

2015 Updating and Screening Assessment for Slough Borough Council

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

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Executive Summary

This report meets the statutory 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 issued by DEFRA.

The LAQM process places an obligation on all local authorities to regularly review and assess and improve 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 implement to meet air quality objectives.

This Air Quality Detailed and Further Assessment 2011 (amended version submitted to DEFRA in August 2013) identified relevant breaches from passive tube monitoring on bath road outside Windmill House and recommended that Slough Borough Council should consider extending the existing Tuns Lane AQMA3 to the east along Bath Road as far as 30 Bath Road. The recommendation was backed up by 2012 monitoring data which shows an exceedance of the annual mean NO₂ objective along this stretch of road. The 2013 and 2014 ratified monitoring data reinforced this position. We will be consulting residents and business affected by the extension of this Air Quality Management Area. It is likely will be issuing the new AQMA 3 Order by March 2016.

The Council should continue to monitor concentrations of NO₂ at the Goodman Park location to the north of the Town Centre AQMA. If the measurements exceed the annual mean NO₂ objective the Council should also consider extending the Town centre AQMA northwards along Uxbridge Road to Goodman Park. The Council has continued to monitor at Uxbridge Road and the impact at the nearest residential receptors is indicating compliance with the NO₂ objective; although the levels are close to the objective and the site will continue to be monitored for any annual trends and fluctuations in traffic flow.

One of the main concerns and issues recently affecting the Council and its future resident's, relates to the significant uptake of 'prior approval planning process' office to residential developments along the A4 Bath Road, which in turn is raising the number of potential new residents exposed to poor air quality within our Town Centre AQMA.

During, 2014 NO₂ annual mean concentration in excess of the 40 µg.m⁻³ objective was measured at one automatic monitoring site and at various diffusion tube sites across the Borough. All of these sites are either within one of the existing AQMAs or are located in areas with no relevant exposure to the public. There were no exceedances of the NO₂ 1-hour mean objective measured at any locations of relevant exposure during 2014. Therefore, there is no need to proceed to a Detailed Assessment based on the recent NO₂ measurements. Additionally, there are changes proposed to the LAQM process that will revise the statutory reporting requirements to require an Annual Status Report, and will remove the requirements for Detailed Assessments, USAs, Progress Reports and Air Quality Action Plan Reports. .

Annual mean NO₂ concentrations measured at the automatic monitoring sites have on average been showing no clear trends over the last five years. Examination of the trend in NO₂ annual means measured across the Slough network of diffusion tubes indicates that concentrations have reduced slightly since 2010, but in general have either increased slightly or remained fairly constant over recent years.

For both PM₁₀ and benzene, annual mean concentrations measured during 2011 were below the respective objectives. The PM₁₀ 24-hour mean objective was exceeded more than 35 times at both the Lakeside 1 and Lakeside 2 urban background PM₁₀ monitoring sites during 2011. Neither of these locations are however representative of relevant exposure.

Air quality objectives were achieved at all monitoring locations outside of the existing AQMAs at locations of relevant exposure hence there is no need to proceed to a Detailed Assessment at any location. Continued measured annual mean NO₂

concentrations in excess of the objective within the current AQMAs confirm that the AQMAs are still required.

The assessment of new sources has not identified any new sources that have not been considered previously. A detailed assessment of any new sources is not therefore required. Slough Borough Council will continue monitoring at all existing sites within the Borough and will continue to implement the measures outlined in their Air Quality Action Plan.

Analysis in 2013 indicated that the air quality objective may be met by 2018 at all the diffusion sites, except Yew Tree Road, without Action plan measures. The analysis indicates that the objective will not be met at Yew Tree Road until after 2020. However, the Council have recently commissioned a new air quality base model for the Borough that will take account of low emission scenarios (i.e. electric bus routes, electric/plugged in vehicles take up rates). The recent DEFRA draft Plans projects that Zone 31, which Slough falls within, will be compliant with the NO₂ EU limits by 2020.

However, it is clear from reviewing trend analysis of monitoring results, and also the uncertainty around diesel light passenger vehicles compliance with EURO 6 that air quality levels within the Borough without early intervention are unlikely to meet NO₂ Objectives before 2020 and in some residential areas. Residential receptors on Yew Tree Road, A4, M4 and Brands Hill breaches are likely to continue to breach these Air Quality Objectives after 2020. This is a serious concern for the Council, the impact poor air quality is having on the public health of its residents.

The Council published an Action Plan in 2012 that covers the Tuns Lane AQMA3 and Town Centre AQMA4. The Council has also consulted since 2014 with Highways England concerning the proposed SMART M4 scheme and these include mitigation measures to deal with air pollution at sensitive residential receptors. There is currently no Air Quality Action Plan for Brands Hill AQMA2. This will be reviewed in line with the Councils new low emission strategy.

The Council has initiated and implemented 41 schemes towards improving air quality and these were reported to DEFRA in March 2015 and published within the DEFRA Consultation of Draft Plan to improve air quality in September 2015. The schemes are reported in the draft zone plans, Annex c Table of Measures¹.

The Council is proactively rolling out low emission infrastructure such as fast and rapid electric vehicle charging infrastructure. The Council is developing a DEFRA funded Low Emission Strategy (LES) aimed at reducing emissions and complying with Air Quality Objectives within its jurisdiction. This strategy will be published in 2016. Within the LES the Council will also publish an up to date Air Quality Plan for the Borough that outline specific measures within each AQMA to improve air quality.

¹ http://uk-air.defra.gov.uk/assets/documents/no2-consultation-2015/AQplans_UK0031.pdf

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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 is an important commercial centre and includes both industrial and densely populated residential areas. The population of Slough has increased by more than 20,000 people (over 16% increase in population) between the 2001 and 2011 census, currently 140,200 people were recorded living in Slough in 2011.

1.2 Purpose of Report

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

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

1.3 Air Quality Objectives

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

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

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

1.4 Summary of Previous Review and Assessments

1.4.1 First Round of Review and Assessment

Following the first round of Review and Assessment, Slough Borough Council concluded that no exceedences of the carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide or PM₁₀ objectives were occurring. An area alongside the M25 in Poyle was identified as likely to exceed the AQS annual mean NO₂ Objective (40 µg.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 (USA) concluded that the AQS Objectives for CO, SO₂, 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. Grondon waste facility (when operational in 2008) was undertaken with respect to these pollutants. In terms of the annual mean objectives for NO₂ and PM₁₀, 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 PM₁₀ 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 NO₂ 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 PM₁₀ 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

Exceedences 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 NO₂ 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 USA (2006) recommended that the new and existing NO₂ 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 NO₂ 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 NO_x and NO₂ 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 NO₂ 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 NO₂ concentrations in 2008 were in excess of the annual mean NO₂ 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 USA recommended, as a result of updated guidance, that the council should conduct a Detailed Assessment of NO₂ 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 NO₂ 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 led to the declaration of the Tuns Lane and Town Centre AQMA. The assessment also apportioned sources of NO_x and the level of reduction required to achieve the NO₂ 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 NO₂ monitoring data showed that within the existing AQMAs there continue to be concentrations in excess of the annual mean objective. At two diffusion tubes sites the measured annual mean NO₂ concentrations were above 60 µg.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 PM₁₀ 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 NO₂ annual mean concentration in excess of the 40 µg.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 NO₂ 1-hour mean objective, PM₁₀ 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.

Progress Report 2013

NO₂ annual mean concentrations measured at all of the automatic monitoring sites within the borough were 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. No exceedances of the short-term NO₂ objective were recorded at any of the automatic monitoring sites during 2012.

An annual mean NO₂ concentration in excess of the 40 µg.m⁻³ objective (and outside existing AQMA boundaries at the time) 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 was subsequently revised to take account of Defra's comments and to clearly define the geographical extent, of the extended Tuns Lane AQMA.

No exceedances of any PM₁₀ objectives were measured in 2012.

The review of local major developments did not identify any locations where there was a risk of the air quality objectives being exceeded.

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 in Colnbrook and Scottish Southern Electric multifuel combined heat and power plant within the Segro Slough Industrial Estate that may give rise to significant air quality impacts locally. Both will require detailed air quality

assessments and will be considered at the 2015 Updating and Screening Assessment

Amended Detailed/Further Assessment 2013

Slough Borough Council's 2009 Updating and Screening Assessment recommended that the Council should proceed to a Detailed Assessment of nitrogen dioxide (NO₂) concentrations at residential properties that are located within 30m of the Great Western Line. The 2011 (amended in 2013) report provided a Detailed Assessment, which aims to assess the magnitude and spatial extent of any exceedances of the air quality objectives for NO₂ in the vicinity of the Great Western Mainline that runs through Slough.

Measured concentrations at monitoring sites closest to the railway in Slough and Hillingdon were found to be less than the air quality objective. The monitoring data thus did not support the need for a declaration of an Air Quality Management Area. However modelling indicated the potential for exceedance of the air quality objective at residential properties within 32 m south of the centre of the trackbed to the south and within 39 m to the north. There are several residential properties within this buffer, particularly in the region of Burnham station. We therefore recommend that additional monitoring is carried out near residential properties closest to the railway.

Monitoring has since been carried out at two residential locations and reported in the 2013 amended report. Sandringham Court and Walpole Road had NO₂ concentrations that fell within the railway buffer area and the ratified monitoring data for 2012 confirmed that air quality levels were well below the Air Quality Objectives. The monitoring data confirms there was no requirement to declare an AQMA close to the railway track. The monitoring will continue during 2013.

In 2011, Slough Borough Council declared Air Quality Management Areas (AQMA) covering Tuns Lane and parts of the Town Centre as the result of a Detailed Assessment carried out in 2008. The results of modelling and measurements confirmed that it was appropriate for Slough Borough Council to declare Tuns Lane and Slough Town centre as AQMAs.

It was recommended in the 2013 amendment that Slough Borough Council should consider extending the Tuns Lane AQMA to the east along Bath Road as far as 30 Bath Road- the validity of this recommendation is backed up by 2012 monitoring data which showed an exceedance of the annual mean NO₂ objective along this stretch of road.

It was also recommended that the Council should continue to monitor concentrations of NO₂ at the Goodman Park location to the north of the Town Centre AQMA. If the measurements exceed the annual mean NO₂ objective the Council should also consider extending the Town centre AQMA northwards along Uxbridge Road to Goodman Park.

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

Progress Report 2014

NO₂ annual mean concentrations measured at all of the automatic monitoring sites within the borough were less than the 40 µg.m⁻³ objective during 2013; the measured concentration at the Chalvey site was less than the objective again in 2013. No exceedances of the short-term NO₂ objective were recorded at any of the automatic monitoring sites during 2013.

Annual mean NO₂ concentrations in excess of the 40 µg.m⁻³ objective were measured during 2013 at a number of passive diffusion tube locations, but all are within one of the existing or soon to be amended AQMA boundaries.

No exceedances of any PM₁₀ objectives were measured in 2013.

The review of local major developments identified the following developments/potential developments which may impact on air quality.

- Changes to local traffic patterns following implementation of the Chalvey traffic management scheme (affect AQMA 3)
- Proposed changes to local traffic patterns following implementation of Windsor Road A322 (affect AQMA 4) and Tuns Lane A355 (affect AQMA 3)
- Slough Mass Rapid Transit Scheme A4 scheme (affect AQMA 2, 3 and 4)
- Scottish Southern Electric multifuel combined heat and power plant (40MW) gross electrical capacity and up to 20 MW of heat (affect AQMA 3)
- Slough Freight International Exchange in Colnbrook Ward (affect AQMA 2)
- Heathrow Road Stone Coating Plant (affect background levels)
- DHL 400 KW (Biomass Plant) (affect background levels)
- Proposed Sand and Gravel Pit at Riding Court Farm in Royal Borough of Windsor and Maidenhead (affect AQMA 1 and 2)
- National Infrastructure Project HA M4 Smart Motorway affects all Sloughs AQMAs but mainly (AQMA 1)
- National Infrastructure Project Heathrow 3rd runway expansion affects all Sloughs AQMAs

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

The SBC programme to add 3 new monitoring stations within its AQMAs has been slightly delayed to ensure the successful role out and delivery of EV charging infrastructure which is a key requirement of the Local Sustainability Transport Fund, Local Transport Plan and Air Quality Actions Plan. The programme is expected to be completed by December 2015.

The Air Quality Management Order for Tuns Lane AQMA 3 has been delayed, is currently awaiting legal advice and will now be amended by March 2016. The amendment is a very minor extension (approximately 300m) eastwards along the A4 as advised in the 2013 Detailed and Assessment Report.

A review of the SBC air quality plans will be undertaken in 2016 and SBC have also submitted a grant application to DEFRA to prepare a low emission strategy in 2015.

Low Emission Strategy 2015

DEFRA awarded Slough a grant to develop a Low Emission Strategy, the principal aim is to reduce road transport emissions in particular NO_x emissions, also Particulate and carbon emissions. The objectives are to assist with compliance with NO₂ Air Quality Objectives by 2020 and also improve Health outcomes for residents of Slough who are particularly vulnerable and affected by poor air quality.

