2018 & 2019 Air Quality Annual Status Report (ASR)

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

November 2019

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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 (2010-2018) show that there is a general decline in levels of nitrogen dioxide and levels of PM_{10} do not exceed the national standards.

[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

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

Coventry was identified by DEFRA in July 2017 as one of 28 cities requiring further action to tackle areas of poor air quality related to emissions of nitrogen dioxide.

Coventry City Council is currently working with the Joint Air Quality Unit (JAQU) to produce an action plan detailing the measures the Council will take to reduce traffic related emissions in the city in the shortest possible time. Following submission of our Strategic Outline Business Case, the City Council has received a Ministerial Direction to implement a Clean Air Zone, but continues to explore alternative options.

Coventry City Council (CCC) is committed to transforming Coventry into a cleaner and healthier city, supporting economic growth, improving health and providing a wider choice of travel options, and improvements in air quality underpin this vision. Coventry has been awarded the UK City of Culture for 2021, and making improvements to benefit air quality within the city fully aligns with the City of Culture themes of Being Human, Reinvention and Moving, and the vision of reimagining the place of culture in a diverse, modern Britain.

Coventry therefore has an opportunity to adopt a solution which delivers a lasting improvement in air quality and to showcase this solution to a wider audience. Coventry is renowned for its rich tradition in innovation, and CCC is keen to support innovative solutions involving emerging technology.

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. Tables 2.1a and b provide 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, promoting active travel, establishing and sharing best practice policies and developing various tools and resources.

With the establishment of the West Midlands Combined Authority (WMCA), regional initiatives to achieve air quality improvements should be forthcoming (governance structures are being established during these formative stages). There will be major opportunities for regional sustainable growth to be secured with Coventry at the forefront of low emission vehicle technology research and development.

Coventry City Council currently has representatives at the Coventry and Warwickshire Air Quality Alliance. The alliance is an informal alliance of officers from Public Health, Planning Transport, Environmental Health and partner organisations across the sub region. Air Quality also features as a priority in the Coventry and Warwickshire Health Protection Strategy 2017-2021 (https://apps.warwickshire.gov.uk/contentplatform/open/WCCC-630-1096). The Alliance have been working in partnership to support collaborative efforts to improve air quality in Coventry and Warwickshire, which has included developing an active travel campaign: "Choose How You Move" (please see website at: www.coventry.gov.uk/activetravel), developing Coventry and Warwickshire-wide planning guidance for developers regarding Air Quality, and collaboratively reviewing air quality action plans.

Coventry City Council is supporting the West Midlands Air Quality Improvement Programme (WMAQIP). Led by the University of Birmingham, the project comprises three broad themes which aim to improve understanding of the region's air pollution challenges and to provide new capability to support clean air measures.

In addition, five local authorities from the Alliance have committed to collaboratively develop a Supplementary Planning Document (SPD) on air quality, that will set out design criteria and measures developers will be expected to implement as part of future planning applications. It is hoped that developing the document on a regional basis will improve consistency across the area. Following changes to consultation requirements it is envisaged that the SPD will now be adopted in 2019 (actual adoption date 6th September 2019) with the other authorities to follow.

On a local level, a number of additional public realm works have taken place around the city centre to improve pedestrian links to the railway station.

The Council have been successful in bidding for £1.2 million of funding to install 39 rapid charging points around the city to charge electric taxis. The intention is to provide the infrastructure to support the uptake of ultra-low emissions electric taxis in Coventry, and reduce emissions from older diesel vehicles. The first of these were installed and operational during 2018. The Council also secured £1.5 million to upgrade over 100 National Express buses to Euro VI Standard engines and £2.2 million for a fleet of 10 electric buses to operate in the City.

Coventry City Council secured £2 million from the Government to improve air quality along the A4600 corridor which runs between the City centre and M6 Junction 2. A package of measures has been developed including junction improvements, new technology to improve traffic management, public engagement and electric vehicle trials for taxi drivers in the City. Coventry will continue to bid for funding measures as they become available.

Coventry City Council is currently working with the Joint Air Quality Unit (JAQU) to produce an action plan detailing the measures the Council will take to reduce traffic related emissions in the city in the shortest possible time. Following submission of our Strategic Outline Business Case, the City Council has received a Ministerial Direction to implement a Clean Air Zone, but continues to explore alternative options.

Conclusions and Priorities

Exceedances in NO_2 continue to be identified inside the existing AQMA although the general trend shows that levels are declining. Working with the Joint Air Quality Unit (JAQU) to identify and target areas of concern and produce an Action Plan is the primary focus. The key priorities for addressing air quality in these areas remains the reduction in queuing traffic and congestion at junctions.

Other priorities for 2019 include:

- 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 raise public awareness of air quality through campaigns for active travel such as City Ride events, a new 'Choose How You Move' website for Coventry and Warwickshire and promotion of Defra's 'Burn Right' campaign.
- Continue green procurement such as electric vehicle recharging points for the promotion of low emission transport and vehicle fleet efficiency improvements
- Complete and formally adopt the Supplementary Planning Document (SPD) relating to air quality by mid-2019

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
- Avoid burning garden and domestic waste and use local recycling facilities
- If using a wood burning stove or open fireplace, ensure the correct/smokeless fuels are being used. Please see the council website for more information: https://www.coventry.gov.uk/info/26/pollution_licensing/1368/smoke_control_areas/2

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

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1 Local Air Quality Management

This report provides an overview of air quality data in Coventry during 2017 and 2018. We will need a note to the effect of this report focuses on measures undertaken during these dates but also provides updated on the current position for context. 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 under the Local Air Quality Management (LAQM) regime 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 there have been a number of challenges the local authority has faced and as a result 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.

The Council held a workshop in June 2017 with key stakeholders and neighbouring local authorities to develop ideas and facilitate the progress of the new AQAP. Subsequent to this, Defra published the *'UK Plan for Tackling Roadside Nitrogen Concentrations'* (July 2017) that identified Coventry as one of a further tranche of towns and cities requiring additional measures to ensure compliance with the NO_2 National Objective.

Coventry City Council are required to produce a local action plan identifying what further measures will be required to achieve compliance with the NO_2 objective, using a Clean Air Zone as a baseline. Following submission of our Strategic Outline Business Case, the City Council has received a Ministerial Direction to implement a Clean Air Zone, but continues to explore alternative options. This work will take precedence over the LAQM plan to comply with Defra timescales. It is envisaged that the local plan will form the basis of a future LAQM AQAP.

This Annual Status Report does however reflect the huge amount of work already taking place in Coventry to reduce traffic congestion, improve low emissions vehicles infrastructure and encourage more sustainable methods of transport, all of which will have a beneficial impact on air quality, including:

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 objectives of the programme were to investigate and produce various regional strategies designed to improve air quality with a view to meeting national air quality standards. 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.

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 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

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

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

As mentioned previously, 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

To support the delivery of Movement for Growth, the WMCA approved the 2026 Delivery Plan for Transport in September 2017. The plan comprises the Delivery Plan and two supporting sets of documents:

- The 2026 Delivery Plan for Transport
- 16 Corridor Strategies
- Four Dashboards of Schemes

In addition, Vision for Bus presents a clear vision of what the region requires from its bus network and sets nine bold objectives for improving bus travel in the West Midlands. This will ensure the bus network can adapt and embrace innovation and opportunities to meet current and future travel demand.

As complementary strands to this work, WMCA have a Sustainable Travel Team working with stakeholders across the region to reduce vehicle use.

