



## 2016 Air Quality Annual Status Report (ASR)

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

July 2016

## Rugby Borough Council

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## Executive Summary: Air Quality in Our Area

### Air Quality in Rugby

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of pulmonary conditions, heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas<sup>1,2</sup>.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>.

The main pollutants of concern in Rugby Borough, as in most areas of the UK, are associated with road traffic, in particular NO<sub>2</sub> and particulate matter (PM) at locations close to busy, congested roads where people may live, work or shop. Previous Review and Assessment reports and local knowledge have identified areas where UK air quality objectives may be exceeded. Rugby Borough Council declared an Air Quality Management Area (AQMA) in 2004 for exceedances of the annual mean NO<sub>2</sub> objective (more details in Section 2.1).

The main areas of concern are the Warwick Street Gyratory in Rugby town centre and surrounding approach routes, Newbold Road, Corporation Street and the crossroads of the A426 / B4429 in Dunchurch. A Detailed Assessment<sup>4</sup> was carried out in 2010 to address findings from the 2009 Updating and Screening Assessment, which highlighted potential impacts on concentrations of NO<sub>2</sub> both within and outside the existing AQMA due to new developments and schemes in Rugby. There were predicted to be exceedances at various locations with relevant exposure in Rugby town centre (within the AQMA), in particular along Church Street and North Street. Recent years' NO<sub>2</sub> diffusion tube monitoring results (2011-2015) show little evidence of any upwards or downwards tendencies, with year-to-year changes in concentrations appearing to be primarily influenced by meteorological variations.

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<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

<sup>2</sup> Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>3</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

<sup>4</sup> AECOM, RBC Air Quality Detailed Assessment for Nitrogen Dioxide, September 2010

The CEMEX cement works, located to the west of Rugby town centre, is a major source of NO<sub>x</sub> and PM<sub>10</sub> emissions, and emissions are monitored closely. The trends for annual NO<sub>x</sub> and PM<sub>10</sub> emissions over the last few years do not indicate any substantial (greater than 30% in a year) increases in emissions since 2012. In partnership with SITA UK, CEMEX commissioned a Climafuel manufacturing facility at Malpass Farm, Parkfield Road, Rugby. The facility came online during 2015. In December 2014, Rugby Borough Council installed a Turnkey Osiris dust monitor to the north-east of the Climafuel facility to measure particulate levels downwind. To date there have been no particulate pollution episodes that could be attributed to the Climafuel plant operation.

The Council is responsible for the regulation of a number of Part A2 and Part B industrial installations that are of significance in terms of air quality. Each process / installation is regulated under the Environmental Permitting (England and Wales) Regulations 2010 and regularly inspected by the Rugby Borough Council Regulatory Services unit to ensure they are controlling their emissions to atmosphere. The latest Permit Holders Register (updated April 2016) can be found in

## **Actions to Improve Air Quality**

A major road improvement scheme for the A45/A46 Tollbar End roundabout in southern Coventry is expected to be completed by the end of 2016. This scheme aims to reduce the volume of traffic using the roundabout by providing a dual-carriageway underpass, and therefore will likely have a net-beneficial impact on local air quality, according to the corresponding Environmental Statement. It should be noted, however, that the resultant increased congestion from the works may cause short-term adverse air quality effect before the scheme is operational. Monitoring results in this area nevertheless show that NO<sub>2</sub> concentrations are currently well within the air quality objective.

An application for a 12 MW solar farm at Churchover is ongoing but thought to be near completion. Once operational, the facility will generate clean, renewable energy, displacing potentially more polluting forms of power generation, though it is accepted that this is an unpopular development with local residents and is unlikely in the short term to have an impact on air quality in AQMA.

Rugby Borough Council is currently developing a new Health Protection Strategy on the reduction of PM<sub>2.5</sub> emissions, which is likely to be actioned through the Coventry and Warwickshire Air Quality Alliance, a partnership comprising Environmental Health, Public Health, Planning and Transport officers from the Coventry and Warwickshire local authorities.

## **Local Priorities and Challenges**

The main priorities for addressing air quality set out by Rugby Borough Council are:

- Maintain existing AQMA declaration for NO<sub>2</sub>.
- Continue to monitor NO<sub>2</sub> concentrations at existing long-term locations, and supplement these with additional sites at pollution hotspots and narrow roads to gain better understanding of spatial variation of pollutant concentrations.
- Implementation of measures to improve air quality in and around the Warwick Street Gyratory and Dunchurch crossroads areas as monitoring results show these to be the areas of poorest air quality.

In addition, the key high-priority measures listed in the draft Air Quality Action Plan to be addressed in the coming year include:

- Public awareness campaigns for active travel – the promotion of walking and cycling, and in particular at schools and workplaces
- Greater provision of cycle infrastructure to encourage greater uptake of cycling
- Road improvement works to remove bottlenecks and alleviate congestion
- Green procurement for promotion of low emission transport, and vehicle fleet efficiency improvements.

One of the key challenges to improving air quality in Rugby is predominantly in the form of planning applications for developments that may impact negatively on existing air quality, as is the case for most local authorities. There have been several recently completed major developments in Rugby, along with a considerable number of large-scale developments in the pipeline and numerous smaller developments.

The most significant planning applications are listed below:

1. A proposed new Secondary School development at Rokeby, Rugby.

2. Rugby Radio Station SUE – urban extension to Rugby providing up to 6,200 dwellings, up to around 130,000 m<sup>2</sup> of space for various land uses, including a mixed use district centre.
3. Rugby Gateway SUE (Eden Park) – outline application for up to 1300 residential units, construction carried out in phases. Phase 1 (244 dwellings) has been built out and occupied, and Phase 2 (230 dwellings) is pending
4. Coton Park East – anticipated upcoming submission of application for 855 dwellings.
5. Gala and CEMEX House, Evreux Way – outline application for redevelopment of site, for up to 7040 m<sup>2</sup> of retail floorspace. Air quality impacts are a concern given proximity of the site to the S10 Webb Ellis Pub monitoring location, which has recorded high concentrations of NO<sub>2</sub> in recent years.
6. Cawston Farm – pre-application discussions ongoing for up to 1400 dwellings and 28 hectares of employment land, which will likely be progressed through the Local Plan process.
7. Leicester Road – permission granted for up to 635 dwellings, with previously approved schemes currently under construction.
8. Mill Road (former ALBA site) – mixed-use development including 29 residential house and 103 apartments. Potential air quality impacts on surrounding area were raised by Environmental Services and mitigation requirements were highlighted.

The following developments are either under construction or are completed / occupied:

1. Warehouse Distribution Centre (Former Peugeot Factory) commercial developments, Ryton-on-Dunsmore – majority of site nearing completion. Outline planning application R14/2236 for remaining Zone C for Class B2 (general industry) & Class B8 (warehouse, storage & distribution) uses- 136500 m<sup>2</sup>
2. Elliot's Field Retail Park – 27,000 m<sup>2</sup> retail development, complete.
3. Junction 1 Retail Park – under development, 5 units of 5,670 m<sup>2</sup> non-food Class A1 retail floorspace, with additional 3 units anticipated to begin shortly.

4. Coton House R12/1353 – construction of two main residential phases ongoing.

## How to Get Involved

The general public can take simple measures to help improve air quality, the main ones being, where possible, making short trips and journeys on foot or by bike instead of by car, or using public transport. Car sharing with colleagues, or with other parents on the school run, are some other examples of ways to reduce traffic congestion, for example. Other measures are listed below:

- Purchasing low-emission electric and/or hybrid vehicles, with government funding and grants available.
- Upgrading boilers to newest and most efficient gas condensing boilers with lowest NO<sub>x</sub> (and carbon) emissions.
- Renewable energy generation via solar photovoltaics or wind turbine installation (although individual effect on air quality is minor and non-local)

Further information can be found on the Council's website<sup>5</sup>, and Defra's Local Air Quality Management (LAQM) website<sup>6</sup>.

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<sup>5</sup> Rugby Borough Council Air Pollution website: [https://www.rugby.gov.uk/info/20021/pollution/217/air\\_pollution](https://www.rugby.gov.uk/info/20021/pollution/217/air_pollution)

<sup>6</sup> Defra LAQM website: <http://laqm.defra.gov.uk/>

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## 1 Local Air Quality Management

This report provides an overview of air quality in Rugby Borough Council during 2015. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Rugby Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

## 2 Actions to Improve Air Quality

### 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of the objectives.

A summary of AQMAs declared by Rugby Borough Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at [https://uk-air.defra.gov.uk/aqma/local-authorities?la\\_id=214](https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=214). The full list of AQMAs can be found at <http://uk-air.defra.gov.uk/aqma/list>.

**Table 2.1 – Declared Air Quality Management Areas**

AQMA Name	Pollutants and Air Quality Objectives	City / Town	One Line Description	Action Plan
Rugby AQMA (NO <sub>2</sub> )	<ul style="list-style-type: none"> <li>NO<sub>2</sub> annual mean</li> </ul>	Rugby	The area covers the whole urban area of Rugby bounded by the southern boundary with Daventry District Council, A5, M6, minor roads to the west of Long Lawford, A45 and M45.	Rugby Borough Council Air Quality Action Plan (AQAP)

### 2.2 Progress and Impact of Measures to address Air Quality in Rugby Borough Council

Rugby Borough Council has taken forward a number of measures during the current reporting year of 2015 in pursuit of improving local air quality.

Details of all measures completed, in progress or planned are set out in Table 2.2. More detail on these measures can be found in the Council's Air Quality Action Plan<sup>7</sup>.

Key completed measures are:

- Leicester Road Viaduct Connect2 and A428 Lawford Road cycleway cycle infrastructure schemes – completed in 2014. Additionally, cycle proficiency courses have been rolled out in schools and other facilities.
- Warwick Street Gyratory Road Improvements – addressed an existing pinch point and supports significant proposed growth. Completed in May 2015.
- Improving Borough Council Vehicle Fleet – several Euro 5 vehicles added or used as replacements between 2007 and 2015, with Euro 6 to follow.
- Workplace Travel Planning / Promoting Travel Alternatives – promoting higher occupancy vehicle trips by Council officers. Implemented April 2016.

Progress on the following measures has been slower than expected:

- Rugby Town Centre 20:20 vision – Promoting Travel Alternatives, will likely be dropped from Air Quality Action Plan due to lack of available funds from WCC.
- Control of Bonfires – due to low number of complaints, this measure has low priority and will be dropped from Air Quality Action Plan.

Rugby Borough Council expects the following measures to be completed or implemented over the course of the next reporting year:

- Improvements to Church Street / North Street – wider scheme to improve town centre traffic flows, pedestrianisation and cycle infrastructure, although the completion date for these measures may extend to 2017 or beyond.

Rugby Borough Council's priorities for the coming year are:

- Maintain existing AQMA declaration for NO<sub>2</sub>.
- Continue to monitor NO<sub>2</sub> concentrations at existing long-term locations, and supplement these with additional sites at pollution hotspots and narrow roads to gain better understanding of spatial variation of pollutant concentrations.

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<sup>7</sup> Rugby Borough Council is currently updating the Air Quality Action Plan. The AQAP is available from the council on request

- Implementation of measures to improve air quality in and around the Warwick Street Gyrotory and Dunchurch crossroads areas as monitoring results show these to be the areas of poorest air quality.
- Continuation of public awareness campaigns for active travel – the promotion of walking and cycling, and in particular at schools and workplaces.
- Greater provision of cycle infrastructure to encourage greater uptake of cycling building upon the Connect2 scheme, for example.
- Continuing major roadworks schemes to remove bottlenecks and reduce congestion.
- Green procurement for the promotion of low emission transport, and vehicle fleet efficiency improvements for the Council, local companies and bus operators.

Rugby Borough Council shall also look at developing new AQAP measures that reflect the current situation and take account of the future growth and development that is planned within the borough.

### **Planning policy**

The Rugby Borough Emerging Local Plan<sup>8</sup> gives reference to “Policy SDC 10: Traffic Generation and Air Quality”, which is under amendment and will likely be supplemented with an Air Quality Supplementary Planning Document. The Air Quality Supplementary Planning Document would be designed to facilitate the understanding of air quality considerations for developers and planners.

Warwickshire County Council is the highways authority for Rugby. The Warwickshire Local Transport Plan<sup>9</sup> sets out the transport policies and strategies for the 2011-2026 period. The Plan also includes an Air Quality Strategy comprising 6 key policies, directed at tackling air quality issues.

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<sup>8</sup> Rugby Borough Council, Rugby Borough Emerging Local Plan – The Preferred Option, December 2015

<sup>9</sup> Warwickshire Local Transport Plan 2011-2016. Available at <http://www.warwickshire.gov.uk/ltp3>

**Table 2.2 – Progress on Measures to Improve Air Quality**

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
A	Rugby Western Relief Road (RWRR)	Transport Planning and Infrastructure / Other	Serve new development at Cawston, Swift Valley, Malpass Farm and Coton Park, and reduce the impact of traffic within the town centre.	WCC	1996-2007 / 2007-2011	Implementation of the scheme in full	12%	The road was fully opened to traffic in September 2010.	N/A	N/A	
<b>Comments relating to emission reductions</b>											
<p>With the opening of the RWRR it was anticipated that traffic flows on certain corridors within the town would decrease and that air quality would improve as a result. Monitoring data showed some significant reductions in traffic levels following the opening of the road, when compared to previous traffic volumes before the road was opened:</p> <p>A426 Newbold Road - 18% decrease from 24,829 in October 2006 to 20,373 in October 2014.</p> <p>B4642 Bilton Road - 20% decrease from 15,422 in May 2005 to 12,288 in March 2012.</p> <p>A426 Dunchurch Road nr. Kingsway - 17% decrease from 13,104 in September 2006 to 10,895 in September 2011.</p> <p>These traffic reductions have translated into NO<sub>2</sub> air quality improvements. Comparing 2010 and 2011 NO<sub>2</sub> monitoring data decreases in NO<sub>2</sub> annual mean concentrations of 18%- 35% on Newbold Road, 25% on Corporation Street, 40% on Oliver Street, 30% on Bilton Road and 22% on Lawford Road. However reductions considered principally attributable to removal of contraflow measures on Lawford Road, Oliver Street and Newbold Road on completion of RWRR significantly reducing congestion episodes. Contraflow measures also compounded by closure of Parkfield Road during construction phase.</p> <p>2012 comparison with 2011 demonstrates more moderate but still significant NO<sub>2</sub> reductions of 17%-27% on Newbold Road, 17% on Corporation Street, 16% on Oliver Street, 13% on Bilton Road and 21% on Lawford Road.</p> <p>Further monitoring and time required for increased diffusion tube monitoring network to permit better assessment of impacts of the RWRR as well as Warwick Street Gyrotory infrastructure improvements (AQAP Measure B). 2017 Annual Status Report should provide better picture.</p>											

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
B	Warwick Street Gyratory Improvements	Transport Planning and Infrastructure / Other	Manage the impact of traffic accessing and passing through the town centre, along with planned housing and employment growth within the town.	WCC	2007-2014 / 2014/15	Implementation of the scheme in full	Not specified	A major improvement to the Gyratory was completed in May 2015. This scheme was developed to address an existing pinch point and support the significant growth proposed in the Borough Council's adopted Local Development Framework Core Strategy.	WCC has secured Local Pinch Point Programme funding from Government towards the proposed improvement of the Warwick Street Gyratory system. The County Council is making a local funding contribution of £0.455m towards the scheme to complement the £1m contribution from the Department for Transport (DfT).	May 2015.	A summary of the air quality assessment results is provided in Appendix section on AQAP.
C	Improvements to Church Street/ North Street	Transport Planning and Infrastructure / Other	Reduce the impact of traffic on the town centre, and allow better access for pedestrians and cyclists.  Support the regeneration of the town centre and the growth proposals within the Borough.	WCC	2007-2016 / Post 2016/17	Implementation of the scheme in full	Not specified	A scheme to extend the pedestrianised area of the town centre on Church Street/North Street was previously developed and consulted upon, however it was jointly agreed by Warwickshire County Council and Rugby Borough Council not to implement the scheme at that time. The Borough Council is now considering a number of public realm improvements as part of a wider strategy for the town centre, which for this area would supersede the previously developed proposals for Church Street/North Street	No further work on the scheme is planned until 2016/17 at the earliest.	No further work on the scheme is planned until 2016/17 at the earliest.	The timescales for implementation of the scheme have changed as a result of the further consultation, which has been carried out on the revised proposal.

