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2017 Air Quality Annual Status Report (ASR)

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

February 2018

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Executive Summary: Air Quality in Our Area

Air Quality in Coventry

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with 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[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

The main pollutants of concern in Coventry are nitrogen dioxide and particulate matter. These pollutants are predominantly associated with road traffic emissions particularly on busy roads and in areas where traffic queues regularly. The issues arise when people spend time near high levels of these pollutants whether through housing, working or recreation.

In Coventry, the main concern is centred on housing that is in close proximity to the major arterial routes with high levels of queuing traffic, principally around busy junctions and traffic lights. Current hotspots include parts of Holyhead Road, Walsgrave Road, Foleshill/Longford Road and Stoney Stanton Road.

Rather than focussing on individual roads and junctions, Coventry has declared the whole area as an AQMA. This decision was taken to ensure that the problem wasn't simply moved from one road or junction to another. More information is available at:

http://www.coventry.gov.uk/info/68/pollution/171/air_quality

Recent years' NO_2 diffusion tube monitoring results (2010-2016) show that there is no overall trend in levels of nitrogen dioxide and levels of PM_{10} do not exceed the national standards.

Coventry City Council is working closely with neighbouring authorities and Government Agencies to address poor air quality. It is one of seven local authorities

[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

in the West Midlands working in partnership to improve air quality and reduce emissions from road transport as part of 'The Low Emissions Towns and Cities Programme (LETCP)'. It is also working closely with Defra to determine whether the introduction of a Clean Air Zone will be beneficial to air quality.

Actions to Improve Air Quality

There is a considerable amount of work being undertaken by Coventry City Council that has the potential to improve air quality whether directly or indirectly. Table 2.1 provides a summary of the main actions being undertaken.

At a strategic level, the grant-funded LETCP is a group of seven West Midlands Local Authorities including Coventry. They are working towards improving air quality and reducing road traffic emissions across the West Midlands. The aim is to do this by promoting the uptake of low emission fuels and technologies, establishing and sharing best practice policies and developing various tools and resources.

Coventry City Council is currently working in partnership with Public Health, along with colleagues from planning, transportation and other local authorities as part of the Coventry and Warwickshire Air Quality Alliance to develop a new Health Protection Strategy on the reduction of vehicle emissions, public education and encourage uptake of sustainable/active modes of transport.

Several major road traffic improvement schemes have been completed in Coventry to improve traffic flows and reduce road traffic emissions. The road improvement scheme for the A45/A46 Tollbar End is now complete. This scheme was designed to reduce the volume of traffic using the associated roundabouts and congestion and we are currently assessing the net-beneficial impact on local air quality.

In addition a number of public realm works have taken place around the city centre to create pedestrian and cycle friendly 'shared spaces', removal of traffic lights to reduce queuing and the introduction of 20mph zones.

Conclusions and Priorities

The key priorities for addressing air quality in Coventry remains the reduction in queuing traffic and congestion at junctions, and to produce a new air quality action plan to focus future improvements.

Other priorities for 2017 include:

- Completion of the feasibility study for the introduction of a Clean Air Zone following instruction from Central Government.
- Completion of the local plan which includes the commitment to improve air quality
- Continue to monitor NO_2 concentrations at existing locations using existing technology and to introduce new technologies that will give more accurate, real-time measurements
- Continue to facilitate low emissions vehicles and non-car travel by requiring the incorporation of low emissions and sustainable travel infrastructure into new residential development through the planning regime
- Continue to raise public awareness through campaigns for active travel such as City Ride events and ‘rush hour challenge’, and a new ‘Choose How You Move’ website for Coventry and Warwickshire
- Continue green procurement for the promotion of low emission transport and vehicle fleet efficiency improvements
- Draft a Supplementary Planning Document (SPD) relating to air quality

Local Engagement and How to get Involved

A large proportion of road vehicles are private car users. There are lots of simple things the public can do to help improve air quality locally, such as:

- Using public transport and park and ride facilities
- Walking or cycling short journeys rather than using the car
- Share journeys with colleagues and friends

- Switch off car engines when stationary
- Choosing a low emission car for your next purchase – there are Government funds available
- Choosing an ultra-low NOx boiler with a dry NOx emission rate of 40mg/kWh or less for your next purchase

Further information can be found on the Council's website, and Defra's Local Air Quality Management (LAQM) website.

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in Coventry during 2016. 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 Coventry City 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

The whole of Coventry was declared as an AQMA in 2009 but no AQAP has been produced since 2007 when three individual and small AQMA's were in effect. The city wide AQMA was declared in 2009 as a number of other pollution hotspots had been identified through the council's monitoring programme, and it was felt to declare further AQMA's would be difficult to manage with the additional risk that tackling hotspots in isolation could simply move the air quality problem from one place to another.

However, since 2009 the council has been through a series of restructures, and with the loss of specialist officers and reduced resources it has not been possible, to produce a revised AQAP that incorporates the 'new' hotspots. The 2007 AQAP is therefore out of date and has not been considered further as part of this report.

We have recently held a workshop with key stakeholders and neighbouring local authorities to develop ideas and facilitate the progress of the new AQAP.

Nevertheless, and despite the lack of a formal AQAP there has been a huge amount of work in Coventry towards continuing to reduce traffic congestion, improving low emissions vehicles infrastructure and encouraging more sustainable methods of transport, all of which will have a beneficial impact on air quality. This report reflects this work bringing it together into a single document for the first time and will form the basis of Coventry City Council's new action plan.

The Low Emissions Towns and Cities Programme (LETCP) is a partnership comprising the seven West Midlands local authorities, (Birmingham City Council, Coventry City Council, Dudley MBC, Sandwell MBC, Solihull MBC, Walsall Council and Wolverhampton City Council) working together to improve air quality and reduce emissions from road transport.

The intention is to do this by promoting the uptake of low emission fuels and technologies, establishing and sharing best practice policies, and developing various tools and resources. The objectives of the programme are to investigate and produce various regional strategies designed to improve air quality, with a view to meeting national air quality objectives.

Funded through a Department of Environment, Food and Rural Affairs (Defra) Air Quality Grant, the aims of the LETCP are to:

- Improve air quality through the reductions in road transport emissions, and simultaneously reductions in carbon emissions;
- Establish best practice policies and measures for the West Midlands, creating transferable models for other towns and cities;
- Improve health; and
- Maximise opportunities for economic development through the transition to a green economy.

Since the launch of the LETCP in 2011, we have been working with stakeholders to develop produce Good Practice Guidance on Planning and Air Quality (completed May 2014) and Procurement Guidance (completed Sept 2014) for the West Midlands and West Midlands Low Emission Zone (LEZ) feasibility studies and scenario modelling have been produced (2015).

A Low Emission Vehicle Strategy for the West Midlands (2016-2021) has been agreed by the LETCP and replaced the Low Emission Strategy (LES). The LES formed part of the adopted West Midlands Strategic Transport Plan *"Movement for Growth"* (discussed further below), which will be implemented by West Midlands Combined Authority (WMCA, June 2016).

The strategy includes consideration of:

- The introduction of mandated and voluntary Clean Air Zones (CAZ)
- Local authority policy developments to support current and future low emission activity
- Low & Ultra-Low Emission Vehicles and Infrastructure

http://cms.walsall.gov.uk/low_emissions_towns_and_cities_programme

See below for links to the reports**.**

As mentioned above, the West Midland Combined Authority has also produced its new strategic transportation plan *'Movement for Growth'* for the next twenty years.

The three main objectives of the plan are:

- Improved national and regional links to boost the economy;
- Improved links across the Metropolitan Area to provide better access to jobs, leisure and services; and
- Improved links within local communities to reduce the reliance on cars for short distance trips.

To achieve these aims there is the intention to improve public transport and cycling networks across the WMCA region, with the associated benefits to air quality which is a key theme of the plan.

A summary of *'Movement for Growth'* is available at:
https://westmidlandscombinedauthority.org.uk/media/1179/2016-06-01-mfg-summary-document_wmca.pdf

The full *'Movement for Growth'* report can be viewed at:
https://westmidlandscombinedauthority.org.uk/media/1178/2016-06-01-mfg-full-document_wmca.pdf

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 compliance with the objectives.

A city wide AQMA for nitrogen dioxide was declared, effective from 1st November 2009. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at:

http://www.coventry.gov.uk/info/68/pollution/171/air_quality

Alternatively, see Appendix D: Map of Monitoring Locations and AQMA, which provides for a map of air quality monitoring locations in relation to the AQMA.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration	Now	
City-wide AQMQ	1st November 2009	NO2 Annual Mean	Coventry City	The whole city as defined by the city boundary	YES	Annual average levels of NO2 identified as exceeding 40µg/m3 at a number of roadside locations in city	Predicted to be exceedances of annual mean NO2 at various locations with relevant exposure in the city (within AQMA)	2007 AQAP is outdated and currently being re-written

☒ **Coventry City Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

2.2 Progress and Impact of Measures to address Air Quality in Coventry

Defra's appraisal of last year's ASR concluded:

1. From the information provided in the ASR report, it is not possible to picture the full extent or degree of exceedances of objectives across the city.

   Response: Please see the link to the new interactive map https://smarturl.it/CovAirMap.

2. The results tables show 18 results above objectives, but they have not been corrected for distance, and are not representative of relevant exposure. Results presented for comparison to objectives are required to be distance corrected for relevant exposure.

   Response: The results have been corrected for distance and are representative of the relevant exposure.