At a local level, Coventry City Council (CCC) is committed to transforming Coventry into a cleaner and healthier city, supporting economic growth, improving health and providing a wider choice of travel options, and improvements in air quality underpin this vision. Coventry has been awarded the UK City of Culture for 2021, and making changes to improve air quality within the city fully aligns with the City of Culture themes of Being Human, Reinvention and Moving, and the vision of reimagining the place of culture in a diverse, modern Britain. Coventry therefore has an opportunity to adopt a solution which delivers a lasting improvement in air quality and to showcase this solution to a wider audience.

Coventry is renowned for its rich tradition in innovation, and CCC is keen to support innovative solutions involving emerging technology. The city is also a leader in the automotive industry and has a vision for a future that incorporates integration of systems and technology such as Ultra Low Emission Vehicles (ULEV), connected and autonomous vehicles, digital data / communications and energy generation, storage and distribution. The city is home to the factory manufacturing the world leader in electric powered taxis, as well as being selected as the site for the UK's Battery Industrialisation centre. Electric vehicles are therefore at the heart of this vision and will play a key part of reducing emissions from road transport.

Coventry is well connected to other major towns and cities in the UK due to its good access to the strategic road network and the national rail network. It is important that Coventry works closely with its key neighbours as this will allow Coventry to reduce NO_2 concentrations and improve the health and wellbeing of its residents and those who travel to work in Coventry or those who visit for other reasons.

Coventry City Council has secured funding from the Government sources listed above to implement a number of initiatives aimed at future-proofing the local transport network to accommodate low emission vehicles. This includes the

installation of 39 rapid charging points for electric vehicles across the city, focussed on locations where taxis are going to require top-up charging. This project will be completed during 2019 and is intended to provide the charging infrastructure to make it easier for local taxi drivers to operate electric vehicles. This work has been supplemented by the Council securing £300,000 from OLEV for the installation of around 80 electric vehicle charging points in on-street locations in residential areas around the city. These areas are predominantly inner-city areas with limited off-street parking, and the charging points will remove one barrier to electric vehicle ownership for local residents.

The third specific strand of work relates to the upgrading of the engines of the main local bus fleet operated by National Express, with over 100 buses being upgraded to Euro VI standard engines. An additional bid for the purchase of 10 electric buses has been made which would operate through two of the city's pollution hotspots (Note: bid was accepted and £2.25 million awarded in 2019).

Through the Early Measures Fund administered by Defra, the City Council was awarded £2 million to support a number of projects focused on improving air quality along the A4600 Walsgrave Road corridor that includes the Ball Hill area, a long standing pollution 'hotspot'. The funding has supported the purchase of air monitor sensors and electronic variable messaging signage (VMS); controlled by the city's Traffic Management team the VMS signs are capable of directing traffic away from the A4600 to alternate routes when the sensors indicate high air pollution levels. In addition, the funding has supported an upgrade of traffic signals along the route, travel planning sessions with local schools and large businesses and the purchase of four electric taxis to operate as a 'try before you buy' scheme whereby the four vehicles are available to lease to drivers for short term periods so that they can appreciate the benefits of electric vehicles in the hope they will go on to purchase a new electric taxi when they replace their current vehicle.

The £82 million project to upgrade Coventry Railway Station has commenced, and will ultimately create a multi-model transport hub with a new bus interchange. Further public realm improvements include traffic free routes to promote pedestrian and cycling access to and from the city centre.

Coventry City Council is supporting the West Midlands Air Quality Improvement Programme. Led by the University of Birmingham, and supported by £5million of funding from the Natural Environment Research Council (NERC), the project comprises three broad themes which aim to improve understanding of the region's air pollution challenges, to provide new capability to support clean air measures and policy focussed upon the region, and to support the application of these to specific policy scenarios, questions and challenges.

During 2018, five local authorities from the Coventry and Warwickshire Air Quality Alliance collaboratively developed a Supplementary Planning Document (SPD) on air quality, that sets out design criteria and measures developers will be expected to implement as part of future planning applications. The SPD builds on the existing West Midlands LETCP Planning Guidance (2014) to further promote low emission vehicles infrastructure, low emissions heating and power and tackling construction related air quality impacts. It is hoped that developing the document on a regional basis will improve consistency across the Coventry and Warwickshire area. Following changes to consultation requirements it is envisaged that the SPD will now be adopted in Coventry in summer 2019 (Note: actual adoption date 6th September 2019) with the other authorities to follow.

An Active Travel Campaign for Warwickshire and Coventry was launched in August 2017. Officers have worked to develop a website which is an active travel information hub, under the 'Choose How You Move' branding, to publicise various travel tools such as journey planners, walking and cycling maps, the Coventry and Warwickshire Car Share scheme, as well linking to air pollution. An interactive map showing NO_2 monitoring sites across Coventry and Warwickshire and annual mean NO_2 concentrations has been developed, and is accessible through the campaign website.

It is envisaged that further travel planning facilities will be required ahead of 2021 when Coventry is UK City of Culture and the 2022 Commonwealth Games, and these are under discussion.

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:

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

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

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)	Link
						At Declaration	Now		
City-wide AQMQ	1st November 2009	NO_2 Annual Mean	Coventry City	The whole city as defined by the city boundary	YES	Annual average levels of NO_2 identified as exceeding 40µg/m^3 at a number of roadside locations in city	Predicted to be exceedances of annual mean NO_2 at various locations with relevant exposure in the city (within AQMA)	2007 AQAP is outdated focus is currently on developing the local plan with JAQU	https://www.coventry.gov.uk/downloads/file/1773/air_quality_action_plan_2007

☒ **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 2017's ASR concluded:

1. Appendix C does not provide discussion of the method and contractor used for NO_2 diffusion tube processing. From the screenshot of the bias adjustment database it can be seen that the factor selected is based on 21 studies from Gradko using a 20% TEA in water method. The adjustment factor used is 0.94, however this is based on the 03/17 V2 revision. If the 09/17 version was used the bias adjustment factor would be 0.92 (based on 32 studies) for 2016 data. Please ensure the latest revision of the spreadsheet is used. For further guidance please refer to Technical Guidance 16 (TG16).

A: The submission date for the report was June 2017. As such the 09/17 version of the adjustment factor was not available for use when the report was underway. The Council is currently unable to re-write the report again in September following the release of this additional data.

2. The report recognises that the AQAP is long out of date, and given the current NO_2 concentrations in Coventry City it may contain measures that are ineffective, additionally it does not target hotspots discovered after 2007. The Council acknowledges this and is currently dedicating efforts and resources towards revising it as a matter of priority. The current AQAP is detailed and contains good discussion of recent progress. Additionally, it contains many measures which could be scaled up and implemented City-wide. The Council should refer to TG16 for further guidance on AQAP development, ensuring the new draft AQAP undergoes satisfactory consultations.

A: The Council is currently focussed on the development of the Local Plan in conjunction with JAQU and takes priority. It is envisaged that this will form the basis for any subsequent AQAP.

3. It would be useful if the Council could provide at least one example calculation for each type of adjustment under Appendix C: QA/QC Procedures. For further guidance please refer to TG16.

A: Additional information has been included in Appendix C.

4. While the report does contain links to interactive maps (which are very useful and hold a high level of detail and historical data for monitoring sites), it would be beneficial if the map included in Appendix D contained site references, as listed in the results tables. For further guidance please refer to TG16.

A: Noted and updated.

5. The report highlights that two sites experienced concentrations greater than 60µg/m^3, indicating the AQO for NO_2 hourly mean may have also been exceeded. However, there is no discussion of NO_2 hourly mean within the report. Please ensure that all pollutants are discussed thoroughly in the context of the data that has been collected. For further guidance please refer to TG16.

A: CCC has no automatic monitors that have provided hourly mean data for the 2017 and 2018 period. As such there is nothing to discuss other than to state that it is likely that we exceeded the hourly mean on Holyhead Road in 2017.