1.4.6 Existing AQMAs

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

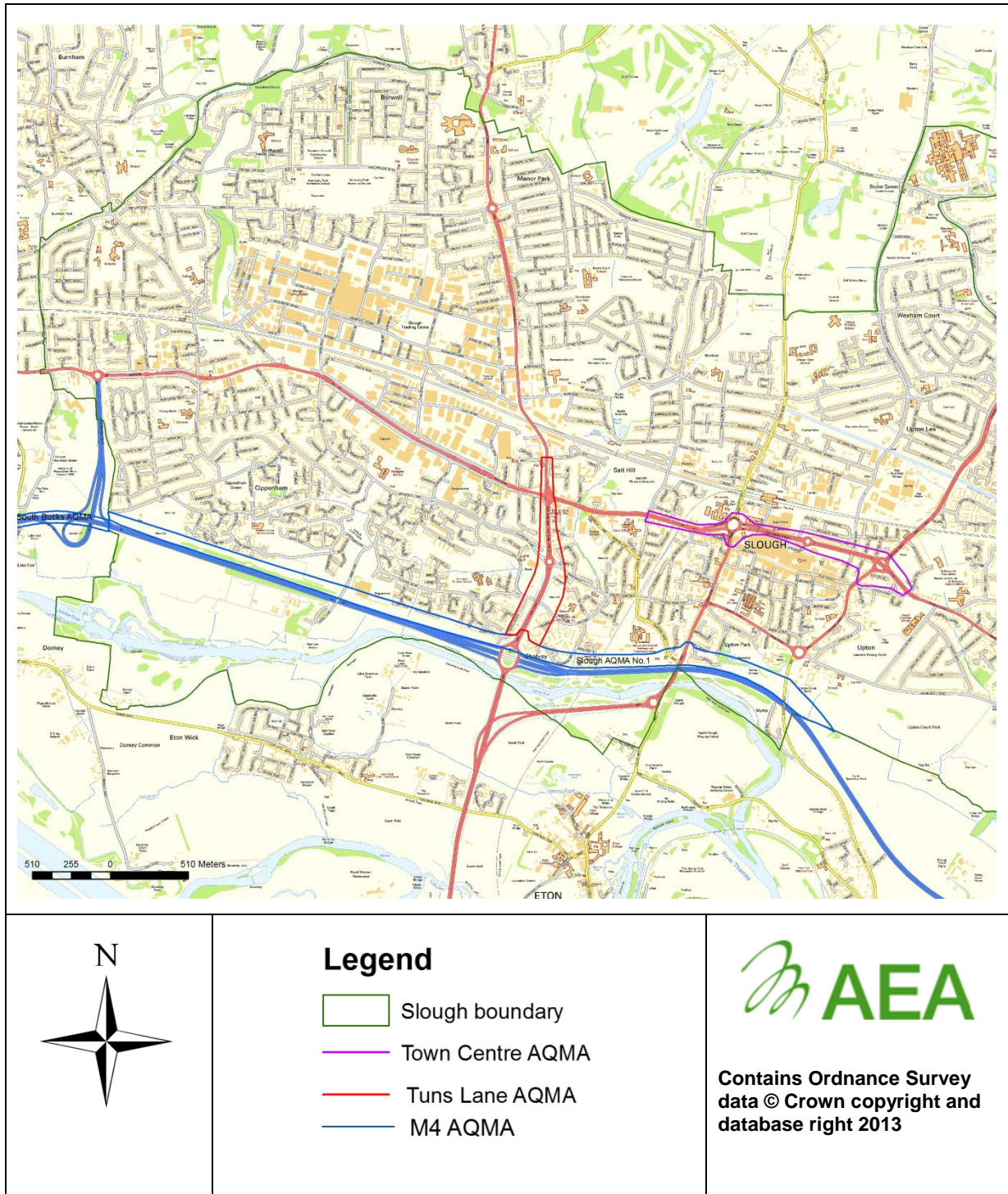


Figure 1.1 Slough Borough Council: AQMA locations – Town Centre, Tuns Lane and M4

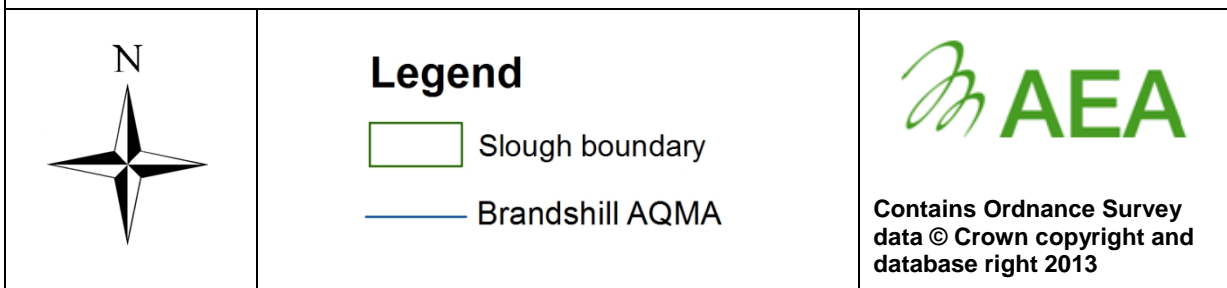
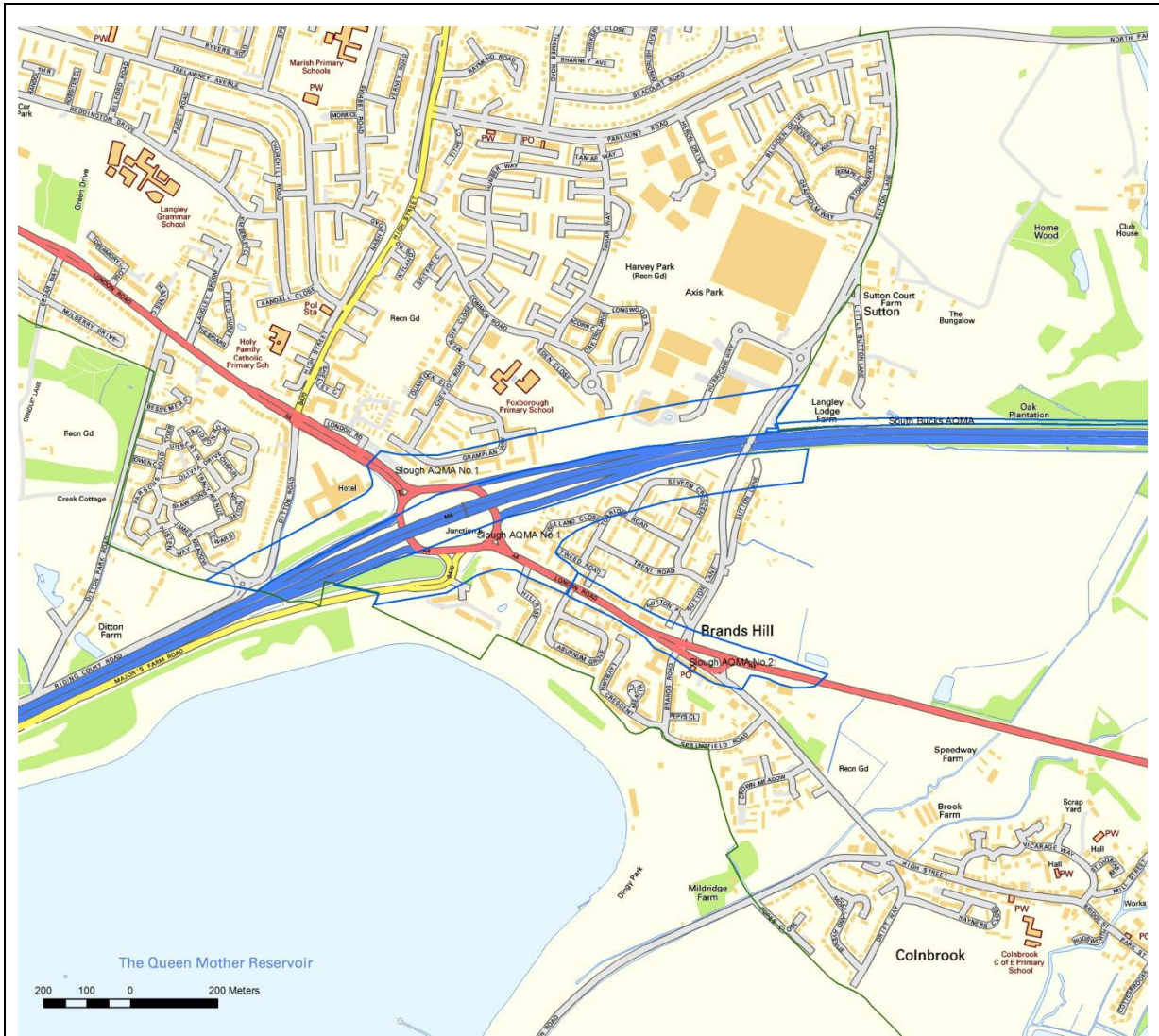


Figure 1.2 Slough Borough Council: AQMA location– Brands Hill

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 (NO₂)
- Particulate matter (PM₁₀)

The SBC programme to add 3 new monitoring stations within its AQMA has been slightly delayed to ensure the successful role out and delivery of EV charging infrastructure which is a key requirement of the LSTF, LTP and AQAPs. The programme is expected to be completed by December 2015.

2.1.1 Automatic Monitoring Sites

Five automatic monitoring sites are operational within the borough. These sites comprise four NO_x/NO₂ analysers; two TEOM PM₁₀ analysers; three 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 Figures 2.1a and 2.1b. 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 or in some cases relevant exposure. Further, it is Slough Borough Council intention to decommission, add and 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 months to complete. The data will be far more representative in terms of relevant exposure and relevant in terms of monitoring annual NO₂ trends with the existing AQMAs.

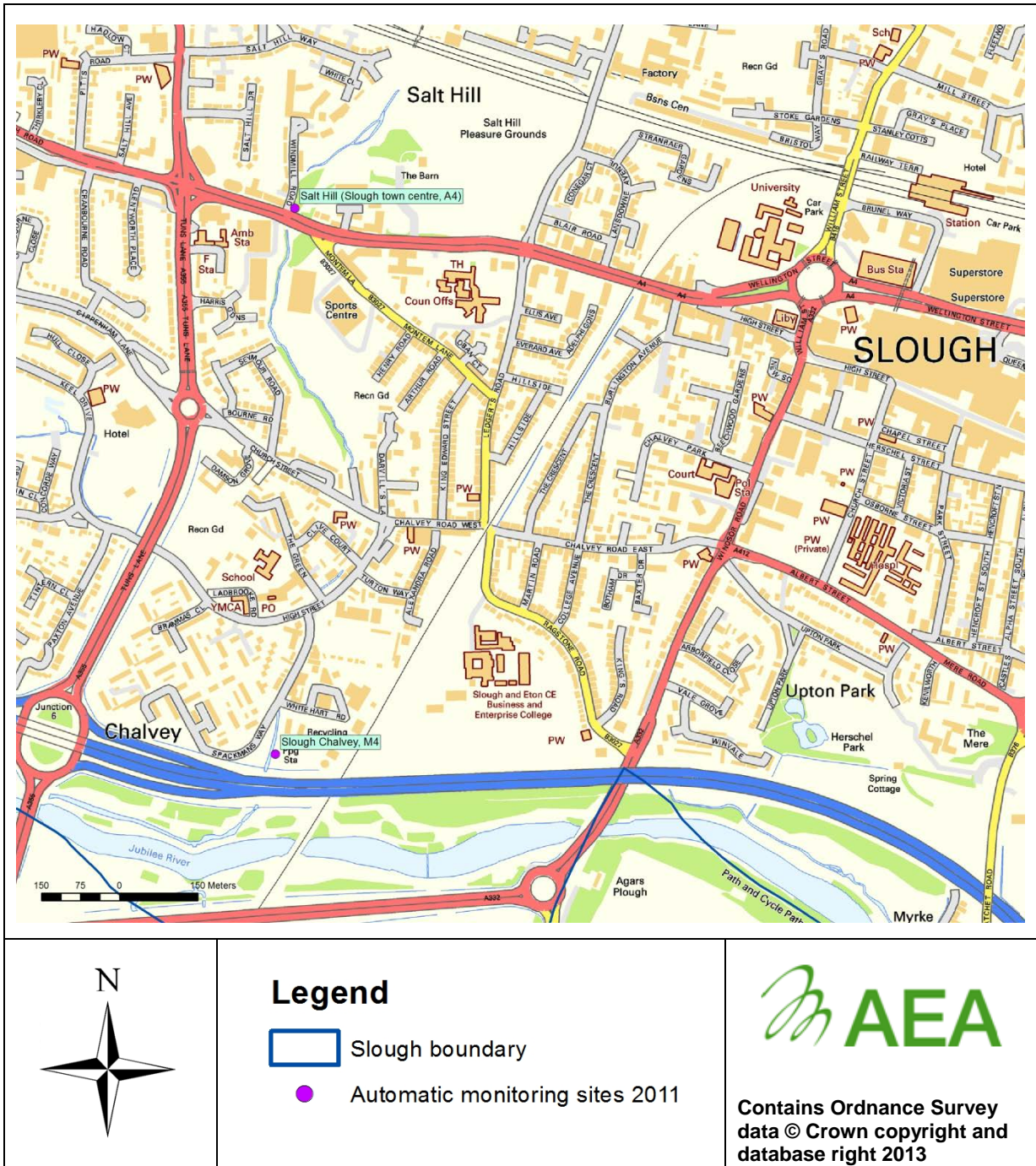


Figure 2.1a Slough Automatic Monitoring sites

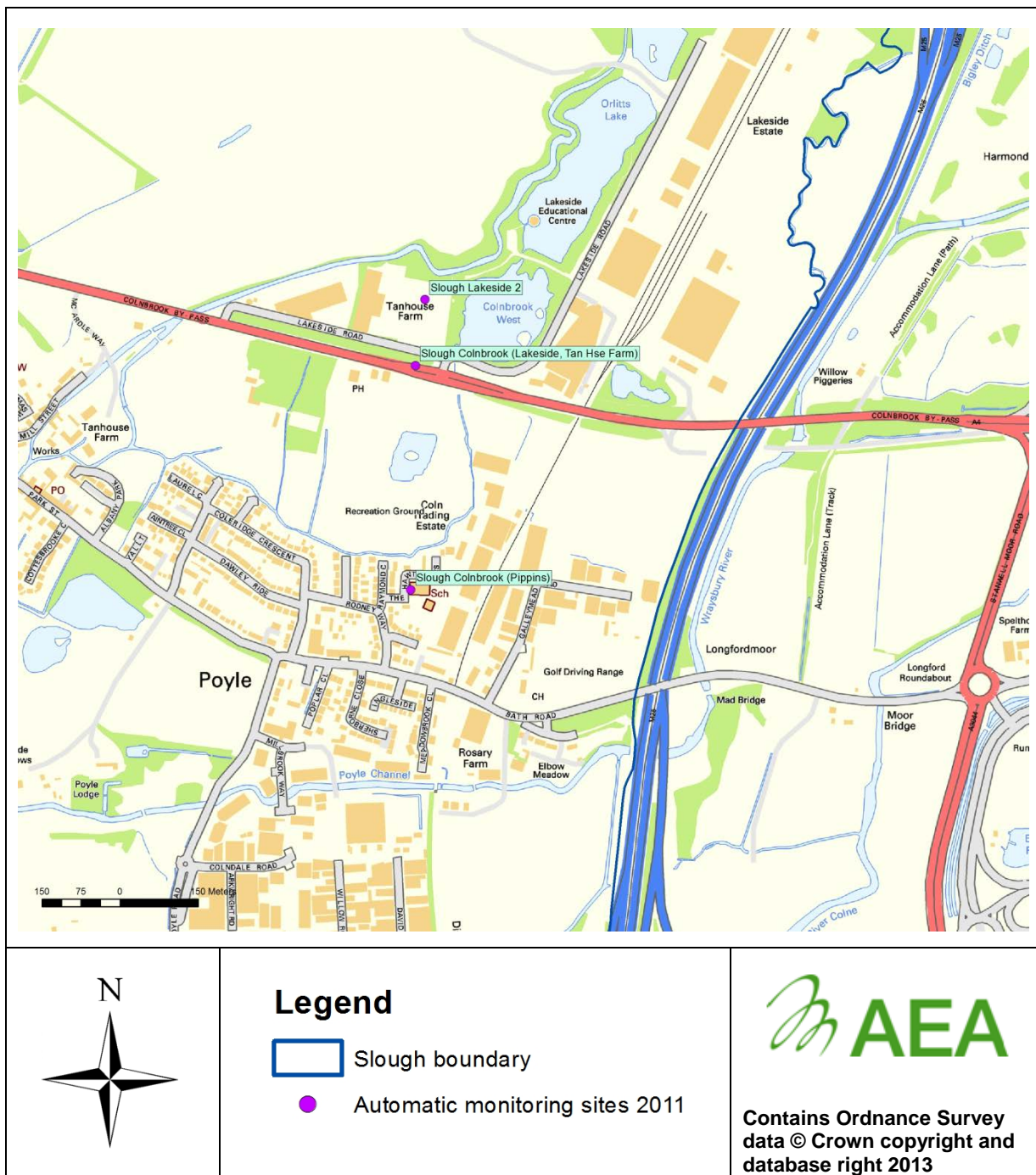


Figure 2.1b Slough Automatic Monitoring sites (Slough East)