3. Also, the map of monitoring positions is not labelled to allow identification of exceedances from results tables. It will be helpful in future reports, if all monitoring locations can be identified on a map that highlights air pollution hotspots and includes the AQMA boundary

   Response: Please see the link to the new interactive map https://smarturl.it/CovAirMap

Coventry City Council has taken forward a number of direct measures during the current reporting year of 2016 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Key completed measures are:

- Completion of the Toll Bar End works. A major road improvement scheme for the A45/A46 Tollbar End roundabout in southern Coventry is expected to be substantially completed by the end of 2016. This scheme aims to reduce the volume of traffic using the roundabout by providing a dual-carriageway underpass for traffic travelling between the A45/A46 & M69 corridor, and

therefore will likely have a net-beneficial impact on local air quality, according to the corresponding Environmental Statement

- Works have started in the Broad Lane / Banner Lane area to improve the highway layout as well as flooding alleviation, with the aim to reduce congestion and improve walking and cycling infrastructure.
- Further public realm schemes have started including the link between Greyfriars Lane/Pepper Lane (to further improve pedestrian links from the East/railway station area into the Cathedral quarter area of the city centre), a second phase of works on Fairfax Street, and a scheme on Greyfriars Green to produce a more direct walking route for those travelling between the city centre and the rail station, cycling infrastructure improvements which will all contribute to making further improvements to pedestrian and cycling routes.
- A Low Emission Vehicle Strategy for the West Midlands (2016-2021) has been agreed by the LETCP and replaced the Low Emission Strategy (LES). The LES formed part of the adopted West Midlands Strategic Transport Plan "Movement for Growth", which will be implemented by West Midlands Combined Authority (WMCA, June 2016).

Coventry City Council expects the following measures to be completed over the course of the next reporting year:

- Completion and relocation of approx. 2000 council staff to the new Friargate building in autumn 2017, will help to reduce the number of council buildings from 27 to 9. Better use of technology, home working and agile working are being encouraged with the associated reductions in staff travelling into the city centre, parking and congestion. As part of the relocation, the council is also looking at a car share scheme for staff, pool cars and bikes, and subsidised public transport as part of a green travel plan that is under development. The new building will have 12 electric vehicle charging points for low emissions pool vehicles
- Completion of the local plan which includes commitment to air quality improvements

- Installation of five new AQMesh units in Coventry to gather real-time information and promote public awareness
- Completion of the new Air Quality Action Plan for Coventry
- Completion of the new SPD for Air Quality
- Installation of between 10 – 15 rapid (50KW) recharging points for electric taxis
- Installation of approximately 10% of electric vehicle recharging points in new Council car parks and NUS car parks

Coventry City Council's priorities for the coming year are

- Completion of the Clean Air Zone feasibility study for JAQU that we are mandated to complete
- Completion of the local plan which includes commitment to air quality improvements
- Continued development of the Heatline District Energy System. The energy network uses waste heat from the municipal waste incinerator to heat eight major buildings within the city centre, one of which is Coventry Cathedral. The scheme eliminates the need for gas boilers at these premises and makes full use of the waste heat using a 650m^3 thermal store. Carbon savings are around 1300 tonnes per year with NO_X and particulate matter emissions from connected premises being reduced to zero
- Coventry Station Master Plan. Phase One of the plan is on site, a pedestrian tunnel is being constructed under Warwick Road to improve pedestrian accessibility to the railway station. The tunnel will eventually form part of a second entrance to the railway station, and is part of a £40M transformation for Coventry Railway Station to create capacity for current and future growth
- Continuation of monitoring programme at long term sites using diffusion tubes, supplemented by NO_2 modelling of the whole city by Walsall Council
- Participate in the Coventry and Warwickshire Air Quality Alliance, a new partnership of local authority public health, planning, transportation and

environmental health professionals, and remain a board member of the West Midlands LETCP Group

- Begin writing the new Air Quality Action Plan for Coventry
- Begin writing the new SDP for Air Quality

The principal challenges and barriers to implementation that Coventry City Council anticipates facing are:

- Resource constraints

Progress on the following measures has been slower than expected due to resource constraints:

- Begin writing the new Air Quality Action Plan for Coventry
- Begin writing the new SDP for Air Quality

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Coventry City Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Park & Ride South	Alternatives to private vehicle use	Bus based park and ride	Coventry City Council (CCC)	Complete	Complete	Uptake	Reduced vehicle emissions	Complete	N/A	Allows drivers to park and finish their journey into the city centre by bus
2	Canley Station Park & Ride	Alternatives to private vehicle use	Rail-based Park & Ride	CCC	Complete	Complete	Uptake	Reduced vehicle emissions	On-going	N/A	Allows commuters to park at the stations and continue their journey on train
3	Tile Hill Station Park & Ride	Alternatives to private vehicle use	Rail-based Park & Ride	CCC	Complete	Complete	Uptake	Reduced vehicle emissions	On-going	N/A	Allows commuters to park at the stations and continue their journey on train
4	Car Share Coventry & Warwickshire	Alternatives to private vehicle use	Car & lift sharing schemes	CCC	Complete	Complete	Uptake	Reduced vehicle emissions	On-going	N/A	Car Share scheme to be launched as part of Council office relocation.
5	HoPE (Holistic Personal Public Eco-Mobility)	Alternatives to private vehicle use	Other	West Midlands Combined Authority (WMCA)	Complete	Complete	Uptake	Reduced vehicle emissions	Complete	Summer 2017	Phone App which aims to satisfy the needs of citizens and tourists for a more easy to use and efficient public transport system. It is to be piloted and tested at three European cities. This will reduce the need to go through multiple timetables, network plans, price lists and conditions, and the like. HoPE is to ease the use of public transportation, encompassing all the phases involved in its typical usage: from access and schedule information to real-time operational information, from planning multi-modal trips to bookings and ticket purchases, redemption, and validation, maintaining interoperability across different transportation modes and pre-existing ICT systems. CCC has been directly involved since 2014, terminating in 2017. 3 months extension, will complete in June, collaboration with TfWM, testing of the app. Google play download, went live last month, for free, gaining feedback.
6	Mercury emissions trading scheme	Environmental Permits	Tradable permit system through	CCC/ Solihull	Complete	Complete	Uptake	Reduced industrial emissions	On-going	Apr-14	A trading scheme for mercury emissions from cremations has been established between Coventry and Solihull councils. The scheme allows two crematoria in Solihull to fulfil their obligations under the

			permit systems and economic instruments								Environmental Permitting Regulations to abate at least 50% of their emissions for mercury by trading emissions permits with Coventry City Council under an independent burden sharing scheme
7	Local Development Plan & Draft City Centre Action Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	CCC	Complete	Complete	Uptake	Reduction / mitigation in NOx and PM	On-going	Nov-17	Within these guidance documents there is a requirement for major developments to consider district energy systems for their heating and cooling needs. Information about the existing low carbon district energy network supplied by waste heat from the nearby waste incinerator is made available but developers are also advised that other similarly low carbon networks will also be acceptable
8	Heatline project	Promoting Low Emission Plant	Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources	CCC	Complete	Complete	Uptake	Reduction in NOx and PM	On-going	N/A	The Heatline district energy network uses waste heat from the municipal waste incinerator to heat eight major buildings within the city centre, one of which is Coventry Cathedral. The scheme eliminates the need for gas boilers at these premises and makes full use of the waste heat using a 650m3 thermal store. Carbon savings are around 1300 tonnes per year with NOX and particulate matter emissions from connected premises being reduced to zero. There is an active programme to connect further large buildings to the scheme including the new Friargate business district and a new leisure centre. Funding from the Heat Networks Delivery Unit of DECC is being used to explore the feasibility of new connections in the Canley area of the city to link with an existing network operated by the University of Warwick
9	Planning guidance	Promoting Low Emission Plant	Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources	CCC	Complete	Complete	Uptake	Reduction / mitigation in NOx and PM	On-going	N/A	On planning applications for new developments applicants are advised (and planning conditions implemented) for the installation of low NOx (low emission) boilers and heating plant for residential, commercial and industrial schemes. Renewable energy technologies are encouraged whereas biomass plant for new commercial sites is less favourable
10	Agile working	Promoting Travel Alternatives	Encourage / Facilitate home-working	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	N/A	CCC has been encouraging more 'Agile working', reducing the need to come to work if work can be managed at home, this will be implemented as part of office relocation of CCC.
11	Pedestrian Thoroughfare	Promoting Travel Alternatives	Intensive active travel	CCC	Complete	Complete	Usage	Reduction in vehicle emissions	Complete	May-15	Creation of Friargate bridge with a new pedestrian boulevard which creates a more direct route for pedestrians into city centre from railway station. This

			campaign & infrastructure								reduces reliance on taxis to move users of rail into the City Centre. Plans for future route development as part of LCWIP – Local Cycling & Walking Infrastructure Plan. Improved access to city centre is planned as part of Ring Road works
12	Warwick University / South West Coventry Junction Improvement Scheme	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure / Promotion of walking & cycling	CCC	Complete	Complete	Reduction in congestion and car usage	Reduction in vehicle emissions	Complete	Mid 2015	This scheme has improved access on one of the main routes into the university campus, as well as delivering a new bus interchange on the university campus to improve bus facilities and encourage patronage and improving walking and cycling routes. UOW bike share scheme has been successful and due to double in size, with potential extension to local Canley station.
13	Further public realm works	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure / promotion of walking & cycling	CCC	Complete	Complete	N/A	Reduction in vehicle emissions	On-going	Sep-17	Funding has been awarded for a further round of public realm schemes, including the link between Greyfriars Lane and High Street and a second phase of works on Fairfax Street. Further funds have been bid for additional public realm and major infrastructure improvements at Coventry Railway Station and ring road junctions one, four and five which will all contribute to making further improvements to pedestrian and cycling routes.
14	The annual "Rush Hour Challenge"	Promoting Travel Alternatives / Public Information	Intensive active travel campaign & infrastructure / via radio etc.	CCC	annual event	annual event	Uptake	Reduction in vehicle emissions	On-going	annual event	A fun event where participants see which mode of transport completes a commuting journey the quickest involving cycling, runners, walkers, kids' scooters, pogo sticks. Progressed by Coventry on the Move to become a region wide annual event involving public health and partner Groundwork). Positive messages of active travel and health, reducing carbon emissions and congestion and improving air quality – publicity through local media including BBC Radio.
15	Let's get moving"	Promoting Travel Alternatives	Personalised Travel Planning / Workplace Travel Planning	Public Health Cov & Warks	2017	2017	Uptake	Reduction in vehicle emissions	On-going	2018	Public Health (Coventry & Warwickshire) have commissioned Groundwork West Midlands to work with a minimum of 1,000 staff within 30 companies to improve levels of physical activity. The service will deliver "Let's Get Moving" pathway and a package of Personal Travel Planning to staff over this 1 year project. A communications campaign is proposed to be run across Coventry and Warwickshire during 2017/8 with a focus on promoting active travel
16	Making Every Contact Count	Promoting Travel Alternatives	Personalised Travel Planning / Workplace Travel	Public Health Cov & Warks	2016	2016	Uptake – 30 businesses supported	Reduction in vehicle emissions	On-going	Apr-18	Public Health (Cov) are redeveloping the Making Every Contact Count (MECC) scheme to provide a greater focus on personal travel planning. MECC is core training for all practitioners delivering NHS Health checks as well as for the wider workforce. The revised