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
D	Decriminalisation of Parking Enforcement within Rugby Borough	Traffic Management / Other	Improve the management of traffic within the town centre and the impact of illegal parking.	WCC	2000-2005 / 2005-2006	Implementation of the scheme in full	Not specified	Scheme fully implemented in 2006	Civil Enforcement Officers continue to enforce town centre and residential streets in Rugby and there has been a noticeable reduction in parked cars and occurrences of congestion caused by illegal or inconsiderate parking. However, since November 2014 on-street parking is no longer under the control of RBC – Solely a WCC function	N/A	Since the commencement of Decriminalisation of Parking (now referred to as Civil Parking Enforcement CPE) on 02/10/06 in Rugby, the introduction of parking charges on some town centre streets together with a high level of enforcement has resulted in less vehicles being parked on the streets and less congestion, and therefore emissions, due to inconsiderate parking.
E	Rugby Town Centre 20:20 Vision	Promoting Travel Alternatives / Other	Improve public transport. Improve access for pedestrians and cyclists.	RBC / Rugby Town Centre Company	N/A – ongoing initiative	N/A	Not specified	Various target dates.	Rugby BID will consult on updating the Town Centre Strategy.	N/A	No progression. WCC has limited financial resources at the moment to support implementation. Measure may be removed from AQAP
F	Re-routing traffic – Lorry Route Maps and agreements	Traffic Management / Congestion Management	Reduce the impact of heavy goods vehicles on the transport network of the Borough.	WCC	N/A – ongoing initiative	Reduction in complaints regarding inappropriate lorry movements	Not specified	An initial Advisory Lorry Route Map for the County was produced in 2005. This was subsequently revised and reissued in 2009. HGV routing maps are stipulated through the planning regime with WCC	N/A	N/A	



## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
G	Variable Message Signing	Traffic Management / Traffic Reduction	Reduce the impact of circulating traffic seeking access to the town centre car parks.	WCC	2006-2008 / 2009	Implementation of the scheme in full	Not specified	Scheme fully implemented in 2009.	N/A	N/A	<p>Evidence from other towns in Warwickshire that Variable Message Signing reduces the unnecessary distance travelled by vehicles looking for parking spaces.</p> <p>In Rugby town centre the impact of Variable Message Signing may have been masked by overall reductions in road traffic brought about by the opening of RWRR and road infrastructure improvements to the Warwick Street Gyratory.</p>
H	Enforcement of Idling Vehicle Legislation	Traffic Management / Anti-idling enforcement	Reduce number of idling vehicle improving local air quality by reducing emissions to air.	RBC/WCC	Investigation found limitations in the Traffic Management Act which means that Civil Enforcement Officers will be unable to fully enforce	Currently N/A	Currently N/A	Feasibility of scheme investigated. Decision taken not to proceed with the scheme due to the restrictions in enforcement actions that can be carried out by Civil Enforcement Officers	Due to enforcement patrols by Civil Enforcement Officers, vehicles that have drivers sitting in them with their engine running and found to be parked in restricted parking areas are requested to move their vehicle. Since November 2014 this is under the control of WCC. Programme currently under review and may be replaced by a new combined warden service if a survey shows idling vehicles still an issue	2017	Under review

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
I	Improve the Borough Council Fleet (interims of emissions)	Promoting Low Emission Transport / Company Vehicle Procurement – Prioritising uptake of low emission vehicles	As vehicles are replaced, they are replaced with lower emission vehicles.	RBC	N/A – ongoing initiative	Not specified	Not specified	10 vehicles replaced with Euro 5 up to April 2013  3 vehicles were replaced with Euro V vehicles in 2007/8 and 2008/9 and 2 further vehicles were replaced during 2009/10. No replacements have been made to date during 2010/2011. A further 3 Refuse Vehicles using Euro v technology added in 2012 with 2 more added in April 2013.	Euro 6 is now the latest technology with no further advancement on the horizon. We have added a further 6 during 2014/15 with a further 6 planed on LGVs for 2016/17. Euro 6 has now been introduced to vehicles 3.5 tons and below. The vehicle replacement plan for this type of vehicle for 16/17 is 17	Ongoing N/A	Euro 6 is the most advanced technology available and is anticipated to deliver NOx emissions reductions
		Promoting Travel Alternatives / Workplace Travel Planning	Higher occupancy vehicle trips by Council officers to reduce vehicle movements and reduce emissions. Economic incentive provided to Officers to encourage implementation	RBC	Feb 2016 / April 2016	Not specified	Not specified	Only implemented in April 2016 so too early accurately quantify progress. However early signs show a positive impact	N/A as implemented April 2016	Ongoing N/A	Too early to quantify. Measure implemented in April 2016. Will be reported for 2017 AQAP

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No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
J	Improve Bus Emissions	Vehicle Fleet Efficiency / Promoting Low Emission Public Transport	The County Council is working with the principal bus operators within the town to reduce bus emissions through their fleet renewal process, and on individual routes when they are upgraded to QBC status. Planning regime also utilised to improve bus provision and modal shift with economic incentives paid for by developers.	RBC/WCC	Ongoing	Not specified.	Not specified	Urban Quality Bus Corridor improvements have been made on routes between the Town Centre and Lower Hillmorton/Long Lawford, between Woodlands and the Town Centre, and on the Inter-Urban route between Rugby and Coventry. Finance has been provided through developers of committed planning developments	No further QBC improvements have been made in the last 12 months due to a lack of resources by the bus operators. However with the onset of new development coming forward it is envisaged further improvements will materialise.	Ongoing initiative	Updating older public service vehicles with those of the latest technologies should result in measureable emissions reductions of NOx and PM10

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
K	Cycling	Promoting Travel Alternatives / Promotion of Cycling	Reduce the impact of traffic on the transport network of the Borough (particularly within the urban area of Rugby) by encouraging a shift towards sustainable modes of transport.	WCC	N/A – ongoing initiative	Increase in cycling as a result of individual scheme implementation	Not specified	<p>The basis of a cycle network has been delivered in phases over the last 15 years, using a combination of on and off-carriageway routes. Additional routes will come forward as resources permit and in conjunction with new development.</p> <p>WCC and RBC provide cycle training for young people and adults who are keen to improve their cycle skills.</p> <p>Connect2 scheme is completed.</p> <p>Cycle facilities have been provided as part of RWRR.</p>	<p>The Leicester Road viaduct Connect2 scheme opened in 2014.</p> <p>The A428 Lawford Road cycleway between Long Lawford and the RWRR was completed in 2014. A bid to the DfT's Cycle Safety fund was successful for a scheme to extend this cycleway from the RWRR to the Town Centre. The extension was completed in 2015. Community Safety Cycle training is provided by WCC and RBC to young people and adults who are keen to improve their cycle skills. RBC Wardens have delivered more than 100 training courses since 2009, of which 26 were in the 12 months Mar'14–Mar'15. Bikeability courses for varying schools in the borough are ongoing.</p> <p>Cycle routes to complement future growth within the Borough continue to be identified and worked up in detail, with funding secured from individual developments.</p>	2014	N/A

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
L	Walking	Promoting Travel Alternatives / Promotion of Walking	Reduce the impact of traffic on the transport network of the Borough (particularly within the urban area of Rugby) by encouraging a shift towards sustainable modes of transport.	WCC	N/A – ongoing initiative	Increase in walking (footfall) as a result of individual scheme implementation	Not specified	The LTP Walking Strategy sets out a series of improvements for pedestrians, including new or upgraded pedestrian crossings, new/widened footways, improved street lighting, provision of new dropped kerbs, and footway resurfacing/ reconstruction.	The cycling improvements described above under Measure K will have significant benefits for pedestrians.	Ongoing	
M	Workplace Travel Plans	Promoting Travel Alternatives / Workplace Travel Planning	Reduce the impact of traffic on the transport network of the Borough (particularly within the urban area of Rugby) by encouraging a shift towards sustainable modes of transport.	WCC	N/A – ongoing initiative	Number of Travel Plans agreed with existing employers and as part of new development	Not specified	Workplace Travel Plans are secured through a S106 agreement as part of new development.	<p>Travel Plans covered by Planning Condition - NPIA Training Centre – Ryton</p> <p>- Rugby Cattle Market, Hotel Use Travel Plans covered by S106</p> <p>- Herbert Grey College / Caldecott Square Residential Travel Plan</p> <p>- Coton Park East. Application formally submitted.</p> <p>Rugby Radio Station – Site Wide Travel Plan included in S106</p>	N/A	

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
N	School Travel Plans and Safer Routes to School	Promoting Travel Alternatives / School Travel Plans	Reduce the impact of traffic on the transport network of the Borough (particularly within the urban area of Rugby) by encouraging a shift towards sustainable modes of transport.	WCC	N/A – ongoing initiative /	Reduction in the number of car-based journeys to school	Not specified	The majority of Local Authority run schools within the Borough now have a School Travel Plan in place.	N/A	N/A	
O	Public Transport Strategy, including the Bus Strategy	Promoting Travel Alternatives / Other	Reduce the impact of traffic on the transport network of the Borough (particularly within the urban area of Rugby) by encouraging a shift towards sustainable modes of transport.	WCC	N/A – ongoing initiative /	Increase in bus patronage	Not specified	Ongoing implementation of the various strategies which make up the Public Transport Strategy, including the Bus Strategy, Passenger Rail Strategy, Community Transport Strategy, Public Transport Information Strategy and Public Transport Interchange Strategy.	No further significant improvements have been made in the last 12 months due to a lack of resources. A study has been undertaken to look at future bus stop capacity within the town centre and the need or otherwise for a bus interchange to be provided. This piece of work concluded that there is no requirement for either additional bus stop capacity or a bus station in the immediate future.	N/A	
P	Travel Awareness Campaigns	Promoting Travel Alternatives / Personalised Travel Planning	Reduce the impact of traffic on the transport network of the Borough (particularly within the urban area of Rugby) by encouraging a shift towards sustainable modes of transport.	WCC	N/A – ongoing initiative /	Reduction in the number of car-based journeys being made within the Borough	Not specified	Ongoing implementation of the Changing Travel Behaviour Strategy and other relevant LTP strategies.	Regular annual events include Bike Week, Walk to School week, and In Town Without My Car Day. WCC and RBC both support the national Travel wise initiative.	N/A	

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
Q	Energy efficiency improvements to Rugby housing & the reduction of fuel poverty.	Policy Guidance and Development Control / Low Emissions Strategy	Reduction of carbon emissions from domestic dwellings, the reduction of residents' fuel bills & the alleviation of ill health due to cold, damp housing.	Rugby Borough Council	N/A – ongoing initiative	HECA report published March 2015, and will be updated at two yearly intervals	N/A	<p>Across the borough we have provided the following services:</p> <ul style="list-style-type: none"> <li>* Worked with our partner, Act on Energy, to provide an energy advice phone line</li> <li>* Organised advice sessions held at the Town Hall &amp; library, flu clinics, Children's Centres and Older People's Drop-in session</li> <li>* Held training sessions for front-line staff and community and voluntary workers</li> <li>* Provided media coverage with Press Releases; articles in Tenant Times; twitter posts on coping with cold weather, energy savings tips, etc.; cold weather alerts issued to front-line staff and 100 community organisations</li> <li>* Sent mail out to 1970 households in the Benn area with information about ECO funding for energy improvements, plus support available from Act on Energy</li> <li>* Held presentation for local landlords about the Minimum Energy (cont.d next column)</li> </ul>	<p>Energy Efficiency Standards and provided information about new Carbon Monoxide legislation</p> <ul style="list-style-type: none"> <li>* Carried out initial feasibility assessment for District Heating</li> </ul> <p>Council tenants have benefitted from these improvements and services:</p> <ul style="list-style-type: none"> <li>* electric to gas conversions for 173 properties</li> <li>* new windows and doors to 980 properties with windows and doors</li> <li>* central heating renewals – 49 gas to gas upgrades</li> <li>* energy advice session held for tenants at Woodside Travellers Site</li> <li>* mail out to Sheltered Tenants and High Rise Residents about Warm Home Discount</li> </ul>	Ongoing	<p>DECC statistics show that CO<sub>2</sub> emissions by domestic use (Units kt CO<sub>2</sub>) have reduced from 215.7 in 2009 to 213.3 in 2013, a per capita reduction from 21.8 to 19.8</p> <p>We aim to reduce CO<sub>2</sub> emissions in the housing sector to 172.6kt CO<sub>2</sub> of 2009 (215.7kt CO<sub>2</sub>) levels by 2020. This will be equivalent to a 20% reduction.</p>

## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
R	Control Of Industrial Emissions	Environmental Permits / Measures to reduce pollution through IPPC Permits going beyond BAT	Reduce the environmental impact of industrial processes through pollution control regulation	RBC	N/A – ongoing initiative	97.5% compliance improvements	Not specified	Annual inspection programme complete.	40 Industrial Pollution Processes (100% of inspections completed). All were inspected through 2014/2015 – 97.5% compliance improvements where required for pollution at these sites.	N/A	
S	Emissions from Domestic and Commercial Sources	Environmental Permits / Other	Prevent and/or reduce environmental impacts from domestic and commercial emissions.	RBC	N/A – ongoing initiative	Reduction in complaints.	Not specified	Low priority. Low number of complaints.	Ongoing  Emissions from domestic and commercial  From 01.01.14 – 31.12.14 complaints about smoke from chimneys: Domestic – 30 Industrial/trade – 1	N/A	Designated smoke Control Area (chimneys) and section 79 of the EPA 1990 actively implemented where problems are identified.
T	Control of Bonfires	Policy Guidance and Development Control / Other policy	Prevent and/or reduce environmental impacts from domestic and commercial emissions.	RBC	N/A – ongoing initiative	Reduction in complaints	Not specified	Low priority. Low number of complaints.	Measure to be removed. Limited number of complaints		Section 79 of the EPA 1990 actively implemented where problems are identified



## Rugby Borough Council

No.	Measure	EU Category / Classification	Focus	Lead authority	Planning / Implementation Phase	Key Performance Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
U	Planning Development and Planning Applications	Policy Guidance and Development Control / Air Quality Planning and Policy Guidance	<p>See below</p> <p>Air quality assessments have been requested for land use planning developments that meet AQMA thresholds in the Rugby Borough Local Plan (July 2006).</p> <p>The requirements for future assessments have now been embodied in a new Planning Obligations Supplementary Planning Document adopted in March 2012. This is to ensure that new development does not result in a significant increase in the production of air pollutants and that opportunities are taken to improve air quality, where possible. In some instances where an AQMA threshold has not been met, officer discretionary measures have been utilised where it is felt that a proposed land use development has potential to impact on air quality and should be a material consideration.</p> <p>New local planning policies emerging. RBC is in the process of developing the Local Plan Preferred Options planning policy document with an updated AQ SPD</p>	RBC	Ongoing / Ongoing	Not specified	Not specified	See list below:	<p>Ongoing</p> <p>Local Plan (July 2006) superseded with Core Strategy/ Planning Obligations Supplementary Planning Document adopted in March 2012. Section 7 covers Air Quality as well as providing an air quality guidance document for developers that has been agreed by Cabinet 4<sup>th</sup> February 2013</p> <p>Developing the Local Plan Preferred Options planning policy document</p>	<p>Submission consultation: August-September 2016</p> <p>Submission to the Planning Inspectorate: December 2016</p> <p>Examination: April 2017</p> <p>Adoption: July 2017</p>	

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5 µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Public Health Coventry (Coventry City Council) and Public Health Warwickshire (Warwickshire County Council) have established the joint Arden Health Protection Committee. Included in the members are the Environmental Health managers in Warwickshire and Coventry comprising representatives from Public Health England, NHS, Public Health Coventry, Public Health Warwickshire and local authority Environmental Health officers.

