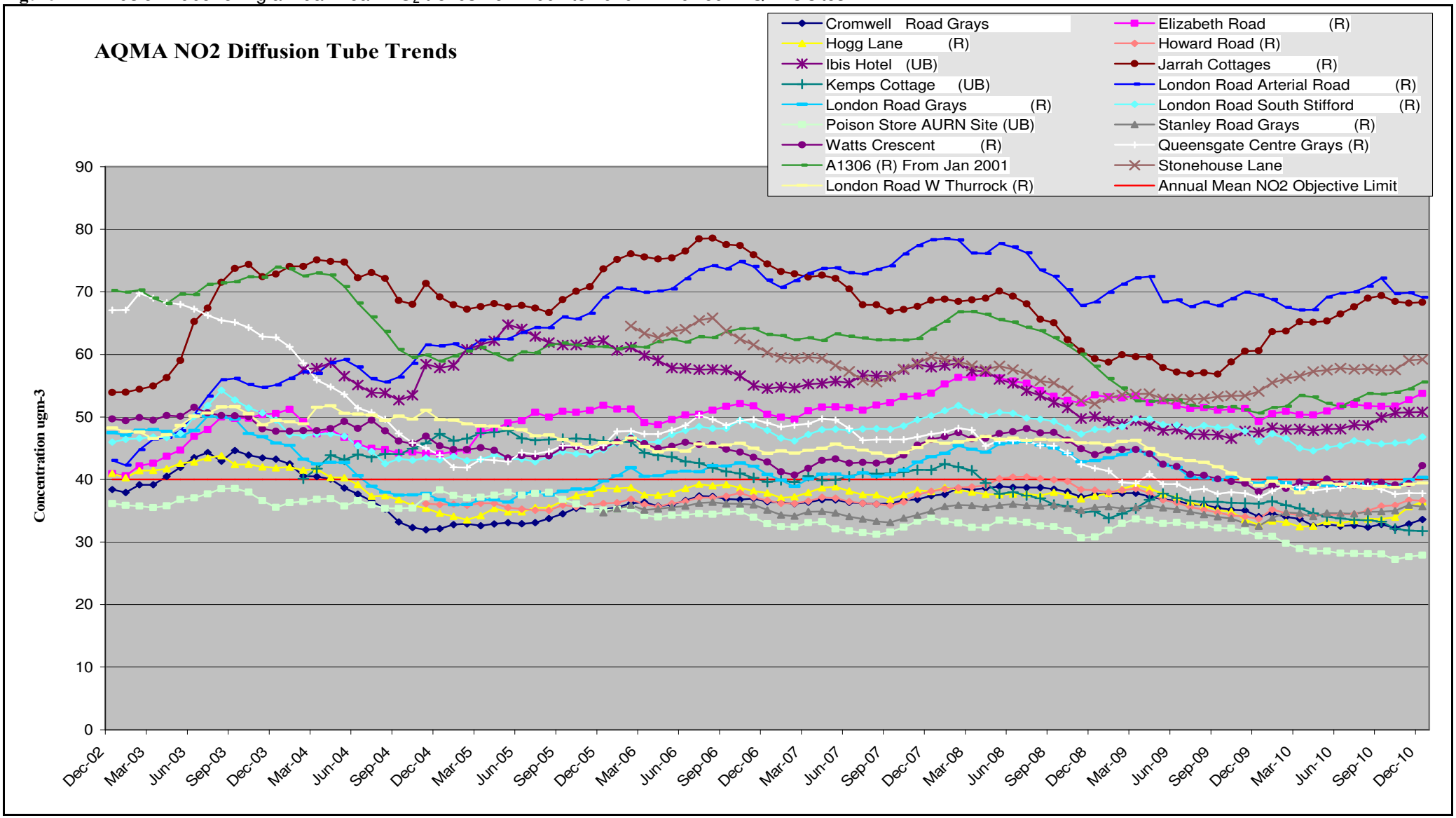
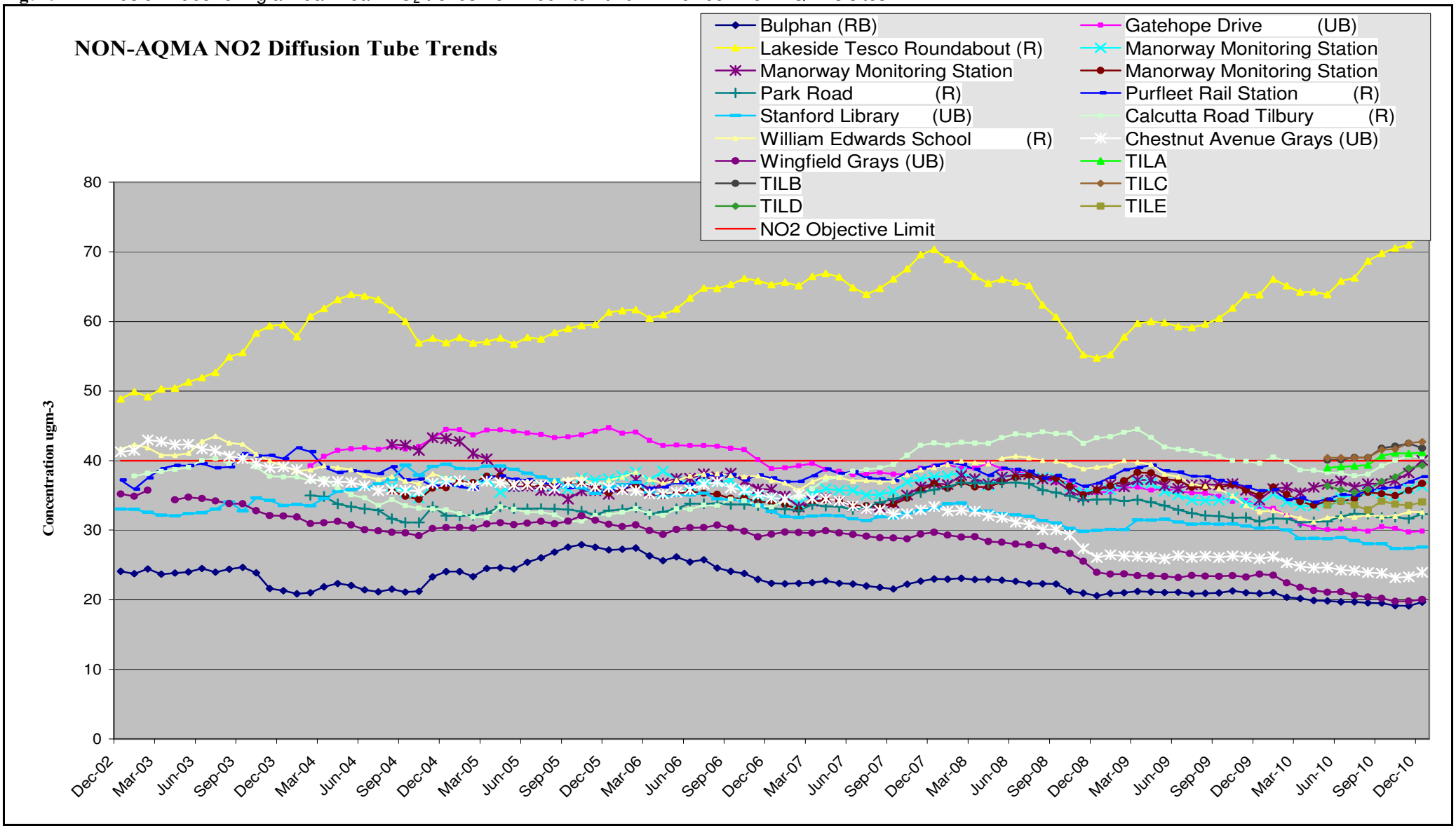