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y 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	No	Y	10m	No
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	No	Y	>50m	No
SLH 7 - Slough Chalvey, M4	Intermediate-Motorway (Residential)	496562	179109	NO _x and NO ₂	Chemiluminescence	Yes (M4 AQMA1)	Y	45m from M4	No
SLH 5 - Slough Colnbrook (Lakeside, Tan Hse Farm)	Urban Background	503551	177258	PM ₁₀ , PM _{2.5} & PM _{1.0}	Osiris	No	N	>50m	No
SLH 8 and SLH9 Slough Lakeside 2 (run by Lakeside Energy from Waste Ltd)	Urban Background	503569	177385	NO _x , NO ₂ and PM ₁₀	Chemiluminescence BAM (PM ₁₀) Co-located Osiris (PM ₁₀ , PM _{2.5} and PM ₁)	No	N	10m	No

2.1.2 Non-Automatic Monitoring Sites

Diffusion tube monitoring of NO₂ is carried out at a number of locations in the Slough Borough Council Area. During 2014 Nitrogen dioxide monitoring was undertaken at forty-five sites across the borough using passive diffusion tubes.

In 2015, monitoring has commenced at three new diffusion tube sites:

- Cornwall House, Bath Rd
- Princes House, Bath Road
- Tuns Station, Farnham Rd

Measurements from these news sites will be reported in the 2016 Progress Report.

Details of the diffusion tube monitoring locations at which measurement were conducted in 2014 are presented in Table 2.2. The locations include kerbside, intermediate and urban background sites.

Maps showing the locations of the diffusion tube monitoring sites are presented in Figures 2.2a to 2.2c.

A bias adjustment factor of 0.88 derived as the average of three co-location studies conducted in Slough during 2011 has been used to adjust the diffusion tube results. Full details of the diffusion tube QA/QC are presented in Appendix A.

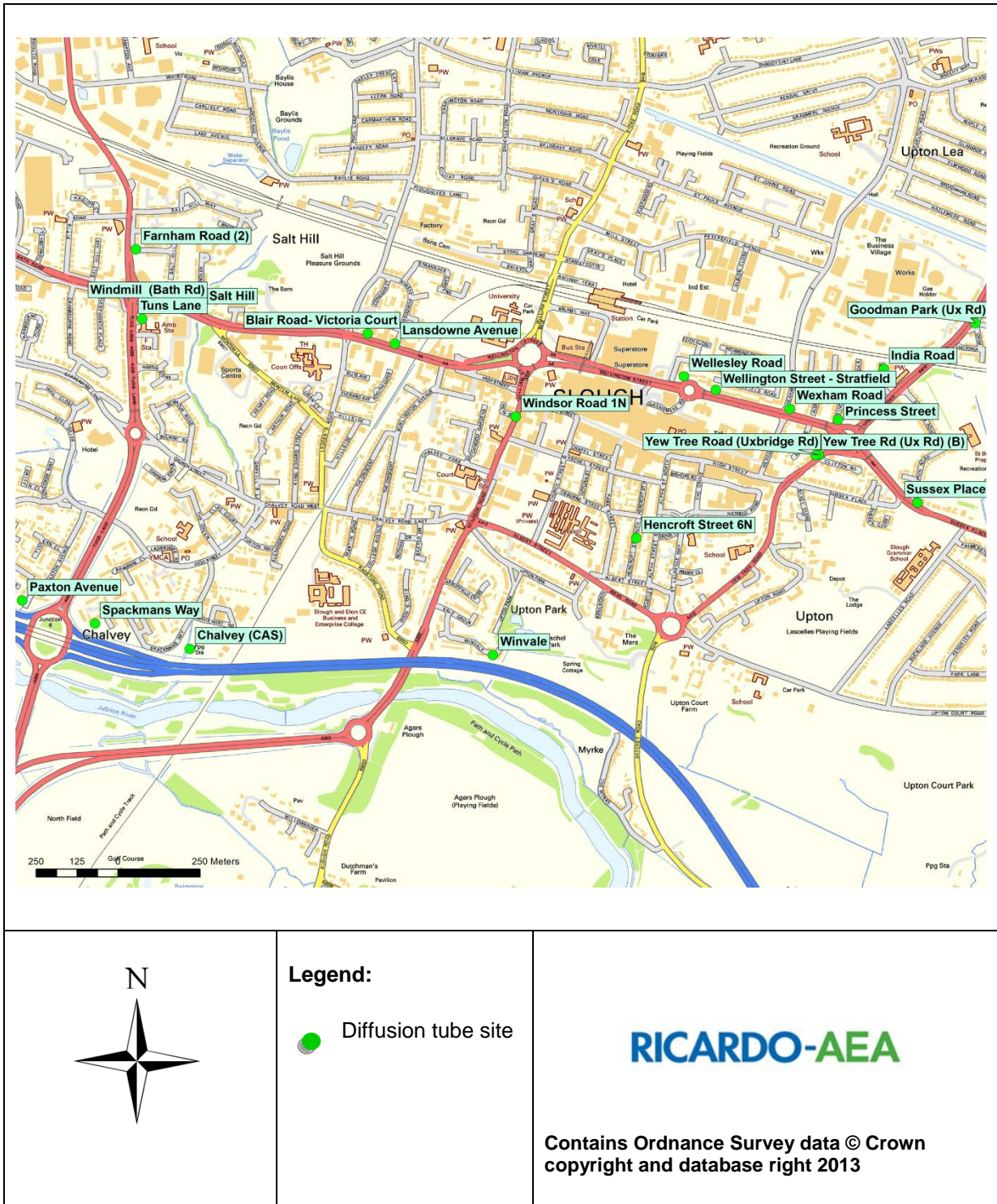


Figure 2.2a Slough diffusion tube locations (Slough Centre)

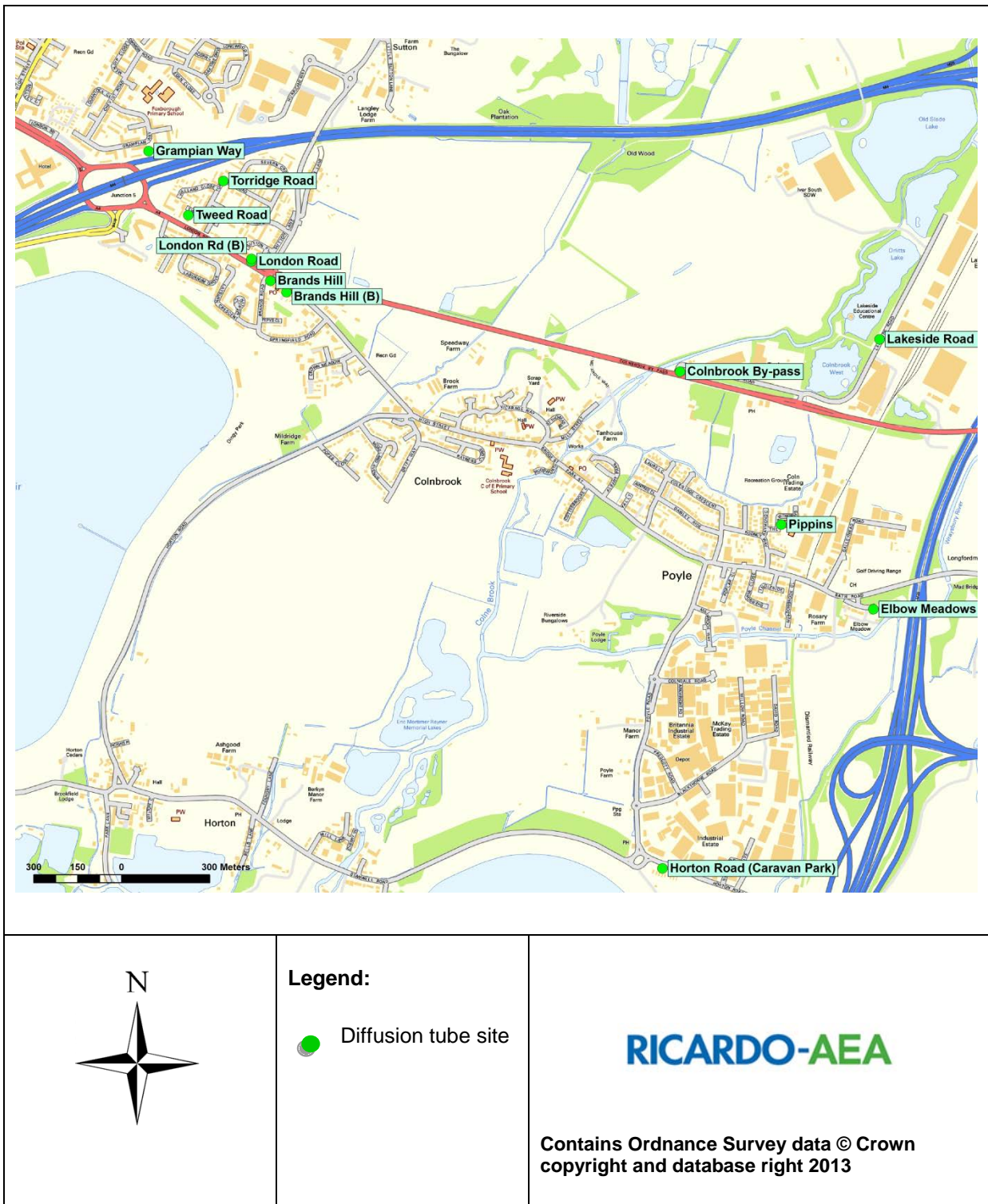


Figure 2.2b Slough diffusion tube locations (Slough East)

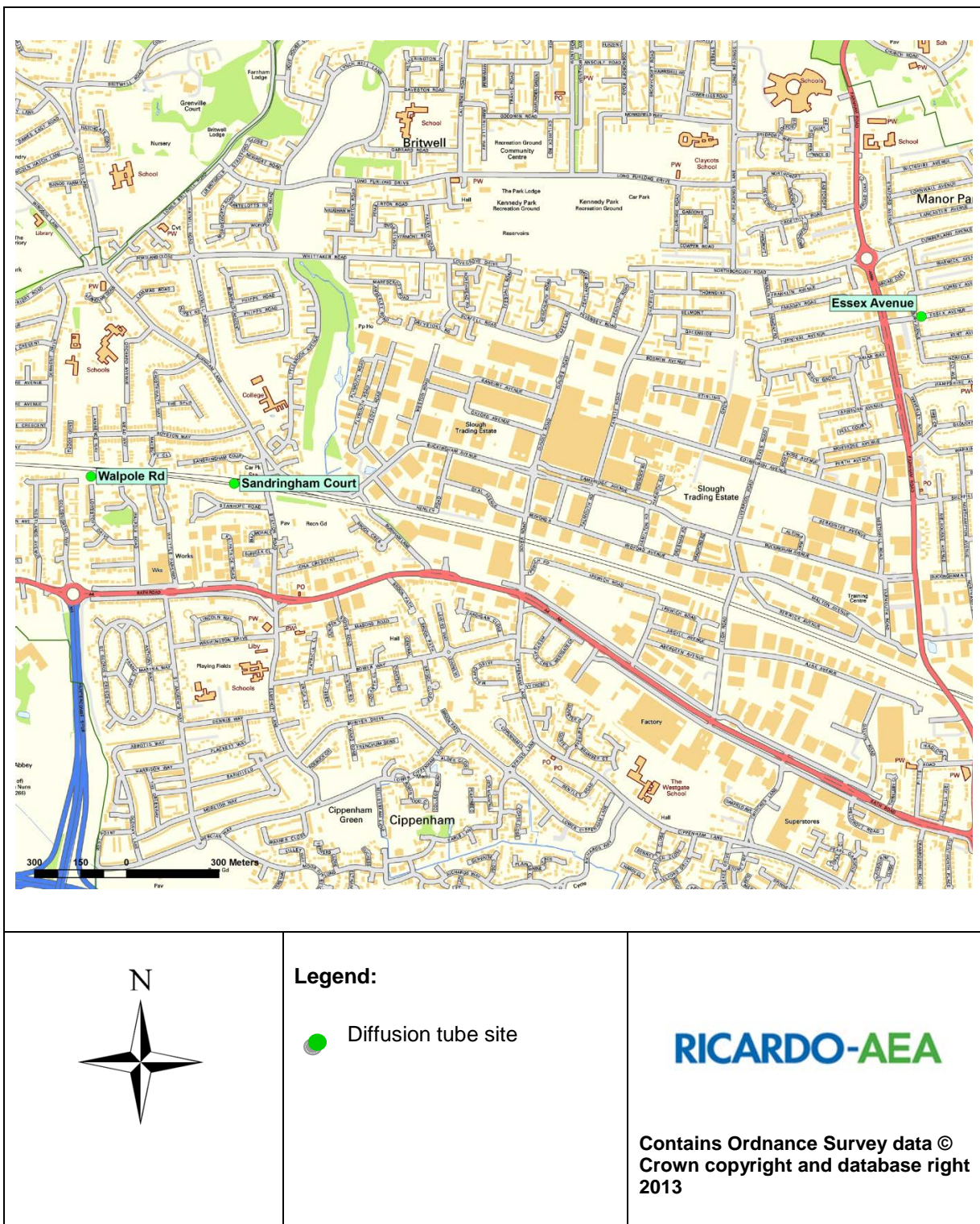


Figure 2.2c Slough diffusion tube locations (Slough North West)