			Planning				in 2015 - 16				MECC programme will be recommissioned as part of the new adult lifestyle service and will be in place by April 2018
17	Love your bike	Promoting Travel Alternatives	Promote use of rail and inland waterways	CCC	2016	2016	Uptake	Reduction in vehicle emissions	On-going	N/A	Love Your Bike sessions delivered during 2016, and a Cycle hub due to open in 2017 at Coventry station
18	City Ride	Promoting Travel Alternatives	Promotion of cycling	Public Health Cov & Warks	annual event	annual event	11,000 participants in organised bike rides, 9,000 on City Ride. 495 participants in adult cycle training via workplaces, schools, colleges and community venues.	Reduction in vehicle emissions	On-going	annual event	Public Health contribute funding to the City Ride and City Ride local schemes and work within schools, including supplementing the costs of the Bikeability scheme among schools serving areas of greater deprivation
19	Public realm improvement schemes	Promoting Travel Alternatives / Traffic Management	Promotion of Walking / Reduction of speed limits, 20mph zones	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	Complete	2017	Belgrade Plaza, Whittle Arch & Fairfax Street, Lidice Place, Hill Top, Gosford St/Coventry University and Fargo entrance public realm improvement schemes have included widening footways and narrowing of roads, de-cluttering unnecessary street furniture including railings and removal of traffic lights, with 20 mph gateways to encourage low vehicle speeds but more freer moving traffic with the removal of signals and replacement of some junctions i.e. Belgrade with shared space principles
20	Wayfinding	Promoting Travel Alternatives / Public Information	Promotion of Walking / Via the internet	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	Complete	2015 / 2016	A network of interactive pedestrian wayfinding totems around the city have been installed, which include points of interest and walking distances to encourage travel by foot around the city centre. These are now being used to promote sustainable events in 2017
21	Coventry Station Masterplan	Promoting Travel Alternatives	Promotion of Walking	CCC	Complete	Mar-16	Uptake	Reduction in vehicle emissions	On-going	2019	Phase One of the Coventry Station Masterplan is under way, a pedestrian tunnel is being constructed under Warwick Road to improve accessibility to the railway station. The tunnel will eventually form part of a second entrance to the railway station, and is part of an £82M transformation for Coventry Railway Station to create capacity for current and future growth.
22	Supporting secondary schools	Promoting Travel Alternatives	School Travel Plans	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	2017	7 secondary schools and colleges supported to support sustainable travel, this is to continue in 2016/2017. They are also included as standard planning condition on new schools and colleges to reduce impact on air

											quality
23	Installation of 2 AQ Mesh units	Public Information	Via other Mechanisms	CCC	TBC	TBC	Feedback	Reduction in vehicle emissions	?	TBC	AQ Mesh unit to be installed on two schools in Coventry to promote education regarding air quality and green travel.
24	VMS Project	Public Information	Via other mechanisms	CCC	Complete	Complete	Uptake - 50 roadside adverts displayed for 4 weeks in 2015 to promote 'City Ride' and to continue through 2016 and 2017	Reduction in vehicle emissions	On-going	Late 2015	A network of Variable Message Signs (VMS) signs have been installed on the gantries of the ring road to improve navigation around the city for motorists, buses and coaches, with signposting to car parks and the ability to change the messages for events or emergencies to manage traffic more effectively
25	HSBC UK City ride, Coventry	Public Information	Via radio & other mechanisms	CCC	On-going (Annual Event)	On-going (Annual Event)	Uptake	Reduction in vehicle emissions	On-going	On-going (Annual Event)	101,607 readers reached by newspaper campaign in lead up to City Ride in 2016. 108,290 listeners reached in lead up to City Ride
26	Appy Parking	Public Information	Other	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	Spring 2018	Secured £150k 'Dft CITS Challenge Fund'. Project imminent to start, to be rolled out across the city centre. All parking bays in the inner ring road will be revisited. App is free to download on Android and I phones. Appy Parking app – 1 year programme to be maintained for 5 years. Follow on project tentatively called Park AV is in the final stages of agreement with Innovate UK and the same project partners.
27	IVMS	Public Information	Other	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	31st March 2018	Intelligent Variable Messaging Systems (IVMS), previously called Dynamic Routing, the IVMS project focuses on three main corridors into Coventry delivering an App based in-vehicle and mobile phone solution building on the Hope project. Project progressing well coming to end, with 3 corridor improvements completed. Final stages involve evaluating the project impact. CWLEP funded (Growth Deal).
28	UK Cite	Public Information	Other	CCC	Complete	On-going	Project Success	Reduction in vehicle emissions	Started in 2015 and will cease in 2018	Dec-18	The 'Connected Intelligent Transport Environment' Project is focussed at building a real world Connected Car to infrastructure demonstrator through bringing together multiple technologies for the purpose of testing both the technical and commercial viability of a road network "Connected Corridor" as a foundation for V2V, V2X and autonomous cars. It will establish a living lab

											test environment that will entice vehicle manufactures to use the UK as a hub for connect vehicle & autonomous vehicle research and development. Implementation of on-street furniture is delayed, due to begin imminently to mitigate risks. Innovate UK funded.
29	UK AutoDrive	Public Information	Other	CCC	Complete	On-going	Project Success	Reduction in vehicle emissions	Started in 2015 and will cease in 2018	Nov-18	First trials completed on test-track at Horiba MIRA (Autumn 2016), the second test track scenarios for connect vehicles and autonomous vehicles were completed (Spring 2017). Third closed on-street trials occurred Autumn 2017 with final open road tests at the latter stages of the project in Summer 2018. Test reaction to autonomous and semi-autonomous vehicles. Principally focused on the vehicle and user experience. Approx. 18 use cases will be tested, using info transmitted from infrastructure - the autonomous vehicle will then determine what to do and how to proceed. Driverless pods to be trialled in Milton Keynes at first and later in Coventry. To date the trials have been a huge success with large scale publicity and dissemination activities including local, national and international press. Largest trial and budget as part of Innovate UK's 'Introducing Driverless Cars to UK Roads' competition.
30	CATCHI	Public Information	Other	CCC / TfWM	Complete	On-going	Uptake	Reduction in vehicle emissions	On-going	Mar-18	Has two parts. One is developing the multimodal journey planner on phone. This will collect data on how people are travelling, and then provide real time information on how long a particular journey would really take people. The second part focuses on harvesting the data and making this available to policy-makers to help plan their policy and plan their networks. CCC in partnership with TfWM – to further develop CATCH & look at possibilities of integrating with the HoPE project. Project extended for one quarter until March end.
31	Whitley Bridge Works	Transport Planning and Infrastructure	Cycle network	CCC	Complete	Complete	Reduction in congestion	Reduction in vehicle emissions	Complete	Aug-16	A more direct access to Whitley Business Park, including Jaguar Land Rover off the A444 has been created, installing a new bridge and road infrastructure. This will reduce congestion and provide a more direct route from the A444, cutting journey times. The scheme has also improved cycle routes between the site and the city centre and neighbouring residential areas.
32	Broad Lane/Banner Lane	Transport Planning and Infrastructure	Cycle network	CCC	Complete	Complete	Reduction in congestion	Reduction in vehicle emissions	Complete	Jun-17	Works started on site later in 2016 to improve the highway layout in this area as well as flooding alleviation, with the aim to reduce congestion and improve walking and cycling infrastructure. The scheme is to introduce a roundabout layout in place of a priority 'T' junction. Works are due to be completed in June 2017.

33	Bike hire Scheme	Transport Planning and Infrastructure	Public cycle hire scheme	Warwick Uni	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	N/A	50 bikes launched in 2015 at University of Warwick, this is being doubled in size in 2017.
34	Public realm works	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	CCC	Dec-17	TBC	Reduction in congestion	Reduction in vehicle emissions	TBC	TBC	A new bus interchange delivered at the railway station to encourage public transport interchange, includes real time information. In addition, the road layout at Whittle Arch/Fairfax St has been improved for buses and coaches accessing Pool Meadow bus station and the Cathedral Quarter.
35	Tollbar Island works	Transport Planning and Infrastructure	Other	Highways England	Complete	Complete	Improvements in traffic flows and Air Quality monitoring results	Reduction in vehicle emissions	Complete	Feb-17	A major road improvement scheme for the A45/A46 Tollbar End roundabout in southern Coventry is was completed by 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.
36	Employee Training	Vehicle Fleet Efficiency	Driver training and ECO driving aids.	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	N/A	All employees using City Council vehicles must complete defensive driver training including how to drive to reduce fuel use. Telematic units are currently fitted within all fleet vehicles to allow vehicles to be tracked and optimal routes to be identified – they are also used to encourage more efficient driving.
37	Assist-Mi	Public Information	Other	Assist-Mi	Complete	Complete	Uptake	Reduction in vehicle emissions	Complete	Complete	assist-Mi® is a app, being managed by Assist Mi, that offers comprehensive assistance to disabled users on the go, empowering them to greater independence when accessing everyday goods and services. Using a unique combination of location based technologies and two-way messaging, assist –Mi removes traditional barriers by connecting the user directly with service providers to request real-time assistance at the touch of a button.
38	JLR Park & Ride	Alternatives to private vehicle use	Bus based park and ride	Jaguar Land Rover	Complete	Complete	Uptake	Reduction in vehicle emissions	Complete	N/A	Private park and ride for JLR staff and visitors. Operates between Birmingham Airport, Coventry Airport and Gaydon Plant Site.
39	SUITS	Public Information	Other	CCC	Complete	On-going	Uptake	Reduction in vehicle emissions	On-going	Dec-20	It will evaluate interventions that will improve Coventry's resilience and ability to deliver on reducing congestion, pollution and the development of inclusive transport measures impacting the quality of life for urban dwellers and commuters. Key outputs will be a validated capacity building program for transport departments, and resource light learning assets, decision support

											tools to assist in procurement, innovative financing, and engagement of new business partners and handling of open, real time and legacy data. Working with 9 local authorities, the consortium is to work on this for four years from December 2016. Stakeholder engagement workshops to be carried out in 2018.