Coventry City Council has taken forward a number of direct measures during the current reporting years of 2017 and 2018 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 in 2017 and 2018 are:

- Submission of business case to JAQU and development of Local Plan outlining how the Council intends to tackle NO_2 exceedances.
- Completion and adoption of the new Local Development Plan for the city with a focus on protecting air quality
- Development of new supplementary planning document on air quality in partnership with Warwickshire authorities
- Launch of 'Choose How You Move' active and sustainable travel website
- Installation of between 10 – 15 rapid (50KW) recharging points for electric taxis
- Installation of five new AQMesh units in Coventry to gather real-time information and promote public awareness

- Installation of approximately 10% of electric vehicle recharging points in new Council car parks and NUS car parks
- Installation of 'Appy Parking' scheme. Coventry City Council has partnered with AppyParking on a new and complementary Innovate UK funded project which will see the implementation of The Parking Platform™
- Completion and relocation of approx. 2000 council staff to the new Friargate building in autumn 2017. This 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 has introduced a car share scheme for staff (with an initial sign up of 125 staff members), pool cars and bikes, and subsidised public transport as part of a green travel plan that is under development. The new building has 12 electric vehicle charging points for low emissions pool vehicles

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

- Submission of Local Plan to JAQU detailing how the city will tackle NO_2 emissions to achieve compliance in the shortest possible time
- Complete, undertake consultation and adopt the Supplementary Planning Document (SPD) in relation to Air Quality (adoption provisionally expected during summer 2019).
- Additional public realm works linking the city centre including the new restaurant quarter and the Coventry railway station making a pedestrian friendly and more attractive route for visitors and commuters to walk and cycle between the station and city centre.
- Variable Messaging Signage along key routes (Walsgrave Road/Binley Rd corridors) and connection of VMS to air quality sensors.
- Uk Autodrive – trialling of autonomous vehicles on real roads around city

- Completion of CATCHI and UK CITE projects enabling personal journey planning and providing data to transport policy makers to assist in network planning
- Installation of 39 on-street electric charging points for taxis, to incentivise use and purchase of electric taxis in the city
- Installation of a mix of 90 slow/rapid charge on-street residential electric vehicle charging points aimed at residents with no off-street parking.
- Retrofit of the entire National Express bus fleet to Euro VI emissions standards, the only buses not being retrofitted are due for replacement.

Coventry City Council's priorities for the coming year are:

- Submission of Local Plan to JAQU demonstrating how the city will comply with NO_2 objective in the shortest possible time.
- Completion of the Early Measures funded project, focusing on the A4600 corridor. A mix of travel planning, junction and signal improvements, variable messaging signage, electric taxis try before you buy scheme and school/business engagement with the aim of reducing emissions along this key corridor.
- Complete and adopt the Supplementary Planning Document (SPD) in relation to Air Quality provisionally during summer 2019.
- 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, including Coventry Cathedral and the new Friargate offices. 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. £82 million project includes new entrances and footbridges to improve pedestrian access, new car park and buildings providing step free access to platforms, new bus interchange forming a public

transport hub and new bay platform enabling 2 x trains per hour between Coventry and Nuneaton.

- Continue to work with strategic partners at a local and sub-regional level (i.e. Coventry and Warwickshire Alliance, West Mids Pollution Groups, West Mids Combined Authority and Transport for West Mids) to continue developing and delivering improvements, good practice and cross boundary collaboration
- Collaboration with Birmingham University on the NERC funded WMAQIP project to improve understanding of the region's air pollution challenges, to provide new capability to support clean air measures and policy focussed upon the region, and to support the application of these to specific policy scenarios, questions and challenges
- Review trial of bus lane suspension along key routes to tackle merging issues with the aim of reducing congestion, improving traffic flow, air quality and safety of cyclists
- Promote the Defra supported 'Burn Right' and 'Ready to Burn' campaigns educating the public about use of correct fuel in open fires and wood-burning stoves with the aim of reducing smoke and PM2.5 emissions

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

- Securing consensus from a wide range of stakeholders on the measures to be implemented;
- Obtaining statutory approvals and permissions where these are required;
- Maintaining the long-term effectiveness of measures through continued investment, given insecurity of resources especially revenue funding;
- Ability to influence other policy areas that impact on travel demand across the city, such as new development or education / social policies;
- Providing attractive and affordable alternatives to the car when the Council does not directly control public transport services;

- Uncertainty of the current national political situation affecting the ability of business to engage/plan their response to the challenges of complying with the NO2 objective and planning for a possible CAZ; and
- Possible new or changed legislative controls requiring the council to implement additional measures for particulate matter, which the current package of work and the proposals in the Business Case do not directly address

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

- Local Plan has required additional traffic and air quality modelling and ANPR surveys were delayed due to, roadworks, adverse weather and vandalism.
- SPD adoption has taken longer than anticipated due to additional consultation requirements.

Table 2.2a – Progress on Measures to Improve Air Quality 2017

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 & Ride	Coventry City Council (CCC)	Complete	Complete	Uptake	Reduced vehicle emissions	On-going	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. 20 additional covered cycle racks have been provided
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. 32 extra covered cycle racks have been provided
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 has been promoted by local businesses including Jaguar Land Rover who have over 10,000 people signed up
5	HoPE (Holistic Personal public Eco-mobility)	Public Information	Other	Transport & Mobility Leuven; Planet Media, CCC, Innova; CTI; AtoS; Bull; Certh, Infohub, OASA; itaca; MLC; KIT EUFP7 European Union Framework Programme 7	Complete	Complete	Uptake	Reduced vehicle emissions	Complete	2017	Pilots of a Public Transport Mobile App with an integrated tourist planner concept which aims to satisfy the needs of citizens and tourists for an easier to use and efficient public transport system. It was piloted in 3 European cities. During all evaluation cycles, constant monitoring of the HoPE mobile applications evaluation progress was performed. Athens takes the largest share of all the users in the HoPE pilots (84%), followed by Gipuzkoa (9%), and Coventry (7%). After a sharp uptake in the app in all 3 locations, this steadily decreased (daily usage). There was a good response to evaluation surveys which could help shape a future marketable product. In particular, information accuracy and usability proved to be rather important aspects which greatly affected user experience towards the HoPE mobile trip planning applications, a user opinion shared among

											all pilot sites. Results indicate usage is higher in the daytime. For future exploitation assets and scenarios have been mapped alongside a SWOT analysis of threats and opportunities.
6	Mercury emissions trading scheme	Environmental Permits	Tradable permit system through permit systems and economic instruments	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 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 / mitigation 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	Supplementary Planning guidance	Promoting Low Emission Plant	Emission control equipment for small and medium sized	CCC	2017	End 2018	N/A	Reduction / mitigation in NOx and PM	On-going	End 2018	On planning applications for new developments applicants are advised (and planning conditions implemented) for the installation of low NOx (low emission)

			stationary combustion sources / replacement of combustion sources								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.
11	Pedestrian Thoroughfare	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CCC	Complete	Complete	Usage	Reduction in vehicle emissions	Complete	Jul-05	Creation of Friargate bridge with a new pedestrian boulevard which creates a more direct route for pedestrians into city centre from railway station. This 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. Completion of the link between Greyfriars Lane and High Street and a second phase of works on Fairfax Street.
12	Further public realm works	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CCC	Complete	End 2018	N/A	Reduction in vehicle emissions	On-going	2021	£82m has been secured for additional public realm and major infrastructure improvements at Coventry Railway Station to create a high quality multi-modal transport interchange. The investment will create infrastructure to increase capacity to support rail passenger growth, and also include a new bus interchange. The pedestrian boulevard will extend to the front of the station, creating a traffic free route to improve pedestrian and cycle connectivity between the station and city centre. Works have commenced on site and are due to be completed by 2021. £44m of funding has been secured to deliver package of city centre public realm improvements, which are targeted to be implemented by 2021 to coincide with Coventry becoming the UK City of Culture. The works include improvements around the Waterpark and Greyfriars Lane, Hertford Street, Upper Precinct and Smithford Way. The works will complement public realm improvements delivered to date and enhance pedestrian and cycle connectivity. The works will be complemented by improved wayfinding to encourage journeys to be made by active travel.