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	Roadside	497105	180081	2	NO ₂	Y	Y (5m)	13m	Y
Brands Hill (A)	Roadside	501798	177659	2.5	NO ₂	Y	Y (5m)	3m	Y
Brands Hill (B)	Roadside	501853	177620	2	NO ₂	Y	Y (0m) on the building facade	8m	Y
Chalvey (CAS)	Other (motorway)	496562	179109	1.5	NO ₂	Y	Y (co-located with automatic site)	45m	Y
Colnbrook By-pass	Roadside	503196	177349	2	NO ₂	N	N	5m	N
Ditton Road	Roadside	500851	177890	2	NO ₂	N	Y (15m)	5m	Y
Elbow Meadows	Suburban	503856	176538	2	NO ₂	N	Y (13m)	1m	Y
Essex Avenue	Roadside	496200	181900	2	NO ₂	N	Y (5m)	1-5m	Y
Farnham Road (2)	Roadside	496397	180341	2	NO ₂	Y	Y (10m)	20m	Y
Goodman Park (Ux Rd)	Roadside	498961	180113	2.5	NO ₂	N	Y (20m)	3m	Y
Grampian Way	Other (motorway)	501382	178101	2	NO ₂	Y	Y (8m)	51m (M4)	Y
Hencroft Street 6N	Suburban	497925	179450	2	NO ₂	N	Y (8m)	N/A	Y
Horton Road (Caravan Park)	Urban background	503136	175654	2	NO ₂	N	Y (15m)	17m	Y
India Road	Other (rail)	498681	179972	2	NO ₂	N	Y (15m) rail	2m	Y
Lakeside Road	Other (industrial)	503877	177459	2	NO ₂	N	N	N/A	N
Lansdowne Avenue	Roadside	497188	180050	2.5	NO ₂	Y	Y (15m)	14m	Y
London Rd (A)	Roadside	501733	177725	2.5	NO ₂	Y	Y (5m)	3m	Y
London Rd (B)	Roadside	501734	177733	2	NO ₂	Y	Y (0m)	10m	Y
London Rd (C)	Roadside	501658	177781	2	NO ₂	Y	Y (0m)	10m	Y
Paxton Avenue	Other (motorway)	496050	179258	2	NO ₂	Y	Y (15m)	40m (M4)	Y
Pippins	Urban background	503542	176827	2.5	NO ₂	N	Y (N/A)	N/A	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
Princess Street	Roadside	498541	179815	2	NO ₂	Y	Y (5m)	17m	Y
Rogans (Colnbrook by pass)	Roadside	501941	177633	2.5	NO ₂	Y	Y (N/A)	5m	Y
Salt Hill	Roadside	496599	180156	2.5	NO ₂	N	Y (m)	10m	Y
Sandringham Court	Other (rail)	493960	181355	2.5	NO ₂	N	Y (26m)	Railway exposure	Y
Spackmans Way	Other (motorway)	496272	179187	2.5	NO ₂	Y	Y (5m)	40m	Y
Sussex Place	Roadside	498784	179560	2	NO ₂	N	Y (5m)	6m	Y
Torrige Road	Other (motorway)	501637	177999	3	NO ₂	Y	Y (8m)	95m (M4)	Y
Tuns Lane	Roadside	496416	180126	2.2	NO ₂	Y	Y (0m) on the building facade	15m	Y
Tweed Road	Roadside	501518	177882	2	NO ₂	Y	Y (6m)	15m	Y
Walpole Rd	Other (rail)	493493	181378	2.5	NO ₂	N	Y (15m)	Railway exposure	Y
Wellesley Road	Roadside	498071	179949	2.5	NO ₂	Y	Y (3m)	12m	Y
Wellington Street - Stratfield	Roadside	498168	179907	2.5	NO ₂	Y	Y (21m)	13m	Y
Wexham Road	Roadside	498394	179849	2	NO ₂	Y	Y (3m)	3m	Y
Windmill (Bath Rd)	Roadside	496533	180175	2	NO ₂	N	Y (0m) on the building facade	5m	Y
Windsor Road 1N	Roadside	497557	179825	2.5	NO ₂	N	Y (34m)	3m	Y
Winvale	Other (motorway)	497488	179090	2	NO ₂	Y	Y (5m)	15m	Y
Yew Tree Rd (Ux Rd) (B)	Roadside	498473	179706	2	NO ₂	Y	Y (0m) on the building facade	8m	Y
Yew Tree Road (Uxbridge Rd)	Roadside	498483	179707	2	NO ₂	Y	Y (5m)	3m	Y
Site types are defined according to the designations provided in Table A1.4 of LAQM.TG(09)									

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The annual mean NO₂ concentrations measured at the automatic monitoring locations in Slough from 2010 to 2014 are presented in Table 2.3. Concentrations in excess of the 40 µg.m⁻³ objective are highlighted in red.

The NO₂ annual mean concentrations measured at all sites within the borough were less than the 40 µg.m⁻³ objective during 2014; the measured concentration at the Chalvey site has been less than the objective since 2012. It should be noted there are residential receptors closer to the M4 than the Chalvey monitoring stations.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 %	Annual Mean Concentration $\mu\text{g}/\text{m}^3$				
				2010	2011	2012	2013	2014
Salt Hill (Slough town centre, A4)	Intermediate (Residential)	N	78.7	32.5	35.2	37.0	35.9	35.5
Slough Colnbrook (Pippins)	Urban Background (Residential)	N	99.2	29.5*	30.1	29.0	29.8	30.7
Slough Chalvey, M4	Urban Background	Y	48.8	41.8	44.2	39.0	37.7	34.0*
Slough Lakeside 2	Urban Background	N	92.0	38.8	34.8	31.0	32.5	33.9

* Annualised mean due to data capture < 75%

A bar chart showing the trends in annual mean NO₂ concentrations over the last five years is presented in Figure 2.3. The chart shows there is no clear trend in NO₂ concentrations in the time series. It can however be seen that concentrations appear to have settled below the annual mean objective at all of the automatic monitoring sites. The Chalvey site developed a significant fault shortly after being audited and had very low capture rate below 50%, so is reported but cannot be relied on as accurate.

Perhaps, the most interesting observation is the Slough Colnbrook station which lies within the Pippins School grounds and is an urban background site as this site is showing very little change in background levels of NO₂ over the past 5 years.

The Council is purchasing 3 more air quality monitoring sites to be located within AQMA 2, 3 and 4 in 2016. It will be interesting to observe the annual mean concentrations from these new sites. The Council has also installed a temporary air quality monitoring station on the corner of Salt Hill Drive and Farnham Road, this station is located within the AQMA 2 and the 2015 results will be reported within the next statutory report.

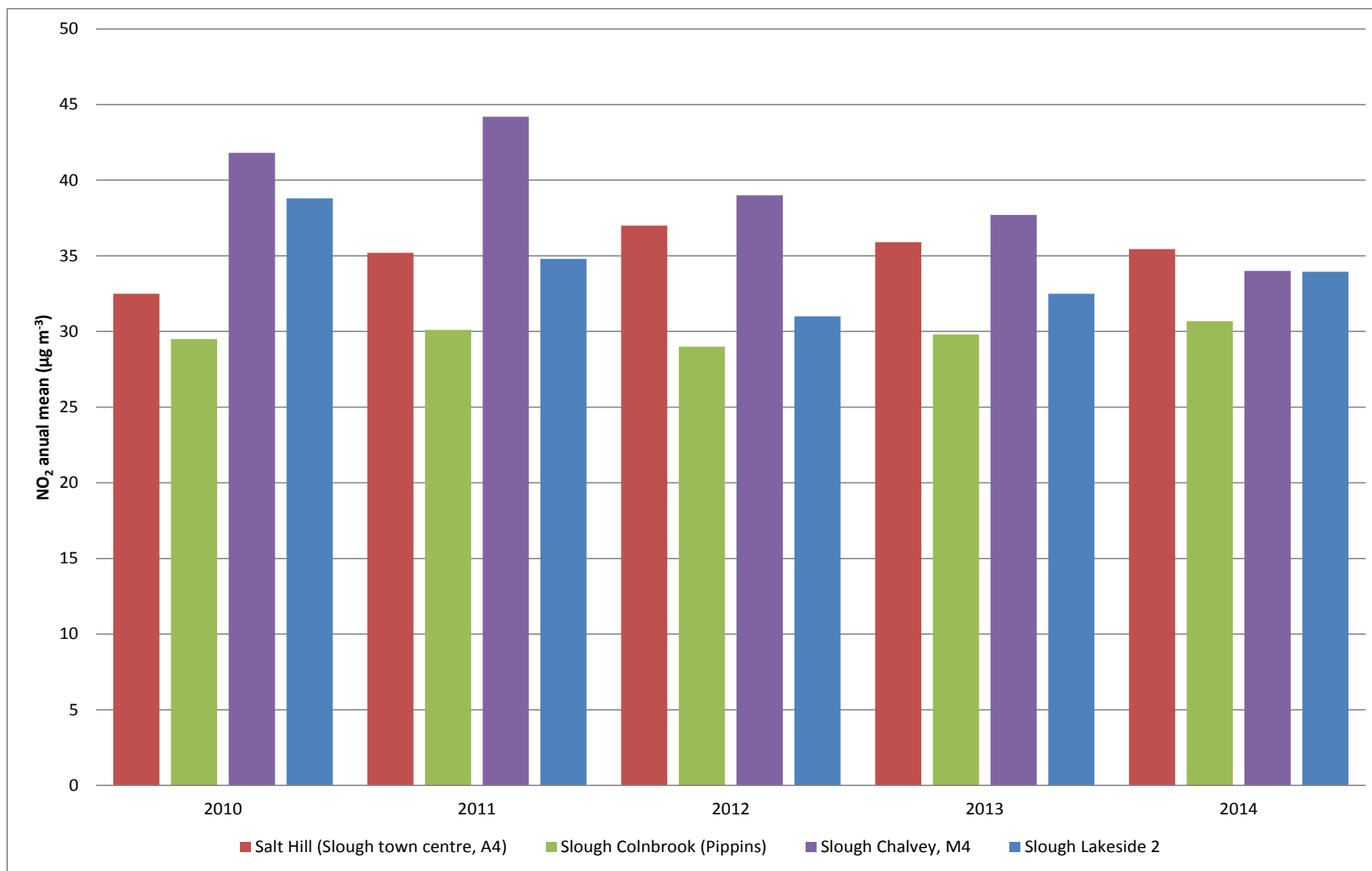


Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

The number of measured 1-hour mean concentrations in excess of the 200 $\mu\text{g}\cdot\text{m}^{-3}$ short-term objective at each of the automatic monitoring sites is presented in Table 2.4.

No exceedances of the hourly standard were measured in Slough in 2014.

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 %	Number of Exceedences of Hourly Mean (200 $\mu\text{g}/\text{m}^3$)				
				2010	2011	2012	2013	2014*
Salt Hill (Slough town centre, A4)	Intermediate (Residential)	N	78.7	0	0	0	0	0 (101.4)
Slough Colnbrook (Pippins)	Urban Background (Residential)	N	99.2	0	0	0	0	0 (104.5)
Slough Chalvey, M4	Urban Background	Y	48.8	1	0	2	0	0 (118.4)
Slough Lakeside 2	Urban Background	N	92.0	0	0	0	0	0 (106.9)

*99.8th percentile of hourly means in brackets

Diffusion Tube Monitoring Data

Details of the annual mean NO₂ concentrations measured using diffusion tube sites during 2014 are presented in Table 2.5 and the series of results measured from 2010 to 2014 are presented in Table 2.6. Bar charts showing the trends in measured NO₂ annual mean concentrations measured with diffusion tubes are presented in Figure 2.4.

Annual mean NO₂ concentrations in excess of the objective were also measured at a few locations where relevant receptors are present and the tubes fall outside the existing AQMAs during 2014. However, using Defra's distance correction calculator reduces the concentrations of NO₂ at these locations (Goodman Park and Windsor Road) to just below the 40µg.m⁻³ standard. In addition, the Windmill site (on Bath Road) still exceeds the annual mean standard but this will be encompassed by the forthcoming Tuns Lane AQMA extension. The only tube with an annual mean NO₂ value over 40µg.m⁻³ and not covered by the descriptions above was Lakeside Road, an industrial area, which does not have relevant exposure for the annual mean objective.

The NO₂ annual mean concentrations measured at all sites within the borough were less than 60 µg.m⁻³ during 2014; this indicates that the 1-hr mean objective of 200 µg.m⁻³ was unlikely to have been exceeded at these locations.