Rugby Borough Council is currently assisting in developing a new Health Protection Strategy with an action plan, which will include actions to improve air quality. The measures of success will be demonstrated reductions in ambient concentrations of NO<sub>2</sub> and PM<sub>2.5</sub>, reductions in the use of private cars for short journeys and increased development and use of cycle ways. The initial focus will be on areas of poorest air quality.

Discussions on the Health Protection Strategy are at an early stage. However, a number of actions to tackle air quality have been proposed:

- Active schools and workplaces initiative to encourage people to take up physical exercise
- A public awareness campaign to encourage people to walk, cycle or take public transport instead of using their cars
- Cycle infrastructure bids aimed at securing funding for new cycleways and promoting cycling
- Supplementary Planning Guidance for developers to ensure appropriate consideration is given to air quality during the planning process
- Council vehicle fleet improvement initiatives

- Green Procurement

Development of the Action Plan is likely to be driven forwards by the Coventry and Warwickshire Air Quality Alliance, made up of Environmental Health, Public Health, Planning and Transport Officers from the Coventry and Warwickshire local authorities.

### **Identifying Areas for Actions and Measuring Success**

Rugby Borough Council shall investigate the best means of measuring the effectiveness of actions to reduce PM<sub>2.5</sub> emissions and concentrations.

Rugby Borough Council operated an extensive network of continuous air quality monitoring stations for almost ten years. At its largest, the network comprised four automatic monitoring stations equipped with reference method gas and particulate analysers, and nineteen Turnkey Osiris dust monitors. In 2008, the monitoring network was reduced to one automatic monitoring station (at Newbold Road) and five Turnkey Osiris dust monitors at key locations throughout the borough as concentrations of SO<sub>2</sub> and PM<sub>10</sub> at many of the monitoring locations had been below the relevant air quality objectives for a number of years.

At the three continuous monitoring stations, which housed PM<sub>2.5</sub> analysers (TEOMs), the annual mean concentrations in 2007 ranged from 11.1 µg/m<sup>3</sup> to 13.0 µg/m<sup>3</sup>.

In 2012, the council took the decision to decommission the entire continuous monitoring network as PM<sub>10</sub> concentrations at the remaining monitoring locations were well below the air quality objectives. Annual mean PM<sub>10</sub> concentrations between 2008 and 2012 were well below the annual mean PM<sub>10</sub> objective and showed evidence of reductions over time; exceedances of the daily PM<sub>10</sub> standard of 50 µg/m<sup>3</sup> were also within the 35 permitted days per year (see Appendix A). The annual mean NO<sub>2</sub> concentrations were exceeding the objective at this time. An extensive NO<sub>2</sub> diffusion tube network was set up subsequent to the decommissioning of the continuous monitoring network to provide greater spatial insight.

The analysis of the historical datasets can provide useful insight into air pollutant concentrations in the Borough, and in particular, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations. Rugby Borough Council proposes to use the historical monitoring data to identify any potential 'hotspot' areas with respect to PM<sub>2.5</sub> concentrations. The Council will also examine the Defra national background maps of PM<sub>2.5</sub> concentrations for all 1-km

grid squares within the administrative area. Despite the coarse scale the maps will provide an indication of where the highest PM<sub>2.5</sub> concentrations are likely to be in the Borough. The broad source apportionment data contained within the maps will also assist in identifying the key sources of PM<sub>2.5</sub>. Having identified the key sources and priority areas the Council will review existing actions aimed at improving air pollution, and, where appropriate, amend these actions to effectively target PM<sub>2.5</sub>. A feasibility study will also be carried out to identify any new actions that may be implemented to reduce PM<sub>2.5</sub> emissions and improve local air quality.

As noted above, there are presently no reference method automatic particulate monitoring stations within the Council area. However, the Council does operate a Turnkey Osiris dust monitor, located at Parkfield Road to monitor emissions from the Sita/Suez Climafuel plant. The Osiris is capable of measuring multiple particulate size fractions, including PM<sub>10</sub> and PM<sub>2.5</sub>, and whilst these dust monitors are not certified as reference equivalent they can provide a general indication of PM<sub>10</sub> and PM<sub>2.5</sub> concentrations. Data from this monitor will be included in determining current PM<sub>2.5</sub> levels in the Rugby area.

The Council will collate recent years' monitoring data from nearby automatic stations that measure PM<sub>2.5</sub> to provide an indication of the likely current PM<sub>2.5</sub> concentrations in the local area. To increase the number of stations for this analysis the Council will look at PM<sub>10</sub> data and apply scaling factors to estimate PM<sub>2.5</sub> concentrations. The automatic monitoring will provide a benchmark against which the success of the Council's actions to tackle PM<sub>2.5</sub> can be measured.

## 3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Rugby Borough Council undertook automatic (continuous) monitoring at one site during 2015. The monitoring site, equipped with a Turnkey Osiris Particulate Monitor, is situated to the north-east of the Climafuel Facility. The site was set up in December 2014 to monitor dust and particulate levels around the Climafuel Facility. Table A.1 in Appendix A shows the details of this monitoring site.

There are no AURN or other automatic monitoring stations in Rugby Borough – the nearest AURN stations are located in Coventry and Leamington Spa. The Leamington Spa Rugby Road AURN station is used by Rugby Borough Council for diffusion tube co-location for calculation of local bias adjustment factors. Monitoring data from this site and other national network stations are available at <https://uk-air.defra.gov.uk/data>.

Maps showing the location of the monitoring sites are provided in Appendix D.

#### 3.1.2 Non-Automatic Monitoring Sites

Rugby Borough Council undertook non-automatic (passive) diffusion tube monitoring of NO<sub>2</sub> at 51 sites during 2015, including one triplicate co-location at the AURN station at Leamington Spa, Stamford Gardens Rugby Road (Tubes S17-S19). In August 2015, additional monitoring of the Warwick Street gyratory system at three new locations (W1-3) was initiated. The additional monitoring was set up in response to a modelling study carried out by ARUP that predicted very high (up to 66 µg/m<sup>3</sup>) concentrations of NO<sub>2</sub> at receptor locations around the gyratory, whilst the monitored concentration at the Webb Ellis Pub (S10) around this time was close to 40 µg/m<sup>3</sup>. These additions increased the total number of diffusion tube monitoring sites to 54. Table A.2 in Appendix A shows the details of all the sites.

In addition to the local authority's diffusion tube network, Jaguar Land Rover has financed a 12-month NO<sub>2</sub> and VOC diffusion tube monitoring programme at 2

sensitive receptor locations around its car painting facility in Ryton-on-Dunsmore, In order to validate a dispersion modelling study of the facility. The modelling study predicted “not significant” emissions of NO<sub>x</sub> and PM<sub>10</sub>, and “insignificant” emissions of VOCs and CO. Monitoring commenced at these locations in March 2015, after the painting plant became operational. Details of these sites can also be found in Table A.2 (JLR1 and JLR2).

Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C. Maps showing the location of the monitoring sites are provided in Appendix D.

## **3.2 Individual Pollutants**

The air quality monitoring results presented in this section are, where relevant, adjusted for bias and “annualised”. Further details on adjustments are provided in Appendix C.

### **3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)**

Table A.3 in Appendix A compares the adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40 µg/m<sup>3</sup>. The full 2015 dataset of raw monthly mean diffusion tube results is provided in Appendix B.

The NO<sub>2</sub> diffusion tube monitoring results indicate that the annual mean NO<sub>2</sub> objective of 40 µg/m<sup>3</sup> was exceeded at two locations (not including the new monitoring locations that were set up in August 2015): S10 Webb Ellis Pub, Corporation Street and S24 Dun Cow, Dunchurch Square. Both of these sites are within the existing AQMA boundary and are locations of relevant exposure. Exceedances of the annual mean NO<sub>2</sub> objective have previously been recorded at S10 and S24. On the basis of these results there is no justification for amendment the currently declared AQMA.

At S10 Webb Ellis Pub, the annual mean NO<sub>2</sub> concentrations in 2008 and 2010 were around 60 µg/m<sup>3</sup>, indicating the possibility of exceeding the hourly NO<sub>2</sub> objective. Between 2010 and 2012 monitored concentrations decreased to just below the annual mean NO<sub>2</sub> objective. Since 2012, however, there is a suggestion of NO<sub>2</sub> concentrations gradually increasing over time at this location.

Additional monitoring that began in August 2015 near S10 around the Warwick Street gyratory system revealed, after seasonal adjustment, that two further locations by the Rugby School (sites W1 and W2) are likely to be exceeding the annual mean objective ( $46.6 \mu\text{g}/\text{m}^3$  and  $46.5 \mu\text{g}/\text{m}^3$  respectively); however, the results are significantly lower than the  $60 \mu\text{g}/\text{m}^3$  threshold that would indicate the possibility of an exceedance of the  $\text{NO}_2$  hourly objective. It is recommended that monitoring at the three new locations continue until at least 12 months of data are available, in order to increase confidence in the results.

Monitoring at S24 Dun Cow, Dunchurch Square commenced in 2012 when Rugby Borough Council expanded its diffusion tube monitoring network. In all years since monitoring commenced annual mean  $\text{NO}_2$  concentrations at this location have exceeded the annual mean  $\text{NO}_2$  objective. There is no clear pattern of increasing or decreasing concentrations over time at this location: the highest  $\text{NO}_2$  concentration was recorded in 2012 ( $50.0 \mu\text{g}/\text{m}^3$ ). Concentrations dipped slightly in 2013 and 2014 and rose again in 2015 ( $48.9 \mu\text{g}/\text{m}^3$ ).

Appendix A contains figures showing trends in  $\text{NO}_2$  concentrations between 2011 and 2015 at diffusion tube monitoring locations. Figure A.1 shows the trend for kerbside diffusion tube sites. It can be seen that there is little observable trend in  $\text{NO}_2$  concentrations, except for the notable decrease in concentrations at site S15 from 2011 to 2012. Figures A.2 to A.4 show a similar lack of trend in  $\text{NO}_2$  concentrations at roadside sites. However, both Figures A.5 and A.6, which show the near-road and urban background site trends, give more evidence towards a slight decrease in  $\text{NO}_2$  concentrations over the last five years.

### **3.2.2 Particulate Matter ( $\text{PM}_{10}$ )**

Rugby Borough Council does not currently operate any automatic monitoring stations for  $\text{PM}_{10}$  that are equipped with reference method analysers. Prior to June 2012 Rugby Borough Council operated an extensive network of automatic monitoring stations measuring  $\text{PM}_{10}$  concentrations throughout the Borough. Following several years of monitored  $\text{PM}_{10}$  concentrations being well below the relevant air quality objectives, these monitoring stations were decommissioned.

Monitoring of TSP,  $\text{PM}_{10}$ ,  $\text{PM}_{2.5}$  and  $\text{PM}_1$  has been carried out at one location since December 2014 using a Turnkey Osiris dust monitor. The Turnkey Osiris instrument is an indicative monitoring technique and therefore cannot be strictly used for

demonstrating compliance with air quality objectives; however, the results from this monitoring study are reported here in the absence of any other local data. The monitoring location was chosen to be downwind of the Climafuel Facility and is situated approximately 200 metres to the north-north-east of the facility on Parkfield Road, Rugby.

Table A.4 in Appendix A shows the ratified monitored PM<sub>10</sub> annual mean concentration, maximum 24-hour concentration and number of days of PM<sub>10</sub> greater than 50 µg/m<sup>3</sup> during 2015. The 2015 annual mean PM<sub>10</sub> concentration was 12.8 µg/m<sup>3</sup>, which is well below the annual mean PM<sub>10</sub> objective. There were three days of PM<sub>10</sub> concentrations greater than 50 µg/m<sup>3</sup>, all occurring during December 2015. The maximum 24-hour mean PM<sub>10</sub> concentration was 99.5 µg/m<sup>3</sup>.

### **3.2.1 Particulate Matter (PM<sub>2.5</sub>)**

Table A.5 in Appendix A presents the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for 2015. Almost total valid data capture (99%) was achieved in 2015, and the annual mean PM<sub>2.5</sub> concentration was 6.6 µg/m<sup>3</sup>. Although there is no annual mean PM<sub>2.5</sub> objective for the UK (excluding Scotland), this is below the Scottish national objective of 10 µg/m<sup>3</sup>. The maximum 24 hour mean PM<sub>2.5</sub> concentration was 32.0 µg/m<sup>3</sup>.



## Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
OSR1	Parkfield Road	Roadside	449029	276315	TSP, PM <sub>10</sub> PM <sub>2.5</sub> , PM <sub>1</sub>	Y	Turnkey Osiris Dust Monitor	5	1	3.5

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Monitoring commenced in December 2014. The Turnkey Osiris dust monitor is an indicative instrument and data collected with such instruments cannot strictly be compared against air quality objectives.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S1	10 Newbold Road	Kerbside	449000	277178	NO <sub>2</sub>	Y	0	0.5	N	2.5
S2	Marton A423	Roadside	440830	269008	NO <sub>2</sub>	N	5	1	N	2.5
S3	69 School Street	Urban Background	447316	276162	NO <sub>2</sub>	Y	0	15	N	2.5
S4	St Margaret's School, Wolston	Urban Background	441131	275648	NO <sub>2</sub>	N	0	90	N	2.5
S5	Ryton Village Hall, High Street	Near-Road	438642	274418	NO <sub>2</sub>	N	25	0.5	N	2.5
S6	2 West Field Road	Urban Background	449671	274795	NO <sub>2</sub>	Y	0	10	N	2.5
S7	68 Cymbeline Way	Urban Background	448863	272786	NO <sub>2</sub>	Y	0	10	N	2.5
S8	EHO Treatment, Newbold Road	Roadside	450138	275557	NO <sub>2</sub>	Y	10	1	N	2.5
S9	(Argyle Street) Cambridge Street	Near-Road	451187	275334	NO <sub>2</sub>	Y	0	5	N	2.5

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S10	Webb Ellis Pub, Corporation Street	Roadside	450069	275040	NO <sub>2</sub>	Y	0	5	N	2.5
S11	15 Oliver Street	Roadside	449787	275224	NO <sub>2</sub>	Y	0	5	N	2.5
S12	Boughton Leigh School, Hollowell Way	Urban Background	451445	277245	NO <sub>2</sub>	Y	0	56	N	2.5
S13	Avon Mill Pub, Newbold Road	Roadside	450088	276229	NO <sub>2</sub>	Y	15	3	N	2.5
S14	Binley Woods, Village Hall	Urban Background	439450	277523	NO <sub>2</sub>	N	0	20	N	2.5
S15	Lawford Road / Jubilee Street, Arnie's Batch	Kerbside	449168	275411	NO <sub>2</sub>	N	0	0.5	N	2.5
S16	Hotel, London Road A45, Ryton	Near-Road	436867	275275	NO <sub>2</sub>	N	0	19	N	2.5
S17 S18 S19	Stamford Gardens Rugby Road	Roadside	431271	266404	NO <sub>2</sub>	N	n/a	6	Y (TriPLICATE)	2.5
S20	Newbold Road	Roadside	450137	275849	NO <sub>2</sub>	Y	25	3	N	2.5
S21	Corner of Percival Road and Ashlawn Road	Roadside	451698	273273	NO <sub>2</sub>	Y	15	2	N	2.5