13	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 opened in 2017 at Coventry station. 150 extra cycle parking spaces have been provided at the Station Cycle Hub
14	Let's ride Coventry	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
15	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 complete and a pedestrian tunnel has been 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.
16	Purchase of 5 AQ Mesh units.	Public Information	Via other mechanisms	CCC	Complete	End 2018	Feedback	Reduction in vehicle emissions	Units fully functioning	On-going	AQ Mesh units installed in areas of known poor air quality. One to be relocated to schools in Coventry to promote understanding of air quality
17	VMS Project	Public Information	Via other mechanisms	CCC	Complete	Complete	Uptake - 50 roadside adverts displayed for 4 weeks in 2015 to promote	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

							'City Ride' and to continue through 2016 and 2017				
18	Real-Time Bay Availability System (aka Appy Parking)	Public Information	Other	Appy Parking, CCC DfT C-ITS	Complete	Complete	Uptake	Reduction in vehicle emissions	Complete	Mar-18	CCCs project with AppyParking is a work in progress, but the information it produces may eventually convert kerb side parking from a frustrating source of congestion and pollution into an efficient well managed urban transport market. Currently through the AppyParking app drivers are able to input their destinations, the length of time they want to park, and their expected arrival time. Soon, when they approach their destinations, the guidance system will give them turn-by-turn voice directions to available kerb or off-street parking spaces. The system will then show the best walking route to and from their destination. Following the delivery of the Real-time Bay Sensor project, Coventry City Council has partnered with AppyParking on a new and complementary Innovate UK funded project which will see the implementation of The Parking Platform™ (to be detailed in next year's report for 2018), AppyParking's system to collect, aggregate and standardise parking restriction data across councils, creating a UK wide parking dataset.
19	Intelligent Variable Messaging System (iVMS)	Public Information	Other	CCC; Siemens Mobility; SGIL; Coventry University; Horiba MIRA CWLEP	Complete	Complete	Uptake	Reduction in vehicle emissions	Complete	Mar-18	The analysis of the reduced travel times (congestion) at peak times leads to some improved accessibility for city centre economic activities, especially using the Binley Rd corridor, where at peak times (assuming 6% App penetration rate) congestion is all but removed. Assuming that these savings can be realised over the year on a consistent basis there is a reduction in congestion in all corridors, with a reduced period where free flow is not possible. Further, the three test corridors represent important routes into Coventry, but only part of the total road network – around just over a fifth of average daily vehicle counts. The savings estimated above can be expected to be

											greater if the traffic management systems operate city-wide. It is possible to provide some indication of effects on vehicle emissions of time savings on the corridors, as calculated by Coventry University Centre for Future Transport and Cities. The most substantial achievement of the iVMS project has been to develop and extend the local test bed environment for vehicle technologies (and related smart city activity) across a number of dimensions. The Bluetooth technology has helped to inform the new DEFRA funded Early Measures Feasibility Project (from 2018 onwards) especially along the A4600 key route into the city.
20	UK Connected Intelligent Transport Environment (UK CITE)	Public Information	Other	Led by Arup managing several partners incl CCC; Axa, Milton Keynes Council, Transport Systems Catapult, Ford, JLR, TMETC, RDM	Complete	Complete	Project Success	Reduction in vehicle emissions	Complete	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. After project end TfWM looking at how to utilise the app further
21	UK AutoDrive	Public Information	Other	Led by Travel A.I including CCC / TfWM; Local Authorities; Consultancies; TSC and Data Experts Innovate UK	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.
22	Citizen's at the City's Heart (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.
23	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, and was doubled to 100 bikes in 2017. A city wide scheme is currently under development
24	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.
25	JLR Park & Ride	Alternatives to private vehicle use	Bus based Park & Ride	Jaguar Land Rover	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	N/A	Private park and ride for JLR staff and visitors. Operates between Birmingham Airport, Coventry Airport and Gaydon Plant Site.
26	SUITS - Sustainable Urban Integrated Transport Solutions	Public Information	Other	Led by Cov Uni inc CCC and a European Consortia Horizon 2020	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.
27	Choose How you Move Active Travel Campaign	Public Information	Via the Internet	Public Health Cov & Warks	2017	2017	Uptake	Reduction in vehicle emissions	On-going	On-going	An Active Travel Campaign for Warwickshire and Coventry was launched in August 2017 (www.coventry.gov.uk/activetravel). Officers have worked to develop a website which is an active travel information hub, under the 'Choose how you Move' branding, to publicise various travel tools such as journey planners, walking and cycling maps, the Coventry and Warwickshire Car Share scheme, as well linking to air pollution. An interactive map showing NO_2 monitoring sites across Coventry and Warwickshire and annual mean NO_2 concentrations has been developed, and is accessible through the campaign website
28	OLEV Funding for Electric Taxi Charging Points	Promoting Low Emission Transport	Taxi emission incentives	Coventry City Council (CCC)	2017	2018	Uptake	Reduction in vehicle emissions	On-going	2019	£1.2 million of funding awarded to CCC to provide 39 rapid charge points for electric taxis. Intention is to provide strategically placed charging points around city to encourage uptake of low emissions taxis to reduce emissions and support the local taxi industry/investment in UK Automotive industry.

Table 2.3b – Progress on Measures to Improve Air Quality 2018

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 & Ride	Coventry City Council (CCC)	Complete	Complete	Uptake	Reduced vehicle emissions	On-going	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. 20 additional covered cycle racks have been provided
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. 32 extra covered cycle racks have been provided
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 has been promoted by local businesses including Jaguar Land Rover who have over 10,000 people signed up
5	Mercury emissions trading scheme	Environmental Permits	Tradable permit system through permit systems and economic instruments	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 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
6	Coventry Local Plan and Coventry City Centre Area 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	2031 (This is when both documents are valid until)	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. In addition, the documents contain policy requiring major

											development schemes to promote the shift to the use of sustainable low emission transport to minimise the impact of vehicle emissions on air quality and that major development proposals require the submission of an air quality assessment.
7	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 / mitigation 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
8	Supplementary Planning guidance	Promoting Low Emission Plant	Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources	CCC	2017	End 2018	N/A	Reduction / mitigation in NOx and PM	On-going	End 2018	A Policy Document created to support and provide technical guidance to policy EM7 (Air Quality) in the Coventry Local Plan. To be adopted by the end of 2019
9	Agile working-Kickstart team	Promoting Travel Alternatives	Encourage / Facilitate home-working	CCC	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	N/A	The city council has been encouraging it's staff and providing the technology to do 'Agile working', reducing the need to travel to work if work can be managed at home.
10	Pedestrian Thoroughfare - public realm	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CCC	Complete	Complete	Usage	Reduction in vehicle emissions	Complete	2017	Creation of Friargate bridge with a new pedestrian boulevard which creates a more direct route for pedestrians into city centre from railway station. This reduces reliance on taxis to move rail commuters arriving at the station into the City Centre. Walking and cycling routes have been improved from Greyfriars Lane to High Street and on