It is Slough Borough Councils intention to locate an automatic station on Brands Hill and close to Yew Tree Road that will allow both the annual mean and 1-hr mean objective to be monitored on a continuous basis.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA	Triplicate or Co-located Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.88)
								2014 ($\mu\text{g}/\text{m}^3$)
1-3	Salt Hill	Roadside	N	Triplicate and Co-located	12 months	n/a	N	33.7
4	Lansdowne Avenue	Roadside	Y	N	12 months	n/a	N	40.0
5	Princess Street	Roadside	Y	N	12 months	n/a	N	43.5
6	Sussex Place	Roadside	N	N	12 months	n/a	N	32.5
7	Colnbrook Bypass	Roadside	N	N	12 months	n/a	No relevant exposure	39.0
8	Grampian Way	Other (motorway)	Y	N	12 months	n/a	N	42.4
9	Tweed Road	Roadside	Y	N	12 months	n/a	N	39.0
10	London Rd (A)	Roadside	Y	N	12 months	n/a	N	51.2
11	Torrige Road	Other (motorway)	Y	N	12 months	n/a	N	36.3
12	Lakeside Road	Other (industrial)	N	N	11 months	n/a	N	45.4
13	Elbow Meadows	Suburban	N	N	12 months	n/a	n/a - Distance from kerb > 50m	37.9
14-16	Pippins	Urban background	N	Triplicate and Co-located	11 months	n/a	N	30.3

Site ID	Location	Site Type	Within AQMA	Triplicate or Co-located Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.88)
								2014 ($\mu\text{g}/\text{m}^3$)
17	Horton Road (Caravan Park)	Urban background	N	N	12 months	n/a	N	33.4
18	Brands Hill (A)	Roadside	Y	N	11 months	n/a	N	53.1
19	Ditton Road	Roadside	Y	N	9 months	n/a	N	38.8
20	Hencroft Street 6N	Suburban	N	N	11 months	n/a	N	29.0
21	Windsor Road 1N	Roadside	N	N	12 months	n/a	Y	41.6 (34.5 at facade)
22	Winvale	Other (motorway)	Y	N	12 months	n/a	N	42.3
23	Tuns Lane	Roadside	Y	N	12 months	n/a	N	36.4
24	Spackmans Way	Other (motorway)	Y	N	11 months	n/a	N	39.7
25	Paxton Avenue	Other (motorway)	Y	N	12 months	n/a	N	41.4
26	Yew Tree Rd (Ux Rd) (B)	Roadside	Y	N	11 months	n/a	N (on facade)	36.3
27	India Road	Other (rail)	N	N	10 months	n/a	N	34.3
28	Rogans (Colnbrook by pass)	Roadside	Y	N	12 months	n/a	N	50.9
29	Yew Tree Road (Uxbridge Rd)	Roadside	Y	N	12 months	n/a	N	54.6

Site ID	Location	Site Type	Within AQMA	Triplicate or Co-located Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.88)
								2014 ($\mu\text{g}/\text{m}^3$)
30	Farnham Road (2)	Roadside	Y	N	12 months	n/a	N	35.7
31	Essex Avenue	Roadside	N	N	12 months	n/a	N	32.1
32	Brands Hill (B)	Roadside	Y	N	12 months	n/a	N	42.1
33	Wellington Street - Stratfield	Roadside	Y	N	11 months	n/a	N	34.9
34-36	Chalvey (CAS)	Other (motorway)	Y	Triplicate and Co-located	12 months	n/a	N	37.6
37	Blair Road-Victoria Court	Roadside	Y	N	12 months	n/a	N	46.0
38	Wellesley Road	Roadside	Y	N	12 months	n/a	N	34.2
39	London Rd (B)	Roadside	Y	N	11 months	n/a	N	38.6
40	Wexham Road	Roadside	Y	N	11 months	n/a	N	47.1
41	Sandringham Court	Other (rail)	N	N	12 months	n/a	N	28.1
42	Walpole Rd	Other (rail)	N	N	12 months	n/a	N	28.4
43	Windmill (Bath Rd)	Roadside	N	N	12 months	n/a	N (on façade)	41.2
44	Goodman Park (Ux Rd)	Roadside	N	N	12 months	n/a	Y	40.1 (34.2 at facade)
45	London Rd (C)	Roadside	Y	N	12 months	n/a	N	36.6

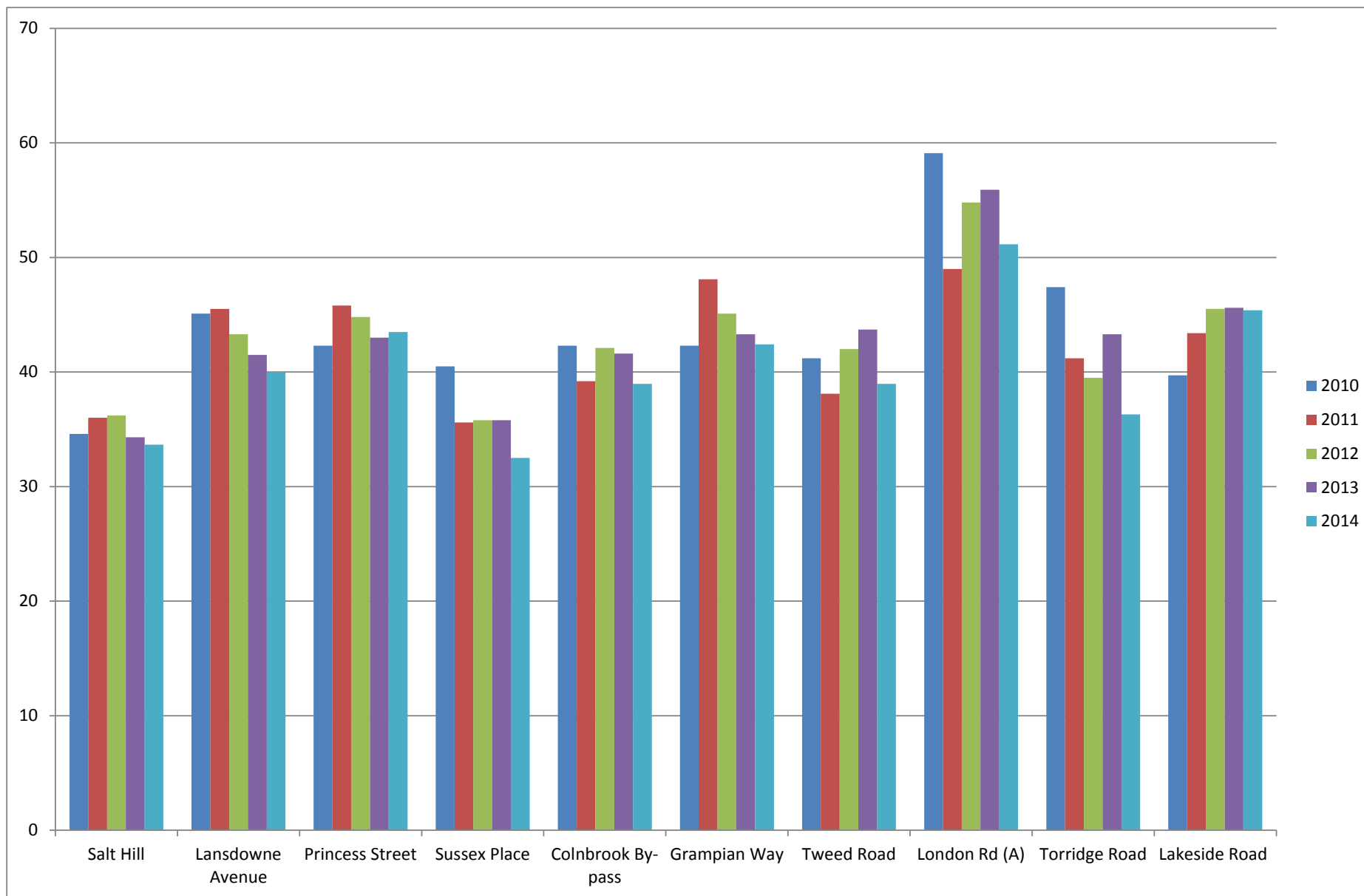
Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

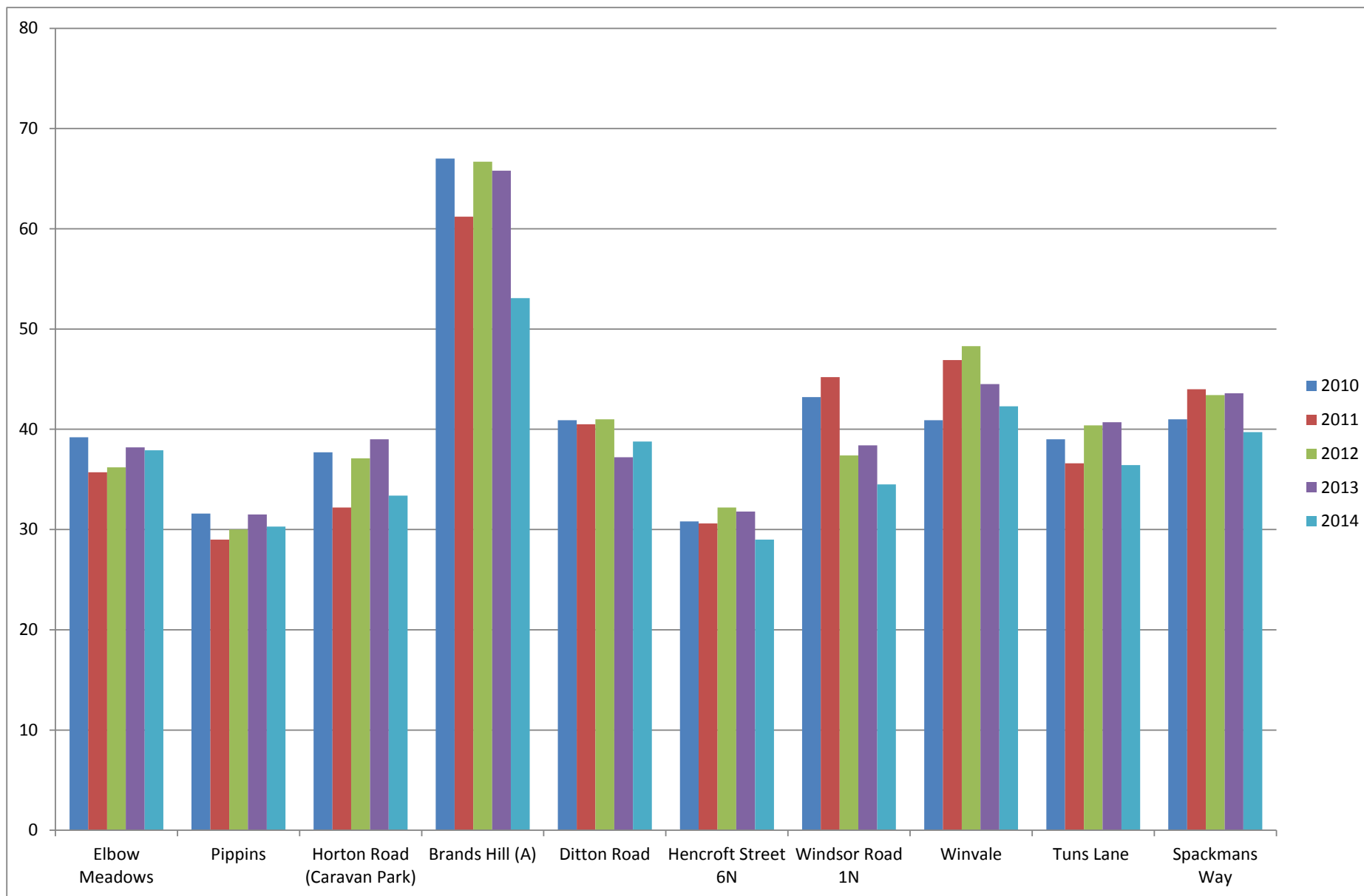
Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
				2010 (Bias Adjustment Factor = 0.82)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.88)	2013 (Bias Adjustment Factor = 0.91)	2014 (Bias Adjustment Factor = 0.88)
1-3	Salt Hill	Roadside	N	34.6	36	36.2	34.3	33.7
4	Lansdowne Avenue	Roadside	Y	45.1	45.5	43.3	41.5	40.0
5	Princess Street	Roadside	Y	42.3	45.8	44.8	43	43.5
6	Sussex Place	Roadside	N	40.5	35.6	35.8	35.8	32.5
7	Colnbrook By-pass	Roadside	N	42.3	39.2	42.1	41.6	39.0
8	Grampian Way	Other (motorway)	Y	42.3	48.1	45.1	43.3	42.4
9	Tweed Road	Roadside	Y	41.2	38.1	42.0	43.7	39.0
10	London Rd (A)	Roadside	Y	59.1	49.0	54.8	55.9	51.2
11	Torrige Road	Other (motorway)	Y	47.4	41.2	39.5	43.3	36.3
12	Lakeside Road	Other (industrial)	N	39.7	43.4	45.5	45.6	45.4
13	Elbow Meadows	Suburban	N	39.2	35.7	36.2	38.2	37.9
14-16	Pippins	Urban background	N	31.6	29.0	30.0	31.5	30.3

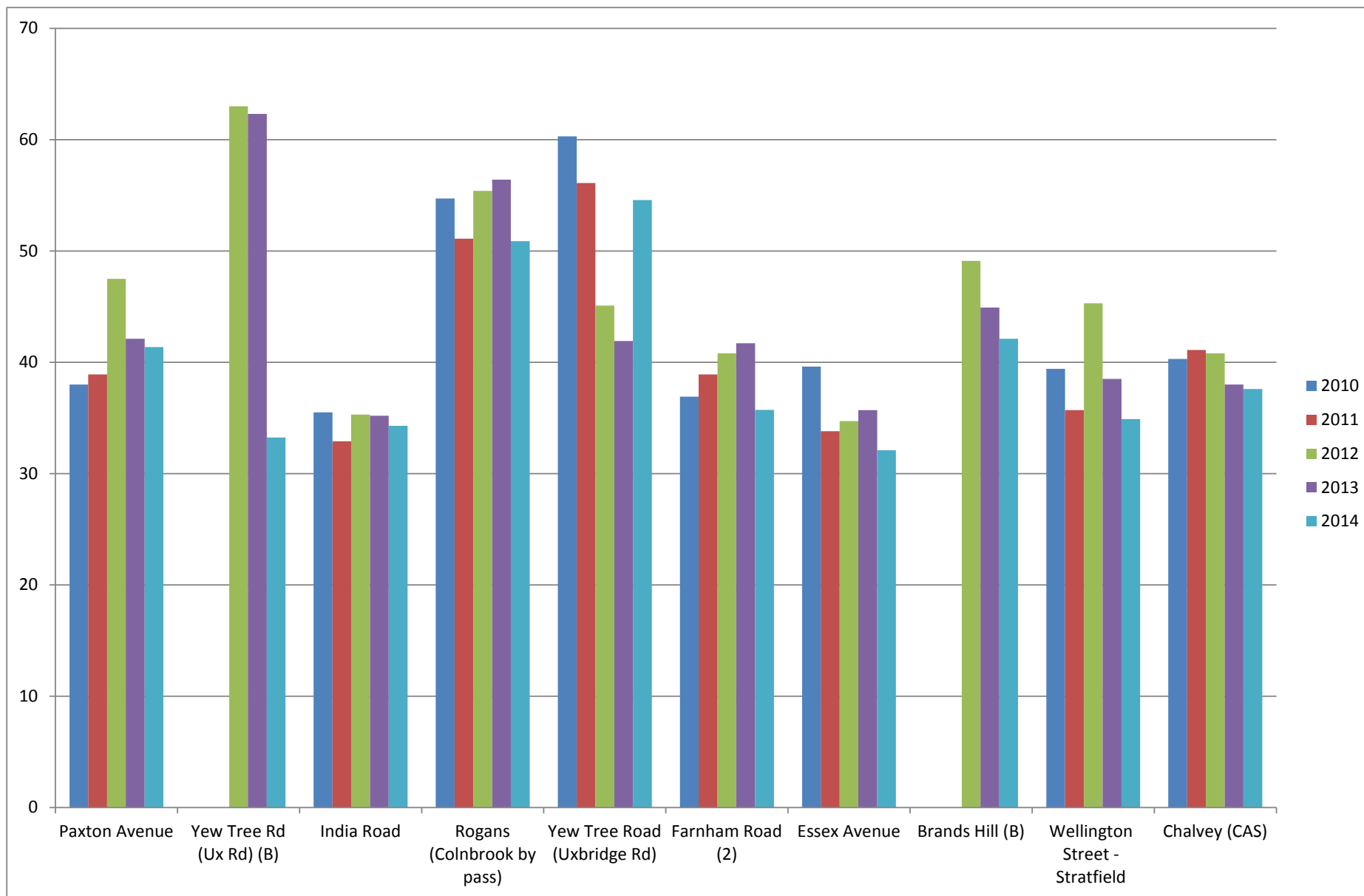
Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
				2010 (Bias Adjustment Factor = 0.82)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.88)	2013 (Bias Adjustment Factor = 0.91)	2014 (Bias Adjustment Factor = 0.88)
17	Horton Road (Caravan Park)	Urban background	N	37.7	32.2	37.1	39	33.4
18	Brands Hill (A)	Roadside	Y	67.0	61.2	66.7	65.8	53.1
19	Ditton Road	Roadside	Y	40.9	40.5	41.0	37.2	38.8
20	Hencroft Street 6N	Suburban	N	30.8	30.6	32.2	31.8	29.0
21	Windsor Road 1N	Roadside	N	43.2	45.2	37.4	38.4	34.5
22	Winvale	Other (motorway)	Y	40.9	46.9	48.3	44.5	42.3
23	Tuns Lane	Roadside	Y	39.0	36.6	40.4	40.7	36.4
24	Spackmans Way	Other (motorway)	Y	41.0	44.0	43.4	43.6	39.7
25	Paxton Avenue	Other (motorway)	Y	38.0	38.9	47.5	42.1	41.4
26	Yew Tree Rd (Ux Rd) (B)	Roadside	Y	-	-	63.0	62.3	54.6
27	India Road	Other (rail)	N	35.5	32.9	35.3	35.2	34.3
28	Rogans (Colnbrook by pass)	Roadside	Y	54.7	51.1	55.4	56.4	50.9
29	Yew Tree Road (Uxbridge Rd)	Roadside	Y	60.3	56.1	45.1	41.9	36.6

Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
				2010 (Bias Adjustment Factor = 0.82)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.88)	2013 (Bias Adjustment Factor = 0.91)	2014 (Bias Adjustment Factor = 0.88)
30	Farnham Road (2)	Roadside	Y	36.9	38.9	40.8	41.7	35.7
31	Essex Avenue	Roadside	N	39.6	33.8	34.7	35.7	32.1
32	Brands Hill (B)	Roadside	Y	-	-	49.1	44.9	42.1
33	Wellington Street - Stratfield	Roadside	Y	39.4	35.7	45.3	38.5	34.9
34-36	Chalvey (CAS)	Other (motorway)	Y	40.3	41.1	40.8	38	37.6
37	Blair Road-Victoria Court	Roadside	Y	45.3	46.1	50.4	47.3	46.0
38	Wellesley Road	Roadside	Y	40.4	39	41.9	41.5	34.2
39	London Rd (B)	Roadside	Y	-	-	36.6	37.8	38.6
40	Wexham Road	Roadside	Y	45.5	44.5	51.7	48.0	47.1
41	Sandringham Court	Other (rail)	N	-	-	32.2	27.9	28.1
42	Walpole Rd	Other (rail)	N	-	-	31.1	29.0	28.4
43	Windmill (Bath Rd)	Roadside	N	-	-	43.7	44.5	41.2
44	Goodman Park (Ux Rd)	Roadside	N	-	-	37.8	34.2	34.2

Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
				2010 (Bias Adjustment Factor = 0.82)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.88)	2013 (Bias Adjustment Factor = 0.91)	2014 (Bias Adjustment Factor = 0.88)
45	London Rd (C)	Roadside	Y	-	-	42.0	37.2	36.6







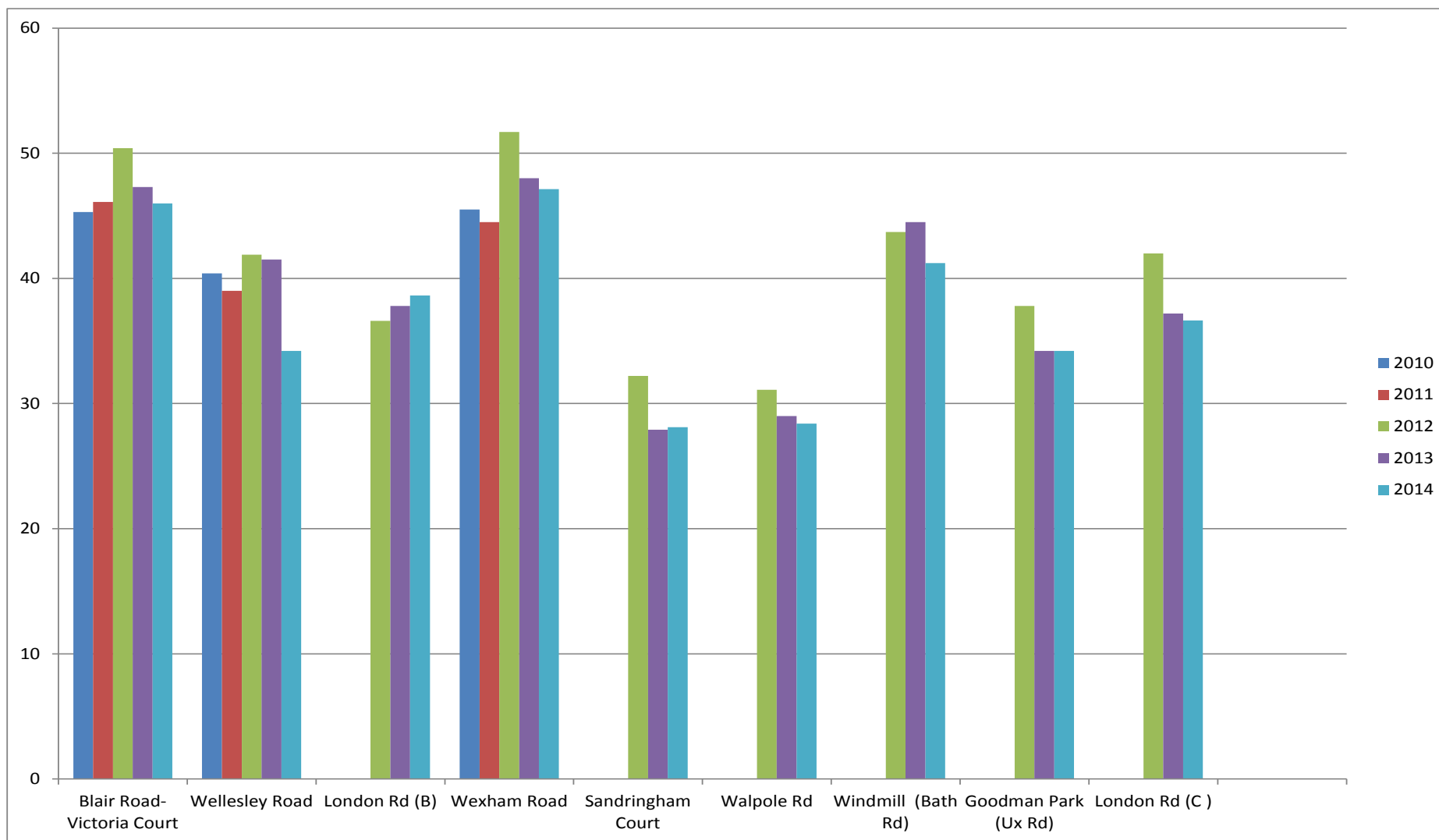
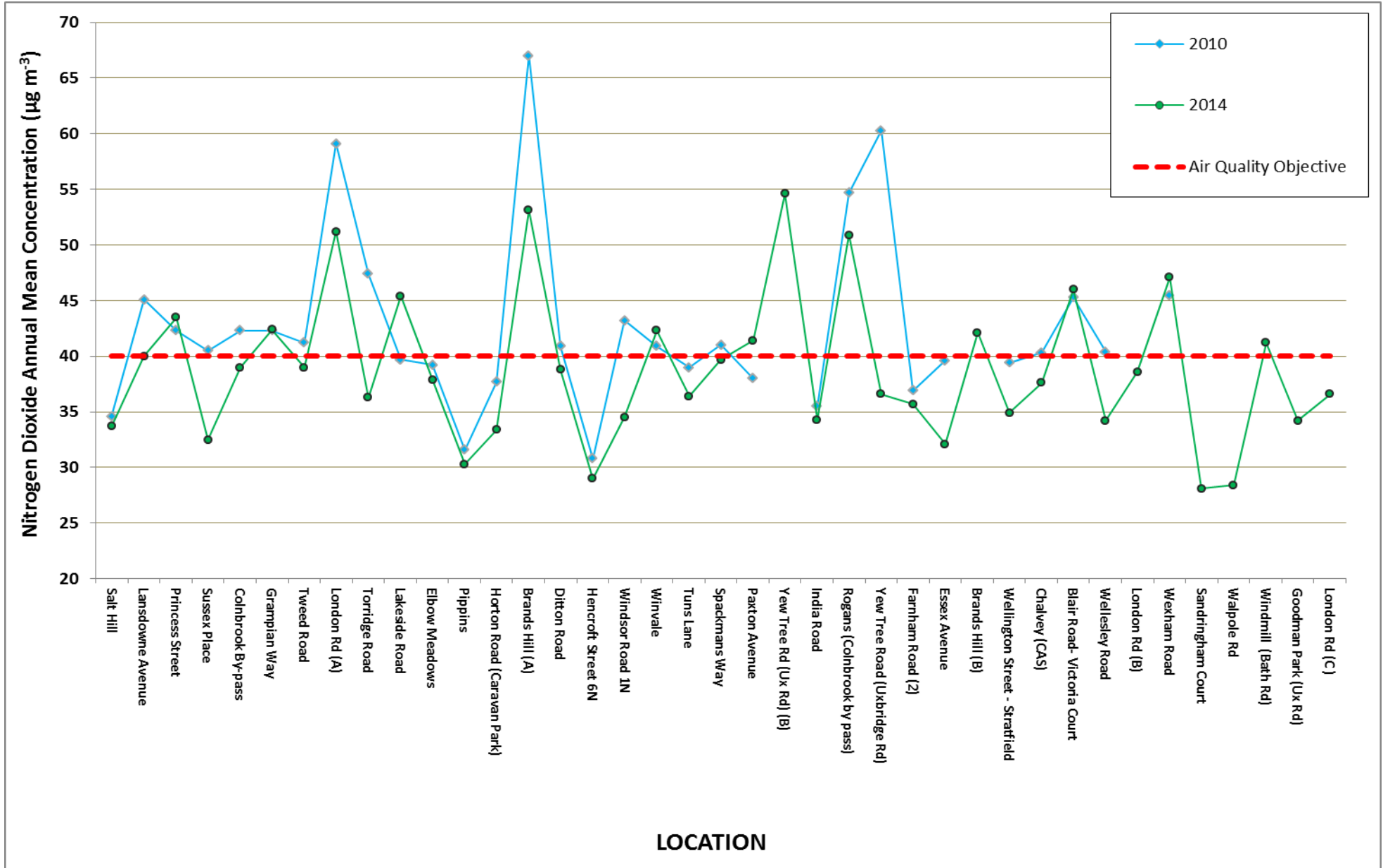


Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites

We see from comparing the 2010 and 2014 line graph below annual mean concentrations that there is a downward trend, but in most cases it is relatively small. As can be seen a number of diffusion tubes (15 sites) are at or just breaching the AQS in 2014. This also includes Windmill a care home on Bath Road, and reaffirms the need to extend the existing AQMA 3. However, a number of diffusion tubes lie just below the AQS within 10% ($36\mu\text{g.m}^{-3}$) (12 sites) and are located within Air Quality Management Areas (AQMA3). At this there is no clear evidence to suggest the existing AQMA3 should be reviewed, amended or revoked. In 2015, a continuous air quality monitor was installed on the junction of Salt Hill Drive and Farnham Road, located within the AQMA3 and 3 diffusion tubes were co-located on this site. In addition two new diffusion tube sites within the Town Centre AQMA4 outside Cornwall House and Princes House have implemented into the programme in 2015. These two sites are office to residential developments within our Town Centre.



2.2.2 PM₁₀

The annual mean PM₁₀ concentrations measured from 2010 to 2014 are presented in Table 2.7 and Figure 2.5. No concentrations in excess of the 40 µg.m⁻³ annual mean objective were measured at any of the monitoring locations across the time series.

The number of 24-hour mean PM₁₀ concentrations in excess of the 50 µg.m⁻³ short-term objective; measured from 2010 to 2014 are presented in Table 2.8. The 50 µg.m⁻³ 24-hour mean objectives were not exceeded more than 35 times at any of the monitoring sites in Slough during 2014.

