2013 Air Quality Progress Report
Slough Borough Council

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

July 2013

RICARDO-AEA

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Executive Summary

Slough Borough Council (SBC) has prepared a Progress Report as required by the Local Air Quality Management process as set out in Part IV of the Environment Act 1995, the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where the Local Authority identifies a risk of an air quality exceedance then it should proceed immediately to a Detailed Assessment.

The Detailed Assessment should be sufficiently detailed to determine both the magnitude and geographical extent of the likely air quality exceedance. The local authority must then declare an Air Quality Management Area (AQMA) or modify an existing (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to implement in order to meet the air quality objectives.

This 2013 Progress report seeks to address the conclusions and recommendations outlined within the SBC Air Quality Detailed and Further Assessment 2011 and 2012 Air Quality Updating and Screening Assessment for Slough Borough Council. In particular to address DEFRAs response that the report is not accepted and that a revised report be submitted. It is also seeks to set out the new direction for continuous air quality monitoring within SBC over 2014 – 2015 to be targeted within the existing AQMAs.

SBC submitted an Air Quality Detailed and Further Assessment 2011, prepared by AEA Technology Plc further to the declaration of two AQMAs covering Tuns Lane and parts of the Town Centre in 2011, as a result of a Detailed Assessment carried out in 2008. The Further Assessment aspect of the report confirmed it was appropriate to declare the Tuns Lane and Slough Town AQMAs.

The Detailed Assessment 2011

- Advised that Modelling indicates that the potential for exceedance of the air quality objective at residential properties within 32m south of the centre of the track bed and within 39m to the north (buffer area). As there are several residential properties within this buffer, it is recommended additional monitoring be carried out at residential properties closest to the railway:

  Monitoring has been carried out at two residential locations, Sandringham Court and Walpole Road that fall within the railway buffer area and the ratified monitoring data for 2012 confirms that air quality levels are well below the Air Quality Objectives. The monitoring data confirms there is no requirement to declare an AQMA close to the railway track. The monitoring will continue during 2013.

The Further Assessment 2011

- The report recommended that SBC should consider extending the Tuns Lane AQMA eastwards along Bath Road (A4) as far as Windmill Road:

  An additional diffusion tube was located on the façade of a residential care home, called Windmill in 2012 following the above recommendation. The tube is located in an area of relevant exposure. The monitored air quality data exceeds the air quality objectives and

validates the above recommendation. A Detailed Assessment is normally required to determine both the magnitude and geographical extent of the likely air quality exceedance along Bath Road. However, this modelling work was completed in 2011 and Ricardo-AEA will include this modelled data in their resubmission of the Air Quality Detailed and Further Assessment 2011 Report.

The extension is likely to be relatively small and defined along the A4 Bath Road. The areas of relevant exposure lies on the northern side of the A4. Once DEFRA are satisfied with the revised 2011 report and modelling, SBC will proceed with the statutory process of amending the existing Tuns Lane AQMA.

- The report recommended that SBC should consider extending the Town Centre AQMA northwards along Uxbridge Road to the parade of shops with flats above (A&A Newsagents)

  SBC does not currently support this recommendation. A new diffusion tube was located at Goodman Park in 2012, on a lamppost 10m from the nearest residential facades. Unfortunately, the data capture was less than 9 months in 2012. The annual mean concentration once it was distance and bias corrected measured air quality levels at 37.8 $\mu g.m^{-3}$ only just below the Air Quality Objective. SBC will continue to monitor air quality at this location and any other relevant locations along the Uxbridge Road and report on these levels within its next progress report. If levels do exceed the Air Quality Objectives along Uxbridge Road, then SBC will follow up the need to extend the Town Centre AQMA in line with Air Quality Detailed and Further Assessment 2011 Report recommendations.

- The Council should continue to monitor concentrations at Sussex Place and Farnham Road and consider extending the AQMAs if these exceed the objective.

  SBC has continued to monitor the air quality at both these locations. Sussex Place is a kerbside location and 2012 readings are below the Air Quality Objectives. Farnham Road is already within the Tuns Lane AQMA.

DEFRA Review and Assessment 2011

The DEFRA Website confirmed the Detailed Assessment Report has not been accepted, **SBC seeks to resolve this report 'not accepted status' to ensure the report is accepted.**

The key outcomes of the DEFRA Detailed Assessment Report and covering letter stated:

- The recommendation to carry out additional monitoring is therefore accepted:

  Monitoring has been carried out in 2012 at Sandringham Court and Walpole Road and both sites demonstrate the air quality levels are significantly below the Air Quality Objective for NO_2. SBC will continue to monitor these sites during 2013.

- Table 3: The details or automatic/non-automatic monitoring sites should clearly indicate the distance to relevant exposure

  We have addressed these concerns within the 2013 Progress Report. We are also setting up a programme to relocate our automatic air quality monitoring stations within our existing AQMAs by 2015. The locations of these monitoring stations will be as close to residential receptors as practically feasible in order to gain more accurate and reliable data and to determine the influence of SBC AQAP measures going forward. This will also allow the

monitoring of 1-hour mean exposure at locations, where diffusion tubes readings are regularly recording the annual mean above 60 $\mu g.m^{-3}$.

- Table 8: The Study Area.

  We agree it is not clear whether the study area is defined for the Detailed Assessment or the Further Assessment. We believe it is for both. India Road being an example of a site very close to the railway, but not within the new formed AQMA. We apologise for this confusion.

  The diffusion tube sites of Windsor Road and Sussex Place are not within the railway buffer area. We apologise for any confusion this has caused.

  SBC recognises combining the Detailed and Further Assessment reports has given rise to some confusion. If both Assessments were required again, subject to the Further Assessment still being part of the LAQM regime, then these reports would be submitted separately.

  The recommendations of DEFRA to ensure the locations of monitoring sites are clearly defined in future reports, and that the local authority need only report information for those sites which are relevant to the assessment will be adopted by SBC.

- Where a report has been completed by a third party, the LAQM TG 09 Guidance that the Authority fully endorses the conclusions and recommendations therein.

  SBC can assure DEFRA that any future air quality reports will be fully endorsed by way of a covering letter, when the report is submitted on line, by the manager responsible for LAQM.

Covering Letter (Tutu Aluko) 2011

- Comments in her last paragraph that ……the report concludes that it was appropriate to declare the AQMAs and that the AQMAs should be amended – the Tuns Lane to the east along Bath Road and the Town Centre AQMA northwards along Uxbridge Road. However, it is unclear whether the revised AQMAs will incorporate areas of likely exceedances where exposure exists. To make the report clearer and to show that all areas of predicted exceedenece will be taken into account in the declaration, we recommend submitting a revised report that clearly illustrates the boundaries of the proposed AQMAs…. We look forward to receiving the Council's revised report soon?

  SBC clearly understands the concerns raised by DEFRAs letter. We apologise for not addressing these concerns sooner. It is a priority for the new manager in post to address these concerns. SBC has approached Ricardo-AEA to revise the report accordingly and hopefully to overturn the report status to approved.

2012 Air Quality Updating and Screening Assessment

- An action plan for the more recently declared AQMAs at Tuns Lane and Slough Town Centre is in preparation

  SBC has completed the AQAP for Tuns Lane an Slough Town Centre AQMAs and has uploaded the plan to the DEFRA website. A summary of the action plan measures and progress to date is provided in Table 9.1.

- Following the Detailed and Further Assessment 2011 recommendations that the Council should consider extending the new AQMAs at Tuns Lane and Slough Town Centre. SBC reviewed the monitoring data and locations. This resulted in 2 new diffusion tubes being located just outside the boundary of the AQMAs in January 2012.

  Two new diffusion tube sites have been installed just outside the AQMAs in January 2012. Windmill diffusion tube sits on the façade of the care home and is an area of relevant exposure. The air quality levels for 2012 are recording above the Air Quality Objective. The second tube at Goodman Park, Uxbridge Road is recording air quality levels just below the Air Quality Objectives and therefore SBC does not intend to extend the Slough Town Centre AQMA, at this time but will continue with the diffusion tube monitoring.

2012 Data Capture Review

A review of monitoring data captured during 2012 has concluded that:

The NO_2 annual mean concentrations measured at all of the automatic monitoring sites within the borough were all less than the 40 $\mu g.m^{-3}$ objective during 2012; the measured concentration at the Chalvey site was less than the objective for the first time in recent years. No exceedances of the short-term NO_2 objective were recorded at any of the automatic monitoring sites during 2012.

An annual mean NO_2 concentration in excess of the 40 $\mu g.m^{-3}$ objective was measured at one diffusion tube location, outside the AQMA, that is representative of relevant human exposure during 2012. The diffusion tube at Windmill (Bath Road) is located at the building façade so is at a location representative of relevant exposure at the residential properties on Bath Road at this location. A Detailed Assessment is required.

Examination of the trend in NO_2 annual means measured across the Slough network of diffusion tubes indicates that concentrations have in general been increasing slightly over recent years.

No annual mean PM_{10} concentrations in excess of the 40 $\mu g.m^{-3}$ annual mean objective was measured at any of the monitoring locations. The 50 $\mu g.m^{-3}$ 24-hour mean PM_{10} objective was not exceeded more than 35 times at any of the monitoring sites during 2012.

The review of new local developments has not identified any locations where there may be a risk of the air quality objectives being exceeded; no additional air quality assessment is recommended at this time.

A number of changes to the road network have been made as part of the Chalvey Traffic Management Project. These changes have been noted and will be assessed further in the 2015 Updating and Screening assessment screening criteria when more information is available on how traffic patterns have been affected.

SBC will be relocating it automatic monitoring stations within each one of its four AQMA in 2014/2015.

Slough Borough Council next LAQM submissions will be a revised 2011 Detailed and Assessment Report in August 2013 and Progress Report April 2014. SBC will be amending its Tuns LANE AQMA eastwards along the A4. The Order will be amended by April 2014.

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1 Introduction

1.1 Description of Local Authority Area

Slough is situated in Berkshire, in the south–east of England, close to the West of London. The borough is an urban area located in the Thames Valley and is surrounded by countryside, which forms part of the Metropolitan Green Belt. Slough has excellent communication links and is in close proximity to Heathrow airport and the Greater London conurbation. Slough is integrated into the heart of the UK transport and communications network. It is located between the M4, M40 and the M25. There is also a rail link into the centre of London, with onward links from there that go to the rest of the country. The town in an important commercial centre and includes both industrial and residential areas.

1.2 Purpose of Progress Report

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

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedance of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

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

Table 1-1: Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved
	Concentration	**Measured as**	
Benzene	16.25 µg.m^{-3}	Running annual mean	31.12.2003
	5.00 µg.m^{-3}	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg.m^{-3}	Running annual mean	31.12.2003
Carbon monoxide	10 mg.m^{-3}	Running 8-hour mean	31.12.2003
Lead	0.50 µg.m^{-3}	Annual mean	31.12.2004
	0.25 µg.m^{-3}	Annual mean	31.12.2008
Nitrogen dioxide	200 µg.m^{-3}not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg.m^{-3}	Annual mean	31.12.2005
Particulate Matter (PM_{10}) (gravimetric)	50 µg.m^{-3}, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg.m^{-3}	Annual mean	31.12.2004
Sulphur dioxide	350 µg.m^{-3}, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg.m^{-3}, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg.m^{-3}, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

1.4.1 First Round of Review and Assessment

Following the first round of Review and Assessment, Slough Borough Council concluded that no exceedances of the carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide or PM_{10} objectives were occurring. An area alongside the M25 in Poyle was identified as likely to exceed the AQS annual mean NO_2 Objective (40 $\mu g.m^{-3}$). There were however no locations where relevant public exposure was occurring.

As part of Slough Borough Council's commitment to sustainable development and improving air quality, the council produced an air quality strategy.

1.4.2 Second Round of Review and Assessment

Updating and Screening Assessment (USA), 2003

The 2003 Updating and Screening Assessment (U&SA) concluded that the AQS Objectives for CO, SO_2, benzene and 1,3 butadiene would be achieved in all areas of Slough. However, it was recommended that a future study of areas surrounding the new S. Grundon waste facility (when operational in 2008) was undertaken with respect to these pollutants. In terms of the annual mean objectives for NO_2 and PM_{10}, the 2003 USA predicted that these would be exceeded close to motorways, major roads and junctions and hence, it recommended that a Detailed Assessment be conducted for annual mean nitrogen dioxide and annual mean and 24 hour mean PM_{10} for five areas in Slough, located primarily around busy roads and junctions where relevant public exposure may be occurring

Detailed Assessment 2004

Modelling of road traffic emission indicated a number of exceedances of the NO_2 annual mean for 2005, particularly adjacent to major roads and junctions, and in the main urban centres where relevant exposure is likely. The modelling also predicted that all modelled areas were likely to exceed the 2010 PM_{10} annual mean objective. The assessment recommended that an AQMA be declared in the areas where exceedances were predicted.

Further Assessment, 2004

The Further Assessment (2004) considered road traffic emissions in the Borough and provided source contribution estimates for the major roads and motorways, and estimated percentage improvements required to meet air quality objectives. The major cause of exceedances of the air quality objectives related mainly to road traffic; with the majority of road traffic emissions from the motorways and other major roads.

Progress Report, 2005

Exceedances of the annual mean objective for nitrogen dioxide were predicted at several locations in Slough. As a result, Slough Borough Council declared two Air Quality Management Areas (AQMAs) in June 2005, which relate primarily to stretches of the M4 (M4 AQMA) and the A4 (Brands Hill AQMA). The Slough Local Transport Plan 2006-2011 (March 2006) contains the air quality action plan for the M4, A4 and also general actions for the Town Centre to improve air quality. The designation of the two AQMAs was supported by the conclusions reached in the first Progress Report (2005).

Further Assessment, 2005

The Further Assessment (2005) identified a number of locations, where exceedances of the NO_2 annual mean objective were occurring, that were not currently in the designated AQMA's; Tuns Lane, Lansdowne Avenue and Princess Street. These sites are close to the A4 in the Town Centre. The report concluded that there was no requirement to declare an AQMA in the Town Centre along the A4 main road as the Tuns Road monitoring site was affected by construction works close by and the other two sites were considered borderline when adjusted to the nearest public exposure.

1.4.3 Third Round of Review and Assessment

Updating and Screening Assessment (U&SA), 2006

Based on the findings of the 2005 Further Assessment, the U&SA (2006) recommended that the new and existing NO_2 monitoring sites in the Town Centre be closely and regularly reviewed to highlight quickly any need to declare an AQMA in the Town Centre.

Progress Report, 2007

The 2007 Progress Report concluded that annual mean NO_2 concentrations in excess of the objective were measured during 2006 at locations in the Town Centre; and noted that exceedances were predicted at these locations in the 2005 Further Assessment. It was suggested that four new diffusion tube sites: namely, Wexham Road, Wellington Street – Stratfield, Blair Road – Victoria Court and Wellesley Road, would help to verify these town centre concentrations during 2007. The 2007 Progress Report recommended that the situation in the Town Centre should be reconsidered in detail in the next round of Review and Assessment.

Detailed Assessment, 2008

The 2008 Detailed Assessment considered NOx and NO_2 concentrations in the Town Centre of Slough; using the 2007 monitoring data from existing and new diffusion tube sites and dispersion modelling. The report recommended that Slough Borough Council should consider the declaration of an AQMA along Tuns Lane from the junction with the M4 up to the junction with Bath Road; and consider declaring an AQMA in the Town Centre along the A4 stretching from William Street roundabout to the Uxbridge roundabout. The report also recommended that any future developments in the vicinity of those areas that are likely to impact levels of road traffic should be carefully considered, particularly in the context of the 'Heart of Slough' project that would bring about changes to the Town Centre infrastructure. In addition, it was recommended that the impact on annual mean NO_2 concentrations as a result of the Great Western Railway line running through the Town Centre should be assessed further and monitored carefully in the future.

1.4.4 Fourth round of review and assessment (2009-2011)

Updating and Screening Assessment, 2009

Measured NO_2 concentrations in 2008 were in excess of the annual mean NO_2 objective at the Chalvey automatic monitoring site and at seven diffusion tube monitoring locations. Five of the monitoring locations were within the existing AQMAs and the other two within the newly declared Town Centre AQMA, therefore justifying the existence of all the borough's AQMAs.

Based on the 2008 monitoring results the 2009 U&SA recommended, as a result of updated guidance, that the council should conduct a Detailed Assessment of NO_2 at residential properties that are located within 30m of the Great Western Line. The report also concluded that the Council should maintain monitoring at existing sites within the borough; and to implement the measures outlined in the Air Quality Action Plan.

Progress Report 2010

Analysis of the 2009 monitoring data showed that there continued to be measured exceedances of the NO_2 annual mean objective within the existing Slough AQMAs. There were also measured exceedances at two monitoring locations outside of the AQMA; one automatic site (SHL4 Salt Hill), and one diffusion tube site (SL4 Windsor Road). Both sites were not near relevant receptors so there was no requirement to proceed to a Detailed Assessment. All other monitored pollutants met AQS objectives. A review of traffic, commercial, industrial and domestic developments identified that there were no new or existing developments likely to lead to any exceedances of the AQS objectives for any pollutant.

Detailed and Further Assessment 2011

The Detailed Assessment aimed to assess the magnitude and spatial extent of any air quality objective exceedances in the vicinity of the Great Western Mainline. The monitoring data did not support the need for a declaration of an AQMA. The modelling did however indicate the potential for exceedances of the air quality objectives at residential receptors. It was therefore recommended that additional monitoring be conducted at these properties.