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S22	Corner of Fisher Avenue and Ashlawn Road	Roadside	452403	273567	NO <sub>2</sub>	Y	18	5	N	2.5
S23	Paddox Pub Corner	Roadside	452672	273633	NO <sub>2</sub>	Y	13	3	N	2.5
S24	Dun Cow, Dunchurch Square	Roadside	448496	271244	NO <sub>2</sub>	Y	0	0.5	N	2.5
S25	Southam Road, 'Crystal', Dunchurch	Roadside	448414	271175	NO <sub>2</sub>	Y	0	2	N	2.5
S26	Lawford Road, (former Simms Scrap Yard)	Near-Road	448999	275505	NO <sub>2</sub>	Y	0	12	N	2.5
S27	Avenue Road / Campbell Street	Roadside	449435	275543	NO <sub>2</sub>	Y	0	2	N	2.5
S28	256 Parkfield Road	Roadside	449011	276329	NO <sub>2</sub>	Y	0	2	N	2.5
S29	Avon Valley School	Urban Background	449575	276540	NO <sub>2</sub>	Y	0	35	N	2.5
S30	Murray Road (Bus Stop Nr Rail Station)	Roadside	451107	275838	NO <sub>2</sub>	Y	0	0.5	N	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S31	Wood Street / Park Road	Roadside	450848	275849	NO <sub>2</sub>	Y	0	3	N	2.5
S32	Railway Terrace, Station Bar	Roadside	450750	275547	NO <sub>2</sub>	Y	0	3	N	2.5
S33	Albert Street, Alma Lodge Hotel	Roadside	450510	275355	NO <sub>2</sub>	Y	0	3	N	2.5
S34	Regent Street, near Oxfam	Roadside	450405	275329	NO <sub>2</sub>	Y	0	3	N	2.5
S35	Church Street, Town Fryer	Roadside	450444	275236	NO <sub>2</sub>	Y	0	3	N	2.5
S36	Whitehall Road junction with Clifton Road Roundabout	Roadside	450870	275043	NO <sub>2</sub>	Y	12	3	N	2.5
S37	Lower Hillmorton Road junction with Clifton Road. Roundabout	Roadside	450897	275059	NO <sub>2</sub>	Y	5	2	N	2.5
S38	Clifton Road before railway bridge	Kerbside	451868	275501	NO <sub>2</sub>	Y	9	0.5	N	2.5

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S39	Clifton Road Roundabout Murray Road	Roadside	450852	275116	NO <sub>2</sub>	Y	0	5	N	2.5
S40	Lawrence Sherriff Street, Drury Lane	Near-Road	450181	275029	NO <sub>2</sub>	Y	0	5	N	2.5
S41	Bilton Road, Big Yellow House	Near-Road	450010	274998	NO <sub>2</sub>	Y	0	15	N	2.5
S42	Bilton Road, near Crow Pie Pub	Roadside	448855	274352	NO <sub>2</sub>	Y	10	5	N	2.5
S43	Dunchurch Gyratory Residential	Roadside	450162	274898	NO <sub>2</sub>	Y	4	3	N	2.5
S44	High Street, Hillmorton	Roadside	453394	273637	NO <sub>2</sub>	Y	10	2	N	2.5
S45	Bretford-electricity pole near 3 Avon Cottages	Roadside	442963	277071	NO <sub>2</sub>	Y	11	3	N	2.5
S46	Oxford Road, Ryton Belvedere	Roadside	437555	274561	NO <sub>2</sub>	N	30	1	N	2.5
S47	Regent Place	Kerbside	450445	275495	NO <sub>2</sub>	Y	5	0.5	N	2.5

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S48	North Street, Nat. West. Bank	Roadside	450304	275314	NO <sub>2</sub>	Y	0	2	N	2.5
S49	Lesley Suiter House, Whitehall Road, Hillmorton	Roadside	450864	274896	NO <sub>2</sub>	Y	13	3	N	2.5
S50	Bilton Church	Roadside	448169	273625	NO <sub>2</sub>	Y	18	3	N	2.5
S51	Brinklow, Brays Close	Roadside	443433	279208	NO <sub>2</sub>	N	6	3	N	2.5
S52	Daventry Road East, Dunchurch	Roadside	448537	271195	NO <sub>2</sub>	Y	1	3	N	2.5
S53	Daventry Road West, Dunchurch	Roadside	448361	271334	NO <sub>2</sub>	Y	4	3	N	2.5
JLR1	Provest William CoE Primary School	Urban Background	438248	274159	NO <sub>2</sub> , VOC	N	0	N/A	N	2.5
JLR2	Stoney Grey Lodge, Ryton-on-Dunsmore	Urban Background	437778	274194	NO <sub>2</sub> , VOC	N	0	20	N	2.5
W1	Rugby School Lamppost 5	Roadside	450226	275008	NO <sub>2</sub>	Y	0	1.5	N	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
W2	Rugby School Lamppost 6	Roadside	450269	274998	NO <sub>2</sub>	Y	0	1.5	N	2.5
W3	57 Boughton Rd	Roadside	TBC	TBC	NO <sub>2</sub>	Y	8	2	N	2.5

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable



Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
						2011	2012	2013	2014	2015
S1	10 Newbold Road	Kerbside	Diffusion Tube	100	100	23.0	20.3	21.6	19.5	20.4
S2	Marton A423	Roadside	Diffusion Tube	100	100	21.1	17.3	19.6	18.4	16.3
S3	69 School Street	Urban Background	Diffusion Tube	100	100	19.8	16.0	18.3	15.5	15.6
S4	St Margaret's School, Wolston	Urban Background	Diffusion Tube	100	100	17.0	16.4	15.0	13.5	13.7
S5	Ryton Village Hall, High Street	Near-Road	Diffusion Tube	100	100	33.9	30.1	31.5	29.6	27.9
S6	2 West Field Road	Urban Background	Diffusion Tube	83	83	19.6	17.2	17.9	15.7	17.3
S7	68 Cymbeline Way	Urban Background	Diffusion Tube	100	100	17.7	14.0	14.3	13.1	12.7
S8	EHO Treatment, Newbold Road	Roadside	Diffusion Tube	100	100	36.4	30.5	31.5	33.5	38.2
S9	(Argyle Street) Cambridge Street	Near-Road	Diffusion Tube	100	100	22.8	19.9	19.2	18.9	18.8
S10	Webb Ellis Pub, Corporation Street	Roadside	Diffusion Tube	83	83	<b>46.1</b>	38.8	<b>40.2</b>	<b>40.9</b>	<b>41.6</b>
S11	15 Oliver Street	Roadside	Diffusion Tube	100	100	30.3	25.8	25.6	25.2	25.6
S12	Boughton Leigh School, Hollowell Way	Urban Background	Diffusion Tube	92	92	28.2	22.4	21.1	21.7	23.9
S13	Avon Mill Pub, Newbold Road	Roadside	Diffusion Tube	100	100	<b>45.2</b>	37.4	35.7	33.4	38.3
S14	Binley Woods, Village Hall	Urban Background	Diffusion Tube	100	100	21.2	18.0	18.3	17.9	19.0
S15	Lawford Road / Jubilee Street, Arnie's Batch	Kerbside	Diffusion Tube	100	100	35.5	28.2	28.9	28.9	30.9
S16	Hotel, London Road A45, Ryton	Near-Road	Diffusion Tube	75	75	24.4	22.1	24.4	22.1	21.3
S17	Stamford Gardens Rugby Road	Roadside	Diffusion Tube	92	92	No data	22.5	20.2	20.5	20.2
S18	Stamford Gardens Rugby Road	Roadside	Diffusion Tube	100	100	No data	23.7	21.9	21.3	20.2
S19	Stamford Gardens Rugby Road	Roadside	Diffusion Tube	100	100	No data	23.2	22.3	20.7	20.5
S20	Newbold Road	Roadside	Diffusion Tube	100	100	No data	30.8	31.6	32.6	30.9
S21	Corner of Percival Road and Ashlawn Road	Roadside	Diffusion Tube	100	100	No data	24.8	24.4	24.7	24.2
S22	Corner of Fisher Avenue and Ashlawn Road	Roadside	Diffusion Tube	92	92	No data	22.0	23.0	22.9	23.2
S23	Paddox Pub Corner	Roadside	Diffusion Tube	92	92	No data	24.5	27.6	24.2	23.1
S24	Dun Cow, Dunchurch Square	Near-Road	Diffusion Tube	100	100	No data	<b>50.0</b>	<b>46.6</b>	<b>46.4</b>	<b>48.9</b>
S25	Southam Road, 'Crystal', Dunchurch	Roadside	Diffusion Tube	100	100	No data	32.6	30.8	31.5	33.8
S26	Lawford Road, (former Simms Scrap Yard)	Roadside	Diffusion Tube	100	100	No data	20.7	21.8	21.0	20.3
S27	Avenue Road / Campbell Street	Urban Background	Diffusion Tube	100	100	No data	21.3	24.0	22.4	20.8
S28	256 Parkfield Road	Roadside	Diffusion Tube	100	100	No data	19.5	20.3	19.7	20.9
S29	Avon Valley School	Roadside	Diffusion Tube	100	100	No data	22.6	23.5	23.0	24.9
S30	Murray Road (Bus Stop Nr Rail Station)	Roadside	Diffusion Tube	100	100	No data	37.5	37.2	36.1	36.6
S31	Wood Street / Park Road	Roadside	Diffusion Tube	100	100	No data	31.9	30.7	31.6	32.1
S32	Railway Terrace, Station Bar	Roadside	Diffusion Tube	100	100	No data	30.8	30.8	29.7	32.6

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Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
						2011	2012	2013	2014	2015
S33	Albert Street, Alma Lodge Hotel	Roadside	Diffusion Tube	100	100	No data	24.0	25.2	25.4	25.6
S34	Regent Street, near Oxfam	Roadside	Diffusion Tube	100	100	No data	28.9	27.7	26.9	33.9
S35	Church Street, Town Fryer	Roadside	Diffusion Tube	100	100	No data	33.5	31.5	34.0	34.8
S36	Whitehall Road / Clifton Road Roundabout	Kerbside	Diffusion Tube	92	92	No data	35.6	36.6	34.0	34.7
S37	Lower Hillmorton Rd / Clifton Rd Roundabout	Roadside	Diffusion Tube	100	100	No data	31.8	33.6	29.9	31.6
S38	Clifton Road before railway bridge	Near-Road	Diffusion Tube	100	100	No data	29.2	27.4	27.9	27.8
S39	Clifton Road Roundabout Murray Road	Near-Road	Diffusion Tube	92	92	No data	30.6	32.6	30.0	31.9
S40	Lawrence Sherriff Street, Drury Lane	Roadside	Diffusion Tube	100	100	No data	33.4	32.4	30.1	32.8
S41	Bilton Road, Big Yellow House	Roadside	Diffusion Tube	100	100	No data	26.8	27.5	25.4	27.0
S42	Bilton Road, near Crow Pie Pub	Roadside	Diffusion Tube	92	92	No data	25.9	25.8	26.4	23.7
S43	Dunchurch Gyrotory Residential	Roadside	Diffusion Tube	100	100	No data	28.7	29.9	27.7	28.7
S44	High Street, Hillmorton	Roadside	Diffusion Tube	92	92	No data	22.3	26.7	23.2	21.7
S45	Bretford- electricity pole near 3 Avon Cottages	Kerbside	Diffusion Tube	100	100	No data	28.0	26.9	28.3	27.7
S46	Oxford Road, Ryton Belvedere	Roadside	Diffusion Tube	100	100	No data	38.5	<b>40.9</b>	39.5	38.1
S47	Regent Place	Roadside	Diffusion Tube	100	100	No data	33.2	35.3	33.0	33.9
S48	North Street, Nat. West. Bank	Roadside	Diffusion Tube	100	100	No data	36.7	34.3	36.6	34.5
S49	Lesley Suiter House, Whitehall Rd, Hillmorton	Roadside	Diffusion Tube	92	92	No data	<b>49.0</b>	39.4	39.9	39.1
S50	Bilton Church	Roadside	Diffusion Tube	100	100	No data	23.5	24.5	24.8	25.1
S51	Brinklow, Brays Close	Roadside	Diffusion Tube	100	100	No data	No data	31.4	32.3	33.6
S52	Daventry Road East, Dunchurch	Kerbside	Diffusion Tube	92	92	No data	No data	23.4	23.0	24.9
S53	Daventry Road West, Dunchurch	Roadside	Diffusion Tube	100	100	No data	No data	21.5	21.4	21.7
JLR1	Provest William CoE Primary School	Urban Background	Diffusion Tube	100	33	No data	No data	No data	No data	14.2
JLR2	Stoney Grey Lodge, Ryton-on-Dunsmore	Urban Background	Diffusion Tube	100	58	No data	No data	No data	No data	18.1
W1	Rugby School Lamppost 5	Roadside	Diffusion Tube	100	42	No data	No data	No data	No data	<b>46.6</b>
W2	Rugby School Lamppost 6	Roadside	Diffusion Tube	100	42	No data	No data	No data	No data	<b>46.5</b>
W3	57 Boughton Rd	Roadside	Diffusion Tube	100	42	No data	No data	No data	No data	32.8

Notes: Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**. NO<sub>2</sub> annual means exceeding 60 µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

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

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

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

Figure A.1 – Trend in Kerbside NO<sub>2</sub> Diffusion Tube Monitoring Locations 2011-2015

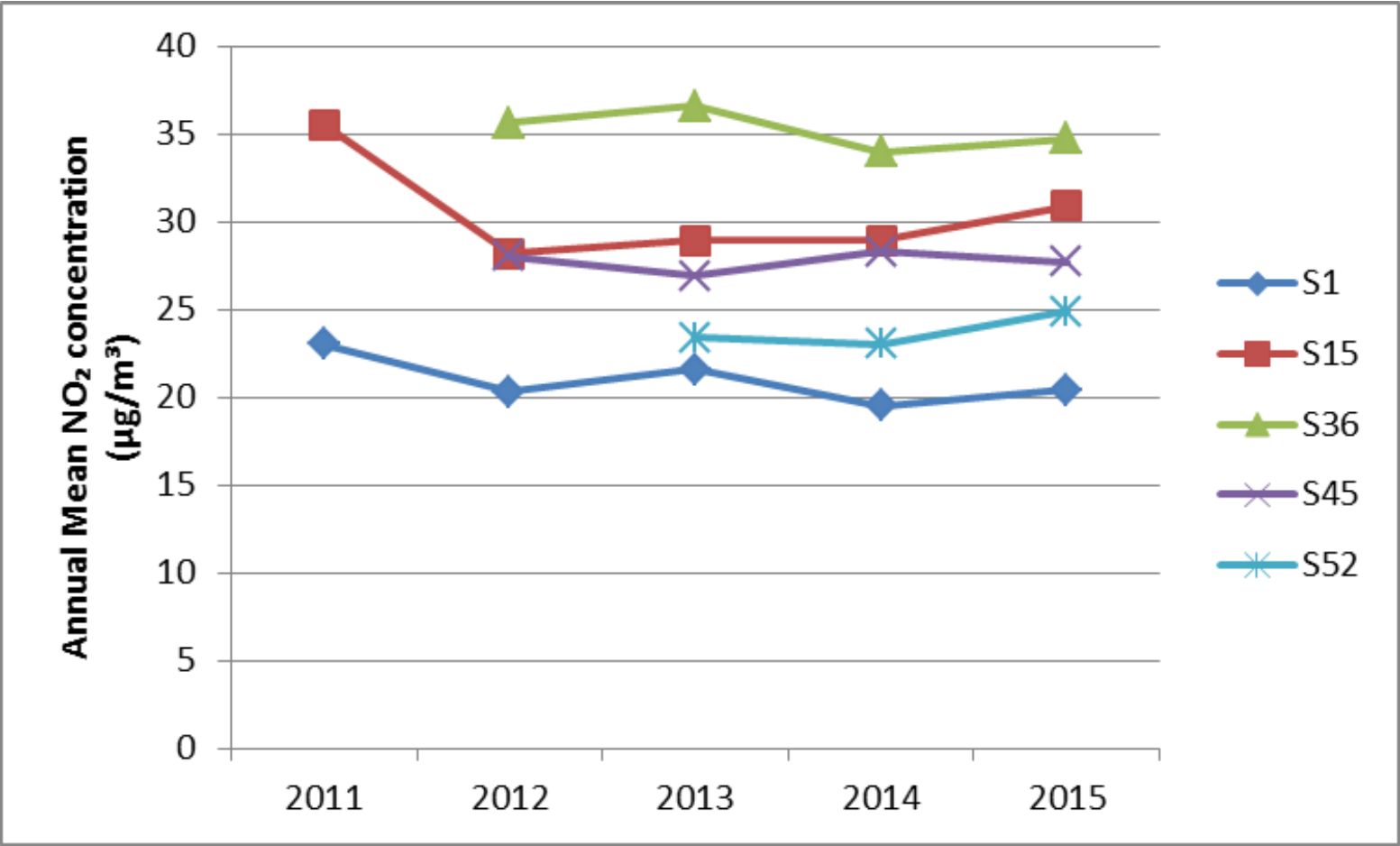


Figure A.2 – Trend in Roadside NO<sub>2</sub> Diffusion Tube Monitoring Locations 2011-2015 (1)