Figure 22 Diffusion Tube rolling annual mean NO_2 trends from 2002 to 2010 in Thurrock Non-AQMAs sites



Appendix 2

Table 26 Part A2 installations in Thurrock

Operator Name	Permit No.	Site address	Process type
Allied Mills Ltd	BM9688IS	Sunblest Mill Port of Tilbury Essex	ANIMAL, VEGETABLE AND FOOD
Petroplus Refining and Marketing	AF8050	CORYTON REFINERY, THE MANORWAY, STANFORD-LE-HOPE, ESSEX	GASIFICATION, REFINING ETC
Chemviron Carbon Limited	AP3338SP	434 LONDON ROAD, GRAYS, ESSEX	RECOVERY OF WASTE
Chemviron Carbon Limited	FP3033BD	434 London Road West Thurrock Essex	CARBON DISULPHIDE, AMMONIA
Industrial Chemicals Limited	BJ7298IF	STONE NESS ROAD, WEST THURROCK, GRAYS, ESSEX	ORGANIC CHEMICALS
Industrial Chemicals Limited	DP3637SG	TITAN WORKS,TITAN INDUSTRIAL ESTATE, GRAYS, ESSEX	INORGANIC CHEMICALS
Kerneos Limited	BL0863IG	Dolphin Way PURFLEET Essex	CEMENT AND LIME
Pura Foods Limited	BU7677IZ	Pura Foods London Road PURFLEET Essex	ANIMAL, VEGETABLE AND FOOD

Table 27 Part B installations in Thurrock (excluding dry cleaners)