Table 2.7 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration $\mu\text{g}/\text{m}^3$				
					2010	2011	2012	2013	2014
SLH4 - Salt Hill (Slough town centre, A4)	I	N	84%	Y	20.0	22.3*	22.0*	22.0*	19.2*
SLH 3 - Slough Colnbrook (Pippins)	UB	N	97%	Y	18.3	20.1*	21.0*	20.0*	17.7*
SLH 5- Slough Colnbrook (Lakeside 1, Tan Hse Farm)	UB	N	81%	N (Osiris)	16.8	19.9 [#]	18.0 [#]	13.0 [#]	19.3 [#]
SLH 8 - Slough Lakeside 2	UB	N	93%	Y	18.6	30.3	20.0	20.0	16.2

* TEOM results VCM corrected

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

Table 2.8 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 µg/m ³)				
					2010	2011	2012	2013	2014
SLH4 - Salt Hill (Slough town centre, A4)	I	N	94%	Y	4	0	0*	7*	0*
SLH 3 - Slough Colnbrook (Pippins)	UB	N	88%	Y	5	0	0*	13*	1*
SLH 5- Slough Colnbrook (Lakeside 1, Tan Hse Farm)	UB	N	95%	N (Osiris) [#]	14	1	36 [#]	8 [#]	1 [#]
SLH 8 - Slough Lakeside 2	UB	N	94%	Y	18	4	37	14	8

* TEOM results VCM corrected

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

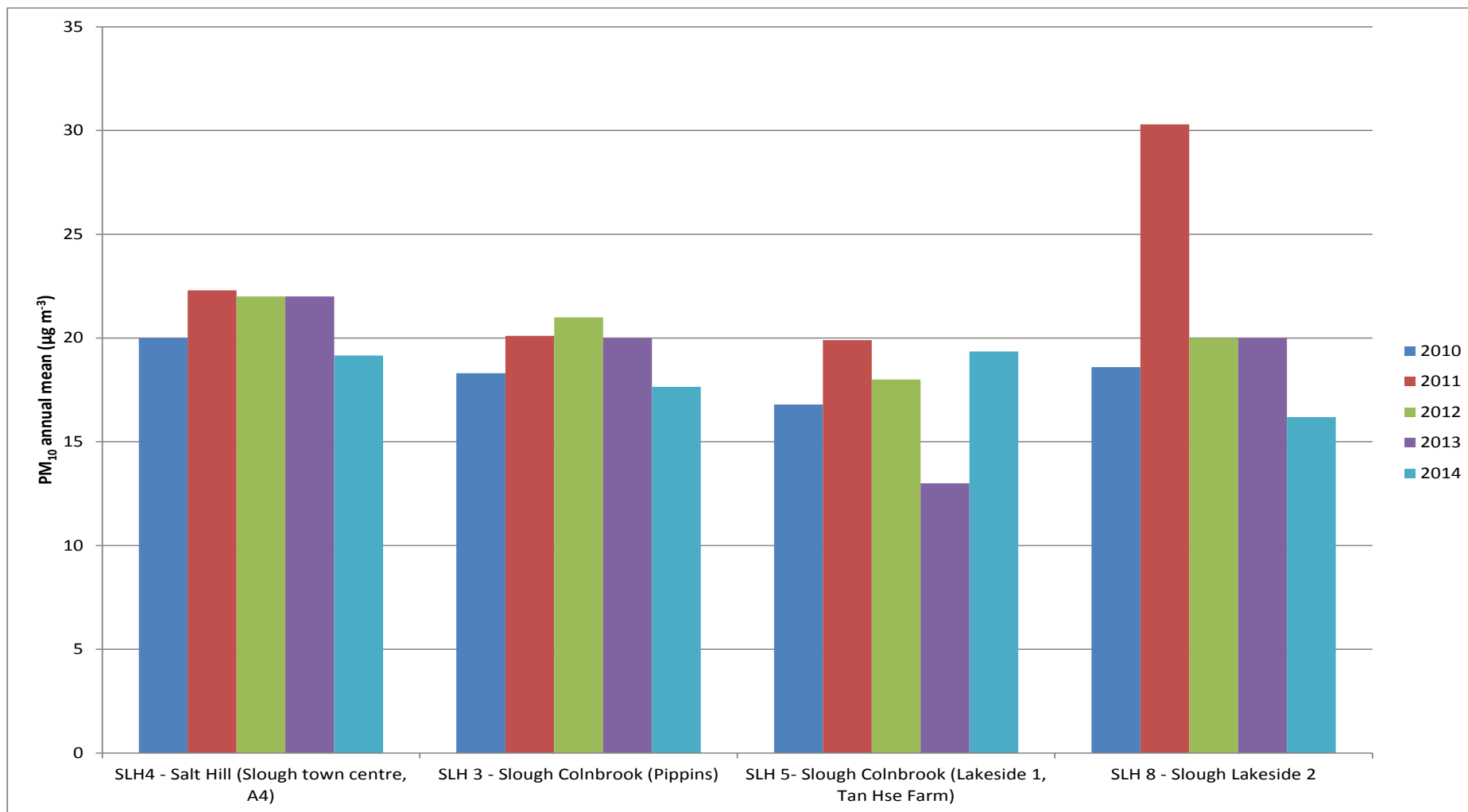


Figure 2.5 Trends in Annual Mean PM₁₀ Concentrations

2.2.3 Sulphur Dioxide

Slough Borough Council do not currently measure sulphur dioxide concentrations.

2.2.4 Benzene

Slough Borough Council does not currently measure benzene concentrations. Benzene was measured prior to January 2013 and no exceedances had ever been recorded in the borough prior to removing the monitoring sites.

2.2.5 Summary of Compliance with AQS Objectives

Measured NO₂ concentrations were compliant with both the annual mean and short-term objectives at most relevant locations outside the existing AQMAs within SBC. An NO₂ annual mean in excess for the 40 µg.m⁻³ objective was measured at the diffusion tube site at Windmill (Bath Road) and will result in the extension of the existing Air Quality Management Area 3 in 2016.

There is a very small general trend downwards in annual NO₂ concentrations over the past 5 years (ranging from 2-15%). The improvement in NO₂ concentrations has slowed down considerably in recent years. There is a need to maintain the existing AQMAs with the majority of receptors experiencing level close to or in breach of the AQS objectives. It should be noted that the geographical extent of the SBC AQMAs is specifically limited to relevant exposure that is likely to exceed the 40 µg.m⁻³ objective.

No PM₁₀ or benzene concentrations in excess of the relevant objectives were measured at any of the monitoring locations.

Slough Borough Council has examined the results from monitoring in the Slough area. Concentrations outside the existing and proposed AQMAs are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

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

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

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

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

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

3.4 Junctions

Slough Borough Council confirms that there are no new/newly identified busy junctions/busy roads.

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

Highway England are proposing to construct an M4 Smart Motorway between Junction 3 and 12; that will result in utilising the hard shoulder lane as a fourth traffic lane, erection of new relief areas and gantries and re-location of bridges. This will result in up to an additional 15,000 AADT movements 15 years after opening in 2022. The proposal has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG (09), and concluded that it will not be necessary to proceed to a Detailed Assessment. There are likely to be some receptors in Slough Borough

Council that may experience exceedances of the AQS at the year of opening in 2022 based on conservative long term trends regarding improvements with NO₂ concentrations.

3.6 Roads with Significantly Changed Traffic Flows

The Thames Valley Berkshire Local Enterprise Partnership (LEP) has drawn up a Strategic Economic Plan (SEP) which covers Berkshire and sets out a range of major transport schemes that the LEP wants to see implemented in 2015/16 and the following five years.

Three of these major schemes are in Slough:

- Slough Mass Rapid Transit (SMaRT)
- A332 Windsor Road route enhancement
- A355 Tuns Lane/ Farnham Road route enhancement

Slough Borough Council has assessed the three schemes taking a conservative approach, which considers the long term trends of roadside NO₂ concentrations. They concluded that:

- Slough Mass Rapid Transit (SMaRT) will have a moderate impact at some receptors, but is unlikely to lead to any new areas exceeding the AQS.
- A332 Windsor Road route enhancement will have a substantial impact at some receptors, and may lead new areas exceeding the AQS along Windsor Road.
- A355 Tuns Lane/ Farnham Road route enhancement will have a moderate impact at some receptors, but is unlikely to lead to any new areas exceeding the AQS.

3.7 Bus and Coach Stations

Slough Borough Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

The Heathrow decision has been pushed back to Summer of 2016, but the expansion if given the go-ahead will mean the airport will expand into Slough Borough Council and will potentially have significant air quality impacts.

Slough Borough Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Start writing supporting text here...

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

4.2.2 Moving Trains

Slough has undertaken a detailed assessment to determine the likelihood of exposure from diesel locomotives on the Great Western Main Line, a significant element of the track has been electrified and the new Crossrail which will operate from 2019 will also be electrified. Ongoing diffusion tube monitoring clearly indicates there is no relevant exposure from diesel locomotives operating on the GWML affecting Slough residents

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

4.3 Ports (Shipping)

Slough Borough Council confirms that there are no ports or shipping that meets the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Scottish Southern Electric has submitted an application for a new 40MW multifuel (waste derived fuel) Combine Heat and Power station to be built by 2020 within the Slough Industrial Estate to replace their existing power station. The new installation will lead to a combined impact from the process and road traffic (HGVs) relating to the process of $0.4 \mu\text{g}\cdot\text{m}^{-3}$ which is 1% of the AQS limit.

Slough Borough Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

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

5.1.3 New or Significantly Changed Installations with No Previous Air

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

5.2 Major Fuel (Petrol) Storage Depots

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

5.3 Petrol Stations

Slough Borough Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Slough Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

An application has been approved for a 400 KW biomass installation DHL Flight Assembly Centre, Lakeside Road, Colnbrook, Slough, SL3 0ED. An air quality screening assessment was submitted to Slough Borough Council in 2014. The screening assessment indicated there were no significant air quality impacts from this proposal. The stack emission rates are below the target emission rates.

Slough Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

Slough Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

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

7 Fugitive or Uncontrolled Sources

Slough Borough Council confirms that there are no new potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Monitoring at Windmill House on Bath Road has indicated NO₂ concentrations are breaching the AQS and therefore the existing AQMA3 will be extended East along Bath Road for approximately 300m.

8.2 Conclusions from Assessment of Sources

To date no other exceedances from sources have been identified outside the existing AQMA3s.

8.3 Proposed Actions

There is no requirement to proceed to Detailed Assessment.

9 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, 2012

Slough Borough Council, Air Quality Review and Assessment Progress Report, 2013

Slough Borough Council Air Quality Detailed and Further Assessment 2013

Slough Borough Council, Air Quality Review and Assessment Progress Report, 2014

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

Slough LEP Impact Assessment, Air Quality, 2015

Appendices

Appendix A: QA/QC Data

Appendix A: QA/QC Data

Factor from Local Co-location Studies (if available)

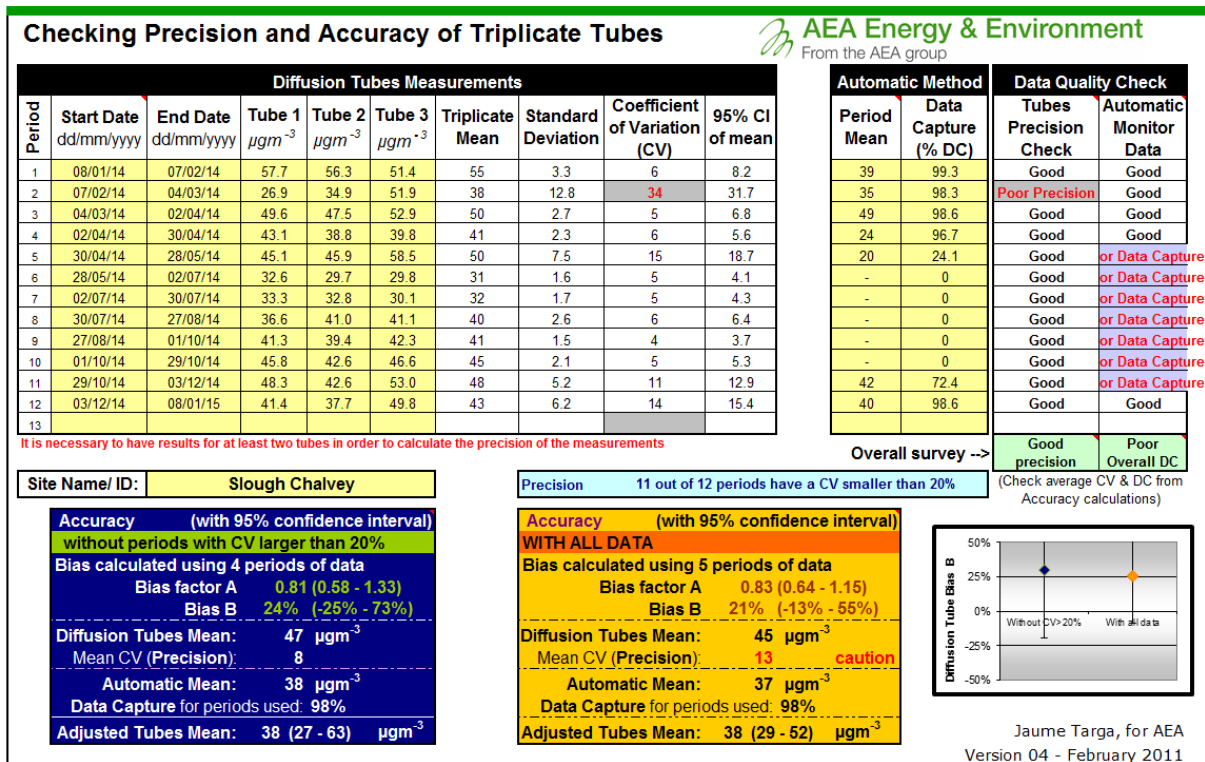
There were three local co-location studies conducted within the borough during 2014 at Chalvey, Colnbrook and Town Centre A4. Bias factors have been calculated for each site.

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

Table A.1 Calculation of the average diffusion tube bias adjustment factor 2014

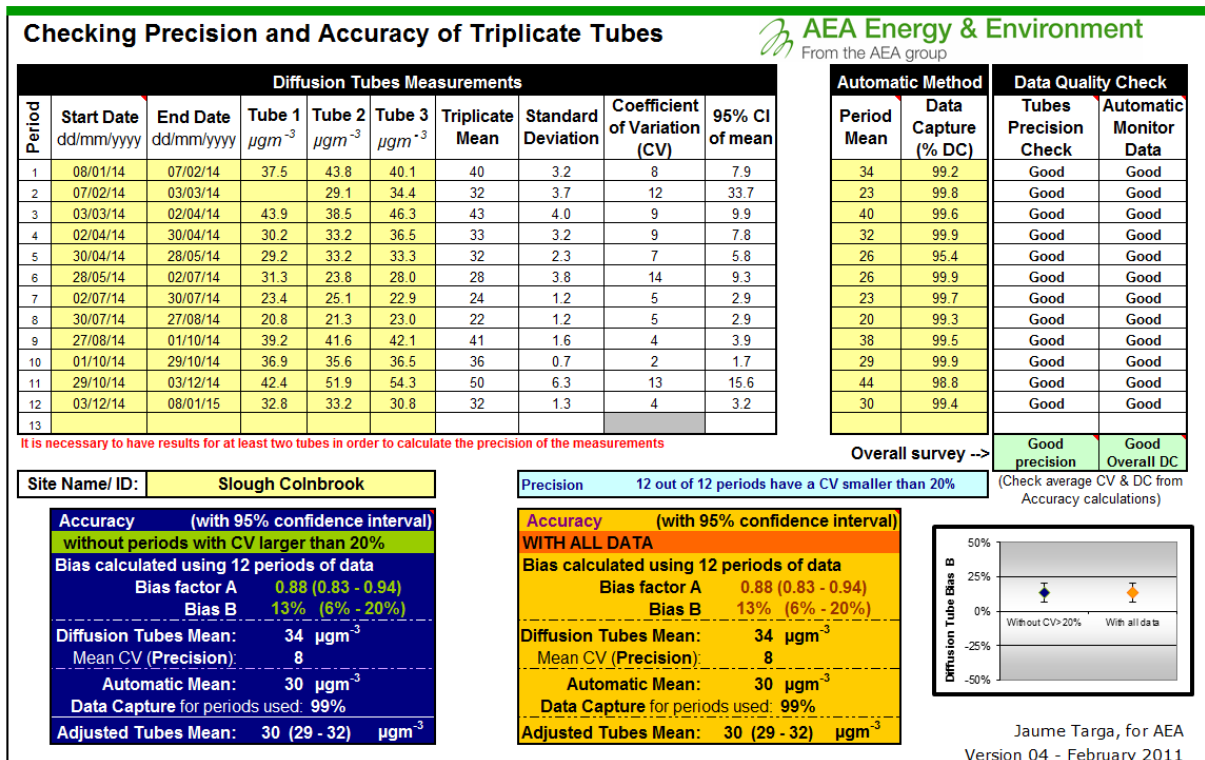
Co-location site	Bias adjustment factor 2011
Chalvey	0.83
Colnbrook	0.88
Salthill	0.95
Average bias	0.88