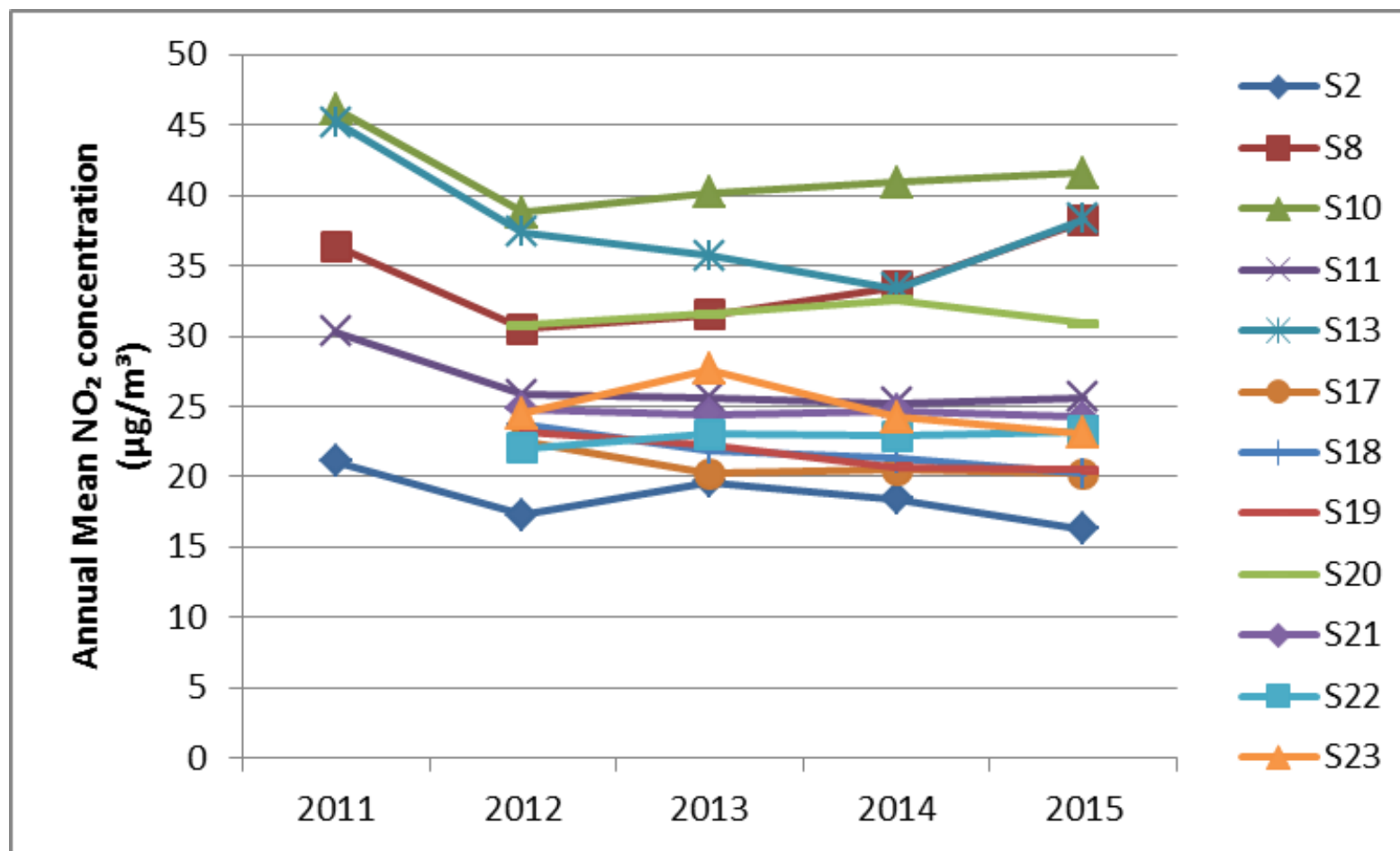


Figure A.3 – Trend in Roadside NO<sub>2</sub> Diffusion Tube Monitoring Locations 2011-2015 (2)

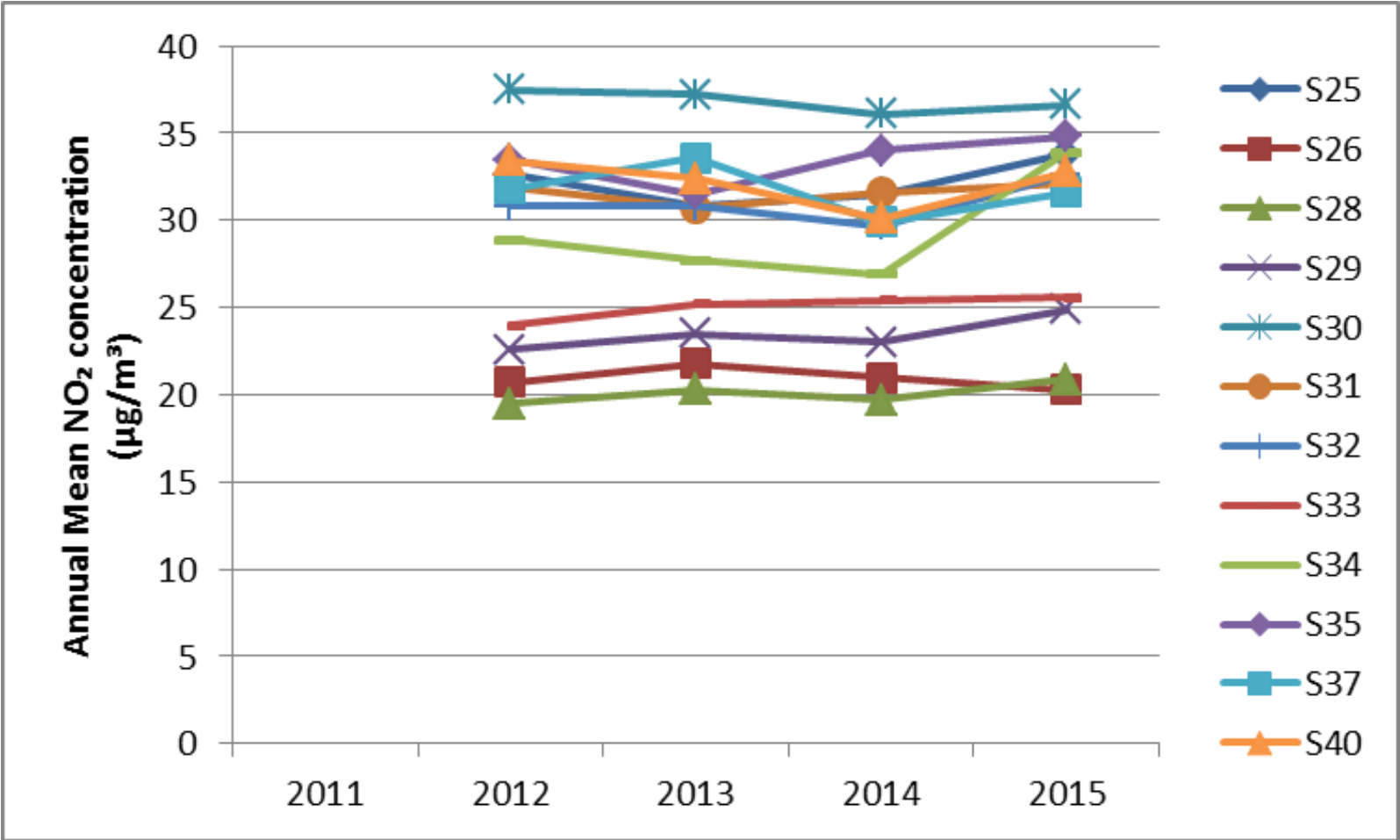


Figure A.4 – Trend in Roadside NO<sub>2</sub> Diffusion Tube Monitoring Locations 2011-2015 (3)

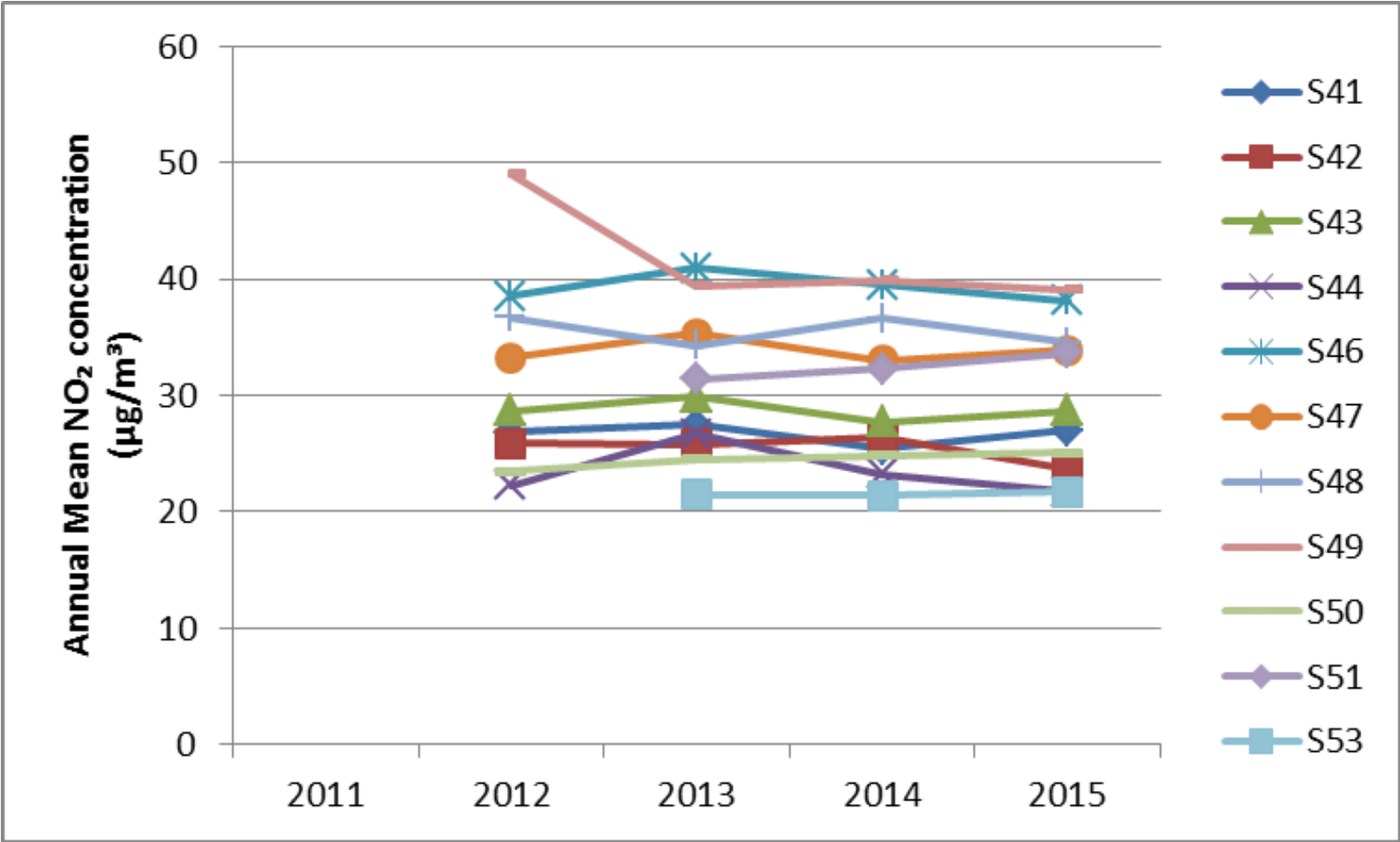


Figure A.5 – Trend in Near-Road NO<sub>2</sub> Diffusion Tube Monitoring Locations 2011-2015

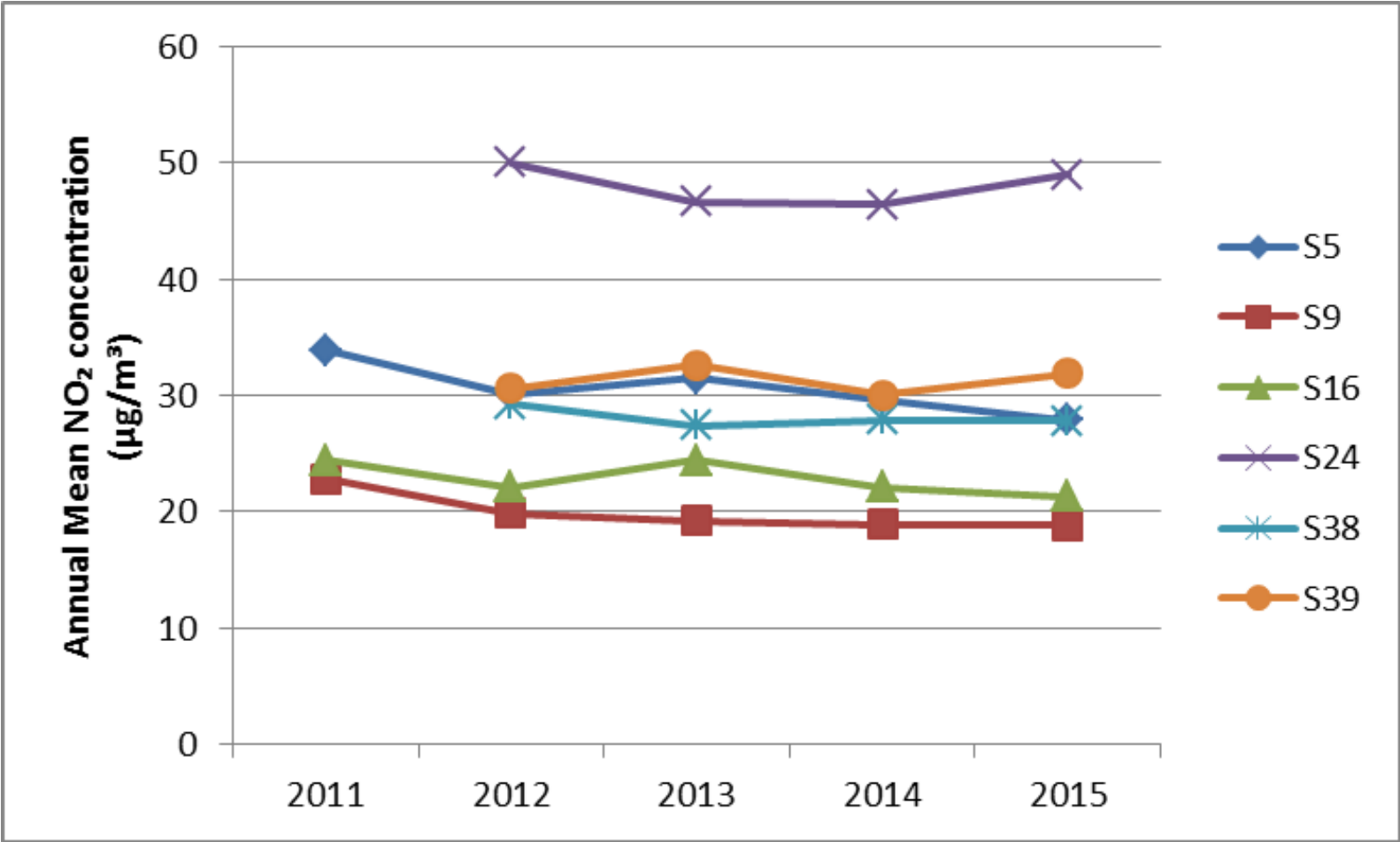


Figure A.6 – Trend in Urban Background NO<sub>2</sub> Diffusion Tube Monitoring Locations 2011-2015