2.3 $PM_{2.5}$ – 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 $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Coventry City Council is having NO_2 and $PM_{2.5}$ modelling carried out as part of its partnership working in the combined LETCP. The results of this modelling will be used to determine whether there are any likely exceedances of standards and to indicate where it would be beneficial to carry out further monitoring.

Coventry City Council is currently trialling two different technologies that are capable of measuring $PM_{2.5}$:

AirSensa – the trial of AirSensa is on hold due to issues with the developer. We are hopeful that the trial will resume in the near future. The AirSensa units are designed to take continuous readings of key air pollutants including NO_2 and $PM_{2.5}$ and atmospheric conditions. These readings are sent wirelessly to a cloud platform which adjusts the data to provide real-time measurements. The units are small enough to be placed on lampposts and are available to wire in to an electrical supply or are solar-powered.

Coventry City Council has recently purchased 5 AQMesh units in partnership with Public Health. AQMesh is also a wireless unit for continuous measurements of key pollutants including NO_2 and $PM_{2.5}$ along with atmospheric conditions. The units are battery operated and can be recharged using solar power. The units are designed to provide trend data.

It is intended to place at least one monitor on the façade of a school to measure pupil's exposure and to raise awareness of air quality. The remaining monitors will be placed in strategic locations on the Walsgrave Road to monitor NO_2 levels more closely. Results of this monitoring will be provided to the Council's transport management team to inform future management of traffic lights along this stretch of road with the intention of easing/ improving traffic flows and thereby reducing exceedances.

Coventry City Council is a member of the Arden Health Protection Committee. The Council is currently assisting in the development of a Health Protection Strategy, which will incorporate measures to improve air quality. The initial focus will be on areas of poorest air quality and success will be measured by reductions in ambient concentrations of NO_2 and $PM_{2.5}$ and in the use of private cars for short journeys and the increase in development and use of cycle ways.

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.

Coventry City Council no longer undertakes any automatic (continuous) monitoring. However, it is trialling two different technologies that are capable of continuously measuring $PM_{2.5}$. More information on the AirSensa technology is available at:

http://www.airsensa.org/

And the AQ Mesh technology at:

http://www.aqmesh.com/

National monitoring results from the AURN site in the Allesley area of the city operated by Defra are available at https://uk-air.defra.gov.uk/ A second AURN unit known as Coventry Binley Road is now on-line and results are also available at: https://uk-air.defra.gov.uk/

3.1.2 Non-Automatic Monitoring Sites

Coventry City Council undertook non- automatic (passive) monitoring of NO_2 at 49 sites during 2016. Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

The results of diffusion tube monitoring across the city, shows no general trend in results apart from a peak in nitrogen dioxide concentrations in 2012. Appendix A contains graphs which show the trend in nitrogen dioxide tube results for the past six years for five specific areas of the city.

In 2016, there were 28 tubes with exceedences of the annual mean (40 µg/m^3) from a total of 49 results. Of these, 2 tubes exceeded 60 µg/m^3. These tubes are located on a small stretch of a busy road with terraced housing. Whilst this result suggests that there may be exceedences of the hourly mean, there is no possibility of placing a continuous monitor in or near this location due to the lack of space. It is hoped that either the AQ mesh or AirSensa will prove suitable to provide this data along this stretch of road in the near future.

Coventry City Council has created an interactive map which shows the locations of the tubes with monitoring results from 2011 to 2016. This is available at:

https://smarturl.it/CovAirMap

All exceedences occur in an AQMA as the whole of Coventry has been declared as one AQMA.

Appendix A: Monitoring Results

Table A.1 – 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) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
CC01*/1N	Holyhead Road, Beaumont Court	Roadside	432105	279578	NO_2	YES	4.1	3.1	NO	2.8
HR1	Holyhead Road	Roadside	432683	279240	NO_2	YES	0	5.8	NO	2.7
HR2c	104 Holyhead Road	Roadside	432525	279345	NO_2	YES	0	6.1	NO	2.1
HR1c	73 Holyhead Road	Roadside	432712	279227	NO_2	YES	4.2	1.8	NO	2.5
BH1a	Walsgrave Road, Library	Roadside	434987	279209	NO_2	YES	2.9	2.9	NO	2.7
BH2a	Walsgrave Road, 161	Roadside	435125	279286	NO_2	YES	0	3.9	NO	2.8
BH4	Walsgrave Road, 243	Roadside	435331	279358	NO_2	YES	2.2	1.3	NO	2.5
BH13	196/198 Walsgrave Road	Roadside	435507	279387	NO_2	YES	0	5.2	NO	2.5
BH14	238 Walsgrave Road	Roadside	435655	279356	NO_2	YES	8	1.6	NO	2.5
BH15i	Walsgrave Road, Post Office	Kerbside	435184	279298	NO_2	YES	3.5	1	NO	3.1
HS3	Hales Street opp. Transport Museum	Roadside	433439	279278	NO_2	YES	51.3	2.7	NO	3

TS3	Trinity Street nr Taxi rank	Roadside	433492	279239	NO_2	YES	0.9	2.4	NO	2.3
FS1	Fairfax Street, Pool Meadow	Kerbside	433569	279234	NO_2	YES	3.9	1	NO	3
QV1	Lampost outside student block	Roadside	433029	278798	NO_2	YES	2.12	1.95	NO	2.2
GF1	Greyfriars Taxi rank	Kerbside	433407	278882	NO_2	YES	0	0.47	NO	2.8
GS1	Outside Gosford Books	Roadside	433899	278845	NO_2	YES	0	9.8	NO	2.6
CS3	Corporation St (Study Inn)	Kerbside	433300	279264	NO_2	YES	1	1	NO	2.8
LON12	Between 76 & 78 London Road	Roadside	434073	278459	NO_2	YES	2	2	NO	2.7
SE1	Spon End, 58a	Kerbside	432084	279042	NO_2	YES	2.6	0.1	NO	2.5
SE3	97 Spon End	Roadside	432303	279028	NO_2	YES	0	2.3	NO	2.5
QAV01	Queensland Avenue, Fairytale Flowers	Kerbside	431595	278991	NO_2	YES	5.3	0.1	NO	2.5
QAV12	Queensland Avenue, 2	Roadside	431704	278680	NO_2	YES	0	4.3	NO	2
QAV13	Hearsall Lane, 181	Roadside	431763	278657	NO_2	YES	0	4.9	NO	2.5
R4	Foleshill Road, Surestart	Roadside	434233	281526	NO_2	YES	0	8.8	NO	3.75
R5	Foleshill Road, 275	Roadside	433716	280503	NO_2	YES	0	3.7	NO	2.8
R6	Foleshill Road, between 181 & 183	Roadside	433609	280246	NO_2	YES	2.2	2.05	NO	2.7
R8	Foleshill Road, 415	Roadside	433992	281008	NO_2	YES	0	4.3	NO	3.1

R9	Foleshill Road, 324	Roadside	434059	281105	NO_2	YES	1.8	3.07	NO	2.65
LR1	23 Longford Road	Roadside	434836	283030	NO_2	YES	0	5.6	NO	2
LR2	24 Longford Road	Roadside	434880	283077	NO_2	YES	0	4.2	NO	2
LR3	Longford Road, 139	Roadside	435016	283515	NO_2	YES	0	8.5	NO	1.5
BRN2	Burnaby Road, 19	Roadside	433605	281965	NO_2	YES	0	5.5	NO	2.75
BRN5	41 Holbrooks Lane	Roadside	433639	281995	NO_2	YES	0	6.7	NO	2
BA1	Beake Avenue/Radford Road	Roadside	432526	280806	NO_2	YES	0	7.5	NO	3
BA1c	299 Beake Avenue	Roadside	432544	282004	NO_2	YES	0	10.45	NO	2
SS1	Stoney Stanton Road, 154	Roadside	434062	280082	NO_2	YES	0	3.7	NO	2.5
SS2	Stoney Stanton Road, 155	Roadside	433994	279969	NO_2	YES	0	4.5	NO	2.5
SS3	R/O 21 Torcastle Close (faces SS Rd)	Roadside	434842	281272	NO_2	YES	0	4.5	NO	2
SS5	Lampost L21CAC	Roadside	433852	279814	NO_2	YES	1.8	2	NO	2
BELL1	16 Hall Green Road	Roadside	435849	282211	NO_2	YES	0	1.7	NO	2.8
BELL2	314 Bell Green Road	Roadside	435826	282158	NO_2	YES	0	5.7	NO	2.5
FGS2	Select & Save, Far Gosford Street	Roadside	434450	279001	NO_2	YES	0	5.7	NO	2.7