A Further Assessment was undertaken to confirm the findings of the 2008 Detailed Assessment which lead to the declaration of the Tuns Lane and Town Centre AQMA. The assessment also apportioned sources of NOx and the level of reduction required to achieve the NO_2 objective, followed by testing of selected abatement scenarios to inform the AQAP. The report confirmed that the declaration of the AQMAs was appropriate and went on to recommend that the council should consider extending the Tuns Lane AQMA along Bath Road as far as Windmill Road and the Town Centre AQMA northwards along Uxbridge Road.

The source apportionment study found that road traffic provides the largest contributions at roadside sites, with heavy duty vehicles contributing more than half of the traffic contribution. The analysis concluded that the air quality objective will be achieved by 2014 at all the diffusion sites except Yew Tree Road, which will not be met until 2017, without Action Plan measures.

Progress Report 2011

The 2010 NO_2 monitoring data showed that within the existing AQMAs there continues to be concentrations in excess of the annual mean objective. At two diffusion tubes sites the measured annual mean NO_2 concentrations were above 60 $\mu g.m^{-3}$ indicating that there may be an exceedance of the 1-hour mean objective occurring at these locations. These sites were Brands Hill (SL13) and Yew Tree Road (SL40) both of which are within the current AQMA.

Measured PM_{10} concentrations in 2010 were not in excess of either the annual mean or daily mean objectives.

A review of traffic, commercial, industrial and domestic developments identified that there were no new or existing developments that were likely to lead to any exceedances of the AQS objectives.

1.4.5 Fifth round of review and assessment

Updating and Screening Assessment, 2012

An NO_2 annual mean concentration in excess of the 40 $\mu g.m^{-3}$ objective was measured at one automatic monitoring site and at various diffusion tube sites during 2011. All of these sites are either within one of the existing AQMAs or are not at locations of relevant exposure. No exceedances of the NO_2 1-hour mean objective, PM_{10} annual mean or 24-hour mean objective; or benzene annual mean objective were measured at any locations of relevant exposure during 2011.

The assessment of new sources did not identify any new sources that have not been considered previously.

No requirement to proceed to a Detailed Assessment was therefore identified from either new monitoring data or assessment of new/changed sources.

1.4.6 Existing AQMAs

Four AQMAs are currently declared within the Borough. Two of which were declared in 2005:

- AQMA Order 1 – M4 Corridor
  The designated area incorporates land adjacent to the M4 motorway along the north carriageway between Junction 7 and Junction 5, and also the south carriageway between junction 5 and Sutton Lane.

- AQMA Order 2 – A4
  The designated area incorporates a stretch of the A4 London Road east of junction 5 of the M4 motorway up until Sutton Lane.

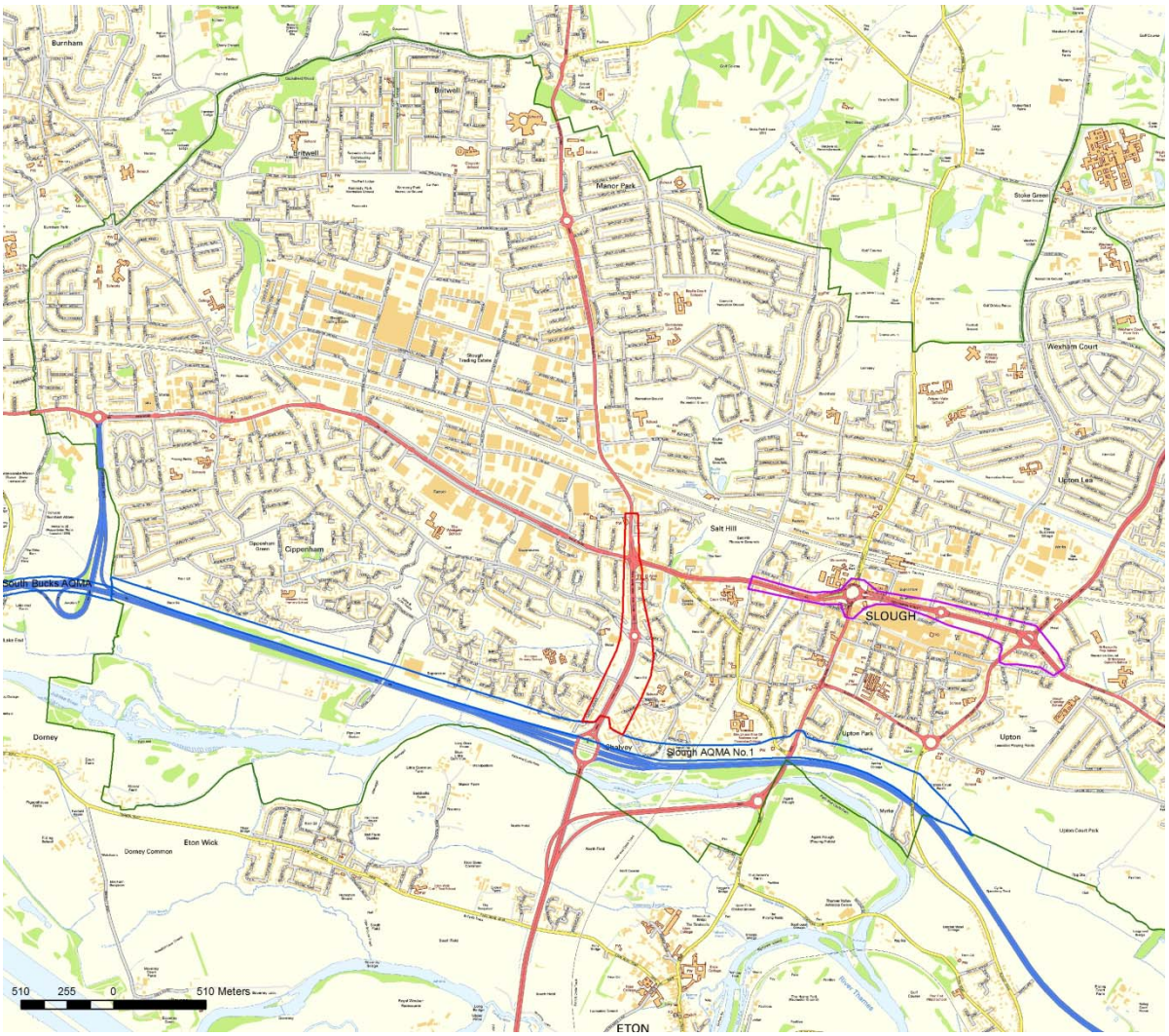
The other two were declared in January 2011 as follows:

- AQMA Order 3 –Tuns Lane
  The designated area incorporates the A335 Tuns Lane from junction 6 of the M4 motorway in a northerly direction to just past its junction with the A4 Bath Road and the A355 Farnham Road ("Three Tuns").

- AQMA Order 4 – A4 town centre. The designated area incorporates the A4 Bath Road from the junction with Ledgers Road/Stoke Poges Lane, in an easterly direction, along Wellington Street, up to the Sussex Place junction.

The locations of the existing AQMAs within the Slough Borough Council area are annotated on Figure 1.1 and Figure 1.2.

Figure 1.1: Slough Borough Council: AQMA locations – Town Centre, Tuns Lane and M4



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Legend

- Slough boundary
- Town Centre AQMA
- Tuns Lane AQMA
- M4 AQMA

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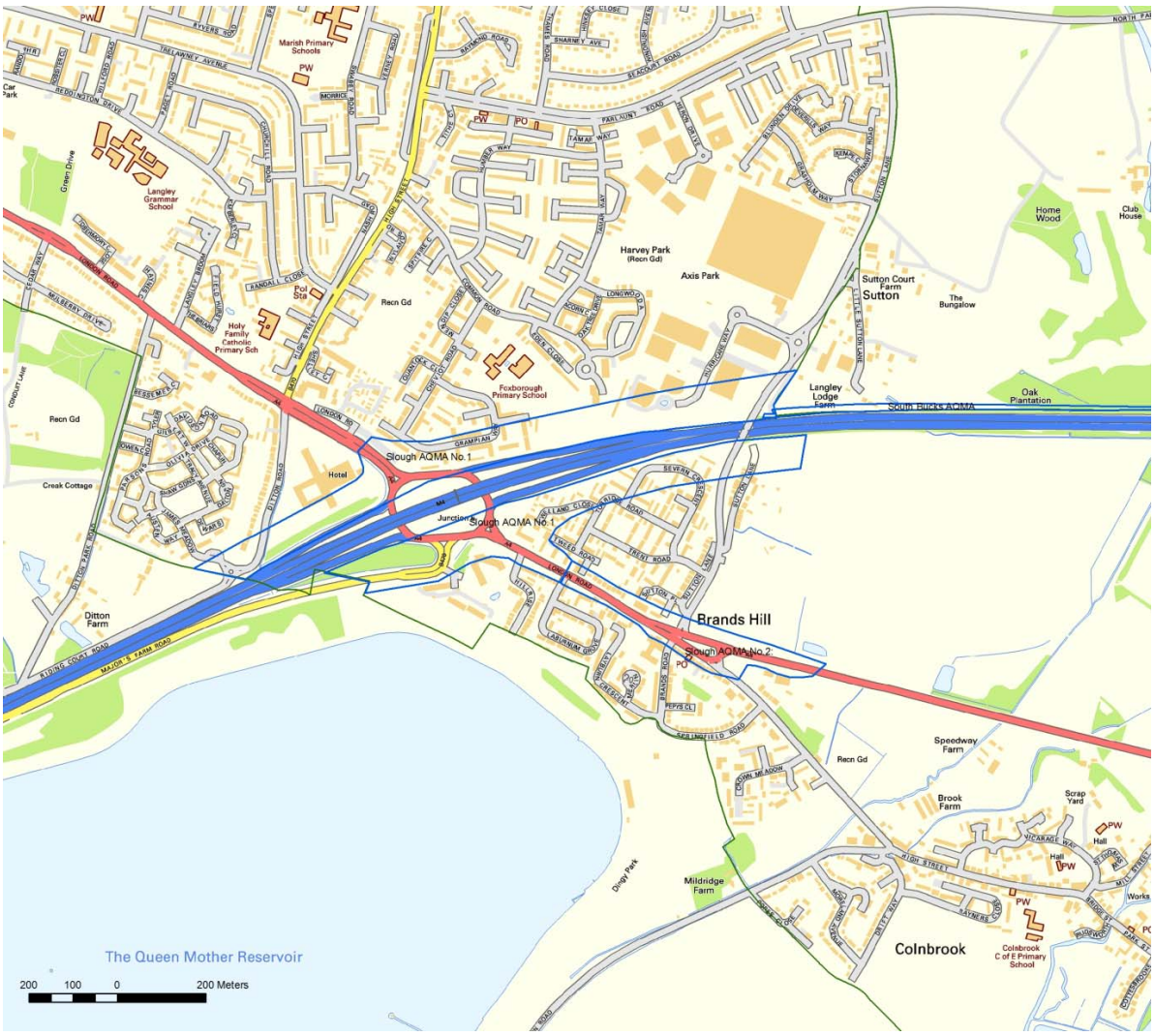
Figure 1.2: Slough Borough Council: AQMA location– Brands Hill



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

Slough Borough Council currently undertakes ambient monitoring of the following pollutants covered by the AQS:

- Nitrogen dioxide (NO_2)
- Particulate matter (PM_{10})
- Benzene (now been discontinued in 2013)

Slough Borough Council also monitors $PM_{2.5}$ and PM_1. While these particulate size fractions are not currently included in the Air Quality Regulations for England and Wales, they may become part of future Regulations.

2.1.1 Automatic Monitoring Sites

Five automatic monitoring sites are operational within the borough. These sites comprise four NOx/NO_2 analysers; two TEOM PM_{10} analysers; two Osiris PM monitors; and one BAM PM monitor.

These sites are not affiliated to Defra's Automatic Urban and Rural Monitoring Network (AURN), but are part of the National Automatic Monitoring Calibration Club, whereby monitoring data are managed to the same procedures and standards as AURN sites.

The Slough Lakeside 2 automatic monitoring site is operated by Lakeside Energy from Waste Ltd close to their waste incineration plant. The results are reported by Slough Borough Council.

Maps showing the locations of the automatic monitoring sites are presented in Figure 2.1 and Figure 2.2. Details of the sites are presented in Table 2-1.

Following a review of the Automatic Monitoring Sites locations, it is concluded that none of these stations represent worst-case exposure. Further, it is Slough Borough Council intention to relocate its automatic monitoring sites, within its control, into each one of its four AQMAs and to locations as close to residential facades and areas of relevant exposure as is practically possible. This extensive programme is likely take 18-24 months to complete. The data will be far more representative in terms of relevant exposure and relevant in terms of monitoring annual NO_2 trends with the existing AQMAs.

Figure 2.1: Slough Automatic Monitoring sites (Slough Centre)

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Legend

Slough boundary

Automatic monitoring sites 2011

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Figure 2.2: Slough Automatic Monitoring sites (Slough East)

Table 2-1: Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring technique	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
SLH 4 - Salt Hill (Slough town centre, A4)	Intermediate (Residential)	496599	180156	NO_x, NO_2 and PM_{10}	Chemiluminescence TEOM	N	N	10m	N
SLH 3 & SLH6 - Slough Colnbrook (Pippins)	Urban Background (Residential)	503542	176827	NO_x, NO_2, PM_{10}, $PM_{2.5}$ & $PM_{1.0}$	Chemiluminescence TEOM and Osiris	N	Y	>50m	N
SLH 7 - Slough Chalvey, M4	Intermediate- Motorway (Residential)	496562	179109	NO_x and NO_2	Chemiluminescence	Y (M4 AQMA)	Y	45m from M4	N
SLH 5 - Slough Colnbrook (Lakeside, Tan Hse Farm)	Urban Background	503551	177258	PM_{10}, PM2.5 & PM1.0	Osiris	N	N	>50m	N
SLH 8 and SLH9 Slough Lakeside 2 (run by Lakeside Energy from Waste Ltd)	Urban Background	503569	177385	NOx, NO_2 and PM_{10}	Chemiluminescence BAM (PM_{10}) Co-located Osiris (PM_{10}, $PM_{2.5}$ and PM_1)	N	N	10m	N

2.1.2 Non-Automatic Monitoring Sites

Diffusion tube monitoring of NO_2 is carried out at a number of locations in the Slough Borough Council Area. During 2012 Nitrogen dioxide monitoring was undertaken at thirty-nine sites across the borough using passive diffusion tubes. Benzene monitoring was discontinued in January 2013 as monitoring results had never shown any breaches of the Air Quality Objectives.

Since 2011, measurements at the following diffusion tube sites have been discontinued:

- Kent Avenue
- Mitchell Close
- William Street Roundabout

In 2012, monitoring commenced at eight new diffusion tube sites:

- Yew Tree Rd (Ux Rd)(B)
- Brands Hill(B)
- London Rd (B)
- London Rd (C)
- Sandringham Court (Railway Tube)
- Walpole Rd (Railway Tube)
- Goodman Park (Ux Rd)
- Windmill (Bath Rd)

Details of the diffusion tube monitoring locations within the Borough are presented in Table 2-1. The locations include kerbside, intermediate and urban background and Railway sites.

Maps showing the locations of the diffusion tube monitoring sites are presented in Figure 2.3 to Figure 2.5.

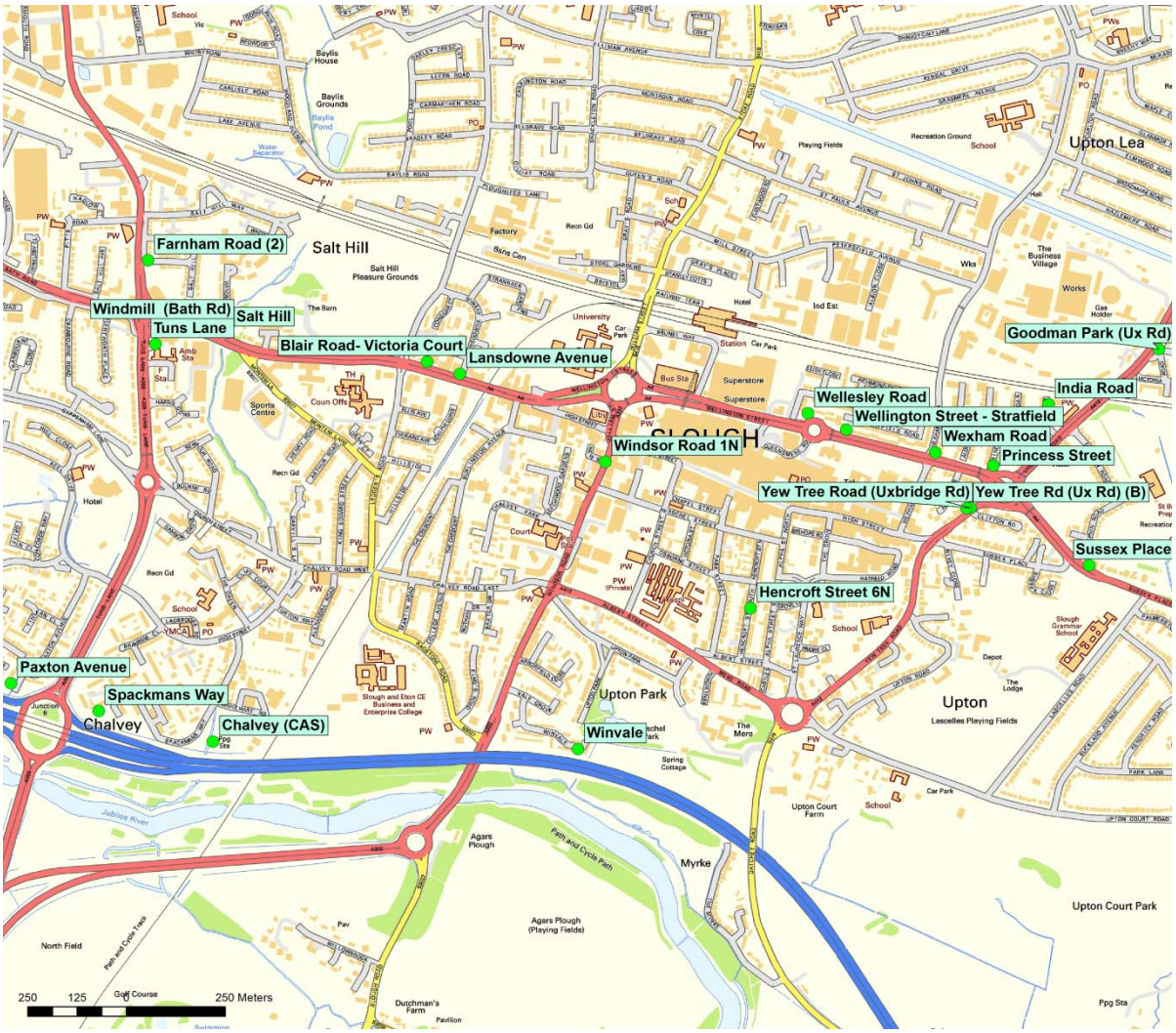
A bias adjustment factor of 0.88 derived as the average of three co-location studies conducted in Slough during 2012 has been used to adjust the diffusion tube results. Full details of the diffusion tube QA/QC are presented in Appendix A.