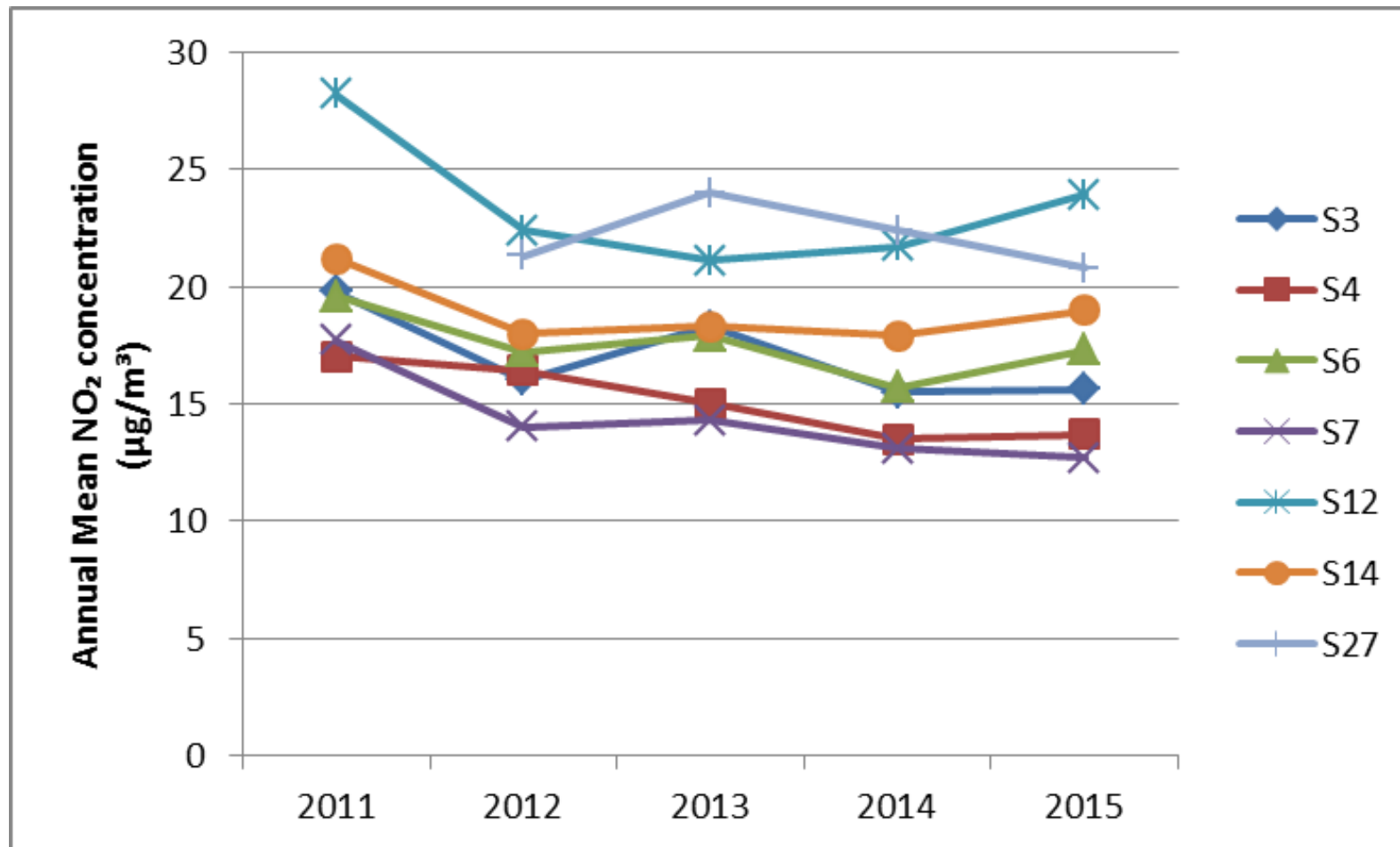




Table A.4 – Annual Mean PM<sub>10</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	2015 PM <sub>10</sub> Statistics <sup>(3)</sup>		
				Annual Mean	Max. 24-hr Mean	24-Hour Means > 50µg/m <sup>3</sup>
OSR1	Roadside	99	99	12.8	99.5	3

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

- (1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
- (3) All means have been “annualised” as per Technical Guidance LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details. If the period of valid data is less than 85%, the 90.4<sup>th</sup> percentile of 24-hour means is provided in brackets.
- Monitoring commenced in December 2014. The Turnkey Osiris dust monitor is an indicative instrument and data collected with such instruments cannot strictly be compared against air quality objectives.

Table A.5 – PM<sub>2.5</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	2015 PM <sub>2.5</sub> Statistics <sup>(3)</sup>	
				Annual Mean	Max. 24-hr Mean
OSR1	Roadside	99	99	6.6	32.0

- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
- (3) All means have been “annualised” as per Technical Guidance LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

**Table A.6 – Historical PM<sub>10</sub> Monitoring Results, Annual Mean Concentrations 2008-2012**

Site Name	Site Type	Annual Mean PM <sub>10</sub> Concentrations (µg/m <sup>3</sup> )				
		2008	2009	2010	2011	2012
AQMS 5 Newbold Road	Roadside	20.9	21.5	20.9	19.8	17.6
T2 Lawford Farm	Rural	20.7	22.2	22.2	19.3	12.5
T8 Townsend Lane	Industrial	16.1	17.3	19.2	25.5	14.3
T10 Avenue Road	Industrial	19.2	19.6	15.4	16.3	12.5
T14 Russelsheim Way	Roadside	20.7	15.9	16.4	19.6	-
T16 Murray Road	Roadside	24.3	20.0	18.2	17.7	12.2

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in bold. All means have been “annualised” as per Technical Guidance LAQM.TG16 where valid data capture for the full calendar year is less than 75%. AQMS 5 Newbold Road was equipped with a TEOM-FDMS reference method analyser. All other monitoring sites used Turnkey Osiris dust monitors. No corrections or adjustments were made to the Turnkey Osiris monitoring data except for “annualisation” in cases where data capture was less than 75%. The Turnkey Osiris dust monitor is an indicative instrument and data collected with such instruments cannot strictly be compared against air quality objectives.

**Table A.7 – Historical PM<sub>2.5</sub> Monitoring Results, Annual Mean Concentrations 2008-2012**

Site Name	Site Type	Annual Mean PM <sub>2.5</sub> Concentrations (µg/m <sup>3</sup> )				
		2008	2009	2010	2011	2012
T2 Lawford Farm	Rural	9.0	8.2	NA	7.3	7.0
T8 Townsend Lane	Industrial	9.3	8.5	8.1	10.6	8.6
T10 Avenue Road	Industrial	10.0	10.2	8.5	9.8	10.2
T14 Russelsheim Way	Roadside	9.1	6.2	7.7	8.0	-
T16 Murray Road	Roadside	8.9	9.1	8.8	9.9	9.0

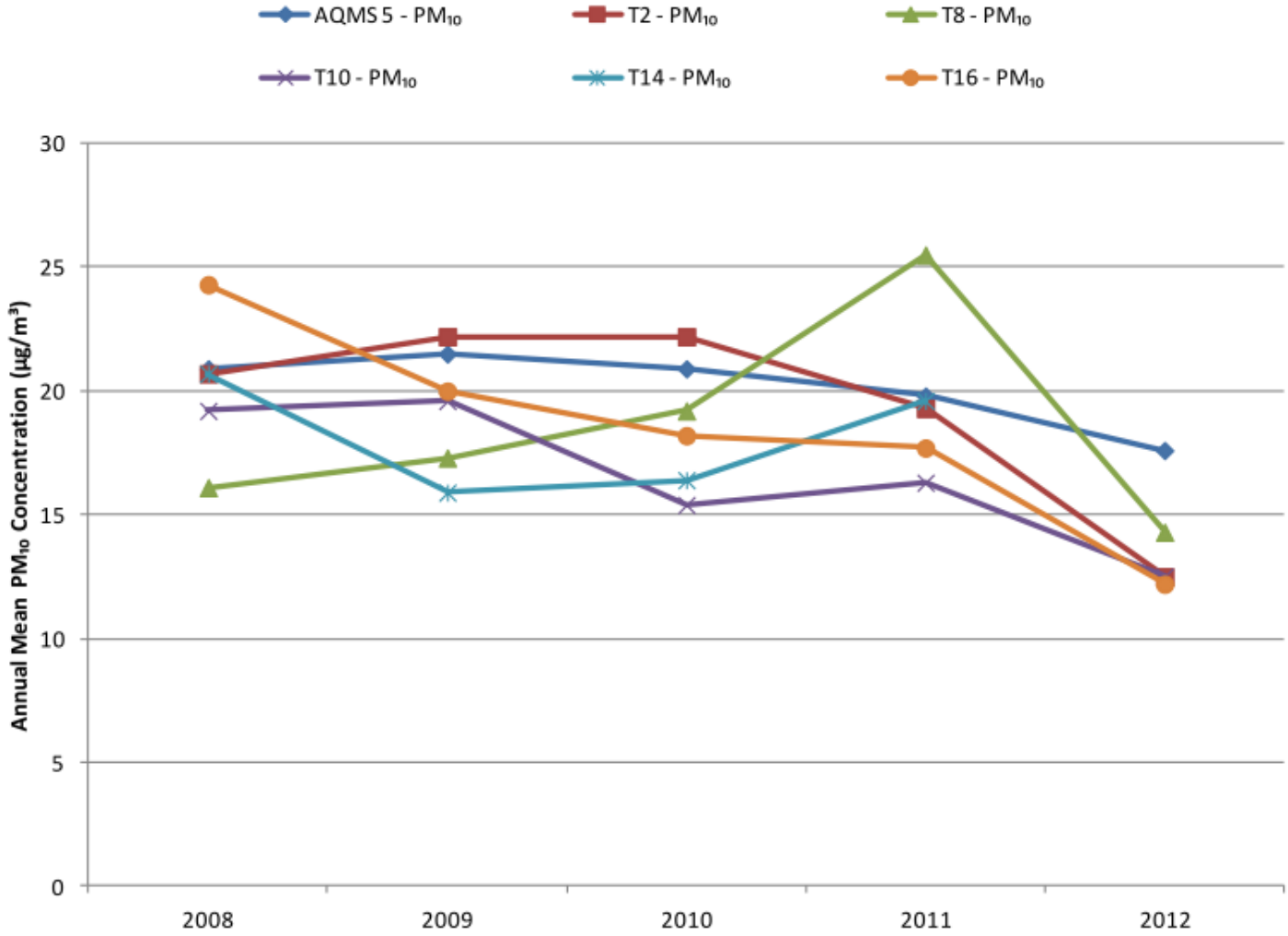
Notes: All means have been “annualised” as per Technical Guidance LAQM.TG16 where valid data capture for the full calendar year is less than 75%. All the PM<sub>2.5</sub> monitoring sites used Turnkey Osiris dust monitors. No corrections or adjustments were made to the Turnkey Osiris monitoring data except for “annualisation” in cases where data capture was less than 75%. The Turnkey Osiris dust monitor is an indicative instrument and data collected with such instruments cannot strictly be compared against air quality objectives.

Table A.8 – Historical PM<sub>10</sub> Monitoring Results, Daily Mean Exceedances 2008-2012

Site Name	Site Type	Number of Daily Mean PM <sub>10</sub> Concentrations >50 µg/m <sup>3</sup>				
		2008	2009	2010	2011	2012
AQMS 5 Newbold Road	Roadside	13	10	4	14	8 (39.0)
T2 Lawford Farm	Rural	5 (31.4)	11	11 (36.3)	7 (33.3)	0 (24.8)
T8 Townsend Lane	Industrial	2 (25.3)	4 (26.1)	6	28 (46.1)	3 (31.9)
T10 Avenue Road	Industrial	5	7 (30.9)	1	6 (26.4)	1 (27.6)
T14 Russelsheim Way	Roadside	5	6	1	9 (35.6)	-
T16 Murray Road	Roadside	11 (40.6)	7	1 (29.5)	11	1 (25.3)

Notes: any exceedances of the PM<sub>10</sub> daily mean AQS objective are shown in bold. Where data capture for the year was less than 90% the 90.4<sup>th</sup> percentiles of 24-hour mean PM<sub>10</sub> measurements are shown alongside the number of days in brackets. 2012 data from T14 Russelsheim Way was found to be spurious and subsequently rejected.

Figure A.7 – Trend in Annual Mean PM<sub>10</sub> Concentrations, 2008-2012



## Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results - 2015

Site ID	Site Name	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>
		S1	10 Newbold Road	30.4	25.3	27.9	24.7	15.8	13.3	11.6	22.6	25.3	26.9	23.2	25.3
S2	Marton A423	7.3	23.8	24.5	18.8	12.7	12.3	11.5	21.3	21.4	26.5	18.8	18.0	18.1	16.3
S3	69 School Street	27.4	24.9	22.4	13.5	9.7	8.8	8.7	15.8	16.9	21.9	19.0	18.5	17.3	15.6
S4	St Margaret's School, Wolston	19.2	18.8	21.2	14.4	10.1	8.5	10.1	14.4	16.5	19.8	17.4	12.0	15.2	13.7
S5	Ryton Village Hall, High Street	46.6	36.6	25.7	32.7	23.9	22.1	21.0	31.5	38.0	45.0	28.2	21.2	31.0	27.9
S6	2 West Field Road	19.9	24.3	28.2	-	-	10.2	14.1	17.0	19.5	25.0	18.6	15.2	19.2	17.3
S7	68 Cymbeline Way	20.5	13.2	19.8	15.1	8.4	8.4	8.6	14.6	15.1	20.0	1.7	24.2	14.1	12.7
S8	EHO Treatment, Newbold Road	43.9	41.9	41.9	41.8	26.5	33.2	40.2	42.5	46.2	50.6	54.4	46.1	42.4	38.2
S9	(Argyle Street) Cambridge Street	34.4	24.4	24.8	18.9	13.0	11.3	13.2	19.6	22.0	27.5	23.0	18.6	20.9	18.8
S10	Webb Ellis Pub, Corporation Street	42.3	52.4	44.4	44.7	36.5	-	32.6	48.1	49.9	63.7	-	47.5	46.2	<b>41.6</b>
S11	15 Oliver Street	38.5	38.1	34.9	27.5	21.3	20.9	13.2	27.2	30.0	35.2	30.6	24.1	28.5	25.6
S12	Boughton Leigh School, Hollowell Way	38.7	37.0	27.8	21.4	18.4	-	15.0	22.0	24.9	30.1	31.5	24.8	26.5	23.9
S13	Avon Mill Pub, Newbold Road	55.7	55.6	47.2	35.5	34.6	27.4	27.5	43.0	46.8	48.7	47.3	41.0	42.5	38.3
S14	Binley Woods, Village Hall	31.0	28.4	26.0	19.1	14.1	12.5	12.9	20.5	23.1	24.7	22.5	18.4	21.1	19.0
S15	Lawford Road / Jubilee Street, Arnie's Batch	47.4	44.1	36.7	29.9	29.6	26.1	25.9	26.9	34.3	41.7	35.3	33.9	34.3	30.9
S16	Hotel, London Road A45, Ryton	33.9	29.2	31.3	24.9	17.3	17.6	17.6	24.7	-	-	-	16.7	23.7	21.3
S17	Stamford Gardens Rugby Road	-	26.9	27.8	21.9	15.6	14.1	14.9	20.2	23.9	30.0	26.6	24.7	22.4	20.2
S18	Stamford Gardens Rugby Road	32.3	30.2	24.4	21.6	15.1	13.7	13.5	16.9	24.6	28.7	26.8	22.1	22.5	20.2
S19	Stamford Gardens Rugby Road	34.4	31.3	28.1	21.0	12.5	14.2	12.5	20.8	23.1	26.1	26.2	23.1	22.8	20.5
S20	Newbold Road	40.1	41.5	40.5	31.0	19.7	18.1	22.4	31.4	37.6	47.5	38.7	43.4	34.3	30.9
S21	Corner of Percival Road and Ashlawn Road	32.1	26.6	32.0	24.0	24.9	10.0	23.1	25.3	30.8	35.7	32.1	25.4	26.8	24.2
S22	Corner of Fisher Avenue and Ashlawn Road	35.7	31.8	-	28.4	20.6	18.1	15.4	23.1	27.8	31.4	29.2	22.0	25.8	23.2
S23	Paddox Pub Corner	33.6	25.3	31.5	27.3	17.1	21.2	18.0	25.3	32.5	-	27.6	22.6	25.6	23.1