FGS3A	Pig in the middle café	Roadside	434530	279026	NO_2	YES	0	2.4	NO	2.7
GR1	217 Gulson Road	Roadside	434679	278920	NO_2	YES	0	4.5	NO	2.5
Grange2	Grange Road N of M6	Roadside	435765	284246	NO_2	YES	1.7	0.3	NO	2.4
SHP2	262 Sir Henry Parkes Road	Roadside	430364	277059	NO_2	YES	0	12.47	NO	2.3
SHP3	Outside 190 Sir Henry Parkes Road	Roadside	430566	277231	NO_2	YES	4.16	4.6	NO	2.4
BL1	Corner Broad Lane / Dunchurch Highway	Roadside	430043	278890	NO_2	YES	9.6	1.5	NO	2.55
DH1	Outside 581 Dunchurch Highway	Roadside	430076	278789	NO_2	YES	12.67	3.17	NO	2.45

Notes:

(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.2 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
CC01*/1N	Roadside	Diffusion Tube	100	100	**41.7**	32.5	39.3	34.9	37.1
HR1	Roadside	Diffusion Tube	100	100	**63.5**	**60.4**	**63.1**	**57.6**	**60.58**
HR2c	Roadside	Diffusion Tube	75	75	/	/	/	/	35.92
HR1c	Roadside	Diffusion Tube	92	92	/	/	/	**81.7**	**75.60**
BH1a	Roadside	Diffusion Tube	92	92	**52.8**	**41.2**	39	36.8	38.60
BH2a	Roadside	Diffusion Tube	100	100	**77.4**	**53.8**	**48.9**	**47.1**	**51.23**
BH4	Roadside	Diffusion Tube	100	100	**56.1**	**46.2**	**47**	**43.2**	**47.6**
BH13	Roadside	Diffusion Tube	100	100	**42.9**	**41.2**	37.4	38.6	38.02
BH14	Roadside	Diffusion Tube	92	92	**43.9**	36.2	36.7	34.8	36.9
BH15i	Kerbside	Diffusion Tube	100	100	/	**44.7**	**42.3**	39.3	**42.50**
HS3	Roadside	Diffusion Tube	83	42	37.2	33.2	35.6	30.6	31.10
TS3	Roadside	Diffusion Tube	92	92	/	/	**47.9**	**45.3**	**47.60**
FS1	Kerbside	Diffusion Tube	75	75	**60**	**49.6**	**44.2**	**41.2**	**43.90**
QV1	Roadside	Diffusion Tube	100	100	/	/	39.8	39.8	**40.40**
GF1	Kerbside	Diffusion Tube	92	92	/	/	37.8	**40.1**	**42.35**
GS1	Roadside	Diffusion Tube	100	100	/	/	44.5	**43.1**	**40.28**
CS3	Kerbside	Diffusion Tube	100	42	/	/	/	/	**48.10**
LON12	Roadside	Diffusion Tube	100	100	**45.8**	**44**	**43.9**	**42.7**	**45.20**
SE1	Kerbside	Diffusion Tube	100	100	38.1	37	36.1	31.4	33.40

SE3	Roadside	Diffusion Tube	92	92	**46.4**	**42.5**	**41.4**	38.7	**41.96**
QAV01	Kerbside	Diffusion Tube	100	100	39.1	38.1	35	34.9	34.20
QAV12	Roadside	Diffusion Tube	58	58	**41.6**	39.4	38.5	37.1	33.69
QAV13	Roadside	Diffusion Tube	100	100	**46**	**43.1**	**43.3**	37.4	**42.73**
R4	Roadside	Diffusion Tube	100	100	39.5	**40.1**	39.6	36.9	**41.86**
R5	Roadside	Diffusion Tube	100	100	**53.4**	**48.8**	**44.9**	**46.6**	**49.01**
R6	Roadside	Diffusion Tube	100	100	**58.5**	**55.7**	**52.9**	**46.1**	**50.50**
R8	Roadside	Diffusion Tube	83	83	**41.5**	**43**	38.9	38.1	**41.62**
R9	Roadside	Diffusion Tube	100	100	**46.6**	**45.8**	**41.2**	36.7	39.30
LR1	Roadside	Diffusion Tube	100	100	**47.6**	**42.6**	**44**	**42.3**	**45.07**
LR2	Roadside	Diffusion Tube	100	100	**47.2**	**47.4**	**43.4**	**43.5**	**45.32**
LR3	Roadside	Diffusion Tube	100	100	**64.7**	**46.5**	**44.6**	**41.6**	**44.68**
BRN2	Roadside	Diffusion Tube	92	92	**44.7**	38.9	39.1	37.5	**41.79**
BRN5	Roadside	Diffusion Tube	100	100	**/**	/	/	**45.9**	**41.39**
BA1	Roadside	Diffusion Tube	92	92	**59.8**	32.9	38.3	37.7	39.71
BA1c	Roadside	Diffusion Tube	100	100	**/**	/	/	33.9	30.26
SS1	Roadside	Diffusion Tube	83	83	**42.7**	37.3	36.8	35	**41.19**
SS2	Roadside	Diffusion Tube	100	100	**43.2**	39	38.1	36.4	38.84
SS3	Roadside	Diffusion Tube	100	100	**40.9**	39	39.1	37.3	**42.80**
SS5	Roadside	Diffusion Tube	100	100	**51.8**	**50.7**	**49.2**	**44.4**	**49.10**
BELL1	Roadside	Diffusion Tube	100	100	**44.1**	**42.3**	**40.2**	38.9	**42.19**
BELL2	Roadside	Diffusion Tube	100	100	**42.9**	39.5	38.9	36.4	39.46
FGS2	Roadside	Diffusion Tube	100	100	**43.4**	39.7	38.9	37.9	39.09
FGS3A	Roadside	Diffusion Tube	83	83	**47.4**	**44**	**42.7**	37.5	**41.00**
GR1	Roadside	Diffusion Tube	100	100	**40.8**	37.7	36.5	36.8	39.04

Grange2	Roadside	Diffusion Tube	100	100	37.6	38.2	**42.9**	33	36.30
SHP2	Roadside	Diffusion Tube	92	92	/	/	/	28.7	35.24
SHP3	Roadside	Diffusion Tube	92	92	/	/	/	31.3	34.90
BL1	Roadside	Diffusion Tube	92	92	/	/	/	**48.5**	30.00
DH1	Roadside	Diffusion Tube	100	100	/	/	/	37.5	29.70

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75%**

☒ **If applicable, all data has been distance corrected for relevant exposure**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

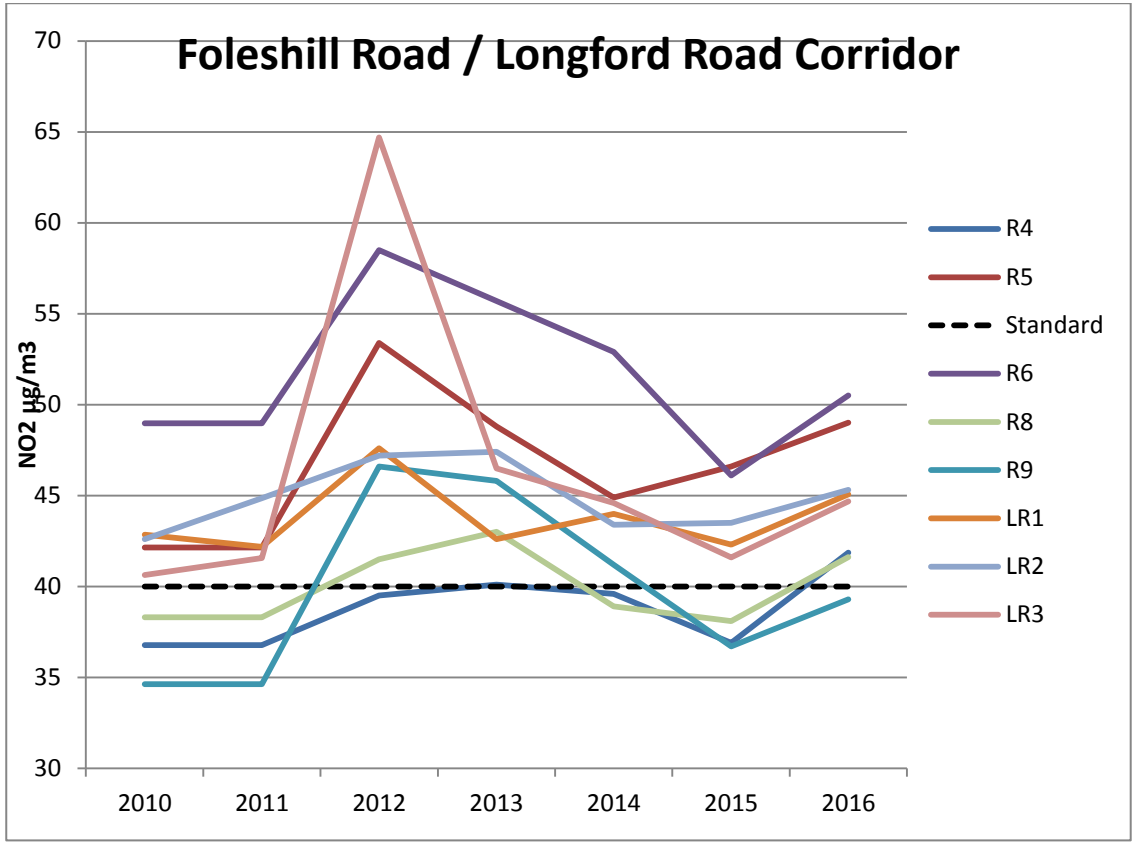
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