Table 2-2: Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Site height (m)	Pollutants Monitored	In AQMA?	Relevant Exposure (distance from site)	Distance to kerb of nearest road	Worst -case Location?
Blair Road- Victoria Court	I	497105	180081	2	NO_2	Y	Y (5m)	13m	Y
Brands Hill (A)	K	501798	177659	2.5	NO_2	Y	Y (5m)	3m	Y
Brands Hill (B)	I	501853	177620	2	NO_2	Y	Y (0m) on the building facade	8m	Y
Chalvey (CAS)	I(M)	496562	179109	1.5	NO_2	Y	Y (co-located with automatic site)	45m	Y
Colnbrook By-pass	K	503196	177349	2	NO_2	N	N	5m	N
Ditton Road	I(M)	500851	177890	2	NO_2	N	Y (15m)	5m	Y
Elbow Meadows	UB(M)	503856	176538	2	NO_2	N	Y (13m)	1m	Y
Essex Avenue	I	496200	181900	2	NO_2	N	Y (5m)	1-5m	Y
Farnham Road (2)	I	496397	180341	2	NO_2	Y	Y (10m)	20m	Y
Goodman Park (Ux Rd)	I	498961	180113	2.5	NO_2	N	Y (15m)	3m	Y
Grampian Way	UB	501382	178101	2	NO_2	Y	Y (8m)	51m	Y
Hencroft Street 6N	UB	497925	179450	2	NO_2	N	Y (8m)	N/A	Y
Horton Road (Caravan Park)	I	503136	175654	2	NO_2	N	Y (15m)	17m	Y
India Road	R	498681	179972	2	NO_2	N	Y (15m) rail	2m	Y
Lakeside Road	UB	503877	177459	2	NO_2	N	N	N/A	N
Lansdowne Avenue	I	497188	180050	2.5	NO_2	Y	Y (15m)	14m	Y
London Rd (A)	K	501733	177725	2.5	NO_2 , Benzene	Y	Y (5m)	3m	Y
London Rd (B)	I	501734	177733	2	NO_2	Y	Y (0m)	10m	Y
London Rd (C)	I	501658	177781	2	NO_2	Y	Y (0m)	10m	Y
Paxton Avenue	I(M)	496050	179258	2	NO_2	Y	Y (15m)	66m	Y
Pippins	UB	503542	176827	2.5	NO_2 , Benzene	N	Y (N/A)	N/A	Y
Princess Street	I	498541	179815	2	NO_2 , Benzene	Y	Y (5m)	17m	Y
Rogans (Colnbrook by pass)	K	501941	177633	2.5	NO_2	Y	Y (N/A)	5m	Y
Salt Hill	I	496599	180156	2.5	NO_2	N	Y (m)	10m	Y

Site Name	Site Type	OS Grid Ref		Site height (m)	Pollutants Monitored	In AQMA?	Relevant Exposure (distance from site)	Distance to kerb of nearest road	Worst-case Location?
Sandringham Court	R	493960	181355	2.5	NO_2	N	Y (26m)	Railway exposure (10+)	Y
Spackmans Way	I(M)	496272	179187	2.5	NO_2, Benzene	Y	Y (5m)	40m	Y
Sussex Place	K	498784	179560	2	NO_2	N	Y (5m)	6m	Y
Torridge Road	I (M)	501637	177999	3	NO_2	Y	Y (8m)	95m	Y
Tuns Lane	I	496416	180126	2.2	NO_2	Y	Y (0m) on the building facade	15m	Y
Tweed Road	I	501518	177882	2	NO_2	Y	Y (6m)	15m	Y
Walpole Rd	R	493493	181378	2.5	NO_2	N	Y (15m)	Railway exposure	Y
Wellesley Road	I	498071	179949	2.5	NO_2	Y	Y (3m)	12m	Y
Wellington Street - Stratfield	I	498168	179907	2.5	NO_2	Y	Y (21m)	13m	Y
Wexham Road	K	498394	179849	2	NO_2	Y	Y (3m)	1-5m	Y
Windmill (Bath Rd)	I	496533	180175	2	NO_2	N	Y (0m) on the building facade	5m	Y
Windsor Road 1N	K	497557	179825	2.5	NO_2	N	Y (34m)	1-5m	Y
Winvale	K(M)	497488	179090	2	NO_2	Y	Y (5m)	15m	Y
Yew Tree Rd (Ux Rd) (B)	I	498473	179706	2	NO_2	Y	Y (0m) on the building facade	8m	Y
Yew Tree Road (Uxbridge Rd)	K	498483	179707	2	NO_2	Y	Y (5m)	3m	Y

Figure 2.3: Slough diffusion tube locations (Slough Centre)



N

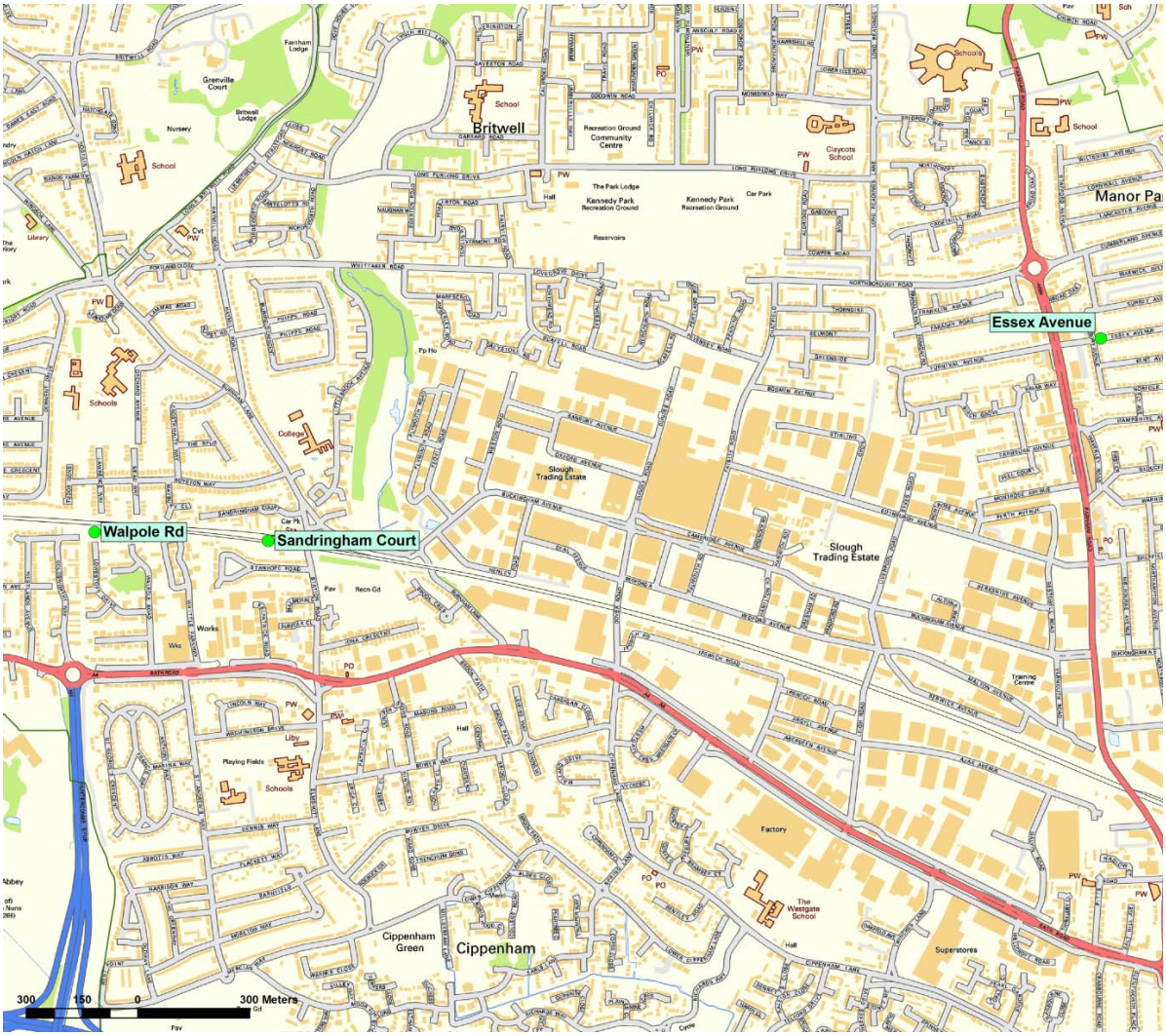
Legend:

Diffusion tube site

RICARDO-AEA

Figure 2.4: Slough diffusion tube locations (Slough East)

Figure 2.5: Slough diffusion tube locations (Slough North West)



N

Legend:

Diffusion tube site

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2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO_2)

Automatic Monitoring Data

The annual mean NO_2 concentrations measured at the automatic monitoring locations in Slough from 2008 to 2012 are presented in Table 2.3. Concentrations in excess of the 40 µg.m^{-3} objective are highlighted in bold.

The NO_2 annual mean concentrations measured at all sites within the borough were all less than the 40 µg.m^{-3} objective during 2012; the measured concentration at the Chalvey site was less than the objective for the first time in recent years.

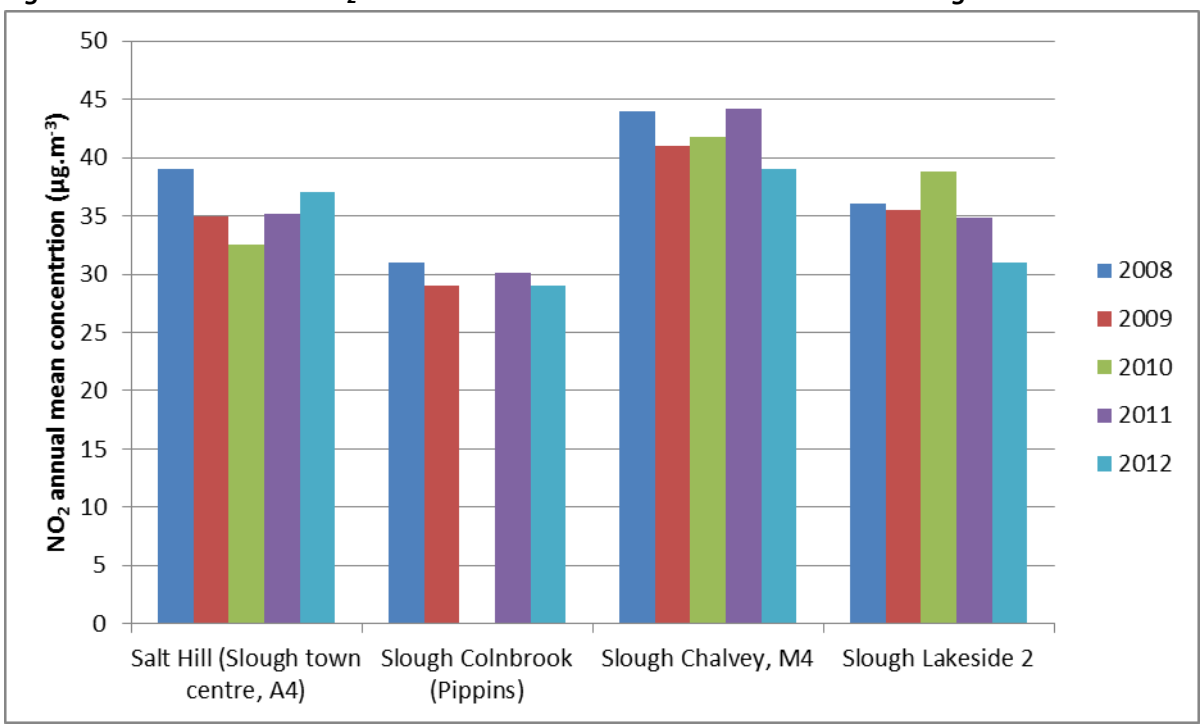
Table 2-3: NO_2 Automatic monitoring results: Comparison with annual mean objective

Site name	Within AQMA ?	Data Capture 2012 (%)	Annual mean concentrations (µg/m^3)				
			2008	2009	2010	2011	2012
Salt Hill (Slough town centre, A4)	N	98.7%	39	35	32.5	35.2	37
Slough Colnbrook (Pippins)	N	99.4%	31	29	29.5*	30.1	29
Slough Chalvey, M4	Y	95.1%	**44**	**41**	**41.8**	**44.2**	39
Slough Lakeside 2	N	90.8%	36	35.5	38.8	34.8	31

*** Annualised mean due to data capture < 75%**

A bar chart showing the trends in annual mean NO_2 concentrations over the last five years is presented in Figure 2.6. The chart shows annual mean NO_2 concentrations have in general been slightly declining over the last five years.

Figure 2.6: Annual mean NO_2 concentration measured at automatic monitoring sites 2008-2012



The number of measured 1-hour mean concentrations in excess of the 200 µg.m^{-3} short-term objective at each of the automatic monitoring sites are presented in Table 2.4. Only two exceedances of the short-term objective were recorded during 2012 at the Chalvey site. The Chalvey site is located within the waste compound of the Council's waste contractor Enterprise.

Table 2-4: NO_2 automatic monitoring results: Comparison with 1-hour mean objective

Site name	Within AQMA ?	Data Capture 2011 (%)	Number of exceedances of hourly mean objective (200 µg.m^{-3}) For data capture < 90%, the 99.79th %ile of 1-hr means is shown in brackets (µg.m^{-3})				
			2008	2009	2010	2011	2012
Salt Hill (Slough town centre, A4)	N	98.7%	0 (111)	0	0	0	0
Slough Colnbrook (Pippins)	N	99.4%	0	0	0 (103)	0	0
Slough Chalvey, M4	Y	95.1%	13	1(128)	1 (130)	0 (132)	2
Slough Lakeside 2	N	90.8%	0	0	0	0	0

Diffusion Tube Monitoring Data

Details of the annual mean NO_2 concentrations measured using diffusion tube sites during 2012 are presented in Table 2-5 and the series of results measured from 2008 to 2012 are presented in Table 2-6. Bar charts showing the trends in measured NO_2 annual mean concentrations measured with diffusion tubes are presented in Figure 2.7.

Annual mean NO_2 concentrations in excess of the 40 $\mu g.m^{-3}$ objective were measured during 2012 at a number of locations, most of which are within one of the existing AQMA boundaries.

Annual mean NO_2 concentrations in excess of the objective were also measured at the following locations where relevant receptors are present and the tubes fall outside the existing AQMAs during 2012.

- Elbow Meadows
- Goodman Park
- Windmill (Bath Road)
- Windsor Road 1N

The annual mean NO_2 concentrations at the nearest relevant exposure to these diffusion tube sites was predicted using the NO_2 distance calculator. The predicted annual mean concentration was less than the 40 $\mu g.m^{-3}$ objective at all locations with the exception of the tube at Windmill (Bath Road) where the measured annual mean was **43.7 $\mu g.m^{-3}$.** The diffusion tube at Windmill (Bath Road) is located on the building façade and is a location that is representative of relevant exposure.

It is therefore necessary to proceed to a Detailed Assessment of NO_2 at this location to determine the spatial extent of the exceedances of the annual mean objective. This Detailed Assessment was carried out in 2011, and based on the current available monitoring data it is likely to lead to a requirement to extend Tuns lane AQMA to include all residential properties at this section of Bath Road.

An annual mean concentration in excess of 60 $\mu g.m^{-3}$ was measured at Brands Hill during 2012 which is consecutive with previous years; this may indicate that the 1-hr mean objective of 200 $\mu g.m^{-3}$ is being exceeded at this location. It is Slough Borough Councils intention to locate an automatic station on Brands Hill that will allow both the annual mean and 1-hr mean objective to be monitored on a continuous basis.

Examination of the trend in NO_2 annual means measured across the Slough network of diffusion tubes indicates that concentrations have in general been increasing slightly over recent years.