## Rugby Borough Council

Site ID	Site Name	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
														Raw Data	Bias Adjusted <sup>(1)</sup>
S24	Dun Cow, Dunchurch Square	69.5	69.1	62.6	55.5	53.9	44.3	42.2	39.2	58.9	63.2	54.4	39.7	54.4	<b>48.9</b>
S25	Southam Road, 'Crystal', Dunchurch	56.1	48.9	43.0	33.0	32.4	23.1	21.1	32.4	43.4	50.0	39.0	28.5	37.6	33.8
S26	Lawford Rd, (former Simms Scrap Yard)	31.9	30.5	24.2	16.8	17.0	14.6	14.3	22.7	25.0	28.7	26.1	18.4	22.5	20.3
S27	Avenue Road / Campbell Street	35.4	31.2	24.3	12.1	15.1	14.8	14.7	22.6	26.2	32.5	27.5	20.4	23.1	20.8
S28	256 Parkfield Road	28.8	28.4	32.0	22.6	14.4	14.5	11.7	19.1	26.1	32.0	23.4	25.4	23.2	20.9
S29	Avon Valley School	37.7	37.1	31.2	26.3	17.1	18.7	16.9	24.1	33.3	36.0	30.8	22.3	27.6	24.9
S30	Murray Road (Bus Stop Nr Rail Station)	46.2	41.8	44.9	40.1	29.6	35.0	31.1	40.7	43.9	54.2	39.3	41.6	40.7	36.6
S31	Wood Street / Park Road	41.3	42.7	42.5	37.1	25.2	21.5	25.2	32.0	41.9	46.9	35.0	36.4	35.6	32.1
S32	Railway Terrace, Station Bar	48.2	34.3	37.8	34.6	28.7	27.4	23.6	35.5	42.6	49.8	39.6	32.7	36.2	32.6
S33	Albert Street, Alma Lodge Hotel	39.8	35.0	32.0	25.6	19.3	13.1	18.3	25.6	28.8	42.7	32.7	28.3	28.4	25.6
S34	Regent Street, near Oxfam	92.7	39.8	39.0	30.2	31.2	25.2	25.7	28.5	36.8	38.8	34.6	30.0	37.7	33.9
S35	Church Street, Town Fryer	46.9	48.4	42.4	35.9	30.2	31.8	27.6	32.7	42.7	43.5	41.3	40.8	38.7	34.8
S36	Whitehall Rd / Clifton Rd Roundabout	52.0	-	41.1	31.8	33.6	31.0	30.3	35.2	39.5	48.7	40.6	40.7	38.6	34.7
S37	Lower Hillmorton Rd / Clifton Rd Roundabout	53.1	40.9	41.9	28.5	29.0	26.0	25.6	28.7	37.7	45.4	34.1	29.8	35.1	31.6
S38	Clifton Road before railway bridge	49.0	34.5	35.3	30.0	20.1	23.6	16.3	30.4	34.5	39.1	33.7	24.2	30.9	27.8
S39	Clifton Road Roundabout Murray Road	48.9	46.9	39.2	31.0	21.8	-	22.9	30.4	35.2	42.9	37.7	32.5	35.4	31.9
S40	Lawrence Sherriff Street, Drury Lane	52.1	41.9	36.9	30.3	30.0	26.5	18.3	36.6	47.8	53.1	36.4	27.6	36.5	32.8
S41	Bilton Road, Big Yellow House	36.7	32.5	35.7	30.9	22.4	22.1	20.6	27.8	33.8	40.9	29.4	27.1	30.0	27.0
S42	Bilton Road, near Crow Pie Pub	-	33.9	34.3	25.4	21.4	20.8	16.6	26.1	28.8	30.2	27.3	24.6	26.3	23.7
S43	Dunchurch Gyrotory Residential	40.0	37.2	34.3	22.9	24.8	20.1	24.6	33.2	37.4	45.1	34.7	28.2	31.9	28.7
S44	High Street, Hillmorton	34.6	30.7	29.0	22.4	18.1	17.5	15.2	21.1	-	32.3	22.1	22.0	24.1	21.7
S45	Bretford- electricity pole near 3 Avon Cottages	37.8	38.1	35.6	25.8	25.1	21.3	19.8	31.6	29.3	38.6	31.4	34.6	30.8	27.7
S46	Oxford Road, Ryton Belvedere	57.4	45.5	47.8	35.9	32.6	38.9	27.3	47.5	52.7	57.5	36.7	28.6	42.4	38.1
S47	Regent Place	45.1	34.4	44.0	39.0	27.1	24.2	31.8	41.1	46.9	50.7	36.7	31.5	37.7	33.9
S48	North Street, Nat. West. Bank	50.9	49.7	43.2	28.9	31.5	32.2	34.4	27.6	40.0	40.6	45.3	35.7	38.3	34.5
S49	Lesley Suiter House, Whitehall Road, Hillmorton	52.2	51.7	44.9	-	39.2	36.7	38.1	39.4	44.2	53.8	43.9	33.8	43.4	39.1
S50	Bilton Church	39.3	36.4	31.4	24.0	20.7	16.5	18.7	26.3	27.6	39.0	30.2	23.9	27.8	25.1
S51	Brinklow, Brays Close	48.0	37.9	40.5	37.5	26.5	30.3	30.3	32.4	42.4	47.7	40.9	33.2	37.3	33.6

Site ID	Site Name	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>
		S52	Daventry Road East, Dunchurch	40.2	33.6	31.5	25.8	20.3	19.4	23.3	23.5	29.2	33.7	-	23.4
S53	Daventry Road West, Dunchurch	39.7	32.3	30.6	19.1	15.5	15.9	14.5	22.0	23.6	30.0	23.1	23.2	24.1	21.7
JLR1	Provest William CoE Primary School	-	-	-	-	-	-	-	-	18.1	22.7	14.4	12.8	17.0	14.2
JLR2	Stoney Grey Lodge, Ryton-on-Dunsmore	-	-	-	-	13.6	13.1	11.5	18.3	23.4	29.6	16.9	18.4	18.0	18.1
W1	Rugby School Lamppost 5	-	-	-	-	-	-	-	50.7	53.2	56.1	56.5	55.4	54.8	<b>46.6</b>
W2	Rugby School Lamppost 6	-	-	-	-	-	-	-	50.9	52.4	62.1	54.9	52.2	54.6	<b>46.5</b>
W3	57 Boughton Rd	-	-	-	-	-	-	-	32.5	36.0	47.9	38.4	36.7	38.6	32.8

(1) See Appendix C for details on bias adjustment. Local bias adjustment factor is 0.90.

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

### **QA/QC of Diffusion Tube Monitoring Data**

Rugby Borough Council's NO<sub>2</sub> diffusion tubes are supplied and analysed by Environmental Services Group (ESG), Didcot using the 50%TEA in Acetone method. Analyses are performed in accordance with standard operating procedure ANU/SOP/1015 Issue 1. This method conforms to the guidelines set out in Defra's 'Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance' document.

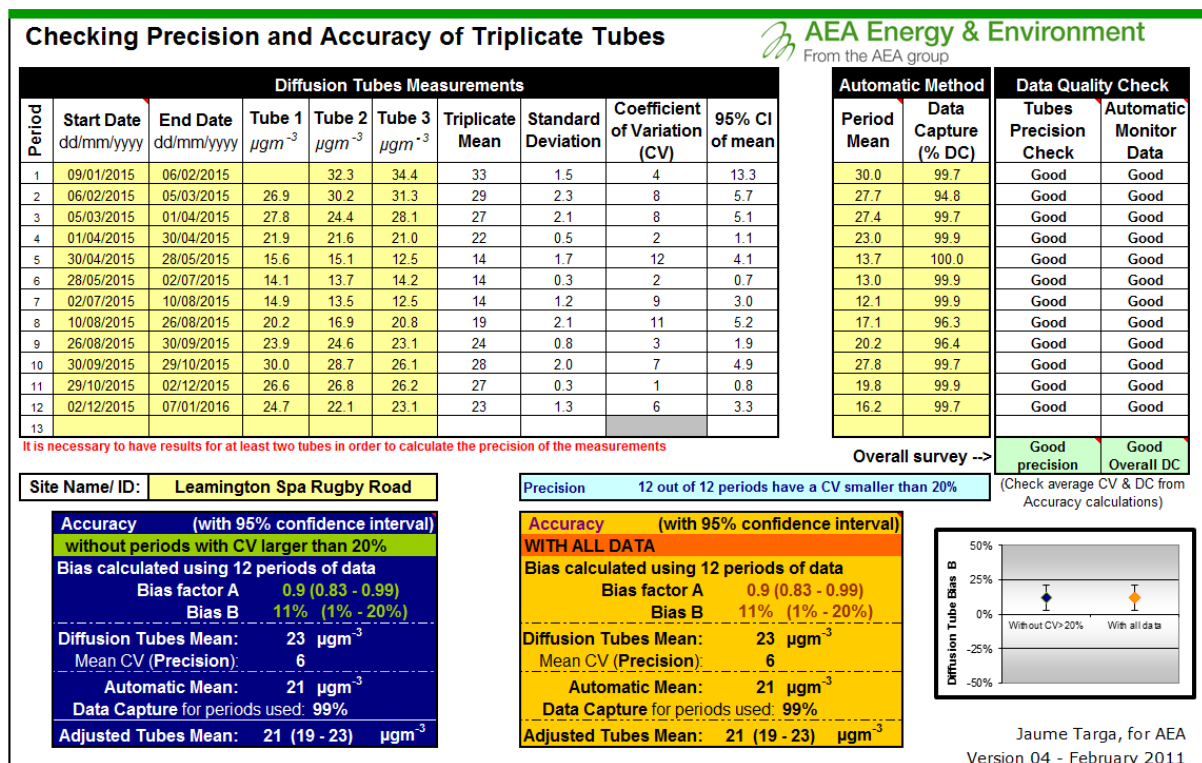
ESG Didcot participates in the AIR NO<sub>2</sub> PT scheme. This scheme forms an integral part of the UK NO<sub>2</sub> Network's QA/QC, and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). In AIR NO<sub>2</sub> PT rounds AR001, 3, 4, 7, 9, 10 and 12 ESG Didcot achieved 100% satisfactory scores.

### **Bias Adjustment of Diffusion Tube Data**

A local bias adjustment factor was calculated from the triplicate co-location of diffusion tubes alongside the AURN monitoring station at Leamington Spa Rugby Road. The local bias adjustment factor was calculated as 0.90; details of the calculation are provided in Figure C.1.



Figure C.1 – Local Bias Adjustment Factor Calculation



A national bias adjustment factor was obtained from the national Diffusion Tube Bias Adjustment Factors Spreadsheet for March 2016. Based on the analytical laboratory (ESG Didcot) and tube preparation method (50%TEA/Acetone) a national bias adjustment factor of 0.81 was derived for 2015.

The use of the local bias adjustment factor is considered preferable, particularly when the data used for the calculation are precise and reliable. Given the good quality of the co-location data the local bias adjustment factor has been used to adjust the raw NO<sub>2</sub> diffusion tube results for 2015. Furthermore, the local bias adjustment factor results in monitored NO<sub>2</sub> concentrations that are more in keeping with previous years' results in Rugby.

### Short-term to Long-term Data Adjustment

Data capture rates for the 51 original diffusion tube monitoring sites are 75% or greater for the 2015 period; consequently, it is not necessary to seasonally adjust any of the monitored concentrations.

However, for the three additional locations (W1, W2 and W3) commissioned in August 2015, seasonal adjustment was carried out using AURN data from three

nearby automatic monitoring stations: Birmingham Acocks Green, Leamington Spa and Leicester University. Details are shown in Table C.1 below.

**Table C.1 – Seasonal Adjustment Factor Calculation**

	Birmingham Acocks Green	Leamington Spa	Leicester University
Annual Mean [Am]	18.8	19.3	27.0
Period Mean [Pm] (W1 & W2)	19.9	20.4	28.4
Average Am/Pm ratio	0.946		
Period Mean [Pm] (W3)	20.0	20.4	28.5
Average Am/Pm ratio	0.944		



# **Rugby Borough Council**

## **Permit Holders Register**

**THE ENVIRONMENTAL PERMITTING (ENGLAND AND WALES)  
REGULATIONS 2010**

**PART A2 AND PART B PREMISES REGULATED FOR  
POLLUTION CONTROL**

**ALL PERMITS LISTED ARE OPERATIONAL**

**UPDATED: 04 APRIL 2016**

Rugby Borough Council

Company	Address	Post Code	Permit Ref	Grid Reference	Issue Date
<b>Part A2 Processes</b>					
Ball Packaging Europe UK	Pretorian Way Glebe Farm Industrial Estate, Rugby	CV21 1RN	13/PPC	SP 502772	23.02.10
<b>Part B Processes</b>					
<b>Car Spraying</b>					
XK Engineering Limited,	Swallow House, Shilton Industrial Estate Shilton Coventry	CV7 9JY	46/PPC	SP 402855	14.03.12
The Rugby Bodyshoppe,	2 Avon Industrial Estate Butlers Leap Rugby	CV21 3UY	29/PPC	SP 515762	20.12.11
Jaguar Land Rover	Unit DC3, Prologis Park Oxford Road, Ryton-on-Dunsmore	CV8 3EA	91/EPR		03.06.15
<b>Coating and Surface Treatment of Metals</b>					
Blanc Aero Industries Ltd	Butlers Leap Rugby	CV21 3RQ	69/PPC	SP 518 761	05.09.11
<b>Concrete Batching</b>					
Hope Construction Materials Limited	Brandon Lane Willenhall Coventry	CV3 3GW	6/PPC	SP 386757	04.10.13
CEMEX UK Materials Limited	Unit 11 Dunchurch Trading Estate A45 London Road Dunchurch Rugby	CV23 9LN	8/PPC	SP 458719	27.04.12
Stonemarket Works Limited	Old Gravel Quarry Oxford Road Ryton-on-Dunsmore	CV8 3EJ	9/PPC	SP 379741	25.06.08
Breedon Aggregates Limited	Ling Hall Quarry Coal Pit Lane Lawford Heath Rugby	CV23 9HH	60/PPC	SP 448727	14.06.13
Brinklow Quarry Mortar Plant	Coventry Road Brinklow Rugby	CV23 0NJ	88/EPR	SP 420785	17.01.13
<b>Crematoria</b>					
Rainsbrook Cemetery and Crematorium	Ashlawn Road Rugby	CV22 5ET	89/EPR	SP/517/35E	13.01.14
<b>Di-isocyanate</b>					
The Millboard Company	Ryton Lodge Oxford Road Ryton on Dunsmore	CV8 3EJ	51/PPC	SP 405708	28.04.10
<b>Dry Cleaners</b>					
Johnsons Cleaners UK Ltd	35 Clifton Road Rugby	CV21 3QF	65/PPC	SP 507751	12.12.07