Reference numbe	Operator	Address	Process / activity undertaken
A2 001 V2	Civil & Marine Slag Cement Limited	London Road, Grays, Essex RM20 3NL	Blend / pack / load / use of bulk cement
B101	Bulphan Service Station	Brentwood Road, Essex RM14 3SS	Small waste oil burner
B102	Benchsound Limited	47 Kings Street, Stanford-le-Hope SS17 0HJ	Small waste oil burner
B103	Hanson Thermalite Limited	Motherwell Way, WT, Essex RM20 3LB	Blend / pack / load / use of bulk cement
B106	C.Y Repair Services	Manorway Ind. Est. Grays RM17 6PG	Small waste oil burner
B110 V1	Lafarge Cement	Oliver Close, WT, Essex RM20 3EE	Blend / pack / load / use of bulk cement
B111	Foster Yeoman Limited	Jurgens Road, Purfleet, Essex RM16 1SH	Roadstone coating processes
B115	CEMEX Materials UK	London Road, Grays RM20 3NL	Blend / pack / load / use of bulk cement
B116	Tarmac Topblock Limited	Buckingham Road, Linford SS17 0PY	Blend / pack / load / use of bulk cement
B119	Brett Concrete Limited	Magnet Industrial Estate, WT RM16 1DB	Blend / pack / load / use of bulk cement
B122	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening
B135	Calor Gas Limited	Manorway, Coryton, SLH SS17 9LW	Coating of metal and plastic
B141	Palmer and Klein Limited	Brentwood Road, Orsett, RM16 3HU	Veg. oil extraction/ refining process
B151 V1	West Thurrock Coachworks Limited	Unit39, Purfleet Indust. Aveley RM15 4YG	Respraying of road vehicles
B152 V1	West Thurrock Coachworks Limited	Unit 2, Curzon Drive, Grays RM17 6BG	Respraying of road vehicles
B153 V1	Enterprise Coachworks Limited	Oliver Close, West Thurrock, RM20 3EE	Respraying of road vehicles
B159	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening
B160 V1	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening

B161 V2	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening
B164	Commodore Kitchens	Gumley Road, Grays RM20 4XP	Timber and wood-based products
B165	CdMP Purfleet Limited	London Road, Purfleet RM19 1PD	Respraying of road vehicles
B167	Clearserve Limited	Holford Road, Linford SS17 0PJ	Mobile crushing and screening
B168	Esso Petroleum Limited	London Road, Purfllleet RM19 1RS	Storage, loading, unloading of petrol
B169	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening
B170	Vopak Tank Terminal London BV Ltd	Oliver Road, West Thurrock RM20 3EY	Storage, loading, unloading of petrol
B171	BP Oil UK Limited	Manorway, Coryton, SLH SS17 9LQ	Storage, loading, unloading of petrol
B174	Kaneb Terminals Limited	London Road, West Thurrock RM17 5YZ	Storage, loading, unloading of petrol
B180	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening
B183	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM191SR	Mobile crushing and screening
B184	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM191SR	Mobile crushing and screening
B185 V1	Balgores Motors 1982 Limited	Unit3 Manor Road, WT RM20 4BA	Respraying of road vehicles
B186	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening
B187 V1	DWS Bodyworks	Unit 1&2 Magnet Way, Grays RM20 4DP	Respraying of road vehicles
B188	Clearserve Limited	Holford Road, Linford SS17 0PJ	Mobile crushing and screening
B189 V1	Tony le Voi	Unit C8 Motherwell Way, WT RM20 3WE	Respraying of road vehicles
B191	Flavin Consulting Limited	1 One Tree Hill, SLH SS17 9NH	Small waste oil burner
B192	Sejoc Auto Repairs	Dock Road, Tilbury RM18 7PT	Small waste oil burner
B193	Derek Mean Vehicle Services	69/71 Victoria Road, SLH SS17 0HZ	Small waste oil burner
B194	Euromix Limited	Oliver Close, West Thurrock RM20 3AD	Blend / pack / load / use of bulk cement
B195	Fairlight Vehicles Limited	Patricia Drive, Fobbing SS17 9HR	Small waste oil burner
B198	Thurrock 4x4 Centre	Oliver Road West Thurrock Essex	Small waste oil burner
B199	S Walsh and Sons Limited	Sleepers Farm, Chadwell St Mary	Mobile crushing and screening
B200	Pullman Fleet Services	Sartoria Business Park, WT, RM20 3NL	Small waste oil burner
B203	Spectrum Vehicle Resprayers	Sandy Lane, WT RM20 4BH	Respraying of Road Vehicles
B204 *(new)	Steintec Paving Systems	728 London Road, WT RM20 3LU	Blend / pack / load / use of bulk cement