Table 2-5: Results of NO_2 Diffusion Tubes 2012

Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2012 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	NO_2 Annual mean concentration 2012 ($\mu g.m^{-3}$) (Bias Adj. factor = 0.88)
Blair Road- Victoria Court	I	Y	N	100%	n/a	N	**50.4**
Brands Hill (A)	K	Y	N	100%	n/a	N	**66.7**
Brands Hill (B)	I	Y	N	92%	n/a	N	**49.1**
Chalvey (CAS)	I(M)	Y	Co-located	100%	n/a	N	**40.8**
Colnbrook By-pass	K	N	N	100%	n/a	No relevant exposure	**42.1**
Ditton Road	I(M)	Y	N	100%	n/a	N	**41.0**
Elbow Meadows	UB(M)	N	N	100%	n/a	n/a - Distance from kerb > 50m	**40.6** (36.2)
Essex Avenue	I	N	N	83%	n/a	N	34.7
Farnham Road (2)	I	Y	N	92%	n/a	N	**40.8**
Goodman Park (Ux Rd)*	I	N	N	67%	Y	Y	**44.5** (37.8)
Grampian Way	UB	Y	N	92%	n/a	N	**45.1**
Hencroft Street 6N	UB	N	N	100%	n/a	N	32.2
Horton Road (Caravan Park)*	I	N	N	50%	Y	N	37.1
India Road	R	N	N	100%	n/a	N	35.3
Lakeside Road	UB	N	N	100%	n/a	N	**45.5**
Lansdowne Avenue	I	Y	N	100%	n/a	N	**43.3**
London Rd (A)	K	Y	N	100%	n/a	N	**54.8**
London Rd (B)*	I	Y	N	67%	Y	N	36.6
London Rd (C)	I	Y	N	92%	n/a	N	**42.0**
Paxton Avenue	I(M)	Y	N	92%	n/a	N	**47.5**
Pippins	UB	N	N	83%	n/a	N	30.0

Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2012 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	NO_2 Annual mean concentration 2012 ($\mu g.m^{-3}$) (Bias Adj. factor = 0.88)
Princess Street	I	Y	N	83%	n/a	N	**44.8**
Rogans (Colnbrook by pass)	K	Y	N	100%	n/a	N	**55.4**
Salt Hill	I	N	N	100%	n/a	N	36.2
Sandringham Court	R	N	N	100%	n/a	N	32.2
Spackmans Way	I(M)	Y	N	100%	n/a	N	**43.4**
Sussex Place	K	N	N	92%	n/a	N	35.8
Torridge Road	I (M)	Y	N	100%	n/a	N	39.5
Tuns Lane	I	Y	N	100%	n/a	N	**40.4**
Tweed Road	I	Y	N	100%	n/a	N	**42.0**
Walpole Rd	R	N	N	92%	n/a	N	31.1
Wellesley Road	I	Y	N	100%	n/a	N	**41.9**
Wellington Street - Stratfield	I	Y	N	100%	n/a	N	**45.3**
Wexham Road	K	Y	N	100%	n/a	N	**51.7**
Windmill (Bath Rd)	I	N	N	100%	n/a	N (on façade)	**43.7**
Windsor Road 1N	K	N	N	100%	n/a	Y	**44.2** (37.4)
Winvale	K(M)	Y	N	75%	n/a	N	**48.3**
Yew Tree Rd (Ux Rd) (B)*	I	Y	N	67%	Y	N	**63.0**
Yew Tree Road (Uxbridge Rd)	K	Y	N	83%	n/a	N	**45.1**

* Short-term to long-term adjustment applied to estimate annual mean due to data capture < 75%

Annual mean NO_2 concentrations in excess of the 40 $\mu g.m^{-3}$ objective are highlighted in bold

NB: Where a distance correction calculation has been applied, the predicted annual mean concentration at the nearest relevant exposure is shown in brackets in red

Table 2-6: Results of NO_2 Diffusion Tubes (2008 to 2012)

Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m^3				
			2008 (Bias Adj. Factor = 0.93)	2009 (Bias Adj. Factor = 0.98)	2010 (Bias Adj. Factor = 0.82)	2011 (Bias Adj. Factor = 0.89)	2012 (Bias adj factor = 0.88)
Blair Road- Victoria Court	I	Y	**40**	**44.2**	**45.3**	**46.1**	**50.4**
Brands Hill	K	Y	**58**	**57.9**	**67**	**61.2**	**66.7**
Brands Hill (B)	I	Y	-	-	-	-	**49.1**
Chalvey (CAS)	I(M)	Y	37.7	**41.4**	**40.3**	**41.1**	**40.8**
Colnbrook By-pass	K	N	39	39.5	**42.3**	39.2	**42.1**
Ditton Road	I(M)	Y	39	38.6	**40.9**	**40.5**	**41.0**
Elbow Meadows	UB(M)	N	34	34.1	39.2	35.7	**40.6** (36.2)
Essex Avenue	I	N	30	33.5	39.6	33.8	34.7
Farnham Road (2)	I	Y	36	36.2	36.9	38.9	**40.8**
Goodman Park (Ux Rd)	I	N	-	-	-	-	**44.5** (37.8)
Grampian Way	UB	Y	**41**	**42.1**	**42.3**	**48.1**	**45.1**
Hencroft Street 6N	UB	N	29	29.7	30.8	30.6	32.2
Horton Road (Caravan Park)	I	N	31	30.9	37.7	32.2	37.1
India Road	R	N	-	37	35.5	32.9	35.3
Lakeside Road	UB	N	39	35.3	39.7	**43.4**	**45.5**
Lansdowne Avenue	I	Y	38	**40.4**	**45.1**	**45.5**	**43.3**
London Road (A)	K	Y	**47**	**48.9**	**59.1**	**49**	**54.8**
London Rd (B)	I	N	-	-	-	-	36.6
London Rd (C)	I	N	-	-	-	-	**42.0**
Paxton Avenue	I(M)	Y	38	**40**	38	38.9	**47.5**
Pippins	UB	N	28	28.7	31.6	29	30.0
Princess Street	I	Y	38	39	**42.3**	**45.8**	**44.8**
Rogans (Colnbrook by pass)	K	Y	**45**	**46.2**	**54.7**	**51.1**	**55.4**
Salt Hill	I	N	32.3	34.9	34.6	36	36.2
Sandringham Court	R	N	-	-	-	-	32.2
Spackmans Way	I(M)	Y	37	39.6	**41**	**44**	**43.4**
Sussex Place	K	N	36	37.6	**40.5**	35.6	35.8
Torridge Road	I (M)	Y	38	36.6	**47.4**	**41.2**	39.5
Tuns Lane	I	Y	34	35.8	39	36.6	**40.4**

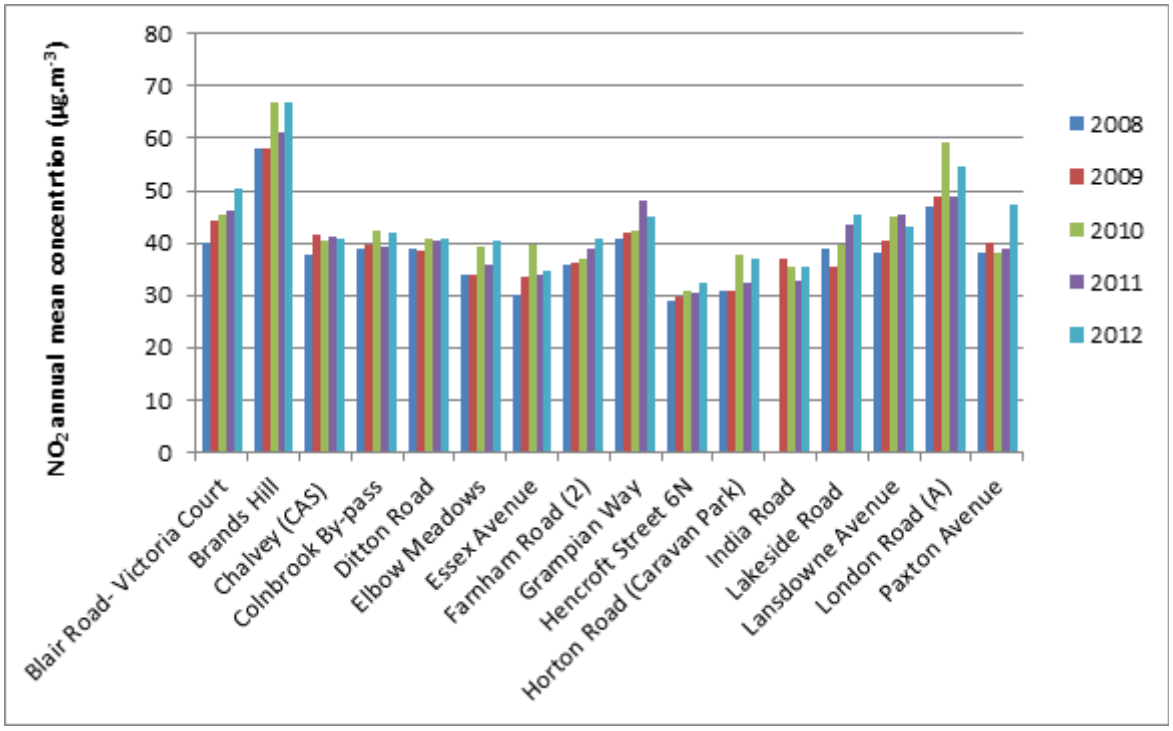
Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m^3				
			2008 (Bias Adj. Factor = 0.93)	2009 (Bias Adj. Factor = 0.98)	2010 (Bias Adj. Factor = 0.82)	2011 (Bias Adj. Factor = 0.89)	2012 (Bias adj factor = 0.88)
Tweed Road	I	Y	37	36.4	**41.2**	38.1	**42.0**
Walpole Rd	R	N	-	-	-	-	31.1
Wellesley Road	I	Y	37	**40.4**	**40.4**	39	**41.9**
Wellington Street - Stratfield	I	Y	38	37.6	39.4	35.7	**45.3**
Wexham Road	K	Y	**42**	**47.1**	**45.5**	**44.5**	**51.7**
Windmill (Bath Rd)	I	N	-	-	-	-	**43.7**
Windsor Road 1N	K	N	**43**	**44.9**	**43.2**	**45.2**	**44.2** (37.4)
Winvale	K(M)	Y	**44**	**42.1**	**40.9**	**46.9**	**48.3**
Yew Tree Rd (Ux Rd) (B)	I	N	-	-	-	-	**63.0**
Yew Tree Road (Uxbridge Rd)	K	Y	**49**	**49.2**	**60.3**	**56.1**	**45.1**

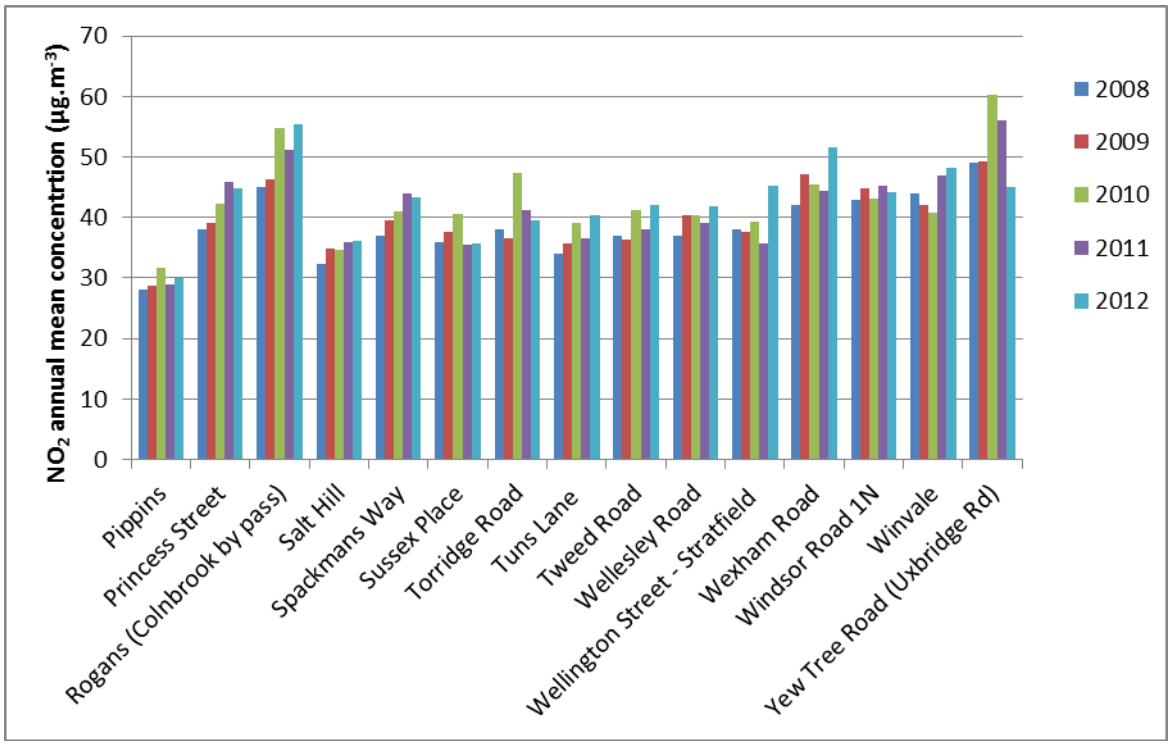
* Short-term to long-term adjustment applied to estimate annual mean due to data capture < 75%

Annual mean NO_2 concentrations in excess of the 40 µg.m^{-3} objective are highlighted in bold

NB: Where a distance correction calculation has been applied, the predicted annual mean concentration at the nearest relevant exposure is shown in brackets

Figure 2.7: Annual mean NO_2 concentrations measured at diffusion tube sites 2008 - 2012





2.2.2 Particulate Matter (PM_{10})

The annual mean PM_{10} concentrations measured from 2008 to 2012 are presented in Table 2-7 and Figure 2.8. No concentrations in excess of the 40 $\mu g.m^{-3}$ annual mean objective were measured at any of the monitoring locations.

The number of 24-hour mean PM_{10} concentrations in excess of the 50 $\mu g.m^{-3}$ short-term objective; measured from 2008 to 2012 are presented in Table 2-8. The 50 $\mu g.m^{-3}$ 24-hour mean objective was not exceeded more than 35 times at any of the monitoring sites during 2012.

Figure 2.8: Trends in annual mean PM10 concentrations measured from 2008 – 2012

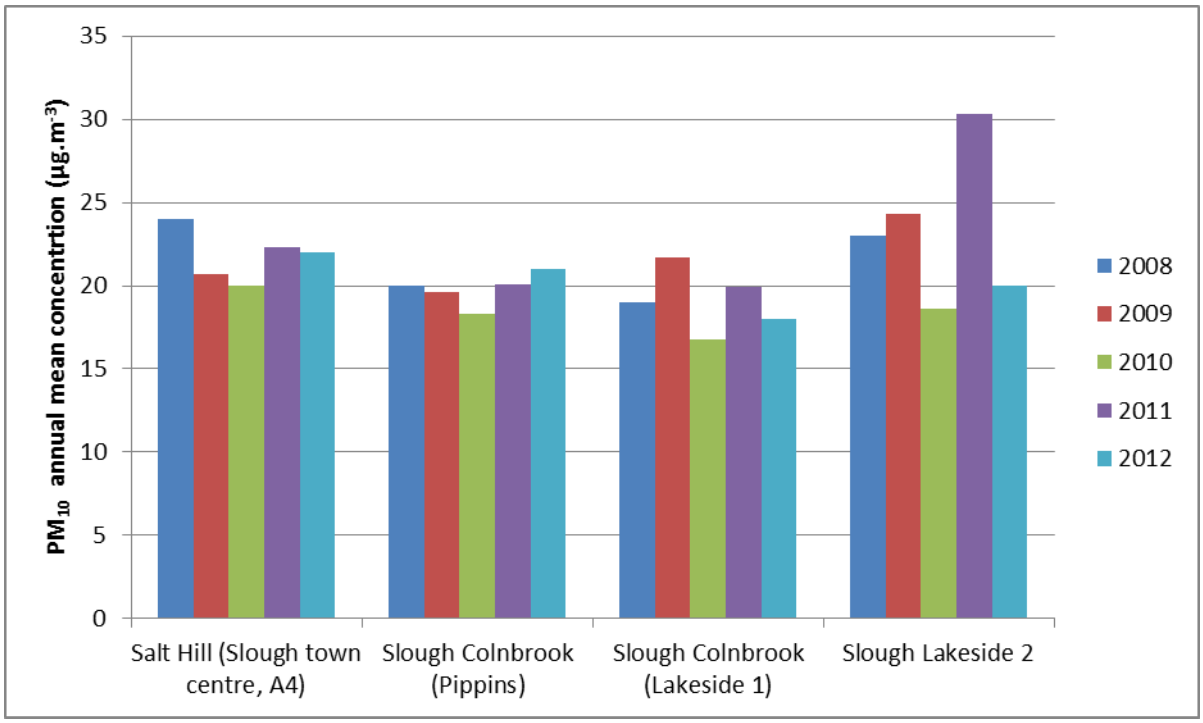


Table 2-7: Results of Automatic Monitoring for PM_{10}: Comparison with Annual Mean Objective

Site name	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2011 %	Confirm Gravimetric Equivalent	Annual Mean Concentration (µg.m^{-3})				
						2008	2009	2010	2011	2012
SLH4 - Salt Hill (Slough town centre, A4)	I	N	92%	92%	Y	24	20.7	20	22.3*	22*
SLH 3 - Slough Colnbrook (Pippins)	UB	N	93%	93%	Y	20	19.6	18.3	20.1*	21*
SLH 5- Slough Colnbrook (Lakeside 1, Tan Hse Farm)	UB	N	88%	88%	N (Osiris)	19	21.7	16.8	19.9#	18#
SLH 8 - Slough Lakeside 2	UB	N	75%	75%	Y	23	24.3	18.6	30.3	20

* TEOM results VCM corrected

Osiris result adjusted with factor calculated from co-location study at Colnbrook (Pippins)

Table 2-8: Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site name	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent	Number of Exceedances of 24-Hour Mean (50 µg.m^{-3})				
						2008	2009	2010	2011	2012
SLH4 - Salt Hill (Slough town centre, A4)	I	N	92%	92%	Y	42	4	0	0*	7*
SLH 3 - Slough Colnbrook (Pippins)	UB	N	93%	93%	Y	21	5	0	0*	13*
SLH 5- Slough Colnbrook (Lakeside 1, Tan Hse Farm)	UB	N	88%	88%	N (Osiris)#	31	14	1	36#	8#
SLH 8 - Slough Lakeside 2	UB	N	75%	75%	Y	39	18	4	37	14

* TEOM results VCM corrected

Osiris result adjusted with factor calculated from co-location study at Colnbrook (Pippins)

2.2.3 Sulphur Dioxide (SO_2)

Slough Borough Council do not currently measure sulphur dioxide concentrations.