**Rugby Borough Council**

<b>Company</b>	<b>Address</b>	<b>Post Code</b>	<b>Permit Ref</b>	<b>Grid Reference</b>	<b>Issue Date</b>
Johnsons Cleaners UK Ltd	Central Processing Unit Unit 17 Gladiator Way Rugby	CV21 1DD	66/PPC	SP 497772	08.04.10
The Village Dry Cleaners	63 High Street Hillmorton Rugby	CV21 4EG	70/PPC	SP 533736	24.08.12
Regal Dry Cleaners Ltd	18a Hunters Lane Rugby	CV21 1EA	80/PPC	SP 502762	05.05.15
<b>Mobile Asphalt Recycling Plant</b>					
Power Plane Limited Highway House	Asfare Business Park Hinckley Road Wolvey	LE10 3HQ	82/EPR	SP 433902	13.2.13
<b>Mobile Fine Milling Concrete Grinding Plant</b>					
Power Plane Limited Highway House	Asfare Business Park Hinckley Road Wolvey	LE10 3HQ	84/EPR 85/EPR 86/EPR	SP 433902	26.3.13 26.3.13 26.3.13
<b>Mobile Screening and Crushing Process</b>					
B Reilly & Son Limited	Watling Street Nr Rugby	CV23 0AL	52/PPC	E: 453, 933 N: 278, 506	06.03.12
Brinklow Quarry	Coventry Road Brinklow	CV23 0NJ	72/PPC	SP 421 786	22.05.12
Mr J. White (Whites of Coventry)	Ryton Mill London Road Coventry	CV8 3DX	90/EPR	SP 375751	29.09.14
<b>Road Stone Coating Process</b>					
Breedon Aggregates Limited	Ling Hall Quarry Coalpit Lane Lawford Heath Nr Rugby Warwickshire	CV23 9HH	71/PPC	SP 448727	14.06.13
<b>Vapour Recovery Stage I (Petrol Service Station)</b>					
Stretton Service Station	350 London Road Stretton On Dunsmore Rugby	CV23 9HX	33/PPC	SP 416733	14.01.15
Pure Fuels (UK) Ltd	(A45 – Northbound) London Road Dunsmore Heath Rugby	CV23 9LG	37/PPC	SP 453719	21.10.09
Gibbetts Cross Station Ltd	Watling Street Shawell, Lutterworth	LE17 6AR	38/PPC	SP 529808	02.12.09
Lawford Road Service Station	Lawford Road, Rugby	CV21 2HX	39/PPC	SP 493754	10.10.14
Rugby Leicester Road Service Station	Leicester Road, Rugby	CV21 1DJ	40/PPC	SP 501763	10.10.14
Binley Woods Service Station	Coventry Eastern By-pass, Coventry	CV3 2ZZ	41/PPC	SP 382769	10.10.14

## Rugby Borough Council

Company	Address	Post Code	Permit Ref	Grid Reference	Issue Date
Auto Stop Service Station	54 Lawford Road, Rugby	CV21 3EA	42/PPC	SP 500751	24.02.14
Paddox Service Station	339 Hillmorton Road Rugby	CV22 5EZ	43/PPC	SP 527738	17.09.09
Dunchurch Service Station	Coventry Road Dunchurch Rugby	CV22 6RA	47/PPC	SP 484714	18.06.09
<b>Vapour Recovery Stage II (Petrol Service Station)</b>					
Sainsbury's Supermarkets Limited	Petrol Station 385 Dunchurch Road, Rugby	CV22 6HU	32/PPC	SP 495726	17.04.13
Shell Webb Ellis	89 Hillmorton Road Rugby	CV22 5AG	34/PPC	SP 513749	06.11.12
Tesco Stores Limited	1 Leicester Road Rugby	CV21 1RG	35/PPC	SP 506769	02.11.09
ASDA Petroleum Station	Corporation Street Rugby	CV21 2DN	78/PPC	SP 500751	16.12.10

**Issue date: Is the date for the latest Environmental Permit issued.**

## Appendix D: Maps of Monitoring Locations

Figure D.1 – Map of Parkfield Road Turnkey Osiris Monitoring Location

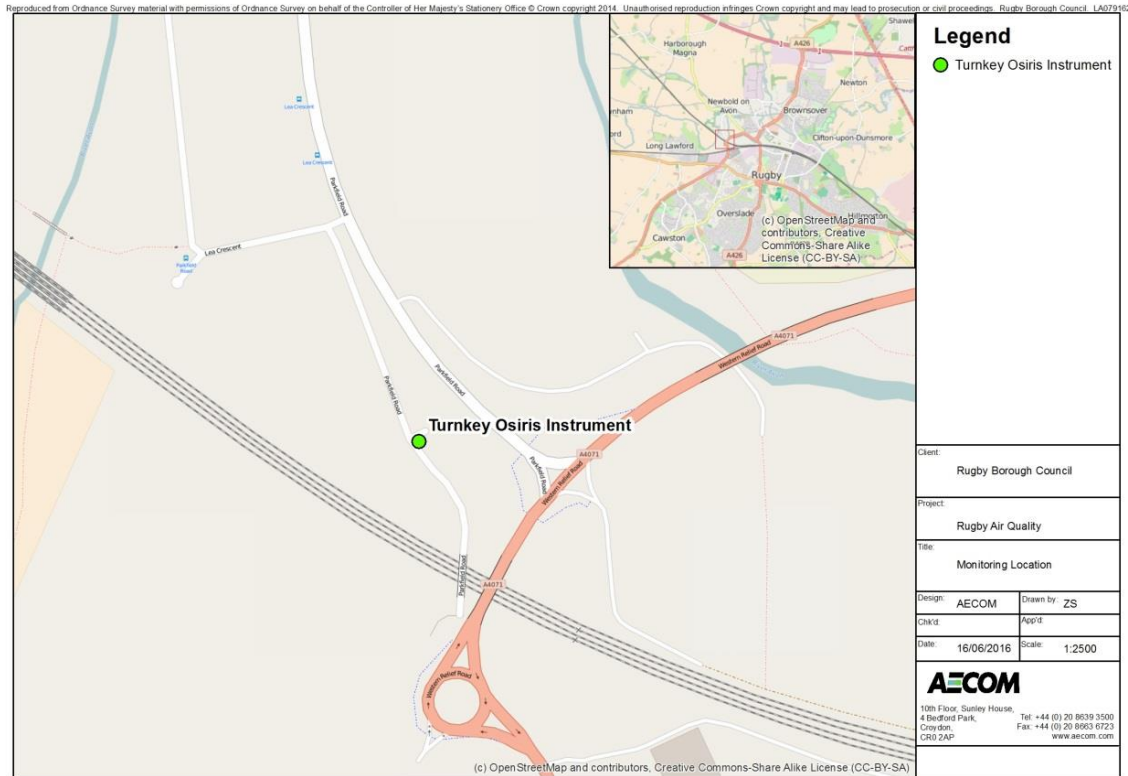


Figure D.2 – Map of NO<sub>2</sub> Diffusion Tube Monitoring Locations

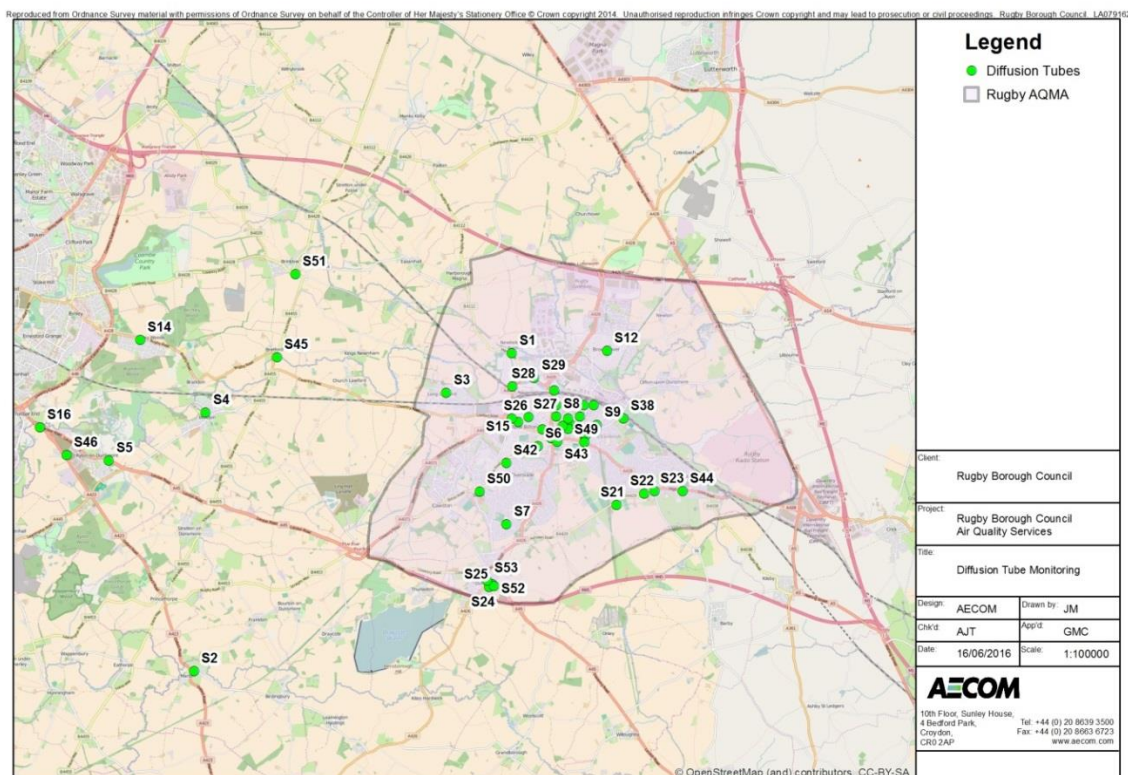




Figure D.3 – Map of NO<sub>2</sub> Diffusion Tubes in Rugby Town Centre

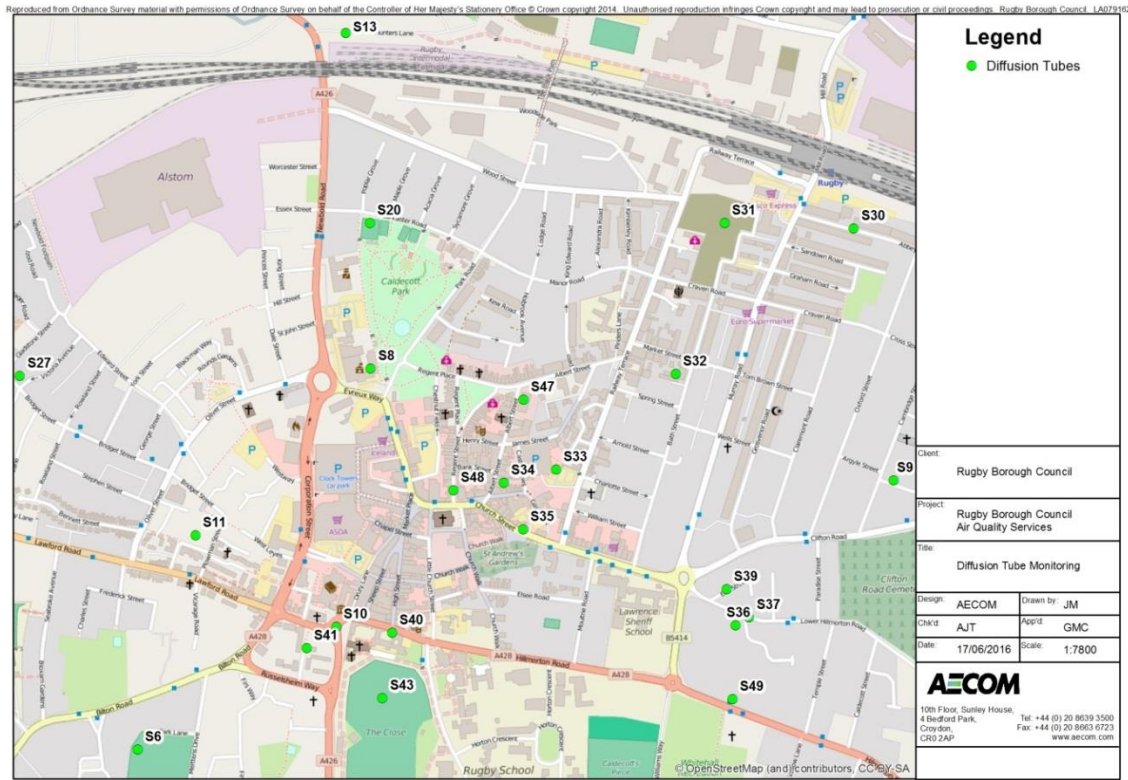
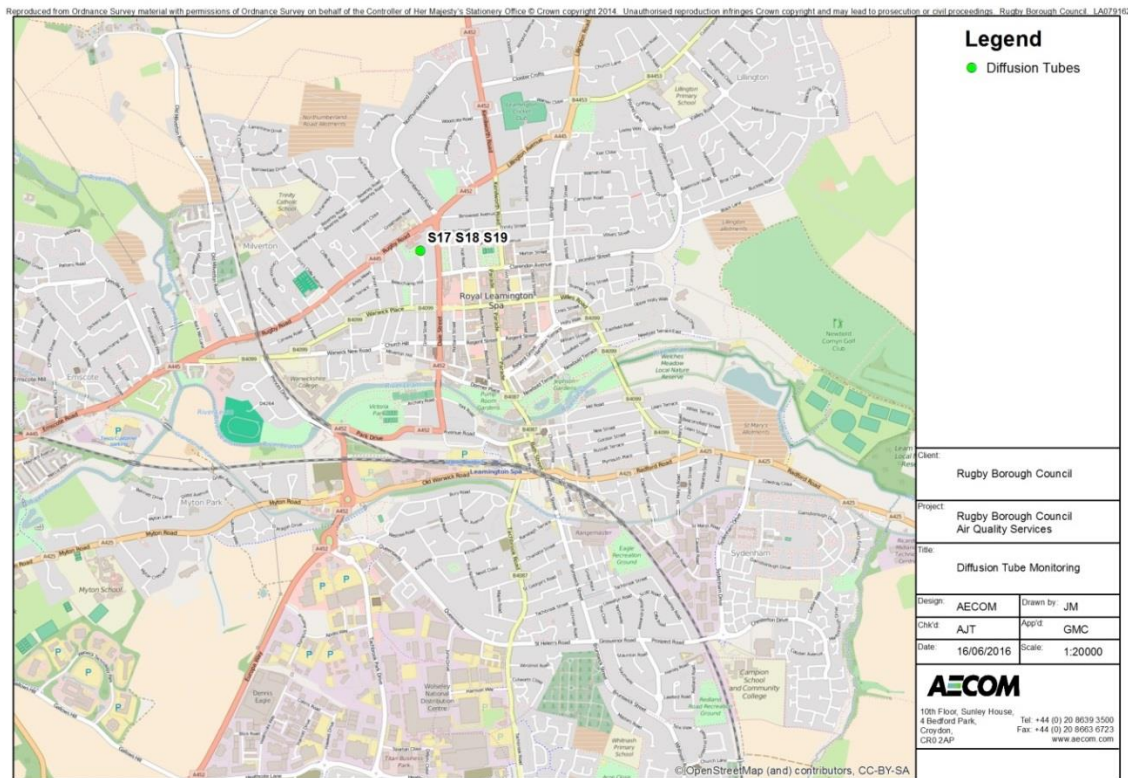


Figure D.4 – Map of NO<sub>2</sub> Diffusion Tubes in Leamington Spa





## Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective <sup>10</sup>	
	Concentration	Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>10</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide
VOC	Volatile Organic Compounds

## References

1. Environmental equity, air quality, socioeconomic status and respiratory health, 2010
2. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
3. Defra. Abatement cost guidance for valuing changes in air quality, May 2013
4. AECOM, RBC Air Quality Detailed Assessment for Nitrogen Dioxide, September 2010
5. Rugby Borough Council Air Pollution website:  
[https://www.rugby.gov.uk/info/20021/pollution/217/air\\_pollution](https://www.rugby.gov.uk/info/20021/pollution/217/air_pollution)
6. Defra LAQM website: <http://laqm.defra.gov.uk/>
7. Rugby Borough Council, Rugby Borough Emerging Local Plan – The Preferred Option, December 2015
8. Warwickshire Local Transport Plan 2011-2016. Available at <http://www.warwickshire.gov.uk/ltp3>