Table 28 Part B installations in Thurrock – Service Stations

Reference number	Operator	Address
SSP1	Mr S Ramachandran	36/38 Southend Road, Grays RM17 5NJ
SSP2	TOTAL UK Limited	Aveley Service Station, Purfleet Road, Aveley RM15 4DJ
SSP3	ASDA Stores Limited	Thurrock Park Way, Tilbury, RM18 7HJ
SSP4	Tesco Stores Limited	Cygnet View, Lakeside, Thurrock RM20 1TX
SSP5	Mr M Gopalakrishnan	26-28 Southend Road, Stanford-le-Hope SS17 0PE
SSP6	BP Oil UK Limited	A13 Eastbound, Grays RM16 3BG
SSP7	BP Oil UK Limited	A13 Westbound, Grays RM16 3BG
SSP9	Murco Petroleum Limited	London Road, Stanford-le-Hope SS17 0WL
SSP10	Esso Petroleum Limited	Granada Thurrock Services, M25 Thurrock RM16 3BG
SSP11	ROC (UK) Limited	Meads Service Station, London Road, Purfleet RM16 1TD
SSP12	Esso Petroleum Limited	Chafford Service Station, Hogg Lane, Grays RM17 5QT
SSP13	Sainsbury's Supermarkets Limited	Burghley Road, Chafford Hundred, RM16 6QQ
SSP14	Pace Petroleum Limited	Daneholes Service Station, Stanford Road, Grays RM16 4XS

SSP15	Murco Petroleum Limited	The Broadway, Dock Road, Grays RM17 6EW
SSP16	Mr S V Chandrakumar	712 London Road, West Thurrock RM20 3PZ
SSP17	Tesco Stores Limited	11-13 Brentwood Road, Chadwell St Mary RM16 4JD
SSP18	George Payne	Church Road, Corringham SS17 9AP
SSP19	Tesco Stores Limited	North Road, South Ockendon, Essex RM15 6QJ
SSP20	Central Garage	31 Lampits Hill, Corringham SS17 9AA
SSP21	Wm Morrison Supermarkets PLC	1 London Road, Grays RM17 5XZ
SSP23	Bell Corner Service Station	London Road, Fobbing Essex SS17 0LE

Table 29 Part B installations in Thurrock – Dry cleaners

Reference number	Operator	Address	Solvent
DC1	Royal Express Dry Cleaners	10 Kings Parade, Stanford le Hope, Essex	perchloroethylene
DC2	Braiden Dry Cleaners	11 Calcutta Road, Tilbury Essex	perchloroethylene
DC3	Tip Top Dry Cleaners	55 Lampits Hill, Corringham, Essex	perchloroethylene
DC6	Jems Dry Cleaners	59 Lodge Lane, Grays, Essex	perchloroethylene
DC7	Jems Dry Cleaners	Sainsburys, Burghley Road, Chafford Hundred, Essex	perchloroethylene
DC8	Sangana International	25 High Street, Grays, Essex	Hydrocarbon
DC11	Classic Dry Cleaners	15-17 The Broadway, Grays, Essex	perchloroethylene
DC12	Corringham Dry Cleaners	18 Grover Walk, Corringham, Essex	perchloroethylene

Table 30 Part B installations no longer in operation

Reference nu	Operator	Address	Process/ activity undertaken
B202	Mordernmix Limited	Baldwins Farm, Uppminster RM14 2YB	Blend / pack / load / use of bulk cement
B124	Bardon Concrete	Botany Way, Purfleet, RM16 1RR	Blend / pack / load / use of bulk cement
B162	Malling Precast Limited	Wouldham Road, Grays RM20 4YB	Blend / pack / load / use of bulk cement
B128	Hanson Building products Limited	Botany Way, Purfleet, Essex RM19 1SR	Blend / pack / load / use of bulk cement
B157 V2	National Grid PLC	Robinson Road, Horndon SS17 8PU	Odorising natural gas & liquid pet. gas
B148	Calor Gas Limited	Manorway, Coryton, SLH SS17 9LW	Odorising natural gas & liquid pet. gas
B177	Shell UK Limited	Shellhaven, Manorway, SLH SS17 9LR	Bitumen and tar processes
B178	G Killoughery Limited	Beacon Hill Ind. Est. Purfleet RM19 1SR	Mobile crushing and screening
B104 V2	William Ball Limited	Gumley Road, Grays, Essex RM16 1BB	Timber and wood-based products
SS24R	Sainsbury's Supermarkets Limited	Burghley Way, Chafford Hundred RM16 8QQ	Temporary Filling Station

Table 31 Inactive Part B installations

Reference nu	Operator	Address	Process/ activity undertaken
B201	Industrial Chemicals Group Limited	Stoneness Road, WT RM20 3AG	Blend / pack / load / use of bulk cement
DC4	Paul's Dry Cleaners	8 Canterbury Parade, South Ockendon, Essex	perchloroethylene