2.2.4 Benzene

Benzene concentrations were measured at four diffusion tube sites within the Borough during 2012. The diffusion tube monitoring results for benzene at these sites across the time series 2008 – 2012 are presented in Table 2-9. Measured annual mean benzene concentrations have been significantly below the objective at all sites in recent years. Monitoring has now discontinued for Benzene as results are consistently well below the Air Quality Objectives.

Table 2-9: Measured annual mean Benzene concentrations 2012

Site ID	Location	Within AQMA ?	Data capture 2011	Annual mean concentrations (µg.m^{-3})				
				2008	2009	2010	2011	2012
B2	Princess Street	Y	75%	1.4	1.2	0.9	1.3	1.0
B3	Pippins School	N	67%	1.0	1.0	0.8	1.2	1.1
B5	London Road	Y	75%	1.4	1.1	0.8	1.1	1.2
B7	Spackmans Way	Y	75%	-	1.1	0.7	0.9	0.9

2.2.5 Summary of Compliance with AQS Objectives

Measured NO_2 concentrations were compliant with both the annual mean and short-term objectives at most relevant locations out-with the existing AQMAs within the Borough. An NO_2 annual mean in excess for the 40 µg.m^{-3} objective was measured at the diffusion tube site at Windmill (Bath Road).

No PM_{10} or benzene concentrations in excess of the relevant objectives were measured at any of the monitoring locations.

Slough Borough Council has measured concentrations of NO_2 above the annual mean objective at relevant locations outside of the existing AQMA and **completed a Detailed Assessment in 2011.** This report will be revised to take account of DEFRA comments and to clearly define the geographical extend of the extended Tuns Lane AQMA.

3 New Local Developments

3.1 Road Traffic Sources

A review of changes to the road network within the last year has identified that some roads within the Borough may have significantly changed traffic flows. The Chalvey traffic management project involved various experimental changes being made to the road network in Chalvey, starting in December 2011 and completed in February 2012. The changes were subsequently the subject of a pubic consultation exercise after which the Council decided in July 2012 to make the changes permanent subject to some minor revisions.

The aims of the Chalvey traffic management scheme are to reduce rat running, enhance public realm and improve residents' parking. To reduce through traffic the scheme involves:

- Chalvey Road East- became one way westbound only (i.e. up to railway bridge);
- Chalvey Road West- became one way eastbound only (i.e. between High St/ Church St junction and railway bridge);
- Ledgers Road - became one way northbound only between Chalvey Road junction and Montem Lane junction;
- Ragstone Road- became one way southbound only.

The Council anticipated that the effect of banning various through movements would be to increase left turns from the A4 Bath Road into A355 Tun's Lane and some changes to the lane markings were introduced to address this. It was probable that at least some through traffic is also diverting via the A322 Windsor Road/ A4 Bath Road.

Once traffic count data is available for the roads affected it will be possible to assess if there is a risk of the air quality objectives being exceeded at any relevant locations using the Updating and Screening assessment screening criteria.

3.2 Other Transport Sources

No other transport sources have been identified within the Slough Borough Council area since the last Updating and Screening assessment. There is a proposal outstanding for an International Freight Exchange in Colnbrook. This application is pending an appeal process which is currently in abeyance.

3.3 Industrial Sources

No new industrial sources have been identified within the Slough Borough Council area since the last Updating and Screening assessment. The Cemex, cement storage facility in Colnbrook was closed earlier in 2013. Scottish Southern Electric is proposing to install a new multifuel combined heat and power plant within its existing Slough Heat and Power Site within the Slough Industrial Estate. This proposal is in the very early stages of development, at the scoping stage. The developer will need to complete an air quality assessment for the proposal.

A full list of Local Authority and Environment Agency PPC regulated industrial processes within the borough is presented in Appendix B.

3.4 Commercial and Domestic Sources

No new commercial biomass sources or residential areas with widespread biomass combustion in use have been identified within the Slough Borough Council area since the last Updating and Screening assessment.

3.5 New Developments with Fugitive or Uncontrolled Sources

No fugitive or uncontrolled sources have been identified within the Slough Borough Council area since the last Updating and Screening assessment.

Slough Borough Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

- Changes to local traffic patterns following implementation of the Chalvey traffic management scheme.
- Scottish Southern Electric multifuel combined heat and power plant (40MW) gross electrical capacity and up to 20 MW of heat
- Slough Freight International Exchange in Colnbrook Ward

These developments will be taken into consideration in the next Updating and Screening Assessment

4 Local / Regional Air Quality Strategy

Slough Borough Council does not currently have a local or regional air quality strategy.

5 Planning Applications

A review of major planning applications determined during 2012 has identified only one residential development located within the existing AQMAs and no major development significantly affecting any of the existing AQMA. There are no developments identified that will need further consideration in the next Updating and Screening assessment.

Table 5-1 below lists major planning applications that were determined in 2012. One application had an air quality impact assessment associated with it.

Table 5-1 Major planning applications determined during 2012

Application number	Decision despatch date	PS2 description	Location	Within AQMA	AQ assessment included
P/14515/003	18/06/2012	All Other Developments Major	Slough Trading Estate, Central Core Area, Leigh Road, Slough	No	Yes, ADMS Roads based
P/06077/020	16/07/2012	All Other Developments Major	Slough Grammar School, Lascelles Road, Slough, SL3 7PR	No	No
P/04239/033	30/07/2012	All Other Developments Major	East Berkshire College, Station Road, Langley, Slough, SL3 8BY	No	No
P/10755/003	17/05/2012	All Other Developments Major	Poyle Place, Horton Road, Colnbrook, Slough, Berkshire	No	No
P/04296/019	27/06/2012	All Other Developments Major	478-480, Bath Road, Slough, Berkshire, SL1 6BE	No	No
P/15180/001	13/07/2012	All Other Developments Major	Upton Court Park, Upton Court Road, Slough, Berkshire	No	No
P/04479/004	22/08/2012	Dwellings Major	132, Knolton Way, Slough, SL2 5SG	No	No
P/01036/038	11/12/2012	Dwellings Major	Land at R/O, St Bernards Preparatory School, Hawtrey Close, SL1 1TB	No	No
S/00671/003	27/06/2012	Dwellings Major	Newbeech House, Long Readings Lane, Slough, SL2 1QP	No	No
P/02441/010	13/11/2012	Dwellings Major	Land at Wyeth Pharmaceuticals, Huntercombe Lane South, Taplow, Berkshire, SL6 0PH	No	No
P/00861/012	23/05/2012	Dwellings Major	Arbor Hill House, 39, Windsor Road, Slough, Berkshire, SL1 2EL	No	No
P/01913/007	22/02/2012	Dwellings Major	9-10, Chapel Street, Slough, SL1 1PF	No	No
P/02465/009	06/06/2012	Dwellings Major	226-228, High Street, Slough, Berkshire, SL1 1JS	No	No
P/00790/020	04/05/2012	Dwellings Major	281, High Street, Slough, SL1 1BD	No	No
P/13110/007	31/05/2012	Dwellings Major	Middlegreen Trading Estate, Middlegreen Road, Slough, Berkshire, SL3 6DF	No	No
S/00671/002	19/01/2012	Dwellings Major	Newbeech House, Long Readings Lane, Slough, SL2 1QP	No	No
P/08911/006	04/05/2012	Dwellings Major	311-313, High Street, Slough, Berkshire, SL1	No	No

Application number	Decision despatch date	PS2 description	Location	Within AQMA	AQ assessment included
			1BD		
P/07851/004	26/03/2012	Dwellings Major	Car park at the rear of, 165-175, Farnham Road, Slough, Berkshire, SL1 4XP	No	No
P/04385/011	13/04/2012	Dwellings Major	24, Ladbrooke Road, Slough, SL1 2SR	No	No
P/00636/007	11/07/2012	Dwellings Major	2-6, Wexham Road, Slough, Berkshire, SL1 1UA	Yes (lies off the main A4)	No
P/04479/002	21/03/2012	Dwellings Major	Wexham House, 132, Knolton Way, Slough, SL2 5SQ	No	No
P/15086/000	27/02/2012	Dwellings Major	9-12, Kingfisher Court, Farnham Road, Slough, Berks, SL2 1JF	No	No
P/09777/006	16/02/2012	Manufacturing Storage Warehousing Major	Former, John Taylor House, Blackthorne Road, Colnbrook, Slough, Berkshire, SL3 0AH	No	No
P/04489/004	27/02/2012	Manufacturing Storage Warehousing Major	8, Buckingham Avenue, Slough, Berkshire, SL1 4RA	No	No
P/13310/014	02/07/2012	Manufacturing Storage Warehousing Major	Unit 2, Colnbrook Industrial Estate, Colnbrook, Slough	No	No
P/13310/015	02/07/2012	Manufacturing Storage Warehousing Major	Unit 2, Colnbrook Industrial Estate, Colnbrook, Slough	No	No
P/09979/004	05/10/2012	Manufacturing Storage Warehousing Major	Mill House, Mathisen Way, Colnbrook, Slough, SL3 0HE	No	No
P/09961/002	20/11/2012	Offices Major	Brook and Future House, Poyle Road, Colnbrook, Slough, SL3 0AA	No	No
S/00308/004	27/04/2012	Offices Major	Britwell Community Hub, Wentworth Avenue, Britwell, Slough	No	No
S/00308/005	27/06/2012	Offices Major	Britwell Community Hub, Wentworth Avenue, Britwell, Slough	No	No

6 Air Quality Planning Policies

Extract from Slough Local Development Framework Core Strategy 2006 - 2026 (adopted December 2008) – Sustainability and the Environment chapter.

Whilst most new development has some effect on the environment, it is particularly important in a densely populated area like Slough that the impact is kept to a minimal level and appropriate mitigation measures are provided. The ability to carry out mitigation measures may not necessarily justify permitting a development particularly where there would be a loss of amenity or create other adverse impacts. In addition the cumulative impact of development upon the environment will have to be taken into account.

There are currently two areas close to the motorways which have been designated as Air Quality Management Areas. They are unsuitable for residential development and other sensitive uses, unless it is practical to incorporate mitigation measures to reduce the effects to acceptable levels.

Slough Local Development Framework 'Core Strategy 2006 – 2026' sets out the policies and guidance to govern the spatial planning of Slough over the next 20 years. This document therefore determines the relationship between planning and air quality within Slough. Of particular relevance are Core Policy 7 and Core Policy 8.

Core Policy 7 Transport

Development proposals will, either individually or collectively, have to make appropriate provision for:

- *Reducing the need to travel*
- *Widening travel choices and making travel by sustainable means of transport more attractive than the private car*
- *Improving air quality and reducing the impact of travel upon the environment, in particular climate change.*

Core Policy 8 - Sustainability and the Environment

All development in the Borough shall be sustainable, of a high quality design, improve the quality of the environment and address the impact of climate change.

> ***3. Pollution***
> ***Development shall not:***
> *a) Give rise to unacceptable levels of pollution including air pollution, dust, odour, artificial lighting or noise;*
> *b) Cause contamination or a deterioration in land, soil or water quality; and*
> *c) Be located on polluted land, areas affected by air pollution or in noisy environments unless the development incorporates appropriate mitigation measures to limit the adverse effects on occupiers and other appropriate receptors*

The Core Strategy also highlights air quality in the following policies/statements;

7.16 *The Spatial Strategy also means that there is no need to build on any land outside of the urban area which has been ruled out for a number of reasons. …Thirdly much of the land is subject to a number of physical or technical constraints. These include the land being subject to flooding, being land filled, having unsuitable access, being in the Public Safety Zone and being subject to excessive noise or poor air quality.*

7.49 *The Sustainability Appraisal Report (Doc.22) identifies the potential adverse environmental effects of the scale of the proposed residential development in the town centre. These include the problems of congestion and air quality….*

7.84 *Office development in the town centre will also be subject to parking restraint which, together with improvements to public transport, should reduce the amount of commuting by the private car. This will help to tackle the problems of congestion and poor air quality in the town centre.*

7.124 *The Slough Local Transport Plan (Doc.14), in accordance with Planning Policy Statement13 – Transport (PPG13), seeks to reduce congestion, improve accessibility, create safer roads, improve air quality and mitigate the impact of the transport system on the environment and ensure that it contributes towards broader social and economic objectives. To effectively tackle congestion the plan seeks to widen travel choices by making public transport, cycling and walking more attractive than the private car….*

7.130 *The Local Transport Plan (Doc.14) has identified a link between the amount of traffic on Slough's roads and an increasing level of pollutants in the town centre, such as carbon dioxide, a contributor to climate change. The plan identifies two Air Quality Management Areas (AQMAs) in Slough and a third may be declared in the town centre that could limit the scope for development there. Target: Annual mean NO2 air quality levels to be 35 ug/m3 by 2021.*

7.141 *The Local Transport Plan (Doc.14) contains a draft Air Quality Action Plan which sets out measures to tackle air quality problems. Further detailed work will have to be carried out to show how air quality problems in the town centre can be mitigated in order to allow the planned additional development to take place. April 2011 Slough Borough Council – England 42 Progress Report*

7.153 *There are currently two areas close to the motorways which have been designated as Air Quality Management Areas. They are unsuitable for residential development and other sensitive uses, unless it is practical to incorporate mitigation measures to reduce the effects to acceptable levels. Other areas of the Borough are affected by pollution from noise, dust, and chemicals, which may limit new development.*

7.160 *Relevant planning applications will have to be accompanied by noise, light pollution or odour studies, which demonstrate that the proposed development will not have an unacceptable impact upon adjoining uses. Developers will also have to carry out air quality modelling to show that the site is not affected by poor air quality and that the proposed activity will not make the air quality any worse.*

9.2 *There is a risk that the Spatial Strategy of concentrating development in the town centre with taller, denser buildings, together with increased transport movements, will combine to increase emissions and limit the potential for the concentration of pollutants to be dispersed. This has the potential to create significant localised long term adverse effects.*

9.3 *The air quality review carried out by the council showed that an area along the A4 in the town centre was close to exceeding the nitrogen dioxide objective primarily as a result of road traffic congestion. An Air Quality Management Area (AQMA) was not declared but this will have to be kept under review in the light of the proposals to build large numbers of residential units in the town centre. Any significant deterioration in air quality could therefore undermine the Spatial Strategy and limit the amount of residential development that can take place there.*

9.4 *As a result, air quality in the town centre will have to be monitored and the effects of any changes to the road system, such as those proposed in the Heart of Slough, will have to be fully assessed.*

Mitigation measures may also have to be introduced such as reducing congestion and controlling the amount of stationary traffic in critical areas. At the same time, buildings may have to be designed so that non residential uses are located on the most sensitive areas. The council will also continue to implement and develop the air quality action plan in the Local Transport Plan. The 'General Development Guidance – Developer's Guide Part 4' is intended to assist developers who are proposing to submit planning applications for residential and commercial schemes in Slough. Air Quality is addressed in Chapter 5. Within this chapter there is a description of the background of Air Quality management in Slough, the existing AQMAs and Action Plan.

7 Local Transport Plans and Strategies

Slough Borough Council's Local Transport Plan is titled LTP3 (after LTP2 expired in March 2011). The following statements specifically refer to Air Quality in LTP3:

LTP Objective: to protect and improve personal health

Improving local air quality
5.6.2 There is clearly a direct link between the amount of traffic on Slough's roads and the levels of pollutants in the air. Of particular concern are levels of nitrogen dioxide (NO_2). In two areas in Slough the levels of NO2 exceed the UK national standards and objectives and also the EU air quality directive limit values. The main source of the exceedance is from road traffic.

5.6.3 As a result, these areas were declared as Air Quality Management Areas (AQMAs) in 2005. One area extends along the length of the M4 and the other along the A4 at Brands Hill approaching Junction 5 of the M4. Our ongoing monitoring and forecasting work shows that NO_2 levels at a number of other locations along Tuns Lane and the A4 in the town centre are also poor, meaning that two further AQMAs will be declared in 2011.

5.6.4 Air Quality Action Plans (AQAP) were agreed in 2006 for the Brand's Hill and M4 AQMAs and integrated within the LTP2. Our action plans have been revised and the specific measures incorporated into the LTP3 as appropriate. Our work shows that, to reduce levels of NO2 we need to:
• reduce the number of vehicles on the roads;
• reduce the levels of emissions from vehicles per mile; and
• reduce stop/start traffic conditions.