										Fairfax Street. Further improvements will be made as part of a wider programme of public realm improvements to be delivered by 2021.
11	Further public realm works	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	CCC	Complete	End 2018	N/A	Reduction in vehicle emissions	On-going	2021	£82m has been secured for additional public realm and major infrastructure improvements at Coventry Railway Station to create a high qualtity multi-modal transport interchange. The investment will create infrastructure to increase capacity to support rail passenger growth, and also include a new bus interchange. The pedestrian boulevard will extend to the front of the station, creating a traffic free route to improve pedestrian and cycle connectivity between the station and city centre. Works have commenced on site and are due to be completed by 2021. £44m of funding has been secured to deliver package of city centre public realm improvements, which are targeted to be implemented by 2021 to coincide with Coventry becoming the UK City of Culture. The works include improvements around the Waterpark and Greyfriars Lane, Hertford Street, Upper Precinct and Smithford Way. The works will complement public realm improvements delivered to date and enhance pedestrian and cycle connectivity. The works will be complemented by improved wayfinding to encourage journeys to be made by active travel.
12	Love Your Bike	Promoting Travel Alternatives	Promotion of cycling	CCC	2016	2016	Uptake	Reduction in vehicle emissions	On-going	N/A	Love Your Bike sessions continued during 2018 with bike security marking by the Safer Travel Police.
13	Let's Ride Coventry	Promoting Travel Alternatives	Promotion of cycling	CCC	Annual Event	Annual Event	10,500 participants in organised bike rides, 9,500 on City Ride. 1,000 on led rides in 2018.	Reduction in vehicle emissions	On-going	Annual Event	The partnership is supported by public health and includes satellite events in more deprived communities where levels of cycling are generally lower. Access to bicycles is a barrier to participation.
14	Coventry Station Masterplan	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	CCC	Complete	Mar-19	Uptake	Reduction in vehicle emissions	On-going	2020	Phase One of the Coventry Station Masterplan is complete and a pedestrian tunnel is proposed 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. Construction work has started on this new entrance, a new footbridge across the railway, and a new station building alongside the existing listed structure.
15	Purchase of 5 AQ Mesh air quality monitoring units	Public Information	Via other mechanisms	CCC	Jan-17	Jul-17	Feedback	Reduction in vehicle emissions	Units fully functioning , evaulation in progress	On-going	AQ Mesh units installed in areas of known poor air quality. One is located adjacent to a school in Coventry to promote understanding of air quality
16	VMS Project (linking VMS to divert traffic onto less polluted corridors)	Public Information	Via other mechanisms	CCC	Complete	Complete	Reduced congestion	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 along key routes.
17	Real-Time Bay Availability System (aka Appy Parking), 2 additional projects have been funded by Innovate UK and DFT,	Traffic Management	UTC, Congestion management, traffic reduction	Appy Parking, CCC DfT C-ITS	Complete	Complete	Uptake	Reduction in vehicle emissions	Complete	Mar-18	. The system will then show the best walking route to and from their destination. Following the delivery of the Real-time Bay Sensor project, Coventry City Council has partnered with AppyParking on a new and complementary Innovate UK funded project which will see the implementation of The Parking Platform™ (to be detailed in next years report for 2018), AppyParking's system to collect, aggregate and standardise parking restriction data across councils, creating a UK wide parking dataset.
18	Appy Parking- "Parking Platform" Project	Traffic Management	UTC, Congestion management, traffic reduction	CCC	2018	2018-19	Digitising traffic regulation orders	Reduction in vehicle emissions	On-going	2019	Assisting autonomous vehicles; embedding TRO's within the vehicles and guiding them to available parking areas and reducing congestion and emissions.
19	Appy Parking - "Park AV" Project	Traffic Management	UTC, Congestion management, traffic reduction	CCC	2018	2019	Autonomous valet parking	Reduction in vehicle emissions	On-going	2019	Allowing autonomous vehicles to find the nearest available parking space, reducing congestion and improving air quality.
20	UK Connected Intelligent Transport Environment (UK CITE)	Public Information	Other	Led by Travel A.I including CCC / TfWM; Local Authorities;	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

				Consultancies; TSC and Data Experts Innovate UK							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.
21	Citizen's at the City's Heart (CATCHI)	Public Information	Other	CCC / TfWM	Complete	On-going	Uptake	Reduction in vehicle emissions	On-going	On-going	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 - completed 2017, finding are available for next 10 years, possibly use findings for 2021 city of culture visitor exerience public transport and tourist attractions, in partnership with TfWM
22	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, and was doubled to 100 bikes in 2017. A city wide scheme is currently under development
23	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.

24	JLR Park & Ride	Alternatives to private vehicle use	Bus based Park & Ride	Jaguar Land Rover	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going	N/A	Private park and ride for JLR staff and visitors. Operates between Birmingham Airport, Coventry Airport and Gaydon Plant Site. 1 Million passenger journeys per year.
25	SUITS - Sustainable Urban Integrated Transport Solutions	Public Information	Other	Led by Cov Uni inc CCC and a European Consortia Horizon 2020	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.
26	Choose How you Move Active Travel Campaign	Public Information	Via the Internet	Public Health Cov & Warks	2017	2017	Uptake	Reduction in vehicle emissions	On-going	On-going	An Active Travel Campaign for Warwickshire and Coventry was launched in August 2017 (www.coventry.gov.uk/activetravel). Officers have worked to develop a website which is an active travel information hub, under the 'Choose how you Move' branding, to publicise various travel tools such as journey planners, walking and cycling maps, the Coventry and Warwickshire Car Share scheme, as well linking to air pollution. An interactive map showing NO2 monitoring sites across Coventry and 2016 annual mean NO2 concentrations has been developed, and is accessible through the campaign website. In addition, funding from Early Measures work has included Sustrans using the Choose How You Move branding to promote Active Travel (with a focus on the A4600 corridor, but also with a city-wide Comms campaign promoting Choose How You Move, and therefore active travel, even more
27	OLEV Funding for Electric Taxi Charging Points	Promoting Low Emission Transport	Taxi emission incentives	CCC	2017	2018	Uptake	Reduction in vehicle emissions	On-going	2019	£1.2 million of funding awarded to the council to provide 39 rapid charge points for electric taxis. Intention is to provide strategically placed charging points around city to encourage uptake of low emissions

											taxis to reduce emissions and support the local taxi industry/investment in UK Automotive industry.
28	OLEV Funding for on street residential chargepoints scheme	Promoting Low Emission Transport	Other	CCC	2018	2019	Uptake	Reduction in vehicle emissions	On-going	2019	£300k of funding awarded to CCC to provide 90 slow and fast charge points for residents that don't have off street parking facility, to encourage them to own or lease electric vehicles
29	JAQU Funding for AQ Early Measures [VMS]	Public Information	Other	CCC	2018	2019	Providing information on Air Pollution and advise on alternate travel route	Improving air quality	Complete	Complete	£2 million of funding was awarded to CCC to deliver projects under the Air Quality Early Measures Scheme. 4 VMS have been installed that will display warnings of high air pollution and advise on alternate routes at two identified hot spots in Coventry
30	JAQU Funding for AQ Early Measures [AQ Sensors]	Other	Other	CCC	2018	2019	Monitoring air pollution	Improving air quality	Complete	Complete	£2 million of funding was awarded to CCC to deliver projects under the Air Quality Early Measures Scheme. 12 air monitoring sensors have been installed. During high air pollution readings, a warning is sent to the Council's UTMC whereby advisory messages are displayed on the VMS signs with warnings of high air pollution and advise on alternate routes at two identified hot spots in Coventry
31	JAQU Funding for AQ Early Measures [Signal upgrade]	Traffic Management	UTC, Congestion management, traffic reduction	CCC	2018	2019	Upgrade of traffic signals along the A4600 [an identified AQ hotspot]	Improving air quality	Complete	Complete	£2 million of funding was awarded to CCC to deliver projects under the Air Quality Early Measures Scheme. 7 traffic signal Junctions along A4600 have been upgraded to facilitate latest technology and bringing it current standards.
32	JAQU Funding for AQ Early Measures [4 x LEVC TX leasing]	Promoting Low Emission Transport	Taxi emission incentives	CCC	2018	2019	uptake of E-Taxis	Improving air quality	On-going	2019	£2 million of funding was awarded to CCC to deliver projects under the Air Quality Early Measures Scheme. A 'try before you buy' scheme has been launched allowing hackney carriage owners/drivers to try the new LEVC electric taxi with a petrol range extender before committing to purchasing the vehicle. CCC is providing financial incentives when new ULEV or electric hackney carriage is purchased. 10 new electric taxis have been purchased through this scheme to date.
33	Burn Right & Ready to Burn Campaigns	Public Information	Via the Internet	Led by Defra and promoted by CCC	Complete	Complete	Project Success	Reduction in PM2.5	Complete	On-going	Campaigns educating the public about use of correct fuel in open fires and woodburning stoves with the aim of reducing smoke and PM2.5 emissions