Figure A.1 Co-location study – Slough Chalvey



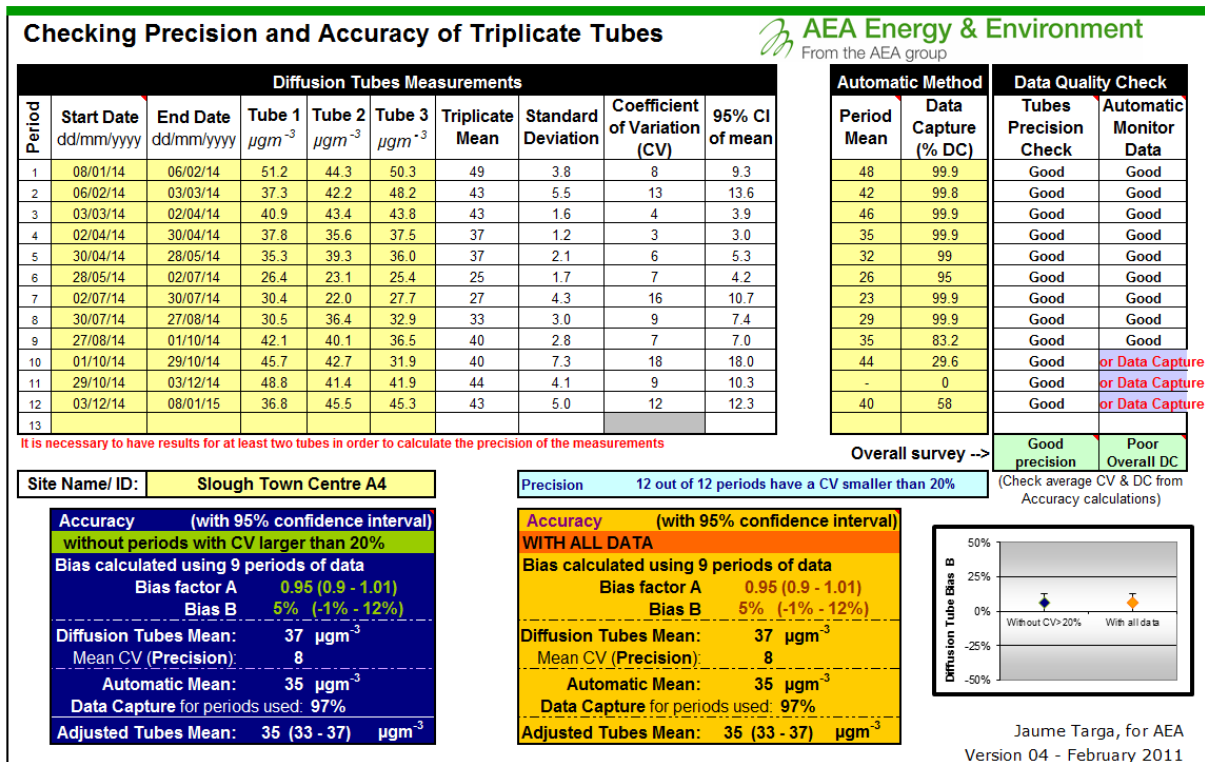
If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

Figure A.2 Co-location study – Slough Colnbrook



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Figure A.3 Co-location study – Slough Town Centre A4



If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at:

LAQMHelpdesk@uk.bureauveritas.com

Diffusion Tube Bias Adjustment Factors

The diffusion tubes deployed by the Slough Borough Council's are supplied and analysed by ESG using a preparation mixture of 50% triethanolamine (TEA) in acetone.

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 years.

PM 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.

Short-term to Long-term Data Adjustment

A short to long term data adjustment was not necessary as the data capture was at least 75% for all sites

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 Ricardo Energy and Environment.

QA/QC of Diffusion Tube Monitoring

ESG participate in the WASP scheme and 100% of results submitted during the period January to December 2014 were determined to be satisfactory based upon a z-score of $< \pm 2$.

Table A.2 NO₂ monthly mean concentrations measured at diffusion tubes sites 2014

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture	Requires annualised?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.88 adj factor)
Hencroft Street * 6N	39.5	29.7	36.1	30.0	21.8	18.9	-	24.2	37.8	38.7	49.7	36.1	33.0	0.9	No	29.0
Essex Avenue	49.2	43.5	45.8	27.3	23.8	23.3	21.4	30.0	38.0	39.0	51.5	44.8	36.5	1.0	No	32.1
Windsor Road * 1N	55.5	56.8	53.7	41.9	45.6	20.1	36.7	40.3	50.8	50.3	59.4	56.7	47.3	1.0	No	41.6
Tweed Road	48.6	38.4	58.1	38.7	43.2	36.6	32.5	38.2	53.1	44.6	58.1	41.3	44.3	1.0	No	39.0
Colnbrook By-pass.moved slightly	45.8	46.7	48.5	29.3	39.9	36.4	32.3	43.2	47.2	51.7	57.3	53.0	44.3	1.0	No	39.0
Horton Road (Caravan Park)	38.7	34.7	44.7	36.3	29.4	33.6	30.1	23.1	56.1	36.7	53.6	38.3	37.9	1.0	No	33.4
Princess Street	64.5	58.8	56.6	42.1	37.1	40.1	36.4	39.8	51.2	48.8	62.9	54.7	49.4	1.0	No	43.5
Paxton Avenue	64.8	47.7	49.1	42.5	47.5	36.7	32.1	37.6	43.1	51.8	58.1	52.9	47.0	1.0	No	41.4
Winvale	62.0	60.4	54.7	41.6	38.5	29.8	34.2	46.8	46.0	58.9	57.2	46.6	48.1	1.0	No	42.3
Lansdowne Avenue	54.6	46.9	52.5	43.3	39.5	34.8	32.6	40.6	44.7	44.5	60.4	51.2	45.5	1.0	No	40.0
Brands Hill	45.4	65.3	83.4	-	68.5	1.2	73.6	61.0	81.5	64.6	77.1	41.8	60.3	0.9	No	53.1
Tuns Lane	47.2	39.2	43.2	39.1	34.6	31.7	42.3	32.4	48.4	45.1	49.9	43.6	41.4	1.0	No	36.4
Elbow Meadows	50.2	40.5	56.8	37.3	39.1	36.1	33.4	29.4	50.8	43.9	61.6	37.7	43.1	1.0	No	37.9
London Road - moved slightly	61.7	42.3	61.1	67.3	54.0	52.5	62.9	46.5	71.3	53.0	73.0	51.9	58.1	1.0	No	51.2
Grampian Way	69.4	56.3	59.9	36.0	43.0	20.3	29.7	36.5	43.8	61.1	66.8	55.5	48.2	1.0	No	42.4
Ditton Road	-	-	49.6	-	39.4	34.1	38.5	34.7	45.7	51.1	56.5	46.9	44.1	0.8	No	38.8
Pippins *	37.5	-	43.9	30.2	29.2	31.3	23.4	20.8	39.2	36.9	42.4	32.8	33.4	0.9	No	29.4
Pippins *	43.8	29.1	38.5	33.2	33.2	23.8	25.1	21.3	41.6	35.6	51.9	33.2	34.2	1.0	No	30.1
Pippins *	40.1	34.4	46.3	36.5	33.3	28.0	22.9	23.0	42.1	36.5	54.3	30.8	35.7	1.0	No	31.4
Salt Hill *	51.2	37.3	40.9	37.8	35.3	26.4	30.4	30.5	42.1	45.7	48.8	36.8	38.6	1.0	No	34.0
Salt Hill *	44.3	42.2	43.4	35.6	39.3	23.1	22.0	36.4	40.1	42.7	41.4	45.5	38.0	1.0	No	33.4
Salt Hill *	50.3	48.2	43.8	37.5	36.0	25.4	27.7	32.9	36.5	31.9	41.9	45.3	38.1	1.0	No	33.5
Torridge Road	44.1	26.7	57.8	29.7	40.6	35.7	37.5	34.3	50.4	34.7	61.5	42.1	41.3	1.0	No	36.3

Slough Borough Council

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture	Requires annualised?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.88 adj factor)
Sussex Place	39.9	39.6	48.2	33.9	33.4	20.5	29.3	33.7	40.5	41.1	47.4	35.8	36.9	1.0	No	32.5
Spackmans Way	55.2	-	47.4	40.7	49.5	37.1	27.9	44.5	40.3	40.7	55.0	58.3	45.1	0.9	No	39.7
Farnham Road (2)	53.7	53.0	-	78.1	30.2	22.5	31.5	33.7	32.9	51.7	53.3	46.5	44.3	0.9	No	39.0
Lakeside Road *	45.7	53.9	58.0	52.1	55.8	-	40.4	41.2	56.0	57.0	63.1	44.1	51.6	0.9	No	45.4
Chalvey (CAS) *	57.7	26.9	49.6	43.1	45.1	32.6	33.3	36.6	41.3	45.8	48.3	41.4	41.8	1.0	No	36.8
Chalvey (CAS) *	56.3	34.9	47.5	38.8	45.9	29.7	32.8	41.0	39.4	42.6	42.6	37.7	40.8	1.0	No	35.9
Chalvey (CAS) *	51.4	51.9	52.9	39.8	58.5	29.8	30.1	41.1	42.3	46.6	53.0	49.8	45.6	1.0	No	40.1
Wexham Road	55.3	-	58.5	52.8	51.4	39.0	40.6	48.2	58.2	60.1	61.3	63.8	53.6	0.9	No	47.1
Wellington Street - Stratfield	47.2	39.8	41.8	41.9	36.6	30.2	35.7	38.1	-	37.0	50.3	37.6	39.7	0.9	No	34.9
Blair Road- Victoria Court	64.6	59.7	52.0	38.0	39.8	43.4	45.0	48.8	56.0	57.1	59.0	63.8	52.3	1.0	No	46.0
Wellesley Road	44.6	42.0	55.1	43.5	-	31.6	28.5	31.3	47.8	48.4	42.6	51.0	42.4	0.9	No	37.3
Rogans (Colnbrook by pass)	64.6	48.1	71.1	62.0	44.7	49.5	50.3	49.3	56.2	61.9	71.3	64.8	57.8	1.0	No	50.9
Yew Tree Road (Uxbridge Rd)	66.1	51.9	65.6	44.4	69.3	52.2	62.6	57.0	73.1	65.0	79.5	57.3	62.0	1.0	No	54.6
India Road	45.5	30.6	47.5	39.8	36.8	-	28.4	-	45.8	23.3	46.9	45.0	39.0	0.8	No	34.3
Yew Tree Rd (Ux Rd) (B) Receptor	44.5	36.9	51.3	43.9	41.3	37.6	34.5	33.2	53.7	-	-	37.1	37.8	0.9	No	33.2
Brands Hill (B)	33.8	32.8	51.7	53.5	49.8	51.3	53.0	35.1	63.5	44.0	63.6	42.1	47.9	1.0	No	42.1
London Rd (B)	-	33.0	54.0	45.8	41.1	41.3	39.8	35.1	51.8	42.7	52.8	45.6	43.9	0.9	No	38.6
London Rd (C)	41.4	32.5	45.4	45.8	44.4	39.6	34.7	35.8	47.3	39.8	51.7	41.3	41.6	1.0	No	36.6
Sandringham Court	44.1	34.6	41.7	34.2	4.4	24.8	22.8	28.9	32.3	37.7	41.9	35.8	31.9	1.0	No	28.1
Walpole Rd	36.2	27.5	38.4	33.7	34.5	27.1	26.6	25.3	35.5	29.0	42.1	31.3	32.3	1.0	No	28.4
Goodman Park (Ux Rd)	56.1	47.4	56.9	42.2	32.1	27.4	32.2	39.2	48.1	49.5	54.2	61.8	45.6	1.0	No	40.1
Windmill (Bath Rd)	48.0	32.9	52.1	48.4	48.2	43.3	39.8	38.8	56.7	50.3	52.7	51.0	46.9	1.0	No	41.2

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2015 Updating and Screening Assessment for Slough Borough Council

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यदि आप इस दस्तावेज में दी गई जानकारी के अनुवाद किए जाने की सहायता चाहते हैं तो कृपया किसी अंग्रेजी भाषी व्यक्ति से यह अनुरोध करने के लिए 01753 875219 पर बात करके कहें.

ਜੇ ਤੁਸੀਂ ਇਸ ਦਸਤਾਵੇਜ਼ ਵਿਚਲੀ ਜਾਣਕਾਰੀ ਦਾ ਅਨੁਵਾਦ ਕਰਨ ਲਈ ਸਹਾਇਤਾ ਚਾਹੁੰਦੇ ਹੋ, ਤਾਂ ਕਿਸੇ ਅੰਗਰੇਜ਼ੀ ਬੋਲਣ ਵਾਲੇ ਵਿਅਕਤੀ ਨੂੰ 01753 875219 ਉੱਤੇ ਕਾਲ ਕਰਕੇ ਇਸ ਬਾਰੇ ਬੇਨਤੀ ਕਰਨ ਲਈ ਕਹੋ।

Aby uzyskać pomoc odnośnie tłumaczenia instrukcji zawartych w niniejszym dokumencie, należy zwrócić się do osoby mówiącej po angielsku, aby zadzwoniła w tej sprawie pod numer 01753 875219.

Haddii aad doonayso caawinaad ah in lagu turjibaano warbixinta dukumeentigaan ku qoran, fadlan weydiiso in qof ku hadla Inriis uu ku Waco 01753 875219 si uu kugu codsado.

اگر آپ کو اس دستاویز میں دی گئی معلومات کے ترجمے کے سلسلے میں مدد چاہئے تو، براہ کرم ایک انگریزی بولنے والے شخص سے 01753 875219 پر کال کر کے اس کی درخواست کرنے کے لئے کہیں۔