5.6.5 We intend to prepare AQAPs for the newly declared town centre AQMAs at the same time that we produce our comprehensive 3-year LTP3 Implementation Plan in Autumn 2011. By linking the plans in this way we aim to show the integration between the LTP3 and air quality management. The new AQAP was granted approval in November 2011 and is included in Appendix C of the report.

5.6.6 Components of LTP3 that will help to minimise the effect of transport on local air quality are described below.

Sustainable land use planning

5.6.7 Sustainable land use policies will be key to reducing traffic volumes and focusing development in the most accessible locations such as the town, district and neighbourhood centres, making the best use of existing and proposed infrastructure and helping build local communities for example by protecting the suburban areas and public green spaces. LDF policies that will support our drive to improve air quality:

- limiting the amount of parking allowed;
- requiring developers to prepare 'transport assessments' of the impacts of the development;
- securing financial contributions from development proposals for improving transport links(e.g. to Heathrow); developing transport hubs (in Slough Town Centre and the Trading Estate) and improving the borough's railway stations;
- tackling congestion by seeking to widen travel choices and make travel by sustainable means more attractive than the private car.

5.6.8 Improving the management of traffic in Slough, particularly along the A4, is necessary to reduce congestion and improve air quality along this corridor and in the town centre. We believe we can

reduce queuing, improve the reliability of journey times and promote quicker, more reliable bus journey times along the A4 corridor if we can reduce overall demand for travel. In doing so, we will improve local air quality by reducing emissions from road vehicles.

5.6.9 We will invest in Urban Traffic Management and Control (UTMC) systems and other Intelligent Transport Systems (ITS) developments, particularly focusing on the A4 corridor. Other traffic and parking management measures such as 20mph zones and controlled parking zones will help us remove unnecessary traffic from residential areas and improve the flow of traffic on key local routes. Better co-ordination of street works and event planning will also assist.

5.6.10 Traffic on the A4 approaching Junction 5 of the M4 is a major contributor to air quality problems. We will seek ways of better managing traffic at this junction but recognise that the way in which the junction is managed heavily influences traffic flows along the M4 itself. We will therefore work with the Highways Agency to examine ways of improving air quality without unduly affecting the M4. Further, the M4 itself it a major generator of emissions and we will also work with the Highways Agency to reduce the impact of the M4 on Slough's residents, workers and visitors.

Cleaner buses, taxis and commercial vehicles

5.6.11 Better management of commercial vehicles, especially Heavy Goods Vehicles (HGVs) on the local road network will be a key action in improving local air quality and we will engage with local businesses and freight operators on how this can be achieved. Upgrading of the lorry and van fleet with greater use of cleaner technology and alternative fuels will help reduce the emission of pollutants as well as emissions of CO_2.

5.6.12 The environmental performance of the bus fleet will increase as new vehicles are put on the road. Within the context of our quality bus partnership with First Berkshire we will promote cleaner buses, including on services passing through the AQMA at Brands Hill. The upgrading of the taxi fleet and the Council's own vehicles will also benefit air quality.

5.6.13 We are committed to significant investment to promote sustainable modes of travel as well as addressing environmental problems including local air quality. For example, through our cycling and walking strategies we will promote use of these low carbon and healthy modes. Many elements of this LTP3 will also support raised standards of air quality by reducing dependence on the private car by making bus and train travel more attractive.

5.6.14 Our parking strategy seeks to restrain and reduce demand for long stay parking in the town centre to promote greater use of public transport, walking and cycling. We will also restrict parking provision associated with new developments as much as possible to prevent significant increases in the size of the overall parking stock and introduce additional Parking Watch Zones. By managing demand for travel by car we can manage emissions. Use of variable message signs and other technology will assist in reducing circulating car park traffic in the town centre.

5.6.15 We continue to deliver travel plans and safer routes to school across Slough to promote walking and cycling and reduce the number of pupils driven to school to minimise the effect school run traffic has on local air quality, and congestion.

5.6.16 Regeneration of the Slough Trading Estate will be linked with significant investment to encourage more sustainable commuter and business travel patterns. We will also continue working with BAA Heathrow on implementation of the Heathrow travel plan as many of Heathrow's workers live in Slough. Staff travel plans will also remain as an integral part of considering planning applications for new developments.

5.6.17 Our Health and Wellbeing Strategy aims to make it easier for people in Slough to be physically active, helping combat obesity, high mortality due to heart disease or stroke. This LTP3 can contribute to this aim by promoting and facilitating active travel i.e. walking and cycling.

5.6.18 Apart from being healthy, walking and cycling offer low carbon, non-polluting alternatives to the private car. Our walking and cycling strategies, combined with our Rights of Way Improvement Plan (RoWIP) are directed at improving facilities and encouraging more people to walk and cycle.

5.6.19 Investment in maintaining and enhancing walking and cycle routes to make them safer and more attractive is the foundation for boosting levels of active travel in Slough. We will work with health partners, the proposed Cycle Forum (see §5.8.34) and others to promote the health benefits.

5.6.20 Our smarter choices strategy places a strong emphasis on promoting walking and cycling to school by working in partnership with schools and developing initiatives to make travel by these modes more attractive. Initiatives to do this include:

- walking buses;
- walk to school awards;
- cycle training and
- Provision of secure and sheltered cycle parking.

5.6.21 Partnership working with employers on preparation and delivery of workplace travel plans also offers an opportunity for the health aspects of travel to be reinforced and this is something we will pursue.

Smarter choices campaign

5.8.17 We will manage a campaign to raise awareness about the impact of car emissions on local air quality and climate change. The campaign will be targeted at young people, ethnic minority communities and commuters. The campaign will also promote the benefits of alternative modes including public transport, walking, cycling, scooter, bike rental, car sharing, car clubs, and incentives to employees for sustainable travel.

5.8.18 We recognise that the poor perception of public transport is a key factor in deterring usage, especially by car drivers. We will therefore also use the campaign to enhance the image of public transport, remove negative associations and make people aware of the availability of bus and rail services. Opening of the new bus station and improvements to Slough station will be a catalyst.

LTP3 Supplementary Strategy Document – Freight Strategy

2.5 Traffic Management Act 2004

The Traffic Management Act now places a network management duty (NMD) on all local authorities to keep traffic flowing and to manage traffic more efficiently… Proposals or initiatives within the borough must recognise the needs of freight and manage its impact on the highway network, including reducing delays and reduce vehicle delays, particularly in areas with existing poor air quality.

3.3 Key Issues and Challenges

Freight traffic contribute to air quality issues in the borough

8 Climate Change Strategies

The Slough Borough Council Climate Change Strategy for Slough 2011 – 2014 acknowledges the link between measures to reduce greenhouse gas emissions and reducing emissions that lead to poor air quality. The strategy lists a number of measures relating to road transport and air quality and cross references the action plans for the AQMA's within the borough.

9 Implementation of Action Plans

Following public consultation during 2012 the finalised action plan for the AQMA at Tuns Lane (AQMA order 3) and the Town Centre (AQMA order 4) was adopted in November 2012. A summary of the action plan measures and progress to date is provided in Table 9-1.

For the Brand's Hill (AQMA order 2), progress on the actions was reported in Chapter 5 of the Slough Borough Council LTP2 Delivery Report published in July 2012. The report is available upon request from Slough Borough Council.

Table 9-1: Action Plan measures and progress to date

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Sustainable Land Use Planning								
Limit the amount of parking allowed in new development.	SBC maintain ceiling figure on town centre parking supply and restrictions on scale of on-site parking generally.	Low	Long term	1	Ongoing			All Actions being followed through planning development control
Require developers to prepare transport assessments of the impacts of the development.	SBC update existing guidance under 'General Development Guidance: Developers Guide Part 4'. SBC require developers to show in transport assessments based on satisfactory evidence that negative air quality impacts will be designed out.	Low	Long term	1	Ongoing			
Secure financial contributions from development proposals for improving transport links (e.g. to Heathrow); developing transport hubs (in Slough town centre and the Trading Estate) and improving the borough's railway stations.	Securing s106 agreements, strengthened by third party contributions towards the LSTF *Smarter Travel Slough* project (see Note 1 at foot of table).	Low	Long term	1	Ongoing			

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Tackle congestion by seeking to widen travel choices and make travel by sustainable means more attractive than the private car.	Delivery of *Smarter Travel Slough* LSTF project (see 'Promoting less polluting travel' and 'School and workplace travel plans' below). BBAF project will enable programme to be enhanced.	Low	Long term	1	Ongoing			LSTF project is in progress and will continue into 2014/15
Better management of congestion and speed								
Reduce queuing, improve the reliability of journey times and promote quicker, more reliable bus journey times along the A4 corridor by reducing overall demand for travel.	Reducing travel demand through *Smarter Travel Slough* LSTF project (see 'Promoting less polluting travel' and 'School and workplace travel plans' below).	Low	Long term	1	Ongoing			LSTF project is in progress and will continue into 2014/15
	Delivery of bus priorities as part of BBAF project (see Note 2 at foot of table).	Low	Long term	2	Short term: programming of action detailed in BBAF project, see Note 2 at foot of table / Medium term: LTP3 programme.			BBAF project is in progress, completion due March 2014

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Improve the management of traffic particularly along the A4 to reduce congestion and improve air quality through investment in Urban Traffic Management and Control (UTMC) and other Intelligent Transport Systems (ITS) developments.	Continuing investment in ITS designed to help stabilise and reduce emissions. Development of a Slough UTMC system with integration of traffic and pedestrian crossing signals within and on the approaches to the AQMAs including the A4/ A355 Three Tuns junction, A4/ A322/ B416 Heart of Slough junction, A4 Tesco/ Queensmere junction, A4/ A412 Uxbridge Road/ Yew Tree Road junction .	See Note 3 at foot of table	See Note 3	3	Short term: programming of action detailed in BBAF project, see Note 2 at foot of table / Medium term: LTP3 programme.			
Review strategic traffic signing and identify other ways of providing information on appropriate HGV routes.	Work with freight operators and Highways Agency to develop advisory lorry routes and map so that trips can be planned where possible to avoid AQMA 3 and 4.	Low	Medium to long term	1	Short/ Medium term			Work yet to start
Other traffic management measures.	SBC to consider making permanent the A4 temporary 30mph speed permanent along A4 through AQMA 4.	Low	Long term	1	Short term			Not yet progressed

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Better co-ordination of street works and event planning.	Proactive engagement with utilities companies and regular event organisers. Carrying out Traffic Management Act network duty in line with SBC network management plan and processes.	Low	Short term	1	Ongoing			Action being progressed
Partnership working to reduce the impact of the M4 on Slough's residents, workers and visitors. Seek ways of better managing traffic at M4 junctions, recognising that the way these junctions are managed heavily influences traffic flows along the M4 itself.	Joint working with the Highways Agency and neighbouring authorities in line with M4 AQMA Action Plan to examine ways of improving air quality without unduly affecting the M4. Implementation of 'Managed Motorway' proposals for hard shoulder running.	Low for AQMA 3 and 4	Long term	3	Medium/ Long Term: Managed Motorway scheme now being developed by Highways Agency for potential delivery post-2015.			Liaison being maintained with HA through Berkshire Strategic Transport Forum (BSTF) Progress slow.
Managing parking demand								
Restrain and reduce demand for long stay parking in the town centre to promote greater use of public transport, walking and cycling.	Maintain ceiling figure on town centre parking supply and restrictions on scale of on-site parking.	Low	Long term	1	Ongoing			Action being followed through planning development control

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Restrict parking provision associated with new developments as much as possible to prevent significant increases in the size of the overall parking stock.	See under 'Sustainable Land Use Planning' above							
Reduce circulating car park traffic in the town centre.	SBC to explore greater use of variable message signs and other technology to guide drivers.	Low	Long term	1	Short/ Medium term			Action being progressed through Council's ITS strategy
Reduce adverse impact of town centre loading and unloading.	Work with freight/ logistic operators to review town centre loading/ unloading in terms of location, size, accessibility and time limits and hours of operation.	Low	Long term	1	Short/ Medium term: programming of action to be set in consultation with Town Centre Manager, when appointed.			Action being progressed through Council's freight strategy
	Explore with freight/ logistics operators the potential for a freight consolidation centre to cater for town centre deliveries.	Low	Long term	1	Medium/ Long term: programming of action to be set in consultation with Town Centre Manager, when appointed.			

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Cleaner buses, taxis and commercial vehicles								
Working with freight and logistics operators to improve the environmental performance of their lorry and van fleets and operations with greater use of cleaner technology and alternative fuels.	Partnership working through creation of a Freight Quality Partnership or forum.	Low	Long term	1	Short term: programming of action to be set in consultation with Freight Quality Partnership / forum.			Actions being pursued through the DEFRA- funded Air Quality Grant project ref 232a2012
	Work with operators to assess the impact on Slough operations of TfL Low Emission Zone (LEZ) requirements. Explore ways of improving fleet fuel efficiency performance including potential introduction of ECO Stars Fleet Recognition Scheme award scheme for efficient and cleaner fleet vehicles.	Low	Long term	1				
	Work with operators to promote Safe and Efficient Driving (SAFED) training.	Low	Long term	1				Actions being pursued through the DEFRA- funded Air Quality Grant project ref 232a2012
	Work with operators to encourage drivers to switch off engines when stationary. Seek where necessary use of fixed penalty notices.	Low	Long term	1				

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Working with bus operators to improve the environmental performance of their vehicles and operations with greater use of cleaner technology and alternative fuels.	Work through the Bus Quality Partnership (QP) and with neighbouring authorities to promote the use of low emission vehicles in the bus fleet operating in Slough.	Low	Long term	2	Short term			Actions being pursued through the DEFRA- funded Air Quality Grant project ref 232a2012
	Introduction by the operators of vehicles using alternative fuels with support from the DfT Green Bus Fund (see Note 4 at foot of table).	Low	Long term	3	Short term: programming detailed in Green Bus Fund bid, see Note 4 at foot of table.			
	Work with operators to promote programmes to encourage fuel efficient driving and switching off engines when stationary.	Low	Long term	1	Short term: programming of action to be set in consultation with Bus QP.			
Working with taxi operators to improve the environmental performance of their vehicles and operations	Work with the taxi trade to examine the potential for reducing vehicle emissions e.g. through promoting best practice use of ranks, improvements in engine maintenance/ technology.	Low	Long term	2	Short/ Medium term: programming of action to be set in consultation with taxi trade representatives.			
	Work with the taxi trade to encourage fuel efficient driving and switching off engines when stationary. Seek where necessary use of fixed penalty notices.	Low	Long term	1	Short term: programming of action to be set in consultation with taxi trade representatives.			

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
Upgrading of the Council's own vehicles.	Continue SBC policy of reducing emissions from Council vehicle fleet through maintenance, modification & where feasible replacement.	Low	Long term	2	Short/ Medium term: programming of action to be set in consultation with SBC fleet manager.			
Partnership working with Heathrow Area Local Authorities (LBs of Hillingdon and Hounslow, Spelthorne BC) to identify measures for reducing nitrogen dioxide concentrations at specified hotspots in the wider Heathrow area.	Complete DEFRA- funded Heathrow Air Quality Hotspot Project into feasibility of implementing a very low emission zone (VLEZ) along with other measures. Project includes the development of an emissions model and evaluation of the performance of low-emission technologies (e.g.hybrids).	Ongoing						
Promoting less polluting travel								
Promoting sustainable modes of travel as alternatives the car	Delivery of *Smarter Travel Slough* LSTF and BBAF projects to reduce car dependency and encourage modal shift (see Notes 1 and 2).	Low	Medium/ Long term	1	Short term: programming of action detailed in LSTF and BBAF projects: see Notes 2 and 3 at foot of table)/ Medium term: LTP3 programme.			LSTF project is in progress and will continue into 2014/15 Bike Hire scheme due to go live August 2012
	Promotion, education and awareness raising including publicity material to promote non car modes/environmental awareness/car free days/cleaner fuels etc.	Low	Medium/ Long term	1				

LTP3 STRATEGY COMPONENTS	Requirements for implementation	NO_x reduction		Technical feasibility	Timescale for completion/ implementation			PROGRESS
		Potential impact on NO_2	Timescale of impact					
	Provision of improved pedestrian and cycling facilities; new routes; filling in gaps in network; bike hire/ hubs; safer crossings.	Low	Medium/ Long term	1				
	Promotion of electric/ low emission vehicles; provision of electric vehicle recharging points in Council car parks and, where possible, in new developments.	Low	Long term	2	Short/ Medium term			Two fast charging points installed in town centre car parks 2013; one slow charger provided in one new housing development. Bids in April 2013 to OLEV for grant to fund a rapid charge point in town centre and 9 fast charge points in local car parks across the Borough. EV strategy being drawn up by BSTF
	Explore potential for future town centre residents' car club.	Low	Long term	1	Medium term			Enquiry received from promoter of EV car clubs: being investigated

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

The NO_2 annual mean concentrations measured at all of the automatic monitoring sites within the borough were less than the 40 $\mu g.m^{-3}$ objective during 2012; the measured concentration at the Chalvey site was less than the objective for the first time in recent years. No exceedances of the short-term NO_2 objective were recorded at any of the automatic monitoring sites during 2012.

An annual mean NO_2 concentration in excess of the 40 $\mu g.m^{-3}$ objective was measured at one diffusion tube location that is representative of relevant human exposure during 2012. This diffusion tube at Windmill care home (Bath Road) is located on the building façade. This location is representative of relevant exposure at the residential properties on the north side of Bath Road. The Detailed Assessment and Further Assessment 2011 report will be revised to take account of DEFRA comments and to clearly define the geographical extent, of the extended Tuns Lane AQMA.