34	Bus Lane Suspension	Traffic Management	Other	CCC	2016	2019	reduced congestion on key route network	Reduction in vehicle emissions	complete	complete	Evidence showed congestion in Coventry to be rising faster than almost anywhere else due to the growth of the city and its economy. To tackle the growing congestion issue, an evidence based bus lane review was recommended, where a number of bus lanes were suspended and results were monitored on a monthly basis for 18 months, showing improvement in congestion.
35	Intelligent Variable Messaging System (iVMS)	Public Information	Via other mechanisms	"CCC; Siemens Mobility; SGIL; Coventry University; Horiba MIRA CWLEP"	Complete	Complete	Uptake	Reduction in vehicle emissions	On-going Completed - NOTE project findings will be further exploited to improve air quality on the three corridors which are pollution hotspots.	On-going	"The analysis of the reduced travel times (congestion) at peak periods leads to some improved accessibility for city centre economic activities, especially using the Binley Rd corridor, where at peak times (assuming 6% App penetration rate) congestion is all but removed. Assuming that these savings can be realised over the year on a consistent basis there is a reduction in congestion in all corridors, with a reduced period where free flow is not possible. Further, the three test corridors represent important routes into Coventry, but only part of the total road network – around just over a fifth of average daily vehicle counts. The savings estimated above can be expected to be greater if the traffic management systems operate city-wide. It is possible to provide some indication of effects on vehicle emissions of time savings on the corridors, as calculated by Coventry University Centre for Future Transport and Cities. The most substantial achievement of the iVMS project has been to develop and extend the local test bed environment for vehicle technologies (and related smart city activity) across a number of dimensions. The bluetooth technology has helped to inform the new DEFRA funded Early Measures Feasibility Project (from 2018 onwards) especially along the A4600 key route into the city. "
36	Binley Business Park - SusCom	Promoting Travel Alternatives	Workplace Travel Planning	CCC, Partners - Binley Business Park, Coventry Building Society, Tsys, St. Gobain, Keogh, Orbit Housing.	2018	2019	Uptake of sustainable travel	Improving air quality	On-going	On-going	Joint travel plan between several large businesses to control traffic mangement and encourage employees to take up sustainable travel.

37	West Midlands Air Quality Improvement Programme	Policy Guidance and Development Control	Other policy	University of Birmingham	Complete	Complete	Uptake of tools and/or policy	Reduction / mitigation in NOx and PM	On-going	2022	Led by the University of Birmingham, and supported by £5million of funding from the Natural Environment Research Council (NERC), the project comprises three broad themes which aim to improve understanding of the region's air pollution challenges, to provide new capability to support clean air measures and policy focussed upon the region, and to support the application of these to specific policy scenarios, questions and challenges
38	Friargate Travel Plan	Promoting Travel Alternatives	Workplace Travel Planning	CCC	Complete	On-going	Uptake	Reduction in vehicle emissions	On-going	On-going	A travel plan has been developed as part of the council's relocation to new offices in a more sustainable location adjacent to the railway station. The building includes cycle parking and changing facilities as well as a fleet of pool bikes and pool cars including electric vehicles to reduce private car use for travel to work and for business journeys.
39	UK Autodrive	Promoting Travel Alternatives	Other	Led by Arup managing several partners incl CCC; Axa, Milton Keynes Council, Transport Systems Catapult, Ford, JLR, TMETC, RDM	Complete	Complete	Project Success	Reduction in vehicle emissions	Complete	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. After project end TfWM looking at how to utilise the app further

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 currently trialling two different technologies that are capable of measuring $PM_{2.5}$ Airsensa and AQ Mesh. Airsensa has unfortunately been on hold for some time due to unforeseen circumstances with the supplier, and we have been working to evaluate AQ Mesh data capture due to reliability issues.

It is still 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 in conjunction with colleagues from Public Health.

The city council has recently purchased the Zephyr sensor supplied by Earthsense that also has PM2.5 monitoring capability. This data will be subject to evaluation.

Coventry City Council are concerned about particulates released by wood burning stoves with some studies estimating 38% of local particulate emissions come from wood burning. We are promoting the Defra campaign through our website to educate the public and the 'Ready to Burn' and 'Burn Right' websites, encouraging the use of the correct fuels to reduce emissions from these appliances.

The supplementary planning document on air quality, developed with partner authorities from Warwickshire, aims to tackle particulate emissions by providing guidance to developers on reducing construction related emissions of particulate matter by requiring developers to produce construction management plans on controlling dust and dirt, use of Non-Road Mobile Machinery (NRMM) and emissions limits on new biomass plant.

Coventry City Council currently has representatives at the Coventry and Warwickshire Air Quality Alliance. The alliance is an informal alliance of officers from Public Health, Planning Transport, Environmental Health and partner organisations across the sub region. Air Quality also features as a priority in the Coventry and Warwickshire Health Protection Strategy 2017-2021

(https://apps.warwickshire.gov.uk/contentplatform/open/WCCC-630-1096). The Alliance have been working in partnership to support collaborative efforts to improve air quality in Coventry and Warwickshire, which has included developing an active travel campaign: "Choose how you move" (please see website at: www.coventry.gov.uk/activetravel), developing Coventry and Warwickshire-wide planning guidance for developers regarding Air Quality, and collaboratively reviewing air quality action plans.

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 52 sites during 2017 and 63 during and 2018. Table A. 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.1 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 2017 and 2018 dataset of monthly mean values is provided in Appendix B.

The results of diffusion tube monitoring across the city, shows a general decline in nitorgen dioxide levels across the city. Appendix A contains graphs which show the trend in nitrogen dioxide tube results for the past seven years for five specific areas of the city.

In 2017, there were 7 tubes with exceedences of the annual mean (40 µg/m^3) from a total of 52 results. Of these, 1 tube exceeded 60 µg/m^3. This tube is located on a small stretch of a busy road on an incline and with a street canyon. 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.