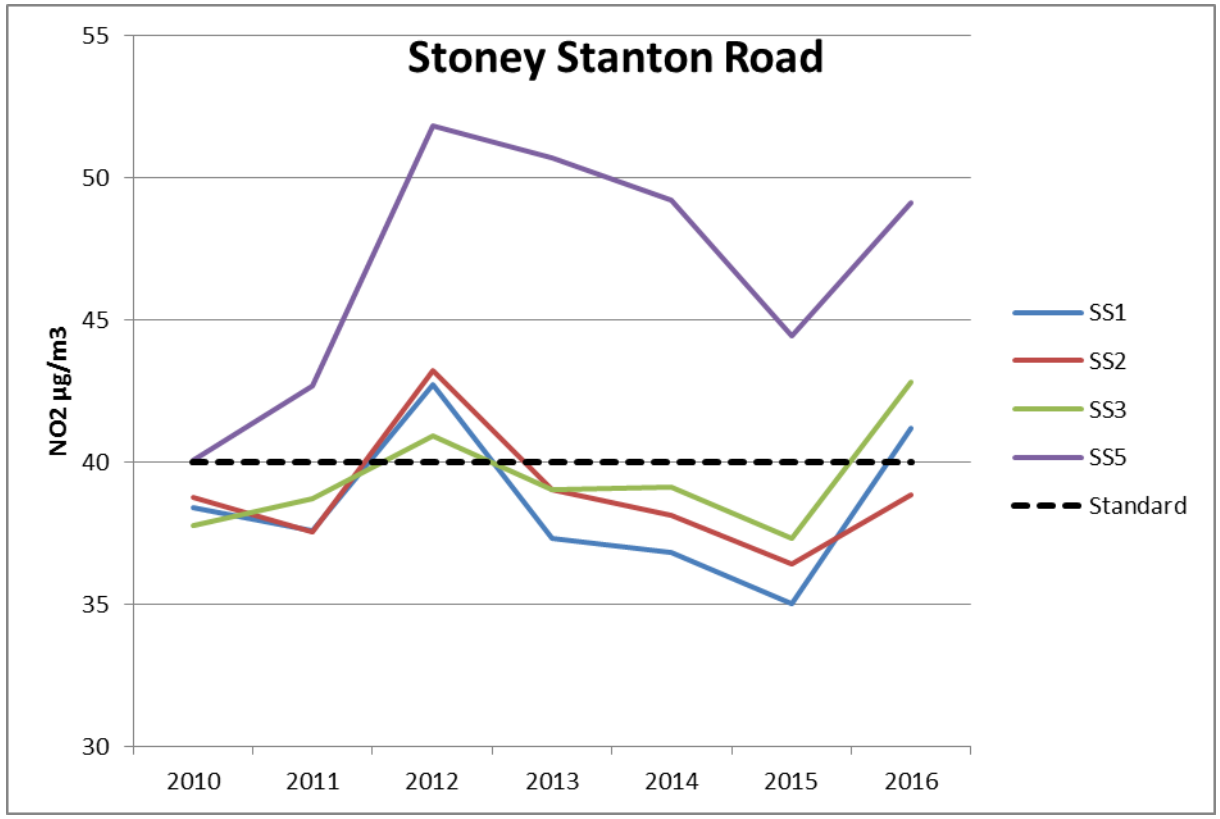
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

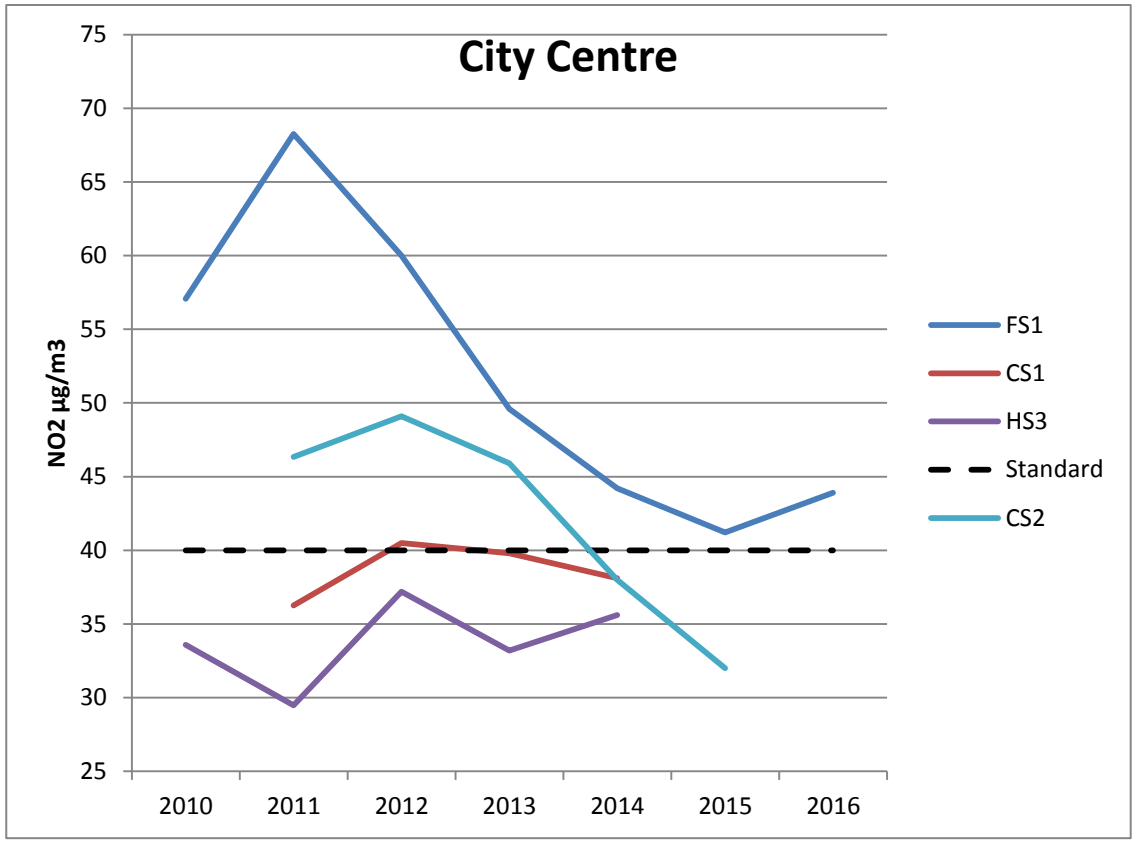
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

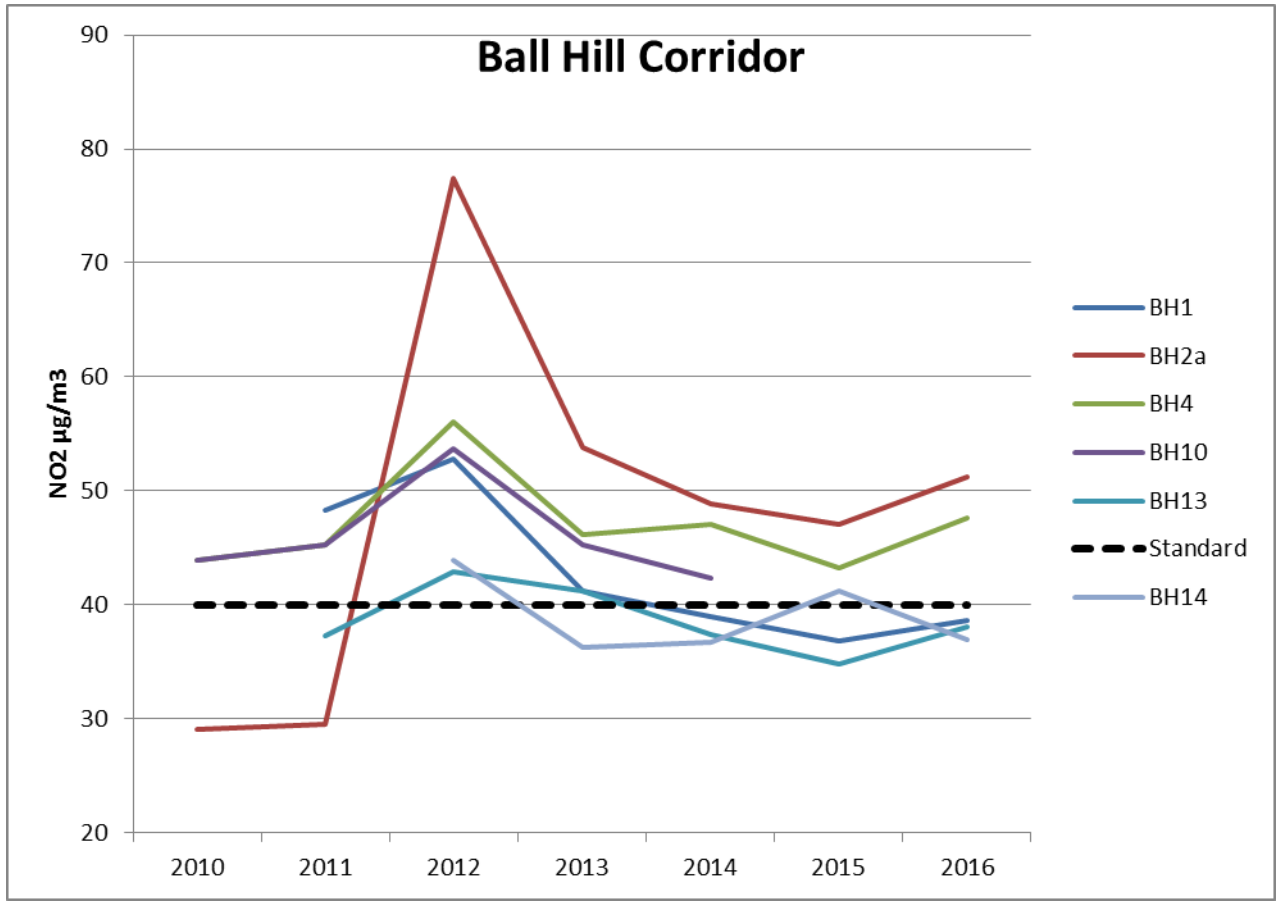
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