Examination of the trend in NO_2 annual means, measured across the Slough network of diffusion tubes, indicates that concentrations have in general been increasing slightly over recent years.

No annual mean PM_{10} concentrations in excess of the 40 $\mu g.m^{-3}$ annual mean objective was measured at any of the monitoring locations. The 50 $\mu g.m^{-3}$ 24-hour mean PM_{10} objective was not exceeded more than 35 times at any of the monitoring sites during 2012.

10.2 Conclusions relating to New Local Developments

The review of local major developments has not identified any locations where there may be a risk of the air quality objectives being exceeded; no additional air quality assessment is recommended at this time.

A number of changes to the road network have been made as part of the Chalvey Traffic Management Project. Once traffic count data is available for the roads affected it will be possible to assess if there is a risk of the air quality objectives being exceeded at any relevant locations using the Updating and Screening assessment screening criteria. There are two proposed industrial developments the Slough International Freight Exchange and Southern Electric multifuel combined heat and power plant that may give rise to significant air quality impacts local. Both will require detailed air quality assessments and will considered at the 2015 Updating and Screening Assessment

10.3 Proposed Actions

The new monitoring data has identified the need to proceed to a detailed assessment of NO_2 at the section of Bath Road between the Town Centre and Tuns lane AQMA's where the Windmill (Bath Road) diffusion tube is located. This Detailed Assessment was completed in 2011 and will be revised shortly.

Any changes that may be required to the Town Centre or Tuns Lane AQMA will be determined by the outcome of the Detailed Assessment at Bath Road.

The next course of action will be:

- Prepare by August 2013- the revised 2011 Detailed and Further Assessment which will clearly show the geographical extent of the Tuns Lane AQMA.
- Prepare the 2014 Progress Report.

11 References

Department for Environment, Food and Rural Affairs, (2009) Local Air Quality Management Technical Guidance LAQM.TG (09).

Department for Environment, Food and Rural Affairs, Air Quality Strategy for England, Scotland Wales and Northern Ireland, 2007.

Slough Borough Council, Air Quality Updating and Screening Assessment, 2009

Slough Borough Council, Air Quality Review and Assessment Progress Report, 2010

Slough Borough Council, Air Quality Review and Assessment Progress Report, 2011

Slough Borough Council Air Quality Detailed and Further Assessment 2011

Spreadsheet of Diffusion Tube Bias Adjustment Factors accessed at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Slough Borough Council, Core Strategy 2006 – 2026 – Development Plan Document

Slough Borough Council - Slough's Third Local Transport Plan

Slough Borough Council – Climate Change Strategy for Slough 2011 - 2014

Appendices

Appendix A: QA/QC data

Appendix B: Regulated industrial processes

Appendix A: QA/QC Data

QA/QC of automatic monitoring

Slough Borough Council's automatic sites are part of the National Automatic Monitoring Calibration Club, whereby monitoring data are managed to the same procedures and standards as AURN sites by AEA Technology

PM_{10} Monitoring Adjustment

Daily mean TEOM measurements were adjusted to account for the volatile fraction of particulate matter using data download from the Kings College VCM Portal Website.

QA/QC of diffusion tube monitoring

The diffusion tubes deployed by Slough Borough Council are supplied and analysed by ESG using a preparation mixture of 50% triethanolamine (TEA) in acetone. ESG participate in the WASP scheme and 100% of results submitted during 2012 were determined to be satisfactory based upon a z-score of < ± 2.

Diffusion Tube Bias Adjustment Factors

Three local co-location studies were conducted within the borough during 2011 at Pippins, Salt Hill and Chalvey. Bias factors have been calculated for each site.

Table A.2 shows details of the calculation of the combined bias adjustment factor; details of how the co-location factors were calculated are presented in Figures A.1 to A.3.

Table A.2: Calculation of the average diffusion tube bias adjustment factor 2012

Co-location site	Bias adjustment factor 2012
Chalvey	0.86
Colnbrook	0.88
Salthill	0.91
Average bias	**0.88**

Figure A.1: Co-location study – Slough Chalvey

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	05/01/2012	02/02/2012	55.9	55.4	49.0	53	3.8	7	9.5
2	02/02/2012	29/02/2012	48.8	44.4	51.2	48	3.4	7	8.6
3	29/02/2012	29/03/2012	59.6	56.4	58.7	58	1.7	3	4.1
4	29/03/2012	24/04/2012	34.0	38.2	42.0	38	4.0	11	9.9
5	24/04/2012	31/05/2012	34.8	31.2	36.4	34	2.7	8	6.6
6	31/05/2012	28/06/2012	43.1	36.7	42.0	41	3.4	8	8.5
7	28/06/2012	02/08/2012	40.9	40.1	40.5	41	0.4	1	1.0
8	02/08/2012	30/08/2012	47.3	46.5	48.3	47	0.9	2	2.3
9	30/08/2012	28/09/2012	41.2	40.6	54.6	45	7.9	17	19.7
10	28/09/2012	31/10/2012	47.0	46.7	44.6	46	1.3	3	3.3
11	31/10/2012	27/11/2012	60.6	54.4	57.3	57	3.1	5	7.7
12	27/11/2012	03/01/2013	65.8	51.2	25.5	48	20.4	43	50.7
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
49	95.1	Good	Good
48	93.7	Good	Good
53	92.8	Good	Good
37	97.3	Good	Good
31	89.9	Good	Good
30	98.4	Good	Good
33	92.7	Good	Good
36	97	Good	Good
37	96	Good	Good
37	95.6	Good	Good
48	95.2	Good	Good
40	97.3	Poor Precision	Good
Overall survey -->		Good precision	Good Overall DC

(Check average CV & DC from Accuracy calculations)

Site Name/ ID: **Slough - Chalvey**

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

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A: 0.86 (0.81 - 0.92)
Bias B: 16% (8% - 24%)
Diffusion Tubes Mean: 46 μgm^{-3}
Mean CV (Precision): 7
Automatic Mean: 40 μgm^{-3}
Data Capture for periods used: 95%
Adjusted Tubes Mean: 40 (38 - 43) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A: 0.86 (0.81 - 0.92)
Bias B: 16% (9% - 24%)
Diffusion Tubes Mean: 46 μgm^{-3}
Mean CV (Precision): 10
Automatic Mean: 40 μgm^{-3}
Data Capture for periods used: 95%
Adjusted Tubes Mean: 40 (38 - 43) μgm^{-3}

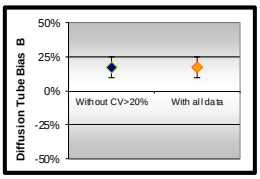


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Figure A.2: Co-location study – Slough Colnbrook

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	05/01/2012	02/02/2012	43.0	43.0	42.9	43	0.1	0	0.1
2	02/02/2012	29/02/2012	40.9	37.9	32.8	37	4.1	11	10.2
3	29/02/2012	29/03/2012	42.8	39.4	50.6	44	5.7	13	14.3
4	29/03/2012	24/04/2012	30.5	29.2	25.8	29	2.4	9	6.0
5	24/04/2012	31/05/2012	29.8	30.4	31.9	31	1.1	4	2.7
6	31/05/2012	28/06/2012	25.6	24.5	30.2	27	3.0	11	7.5
7	28/06/2012	02/08/2012	24.1	25.5	25.4	25	0.8	3	1.9
8	02/08/2012	30/08/2012	28.6	27.7	29.0	28	0.7	2	1.7
9	30/08/2012	27/09/2012	22.2	27.6	28.8	26	3.5	13	8.7
10	27/09/2012	31/10/2012	34.6	34.0	33.3	34	0.7	2	1.6
11	31/10/2012	27/11/2012	42.5	49.4	45.3	46	3.5	8	8.6
12	27/11/2012	02/01/2013	40.5	37.5	38.3	39	1.6	4	3.9
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
38	99.6	Good	Good
42	99.7	Good	Good
42	99.3	Good	Good
27	99.5	Good	Good
25	99.1	Good	Good
22	99.7	Good	Good
19	99.3	Good	Good
22	99.9	Good	Good
23	99.7	Good	Good
29	99.6	Good	Good
37	95.7	Good	Good
33	99.7	Good	Good
Overall survey -->		Good precision	Good Overall DC

(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

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

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A: 0.88 (0.82 - 0.94)
Bias B: 14% (6% - 21%)
Diffusion Tubes Mean: 34 μgm^{-3}
Mean CV (Precision): 7
Automatic Mean: 30 μgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 30 (28 - 32) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A: 0.88 (0.82 - 0.94)
Bias B: 14% (6% - 21%)
Diffusion Tubes Mean: 34 μgm^{-3}
Mean CV (Precision): 7
Automatic Mean: 30 μgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 30 (28 - 32) μgm^{-3}

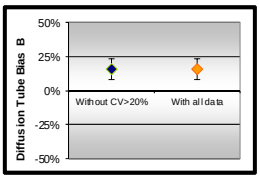

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Figure A.3: Co-location study – Slough Salthill

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	05/01/2012	02/02/2012	51.5	50.6	52.1	51	0.7	1	1.8	45	99.7	Good	Good
2	02/02/2012	29/02/2012	47.1	42.8	45.5	45	2.2	5	5.4	45	99.8	Good	Good
3	29/02/2012	29/03/2012	51.5	52.6	51.3	52	0.7	1	1.7	47	99.7	Good	Good
4	29/03/2012	24/04/2012	38.2	36.9	35.4	37	1.4	4	3.5	34	99.7	Good	Good
5	24/04/2012	31/05/2012	31.0	32.1	32.5	32	0.8	2	1.9	26	91.1	Good	Good
6	31/05/2012	28/06/2012	29.3	34.6	39.3	34	5.0	15	12.4	28	99.7	Good	Good
7	28/06/2012	02/08/2012	39.2	36.8	44.6	40	4.0	10	9.9	29	99.8	Good	Good
8	02/08/2012	30/08/2012	44.3	37.9	41.5	41	3.2	8	8.0	33	99.9	Good	Good
9	30/08/2012	27/09/2012	41.4	43.0	41.2	42	1.0	2	2.5	35	99.1	Good	Good
10	27/09/2012	31/10/2012	43.4	45.2	42.0	44	1.6	4	4.0	36	97.9	Good	Good
11	31/10/2012	27/11/2012	13.3	49.4	19.5	27	19.3	70	48.0	46	98.6	Poor Precision	Good
12	27/11/2012	02/01/2013	48.5	47.0	48.1	48	0.8	2	1.9	44	99.7	Good	Good
13													

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

Overall survey --> Good precision | Good Overall DC

Site Name/ ID:

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

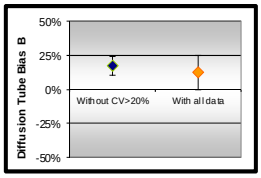
(Check average CV & DC from Accuracy calculations)

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

Bias calculated using 11 periods of data
Bias factor A: 0.86 (0.81 - 0.92)
Bias B: 16% (9% - 23%)
Diffusion Tubes Mean: 42 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 37 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 36 (34 - 39) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA

Bias calculated using 12 periods of data
Bias factor A: 0.91 (0.81 - 1.02)
Bias B: 10% (-2% - 23%)
Diffusion Tubes Mean: 41 µgm^{-3}
Mean CV (Precision): 10 caution
Automatic Mean: 37 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 37 (33 - 42) µgm^{-3}



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Discussion of Choice of Factor to Use

The locally derived co-location factor derived from three co-location studies has been used to bias adjust the diffusion tube results. This is consistent with the approach used to adjust Slough Borough Council's diffusion tube results in recent year. The average factor of 0.88 derived from the local co-location studies is consistent with the factor of 0.89 used in 2011. The average bias factor from 26 studies published in the national database of co-location studies was 0.79.

Short-term to Long-term Data adjustment

A short to long term data adjustment was applied to four annual mean NO_2 diffusion tube measurements where the data capture was less than 75%. The details of the AURN sites used to calculate each adjustment factor are presented in Tabled A.1 to A.4.

Table A.1: Short to long term data adjustment derivation for Landsdowne Ave SL3 diffusion tube

Site	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
London Hillingdon	UB	57.2	59.6	0.96
Reading New Town	UB	25.5	29.7	0.86
			Average ratio (Am/Pm)	**0.91**

Table A.2: Short to long term data adjustment derivation for Grampian SL8 diffusion tube

Site	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
London Hillingdon	UB	57.2	61.6	0.93
Reading New Town	UB	25.5	31.3	0.81
			Average ratio (Am/Pm)	**0.87**

Table A.3: Short to long term data adjustment derivation for Essex Ave SL31 diffusion tube

Site	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
London Hillingdon	UB	57.2	59.1	0.97
Reading New Town	UB	25.5	27.2	0.93
			Average ratio (Am/Pm)	**0.95**

Table A.4: Short to long term data adjustment derivation for Wellesley SL3 diffusion tube

Site	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
London Hillingdon	UB	57.2	57.0	1.00
Reading New Town	UB	25.5	25.6	1.00
			Average ratio (Am/Pm)	**1.00**

Table A.5: NO_2 monthly mean concentrations measured at diffusion tubes sites 2012

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu g.m^{-3}$)	Data capture	Requires annualised?	Bias adjusted annual mean ($\mu g.m^{-3}$) (0.88 adj factor)
Blair Road- Victoria Court	67.1	59.6	1.3	108.3	46.0	49.4	48.8	54.6	51.9	54.5	70.6	74.8	**57.2**	**100%**	N	50.4
Brands Hill (A)	81.8	80.0	87.1	78.2	72.8	59.8	69.5	70.8	79.4	78.7	75.0	76.3	**75.8**	**100%**	N	66.7
Brands Hill (B)	51.1	53.5	-	126.5	59.0	48.9	37.0	44.7	40.4	44.7	50.8	57.4	**55.8**	**92%**	N	49.1
Chalvey (CAS) 1	55.9	48.8	59.6	34.0	34.8	43.1	40.9	47.3	41.2	47.0	60.6	65.8	**48.2**	**100%**	N	42.5
Chalvey (CAS) 2	55.4	44.4	56.4	38.2	31.2	36.7	40.1	46.5	40.6	46.7	54.4	51.2	**45.1**	**100%**	N	39.7
Chalvey (CAS) 3	49.0	51.2	58.7	42.0	36.4	42.0	40.5	48.3	54.6	44.6	57.3	25.5	**45.8**	**100%**	N	40.3
Colnbrook By-pass	44.3	47.1	65.1	42.5	39.4	40.4	41.8	46.1	46.0	48.9	59.7	53.1	**47.9**	**100%**	N	42.1
Ditton Road	51.8	46.9	61.8	41.5	46.0	43.9	39.6	49.3	34.4	50.5	-	-	**46.6**	**83%**	N	41.0
Elbow Meadows	54.6	49.9	58.2	42.5	45.2	37.4	31.7	37.6	37.1	-	53.7	59.3	**46.1**	**92%**	N	40.6
Essex Avenue	-	48.0	53.3	33.5	-	-	31.2		35.6	43.4	37.1	49.5	**39.4**	**67%**	Y	34.7
Farnham Road (2)	58.4	52.8	56.9	38.4	32.8	40.1	36.6	44.7	46.0	45.0	58.2	-	**46.4**	**92%**	N	40.8
Goodman Park (Ux Rd)	61.1	58.9	59.0	52.6	38.6	39.4	38.4	44.6	43.1	50.0	59.8	61.4	**50.6**	**100%**	N	44.5
Grampian Way	60.7	49.9	69.4	-	-	-	-	-	47.1	-	66.7	60.0	**51.3**	**50%**	Y	45.1
Hencroft Street 6N	47.6	46.4	50.1	31.4	25.8	23.6	25.7	29.6	29.6	36.5	47.1	45.5	**36.6**	**100%**	N	32.2
Horton Road (Caravan Park)	49.5	46.8	60.4	34.0	38.6	31.9	28.1	35.7	34.0	43.0	61.8	42.4	**42.2**	**100%**	N	37.1
India Road	50.2	46.9	52.0	30.0	33.3	30.0	29.0	31.9	35.1	40.5	50.4	52.0	**40.1**	**100%**	N	35.3
Lakeside Road	53.0	52.0	60.3	37.4	52.5	43.6	45.0	53.5	52.1	52.6	59.0	59.0	**51.7**	**100%**	N	45.5
Lansdowne Avenue	65.2	44.6	66.4	45.9	-	-	-	-	47.6	48.9	58.5	55.8	**49.2**	**67%**	Y	43.3
London Rd (A)	70.6	-	85.8	61.7	60.4	53.0	51.5	49.7	52.3	65.7	67.3	67.4	**62.3**	**92%**	N	54.8
London Rd (B)	44.6	53.5	66.7	48.4	43.7	22.2	-	2.4	33.3	43.0	47.6	51.9	**41.6**	**92%**	N	36.6
London Rd (C)	49.7	47.7	-	94.4	39.3	32.7	33.0	36.9	40.5	-	50.1	52.9	**47.7**	**83%**	N	42.0
Paxton Avenue	61.2	53.3	-	95.7	40.0	42.5	39.0	51.8	46.8	-	56.5	53.2	**54.0**	**83%**	N	47.5
Pippins 1	43.0	40.9	42.8	30.5	29.8	25.6	24.1	28.6	22.2	34.6	42.5	40.5	**33.8**	**100%**	N	29.7
Pippins 2	43.0	37.9	39.4	29.2	30.4	24.5	25.5	27.7	27.6	34.0	49.4	37.5	**33.8**	**100%**	N	29.8