In 2018 there were 9 tubes with exceddences of the annual mean (40 µg/m^3) from a total of 58 results. Of these, no tubes exceeded 60 µg/m^3

Coventry City Council has created an interactive map which shows the locations of the tubes with monitoring results from 2011 to 2018. 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.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) (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
HR4	89 Holyhead Road	Roadside	432639	279258	NO_2	YES	0	7.80	NO	3.00
HR5	School	Roadside	432730	279238	NO_2	YES	3.20	1.80	NO	2.50
HR6	75 Holyhead Rd	Roadside	432706	279228	NO_2	YES	0	6.00	NO	3.00
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
FS1	Fairfax Street, Pool Meadow	Kerbside	433569	279234	NO_2	YES	3.9	1	NO	3
QV1	Lamppost 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
STL1	End of Stonehouse Lane	Roadside	436203	275841	NO_2	YES	9	12	NO	2.45
LON8	On no. 703 London Rd	Roadside	436551	275703	NO_2	YES	0	17.9	NO	2.45
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	5.2	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
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	Lamppost 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

FGS4	Callice Court	Roadside	434203	278892	NO_2	YES	0	5.40	NO	2.80
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	1.44	0.3	NO	2.4
Grange3	161/163 Grange Road	Roadside	435791	284285	NO_2	YES	1.7	1.74	NO	2.43
SHP1	257 Sir Henry Parkes Road	Roadside	430447	277080	NO_2	YES	0	9.93	NO	2.37
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
RR1	Opposite Chantry Place	Roadside	433550	279478	NO_2	YES	N/A	0	NO	2
RR2	Near Junction 1	Roadside	433525	279502	NO_2	YES	N/A	0	NO	2.9
RR3	Opposite to RR2	Roadside	433552	279524	NO_2	YES	N/A	1.4	NO	2.5
SA1	L12PIP	Roadside	427538	277397	NO_2	YES	9.70	1.60	NO	2.50
SA2	Outside 62	Roadside	427624	277863	NO_2	YES	7.70	2.50	NO	2.50
SA3	Tanners Lane/ Banner Lane Junction	Roadside	427613	278162	NO_2	YES	1.80	3.70	NO	2.60
HL1	Junction with Broad Lane	Roadside	427249	279780	NO_2	YES	6.70	1.10	NO	2.75
BS1	162 Bennetts Road South	Roadside	431940	282916	NO_2	YES	0	16.00	NO	2.20

KG1	Outside no 6	Roadside	431956	282113	NO_2	YES	6.70	2.70	NO	3.00
EB1	70 Aldermans Green Road	Roadside	435928	283069	NO_2	YES	0	8.60	NO	2.00

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.1 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)					
					2013	2014	2015	2016	2017	2018
CC01*/1N	Roadside	Diffusion Tube	100	100	32.5	39.3	34.9	37.1	33.9	29.00
HR1	Roadside	Diffusion Tube	100	100	**60.4**	**63.1**	**57.6**	**60.58**	**52.8**	**47.11**
HR2c	Roadside	Diffusion Tube	91.67	91.67	/	/	/	35.92	26.9	27.50
HR1c	Roadside	Diffusion Tube	100	100	/	/	**81.7**	**75.60**	**63.9**	**58.40**
HR4	Roadside	Diffusion Tube	87.5	58.3	/	/	/	/	/	**46.27**
HR5	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	**46.90**
HR6	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	**55.53**
BH1a	Roadside	Diffusion Tube	100	100	**41.2**	39	36.8	38.60	35	32.10
BH2a	Roadside	Diffusion Tube	100	100	**53.8**	**48.9**	**47.1**	**51.23**	**43.5**	**40.42**
BH4	Roadside	Diffusion Tube	100	100	**46.2**	**47**	**43.2**	**47.6**	39.8	37.40
BH13	Roadside	Diffusion Tube	100	100	**41.2**	37.4	38.6	38.02	34.1	30.88
BH14	Roadside	Diffusion Tube	100	100	36.2	36.7	34.8	36.9	30.3	30.10
BH15i	Kerbside	Diffusion Tube	91.67	91.67	**44.7**	**42.3**	39.3	**42.50**	34.4	34.20
FS1	Kerbside	Diffusion Tube	100	100	**49.6**	**44.2**	**41.2**	**43.90**	39.3	36.16

QV1	Roadside	Diffusion Tube	83.33	83.33	/	39.8	39.8	**40.40**	35.1	32.29
GF1	Kerbside	Diffusion Tube	33.33	33.33	/	37.8	**40.1**	**42.35**	25.5	23.46
GS1	Roadside	Diffusion Tube	100	100	/	**44.5**	**43.1**	**40.28**	35.3	32.48
STL1	Roadside	Diffusion Tube	100	58.3	/	/	/	/	31.2	28.40
LON8	Roadside	Diffusion Tube	100	58.3	/	/	/	/	30	25.30
LON12	Roadside	Diffusion Tube	83.33	83.33	**44.0**	**43.9**	**42.7**	**45.20**	**44.3**	39.80
SE1	Kerbside	Diffusion Tube	100	100	37.0	36.1	31.4	33.40	30	29.40
SE3	Roadside	Diffusion Tube	75	75	**42.5**	**41.4**	38.7	**41.96**	36.6	31.92
QAV01	Kerbside	Diffusion Tube	100	100	38.1	35.0	34.9	34.20	28.8	26.90
QAV12	Roadside	Diffusion Tube	75	75	39.4	38.5	37.1	33.69	31.1	32.41
QAV13	Roadside	Diffusion Tube	92	92	**43.1**	**43.3**	37.4	**42.73**	37.3	33.74
R5	Roadside	Diffusion Tube	100	100	**48.8**	**44.9**	**46.6**	**49.01**	**40.1**	39.48
R6	Roadside	Diffusion Tube	100	100	**55.7**	**52.9**	**46.1**	**50.50**	**45.7**	**42.10**
R8	Roadside	Diffusion Tube	100	100	**43.0**	38.9	38.1	**41.62**	37.3	35.48
R9	Roadside	Diffusion Tube	91.67	91.67	**45.8**	**41.2**	36.7	39.30	34.9	34.40
LR1	Roadside	Diffusion Tube	100	100	**42.6**	**44**	**42.3**	**45.07**	37.8	34.88
LR2	Roadside	Diffusion Tube	100	100	**47.4**	**43.4**	**43.5**	**45.32**	37.2	38.10
LR3	Roadside	Diffusion Tube	100	100	**46.5**	**44.6**	**41.6**	**44.68**	38.7	37.12

BRN2	Roadside	Diffusion Tube	100	100	38.9	39.1	37.5	**41.79**	36	34.41
BRN5	Roadside	Diffusion Tube	100	100	/	/	**45.9**	**41.39**	32.6	35.40
BA1	Roadside	Diffusion Tube	91.67	91.67	32.9	38.3	37.7	39.71	33.8	32.65
BA1c	Roadside	Diffusion Tube	83.33	83.33	/	/	33.9	30.26	25.2	/
SS1	Roadside	Diffusion Tube	100	100	37.3	36.8	35	**41.19**	34.3	34.08
SS2	Roadside	Diffusion Tube	100	100	39.0	38.1	36.4	38.84	31.3	33.19
SS3	Roadside	Diffusion Tube	100	100	39.0	39.1	37.3	**42.80**	36.1	35.29
SS5	Roadside	Diffusion Tube	100	100	**50.7**	**49.2**	**44.4**	**49.10**	**42.7**	**41.90**
BELL1	Roadside	Diffusion Tube	100	100	**42.3**	**40.2**	38.9	**42.19**	38.2	36.26
BELL2	Roadside	Diffusion Tube	100	100	39.5	38.9	36.4	39.46	35.2	33.37
FGS2	Roadside	Diffusion Tube	100	100	39.7	38.9	37.9	39.09	32.7	32.36
FGS3A	Roadside	Diffusion Tube	100	100	**44.0**	**42.7**	37.5	**41.00**	33.8	32.87
FGS4	Roadside	Diffusion Tube	87.5	58.3	/	/	/	/	/	**40.75**
GR1	Roadside	Diffusion Tube	100	100	37.7	36.5	36.8	39.04	33.5	33.06
GR2a	Roadside	Diffusion Tube	25	25	/	/	/	/	/	37.80
Grange2	Roadside	Diffusion Tube	50	50	38.2	**42.9**	33.0	36.30	32.5	/
Grange3	Roadside	Diffusion Tube	80	33.33	/	**43.0**	/	/	32.2	28.04
SHP1	Roadside	Diffusion Tube	100	16.7	/	/	36.0	/	/	29.52