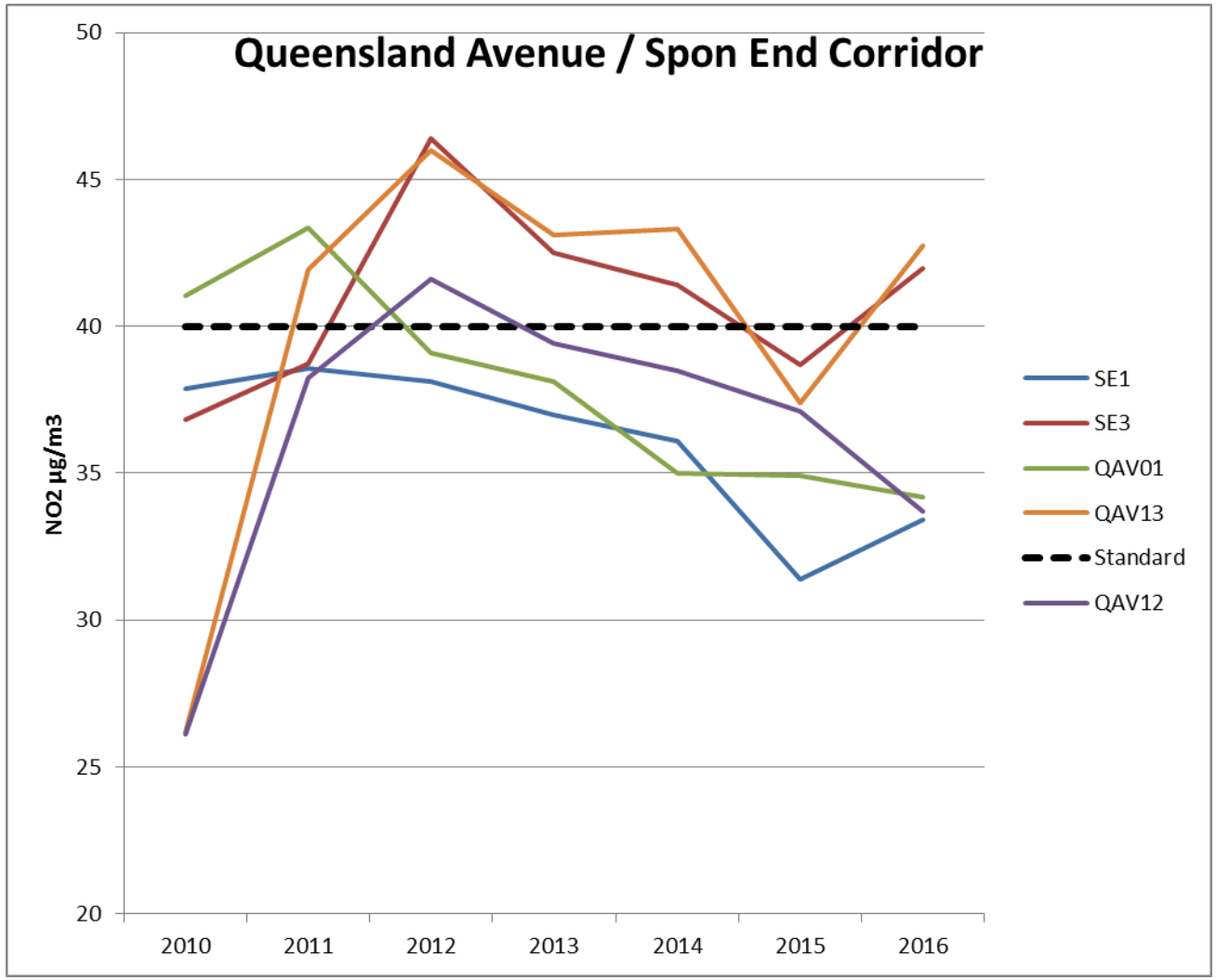
Figure A.1 – Trends in Annual Mean NO_2 Concentrations




Stoney Stanton Road
NO2 µg/m3
55
50
45
40
35
30
2010
2011
2012
2013
2014
2015
2016
SS1
SS2
SS3
SS5
Standard


City Centre
NO2 µg/m3
75
70
65
60
55
50
45
40
35
30
25
2010
2011
2012
2013
2014
2015
2016
FS1
CS1
HS3
Standard
CS2


Ball Hill Corridor
NO2 µg/m3
90
80
70
60
50
40
30
20
2010
2011
2012
2013
2014
2015
2016
BH1
BH2a
BH4
BH10
BH13
Standard
BH14


Queensland Avenue / Spon End Corridor
NO2 µg/m3
50
45
40
35
30
25
20
2010
2011
2012
2013
2014
2015
2016
SE1
SE3
QAV01
QAV13
Standard
QAV12

Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO_2 Monthly Diffusion Tube Results – 2016

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.94) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
CC01/1*N	64.42	48.73	39.57	37.26	29.85	36.03	39.51	35.75	41.91	37.07	54.79	62.01	43.91	**41.27**	37.10
HR1	78.21	64.44	62.3	59.80	64.67	65.23	52.96	48.29	68.11	63.99	73.42	71.93	64.45	**60.58**	**60.58**
HR2C	41.44	41.34	/	/	40.60	35.54	22.68	25.12	32.75	45.22	49.59	47.80	38.21	35.92	**35.92**
HR1C	/	103.35	89.7	85.65	91.56	101.87	88.31	81.16	101.12	101.78	/	114.56	95.91	**90.16**	**75.60**
BH1a	51.13	53.02	38.15	/	40.47	37.81	31.49	36.12	43.55	48.71	57.00	49.43	44.26	**41.61**	38.60
BH2a	56.15	56.59	54.97	59.15	50.68	47.39	46.26	41.77	52.93	56.50	67.82	63.73	54.50	**51.23**	**51.23**
BH4	53.72	62.53	60.66	48.00	56.02	59.11	42.74	40.75	57.19	68.77	74.50	73.37	58.11	**54.63**	**47.60**
BH13	53.9	47.89	37.08	35.05	33.54	33.71	34.24	32.86	40.05	38.39	45.47	53.21	40.45	38.02	38.02
BH14	57.05	60.24	48.16	45.87	45.43	41.99	38.04	/	43.69	49.98	66.56	56.71	50.34	**47.32**	36.90
BH15i	58.77	58.58	56.84	56.70	58.53	51.58	38.72	39.42	50.70	61.32	68.03	61.63	55.07	**51.76**	**42.50**
HS3	62.32	61.07	42.45	50.91	51.95	/	/	/	/	/	/	/	53.74	**45.46**	31.10
TS3	67.46	/	50.07	46.20	55.83	49.95	41.21	40.61	48.74	50.39	59.03	68.71	52.56	**49.41**	**47.60**
FS1	/	/	/	55.63	59.90	55.47	42.15	45.15	52.74	61.65	68.53	59.98	55.69	**52.35**	**43.90**
QV1	47.74	56.16	50.07	44.10	40.05	41.21	38.31	37.12	45.74	47.07	64.19	57.62	47.45	**44.60**	**40.40**
GF1	55.73	52.14	51.42	47.61	45.95	42.35	28.66	31.34	42.37	42.81	55.22	/	45.05	**42.35**	**42.35**

GS1	51.28	49.11	47.51	40.55	42.70	37.09	29.44	30.42	37.63	46.06	52.96	49.43	42.85	**40.28**	**40.28**
CS3	/	/	/	/	/	/	/	47.80	54.94	66.27	71.99	64.45	61.09	**51.68**	**48.10**
LON12	56.46	57.86	49.5	42.91	48.92	50.05	48.52	42.46	47.43	53.13	68.81	65.95	52.67	**49.51**	**45.20**
SE1	51.98	54.07	43.61	36.09	44.74	39.62	36.31	30.71	43.04	47.80	60.71	53.72	45.20	**42.49**	33.40
SE3	57.18	48.07	41.24	37.71	39.00	34.1	28.20	/	40.33	46.57	60.17	58.48	44.64	**41.96**	**41.96**
QAV01	64.53	59.94	53.76	50.20	56.44	45.73	42.04	37.83	55.82	57.29	70.89	63.68	54.85	**51.56**	34.20
QAV12	52.01	47.84	/	39.46	41.12	37.02	31.43	29.84	/	/	/	/	39.82	33.69	33.69
QAV13	53.67	45.59	45.43	42.88	41.16	41.69	40.23	35.41	45.47	45.82	57.06	51.08	45.46	**42.73**	**42.73**
R4	42.17	48.46	45.56	45.57	44.91	41.45	36.29	35.63	46.92	40.43	55.46	51.51	44.53	**41.86**	**41.86**
R5	50.13	55.31	55.37	45.42	57.96	52.99	40.33	39.73	51.12	56.60	66.36	54.28	52.13	**49.01**	**49.01**
R6	62.16	61.41	58.44	46.18	61.96	62.83	43.88	42.02	58.87	64.88	81.21	73.82	59.81	**56.22**	**50.50**
R8	37.73	40.7	45.28	36.61	/	/	33.48	32.70	42.06	47.45	55.34	71.42	44.28	**41.62**	**41.62**
R9	48.64	45.86	42.38	39.22	42.79	43.85	33.09	35.22	44.16	47.21	55.59	54.45	44.37	**41.71**	39.30
LR1	49.85	53.31	50.5	39.93	47.50	45.13	36.89	36.00	46.22	46.05	60.98	62.96	47.94	**45.07**	**45.07**
LR2	52.02	53.36	52.28	41.96	48.09	47.36	32.91	35.51	46.99	53.67	59.38	55.05	48.22	**45.32**	**45.32**
LR3	54.8	47.9	46.1	46.78	45.24	44.39	42.01	37.23	45.28	43.32	56.84	60.47	47.53	**44.68**	**44.68**
BRN2	48.68	45.05	39.56	/	39.05	42.5	38.23	35.14	43.21	42.41	55.98	59.23	44.46	**41.79**	**41.79**
BRN5	50.68	48.1	42.87	41.68	44.32	42.15	28.58	31.18	40.21	49.79	53.74	55.11	44.03	**41.39**	**41.39**
BA1	46.56	39.83	39.34	34.30	37.82	36.64	37.05	/	41.65	43.83	54.48	53.16	42.24	39.71	39.71
BA1c	33	36.59	33.82	28.15	31.61	30.16	24.12	23.96	26.65	35.80	42.09	40.38	32.19	30.26	30.26
SS1	46.4	49.56	44.88	/	42.92	41.36	31.93	32.25	40.96	47.28	60.67	/	43.82	**41.19**	**41.19**
SS2	48.06	41.37	43.81	34.73	40.57	38.58	30.12	27.70	38.88	42.93	55.83	53.25	41.32	38.84	38.84
SS3	49.63	50.63	45.97	41.75	46.30	39.29	34.04	35.92	42.22	48.03	56.02	56.59	45.53	**42.80**	**42.80**
SS5	65.62	59.88	59.13	53.22	52.51	55.86	48.04	41.04	54.66	58.96	67.12	62.87	56.58	**53.18**	**49.10**
BELL1	55.46	50.43	42.72	38.45	36.86	40.58	36.43	34.89	43.97	41.13	61.09	56.64	44.89	**42.19**	**42.19**