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu g.m^{-3}$)	Data capture	Requires annualised?	Bias adjusted annual mean ($\mu g.m^{-3}$) (0.88 adj factor)
Pippins 3	42.9	32.8	50.6	25.8	31.9	30.2	25.4	29.0	28.8	33.3	45.3	38.3	**34.5**	**100%**	N	30.4
Princess Street	56.6	56.2	54.8	43.4	39.3	42.3	46.9	46.3	46.6	49.1	63.1	66.6	**50.9**	**100%**	N	44.8
Rogans (Colnbrook by pass)	61.7	81.6	65.7	60.8	53.3	52.9	48.4	47.7	-	66.3	73.8	79.8	**62.9**	**92%**	N	55.4
Salt Hill 1	51.5	47.1	51.5	38.2	31.0	29.3	39.2	44.3	41.4	43.4	13.3	48.5	**39.9**	**100%**	N	35.1
Salt Hill 2	50.6	42.8	52.6	36.9	32.1	34.6	36.8	37.9	43.0	45.2	49.4	47.0	**42.4**	**100%**	N	37.3
Salt Hill 3	52.1	45.5	51.3	35.4	32.5	39.3	44.6	41.5	41.2	42.0	19.5	48.1	**41.1**	**100%**	N	36.2
Sandringham Court	-	37.4	38.0	49.3	26.6	29.3	27.8	35.1	30.7	35.2	44.4	48.6	**36.6**	**92%**	N	32.2
Spackmans Way	61.0	53.7	60.1	44.5	36.3	41.4	46.7	46.9	48.5	50.8	54.1	47.9	**49.3**	**100%**	N	43.4
Sussex Place	46.5	42.3	50.3	45.7	31.3	33.6	29.1	35.6	35.9	41.8	50.0	45.6	**40.6**	**100%**	N	35.8
Torridge Road	55.7	49.8	55.1	46.4	46.4	32.2	28.9	32.9	41.7	49.2	52.4	48.0	**44.9**	**100%**	N	39.5
Tuns Lane	48.5	49.7	61.6	42.7	38.7	36.3	35.3	39.3	44.9	47.5	55.2	51.3	**45.9**	**100%**	N	40.4
Tweed Road	52.3	61.0	66.7	41.6	39.7	37.6	30.8	37.4	45.5	49.8	56.1	54.0	**47.7**	**100%**	N	42.0
Walpole Rd	40.4	30.7	43.8	29.1	28.3	-	-	-	29.3	33.1	44.7	39.1	**35.4**	**75%**	N	31.1
Wellesley Road	60.2	-	-	43.8	45.1	-	-	36.3	41.9	44.2	51.4	57.5	**47.6**	**67%**	Y	41.9
Wellington Street - Stratfield	48.0	51.3	-	103.5	38.3	32.1	33.8	-	45.4	50.3	54.5	57.2	**51.4**	**83%**	N	45.3
Wexham Road	68.9	63.1	77.0	-	44.8	43.1	49.1	51.6	51.3	57.2	61.8	78.4	**58.7**	**92%**	N	51.7
Windmill (Bath Rd)	58.7	55.9	64.2	31.1	47.9	38.2	41.9	45.6	49.5	40.3	58.9	63.5	**49.6**	**100%**	N	43.7
Windsor Road 1N	54.5	56.3	65.0	45.5	41.8	44.6	42.5	44.9	44.6	52.2	49.4	61.6	**50.2**	**100%**	N	44.2
Winvale	66.7	51.0	60.9	48.4	36.8	47.8	49.3	57.2	55.2	52.8	67.5	65.7	**54.9**	**100%**	N	48.3
Yew Tree Rd (Ux Rd) (B)	86.2	80.4	86.7	67.9	64.0	61.1	59.1	59.4	63.3	71.4	69.1	89.9	**71.5**	**100%**	N	63.0
Yew Tree Road (Uxbridge Rd)	60.3	50.4	-	107.0	44.4	38.4	37.9	35.7	40.9	45.0	54.6	49.1	**51.2**	**92%**	N	45.1

Appendix B: Regulated industrial processes

Table B.1 Part A Processes

Type of process	Name of company	Location	Grid Reference
Combustion	Slough Power Station	Slough Trading Estate, Slough, Berkshire	495370 E 181540 N
Various pain processes	ICI Plc	Wexham Road, Slough, Berkshire, SL2 5DS	498460 E 101120 N
Surface treatment	Metal Colours Ltd	9 Cambridge Avenue, Slough Trading Estate, Slough, Berkshire, SL1 4QG	503716 E 176204 N
Landfill	Colnbrook Landfill	Sutton Lane, Slough, Berkshire SL3 8AB	503716 E 176204 N
Biological Process for Pharmaceuticals	Lonza Biologics Plc	224-230 Bath Road, Slough, Berkshire SL1 4DX	495600 E 188060 N
Manufacture and Packaging of Chocolate based Confectionary	Mars UK Ltd	Dundee Road, Slough, Berkshire SL1 4JX	495100 E 181550 N
Incineration Plant, Clinical Waste	S Grundon (Waste) Ltd	Lakeside Road, Lakeside Industrial Estate, Slough, Berkshire SL3 0EG	503870 E 177300 N
Waste Management	Amber Builders Ltd	Poyle Manor Farm Recycling Centre, Poyle Road, Poyle, Slough, Berkshire SL3 0BL	503041 E 176159 N
Energy from Waste	Lakeside Energy from Waste Ltd	Lakeside Road, Colnbrook, Slough SL3 0FE	503860 E 177318 N
Sewerage Works	Thames Water Utilities	Thames House, Wood Lane, Slough, Berkshire SL1 9EB	494651 E 179516 N
Metal Waste and Scrap	Slough ELV Centre Ltd	69 Lake Avenue, Slough, Berkshire SL1 3BZ	496527 E 180720 N

Table B.2: LAPPC regulated Processes (B & A2) as of March 2013

APPLICANT	TYPE OF PROCESS.	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Slough Crematorium Stoke Road Slough Berks SL2 5AX	Cremation of Human Remains.	497710 E 181450 N	PG 5/2	31st July 1991	20th July 1992	12TH May 2008	PPC/08/19	LOW
BPV Servicing and SAAB Spares The Workshop Ely Avenue Slough Berks SL2 5DS	Waste Oil Burners.	496280 E 181450 N	PG 1/1	16th January 1992	27th May 1993	March 2005	Q04PELYA/1/2005	N/A
London Concrete (Heathrow Plant) Colnbrook by Pass Slough Berkshire SL3 OEB	Mixing Concrete	504289 E 177884 N	PG 3/1	22nd February 2002	6th June 2003	3rd May 2007	PPC/07/16	LOW
Cemex Cement storage facility Colnbrook by Pass Colnbrook Slough Berkshire SL3 OET	Cement storage facility **CLOSED AND REVOKED 2013**		PG 3/1	4th March 2011	N/A	16th March 2011	PPC/11/15	LOW

APPLICANT	TYPE OF PROCESS.	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Wiggins Transport Ltd R/O Poyle Manor Farm Poyle Road Stanwell Middx	Crushing and Grinding.	502900 E 176300 N	PG 3/8	29th April 1992	23rd December 1992	28th February 2007	PPC/07/3	N/A
McArdle Contractors Ltd McArdle House McArdle Way Colnbrook Slough	**CLOSED AND REVOKED 2008**	N/A	PG3/16	18th September 2006	N/A	29th December 2006	PPC/06/1	N/A
McArdle Contractors Ltd McArdle House McArdle Way Colnbrook Slough	Mobile Screening Plant	N/A	PG3/16	18th September 2006	N/A	29th December 2006	PPC/06/2	N/A
Wagstaff Foundries Ltd 7 David Road Poyle Trading Estate Colnbrook Slough Berks SL3 ODB	Iron Sandcasting Production process.	503480 E 176180 N	PG 2/4 PG 2/3	Sept 2003	18th December 2003	28th February 2007	PPC/07/17	LOW
Emanuel Brothers Ltd Wexham Road Slough Berks SL1 1RW	Respraying of Road Vehicles.	498440 E 180220 N	PG 6/34	14th September 1992	5th August 1993	28th February 2007	PPC/07/6	N/A

APPLICANT	TYPE OF PROCESS.	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Rainbow Bodyshop 460 Bath Road Slough Berks SL1 6BB	Respraying of Road Vehicles.	493880 E 181140 N	PG 6/34	21st October 1992	28th May 1993	28th February 2007	PPC/07/7	N/A
Tigwell & William 11 David Road Poyle Industrial Estate Colnbrook SL3 0DB	**LOSED AND REVOKED 2008**	503480 E 176220 N	PG 6/34	29th September 1992	28th February 1994	28th February 2007	PPC/07/9	N/A
Bodytechnics Limited 381 Sykes Road Slough Trading Estate Slough Berkshire SL1 4SP	Respraying of Road Vehicles	494460 E 181370 N	PG 6/34	24th May 1999	19th December 2000	28th February 2008	PPC/07/19	N/A
Berkshire Accident Repair Centre 466 Bath Road Slough Berks SL1 6BB	Respraying of Road Vehicles	493840 E 181030 N	PG 6/34	5th June 1995	5th July 1996	28th February 2007	PPC/07/8	N/A
Autotech Slough Ltd 649-650 Ajax Avenue Slough Trading Estate Slough, Berks SL1 4BG	Respraying of Road Vehicles	495796 E 180807 N	PG 6/34	22nd October 2003	No Authorisation in file	28th February 2007	PPC/07/4	N/A
Autotech ARC Stoke Gardens Industrial Estate Slough Berks SL1 3QB	Respraying of Road Vehicles		PG 6/34	18th March 2003	No Authorisation in file	28th February 2007	PPC/07/5	N/A

APPLICANT	TYPE OF PROCESS.	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
R & C Motors Co Ltd White Hart Road Chalvey Slough Berks SL1 2SF	Respraying of Road Vehicles.	496620 E 179240 N	PG 6/34	30th September 1992	5th August 1993	28th February 2007	PPC/07/11	N/A
DWS (Slough) Ltd Whittle Park Way Slough SL1 6FE	Respraying of Road Vehicles.		PG6/34B(O6)	29th November 2010		7th December 2010	PPC/10/21	LOW
DWS (Heathrow) Ltd Whittle Park Way Slough SL1 6FE	Respraying of Road Vehicles.		PG6/34B(O6)	29th November 2010		7th December 2010	PPC/10/22	LOW
Wartsila Propulsion 810 Oxford Avenue Slough Industrial Estate Slough Berkshire SL1 4LN	Textile Coating		PG 4/02(05) PG6/08 (04)	5th July 2007	N/A	18th December 2007	PPC/07/18	LOW
ICI PAINTS Wexham Road Slough; Berks SL2 5DS	Paint Manufacturing.	498500 E 180190 N	PG 6/10(92)	25th August 1992	30th September 1993	28th June 2007	PPC/07/14	LOW
AGI World Ltd Slough Interchange Whittenham Close Slough SL2 5EP	Printing		PG6/16	26th October 2010		25th January 2011	PPC/11/23	LOW

APPLICANT	TYPE OF PROCESS.	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
W R GRACE LTD 636/9 and 647/8 Ajax Avenue Slough Berks SL1 4BH	**CLOSED AND REVOKED JAN 2011**	495840 E 180730 N	PG 6/42	3rd August 1995	8th November 1996	8th March 2007	PPC/07/12	LOW
W R GRACE LTD 636/9 and 647/8 Ajax Avenue Slough Berks SL1 4BH	**CLOSED AND REVOKED JAN 2011**	495750 E 180820 N	PG6/43	3rd August 1995	8th November 1996	8th March 2007	PPC/07/13	LOW
Classic Cleaners 278 Farnham Road Slough Berkshire SL1 4XL			PG6/46	24th October 2006	N/A	29th December 2006	PPC/06/DC1	N/A
Launderama 14 Harrow Market Langley Slough Berkshire SL3 8HJ			PG6/46	30th October 2006	N/A	29th December 2006	PPC/06/DC2	N/A
White Rose Dry Cleaners 9 Grasmere Avenue Slough Berkshire SL2 5JD			PG6/46	30th October 2006	N/A	29th December 2006	PPC/06/DC3	N/A

APPLICANT	TYPE OF PROCESS.	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Wardrobe Game 59 Coleridge Crescent Colnbrook Slough Berkshire SL3 0QD			PG6/46	28th October 2006	N/A	11th January 2007	PPC/06/DC4	N/A
Pick & Drop Dry Cleaning Co 119 Bath Road Slough Berkshire SL1 3UW			PG 6/46	28th October 2007	N/A	18th December 2007	PPC/07/DC5	N/A
Excels 3 Colndale Road Colnbrook Slough Berkshire SL3 0HQ			PG 6/46	28th November 2007	N/A	17th April 2008	PPC/08/DC6	N/A

PART A2 PROCESSES

APPLICANT	TYPE OF PROCESS. Reference	GRID REFERENCE	PROCESS GUIDANCE NUMBER	DATE AUTHORISED	APPLICATION DATE	PERMIT ISSUED DATE	PERMIT REFERENCE
DUCO International Ltd Eastbourne Road Slough Berks SL1 4SF	Textile and Fabric Coating and Finishing Process. **CLOSED March 2011** **Awaiting site surrender Application.**	494960 E 181270 N	PG 6/8	29t September 1993	1st July 1992	11th December 2008 (revised)	IPPC/A2/08/1b

PETROL FILLING STATIONS

APPLICANT	PETROL FILLING STN	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Tesco Service Station Brunel Way Slough Berkshire SL1 1XW	Stage I Vapour Recovery & Stage II Vapour Recovery		PG 6/46	26th May 1998	31st December 1998	4th May 2007	PPC/PFS/07/1	N/A
Farnham Road Service Station 416 Farnham Road Slough Berkshire SL2 1JA	Stage I Vapour Recovery		PG 6/46	2nd November 1998	31st December 1998	4th May 2007	PPC/PFS/07/2	N/A
BP Chequers Service Stn Colnbrook By Pass Colnbrook Slough	Stage I Vapour Recovery & Stage II Vapour Recovery		PG 6/46	3rd August 1998	31st December 1998	24th May 2007	PPC/PFS/07/3	N/A

APPLICANT	PETROL FILLING STN	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Berkshire SL3 0EH								
Slough East Service Stn 85 London Road Slough Berkshire SL3 7RS	Stage I Vapour Recovery		PG 6/46	19th November 1998	31st December 1998	4th May 2007	PPC/PFS/07/4	N/A
Shell Burnham Lane 56 Burnham Lane Slough Berkshire SL1 6JY	Stage I Vapour Recovery & Stage II Vapour Recovery		PG 6/46	11th January 1999	31st March 1999	24th May 2007	PPC/PFS/07/5	N/A
Good Companions Service Station 93 Stoke Poges Lane Slough Berkshire SL1 3NJ	Stage I Vapour Recovery		PG 6/46	16TH February 1998	31st December 1998	28th June 2007	PPC/PFS/07/6	N/A
BP Brandshill Service Stn 575 London Road Slough Berkshire SL3 1DA	Stage I Vapour Recovery & Stage II Vapour Recovery		PG6/46	3rd August 1998	31st December 1998	24th May 2007	PPC/PFS/07/7	N/A
Murco Service Station 135 High Street Chalvey, Slough	Stage I Vapour Recovery & Stage II Vapour Recovery		PG6/46	30th November 1998	31st December 1998	28th June 2007	PPC/PFS/07/8	N/A

APPLICANT	PETROL FILLING STN	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Berkshire SL1 2TW								
BP Wexham Road Service Station 273 Wexham Road Slough Berkshire SL2 5QY	Stage I Vapour Recovery & Stage II Vapour Recovery		PG6/46	3rd August 1998	31st December 1998	24th May 2007	PPC/PFS/07/9	N/A
Langley Connect Service Station Parlaunt Road Slough Berkshire SL3 8QR	Stage I Vapour Recovery & Stage II Vapour Recovery		PG6/46	3rd August 1998	31st December 1998	24th May 2007	PPC/PFS/07/10	N/A
Tesco Express 80-82 London Road Slough Berkshire SL3 7HR	Stage I Vapour Recovery & Stage II Vapour Recovery		PG6/46	6th October 1998	31st December 1998	28th June 2007	PPC/PFS/07/11	N/A
Bath Rd Filling Station 232 Bath Road Slough Berkshire SL1 3XE	Stage I Vapour Recovery		PG6/46	13th October 1998	31st December 1998	4th May 2007	PPC/PFS/07/12	N/A
BP Furnival Service Station 253-257 Farnham Rd Slough	Stage I Vapour Recovery & Stage II Vapour Recovery		PG6/46	7th May 1998	31st December 1998	28th June 2007	PPC/PFS/07/13	N/A

APPLICANT	PETROL FILLING STN	GRID REFERENCE	PROCESS GUIDANCE NUMBER	APPLICATION DATE	DATE AUTHORISED	PERMIT ISSUED DATE	PERMIT REFERENCE	RISK RATING
Berkshire SL2 1DA								
South West Service Stn 395 Bath Road Slough Berkshire SL1 3SA	Stage I Vapour Recovery & Stage II Vapour Recovery		PG6/46	24th September 1998	31st December 1998	28th June 2007	PPC/PFS/07/14	N/A
Golden Cross Service Stn Old Bath Road Colnbrook Slough Berkshire SL3 0JZ	Stage I Vapour Recovery		PG6/46	26th November 1998	31st December 1998	28th June 1998	PPC/PFS/07/15	N/A