BELL2	48.42	40.1	45.33	34.91	38.88	39.05	35.67	29.91	44.92	39.28	53.28	54.02	41.98	39.46	39.46
FGS2	43.51	46.48	41.38	42.47	40.90	39.36	26.93	29.38	38.54	46.27	54.02	49.78	41.59	39.09	39.09
FGS3A	47.64	45.21	/	51.00	44.74	37.29	30.29	31.57	/	47.25	55.16	45.99	43.61	**41.00**	**41.00**
GR1	47.49	45.01	44.62	41.70	35.53	36.1	32.72	32.45	39.09	46.43	51.32	45.98	41.54	39.04	39.04
Grange 2	52.77	48.04	38.41	40.22	34.82	34.74	41.37	36.90	45.31	53.73	55.78	60.24	45.19	**42.48**	36.30
SHP2	45.67	34.65	35.97	27.10	40.74	33.3	22.97	/	33.77	43.82	45.85	48.54	37.49	35.24	35.24
SHP3	36.73	/	38.99	37.10	39.43	37.64	36.04	30.41	38.44	48.05	52.42	51.41	40.61	38.17	34.90
BL1	42.34	39.19	/	36.74	37.15	39.18	26.03	22.90	37.53	40.34	51.43	57.54	39.13	36.78	30.00
DH1	44.02	34.24	/	36.72	42.69	34.34	18.21	22.75	32.44	41.78	51.09	60.06	38.03	35.75	29.70

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

Diffusion Tube Bias Adjustment Factors

The bias adjustment figure for 2016 was taken from version 2 of the National Diffusion Tube Bias Adjustment Factor spreadsheet, as Coventry no longer has any automatic monitoring data. There were 21 studies that contributed and therefore the adjustment factor of 0.94 is thought to be representative.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/17 V2

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2017
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data

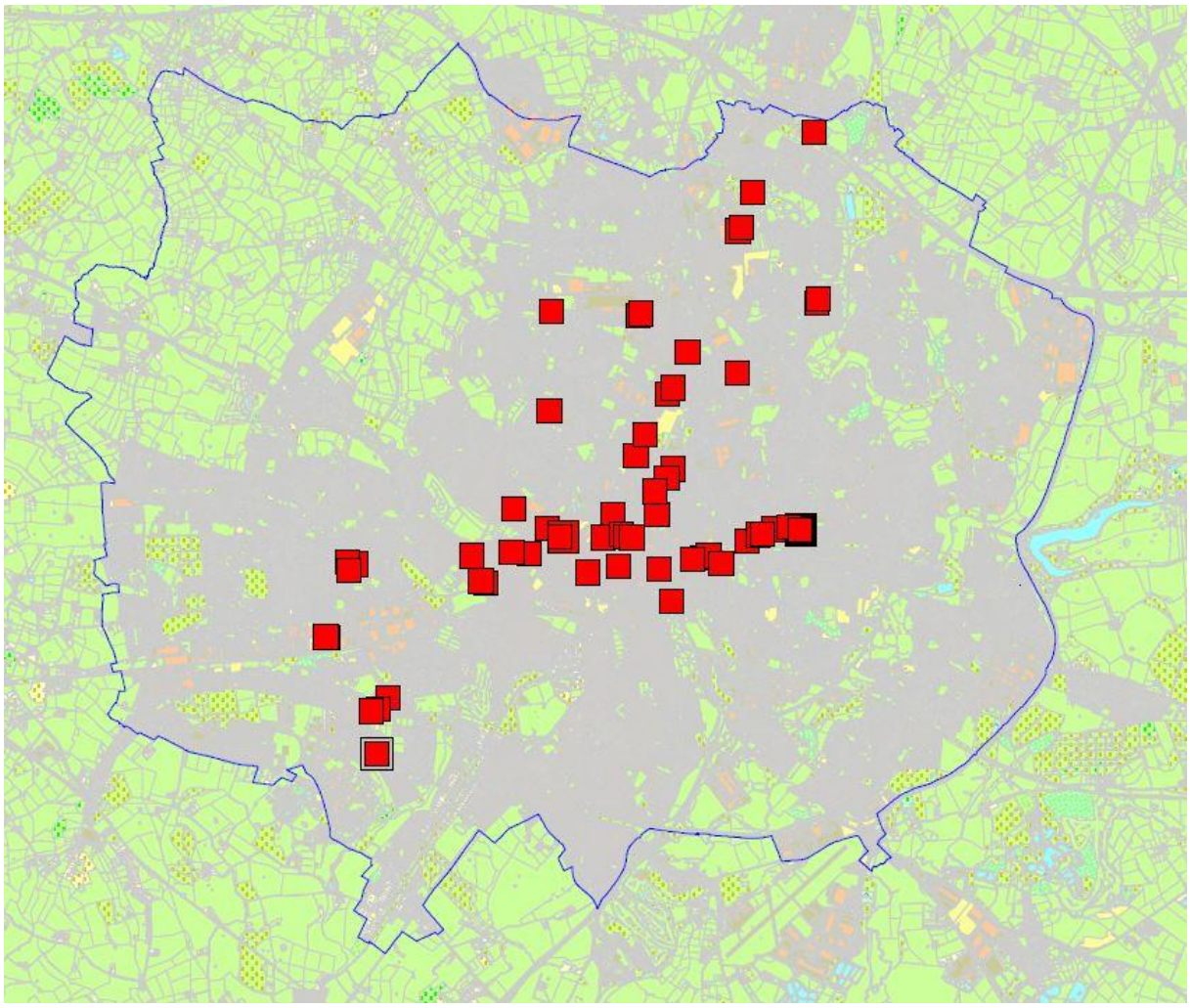
Step 4: **Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.**

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method	Year[2]	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2016	R	Wokingham Borough Council	11	45	41	9.0%	G	**0.92**
Gradko	20% TEA in water	2016	R	Wokingham Borough Council	11	37	34	9.5%	G	**0.91**
Gradko	20% TEA in water	2016	R	Cheshire West and Chester	12	37	39	-5.3%	G	**1.06**
Gradko	20% TEA in water	2016	R	Thurrock Borough Council	12	29	26	11.0%	G	**0.90**
Gradko	20% TEA in water	2016	R	Borough Council of King's Lynn & West Norf	11	30	25	18.2%	G	**0.85**
Gradko	20% TEA in water	2016	UB	Eastleigh Borough Council	11	29	30	-4.7%	G	**1.05**
Gradko	20% TEA in water	2016	R	Eastleigh Borough Council	12	44	42	2.9%	G	**0.97**
Gradko	20% TEA in water	2016	R	Brighton & Hove City Council	12	52	48	8.8%	G	**0.92**
Gradko	20% TEA in water	2016	R	Eastleigh Borough Council	11	29	37	-22.0%	G	**1.28**
Gradko	20% TEA in water	2016	KS	Marylebone Road Intercomparison	12	99	79	25.2%	G	**0.80**
Gradko	20% TEA in water	2016	R	Monmouthshire County Council	11	39	34	16.6%	G	**0.86**
Gradko	20% TEA in Water	2016	R	Preston City Council	10	30	27	10.0%	G	**0.91**
Gradko	20% TEA in water	2016	R	Dudley MBC	12	37	34	11.0%	G	**0.90**
Gradko	20% TEA in water	2016	UB	Dudley MBC	12	26	22	18.6%	G	**0.84**
Gradko	20% TEA in water	2016	R	Dudley MBC	11	43	38	12.4%	G	**0.89**
Gradko	20% TEA in water	2016	R	Dudley MBC	12	51	54	-5.6%	G	**1.06**
Gradko	20% TEA in water	2016	B	LB Waltham Forest	12	31	30	2.3%	G	**0.98**
Gradko	20% TEA in water	2016	R	NOTTINGHAM CITY COUNCIL	12	37	39	-5.4%	G	**1.06**
Gradko	20% TEA in water	2016		**Overall Factor[3] (21 studies)**				**Use**		**0.94**

Figure 1: A screenshot of the National Diffusion Tube Bias Adjustment Factor spreadsheet, showing the laboratory, preparation method and factor used

Appendix D: Map of Monitoring Locations and AQMA



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[4] The units are in micrograms of pollutant per cubic metre of air (µg/m^3).

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'
AQEG	Air Quality Expert Group
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	Air quality Annual Status Report
CAZ	Clean Air Zone
CCC	Coventry City Council
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
HoPE	Holistic Personal Public Eco-Mobility
LAQM	Local Air Quality Management
LES	Low Emission Strategy
LETCP	The Low Emissions Towns and Cities Programme
LEZ	Low Emission Zone
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less

QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
SPD	Supplementary Planning Document
WMCA	West Midlands Combined Authority