SHP2	Roadside	Diffusion Tube	100	100	/	/	28.7	35.24	28.6	30.70
SHP3	Roadside	Diffusion Tube	91.67	91.67	/	/	31.3	34.90	31.2	26.00
BL1	Roadside	Diffusion Tube	91.67	91.67	/	/	**48.5**	30.00	26.4	28.04
DH1	Roadside	Diffusion Tube	83.33	83.33	/	/	37.5	29.70	25.6	/
RR1	Roadside	Diffusion Tube	100	33.33	/	/	/	/	/	39.12
RR2	Roadside	Diffusion Tube	75	25	/	/	/	/	/	38.45
RR3	Roadside	Diffusion Tube	66.67	16.7	/	/	/	/	/	47.63
SA1	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	20.70
SA2	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	24.20
SA3	Roadside	Diffusion Tube	50	33.3	/	/	/	/	/	25.30
HL1	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	21.00
BS1	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	21.16
KG1	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	27.40
EB1	Roadside	Diffusion Tube	100	66.7	/	/	/	/	/	30.01

☒ Diffusion tube data has been bias corrected

☒ 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**.

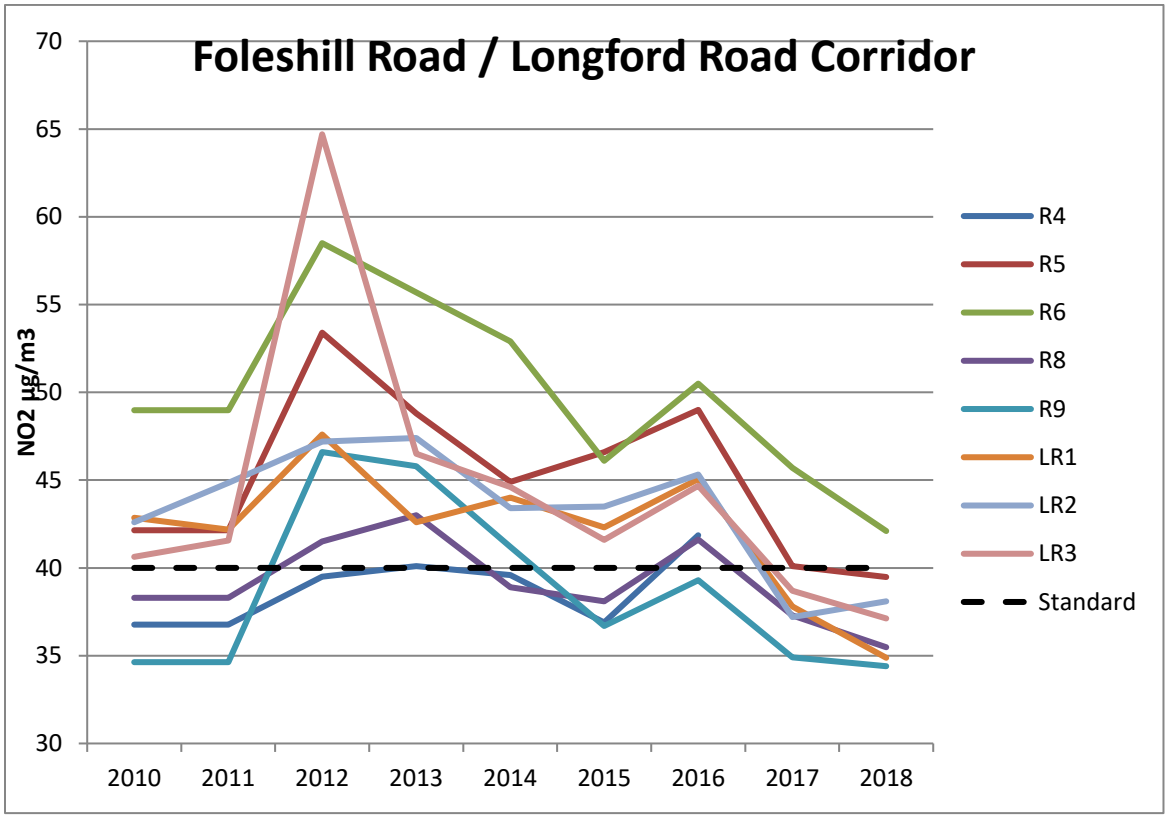
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

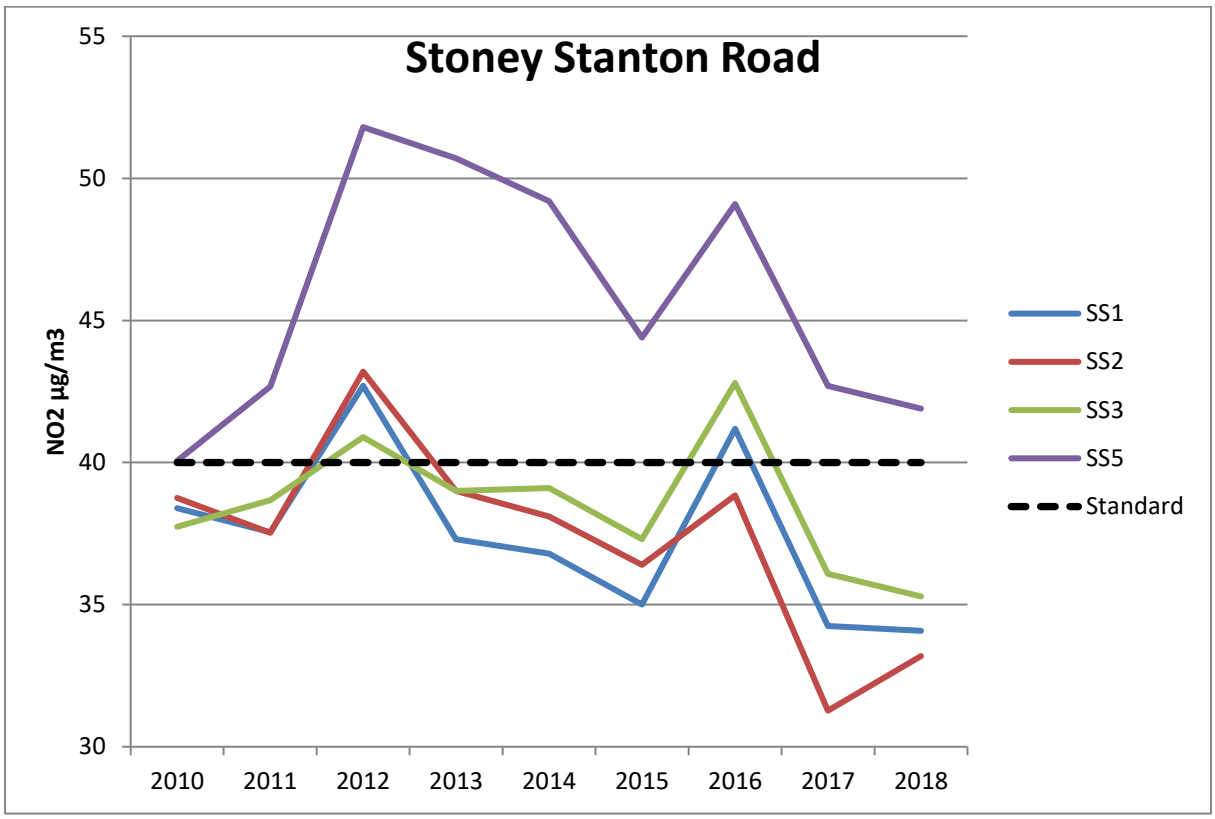
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

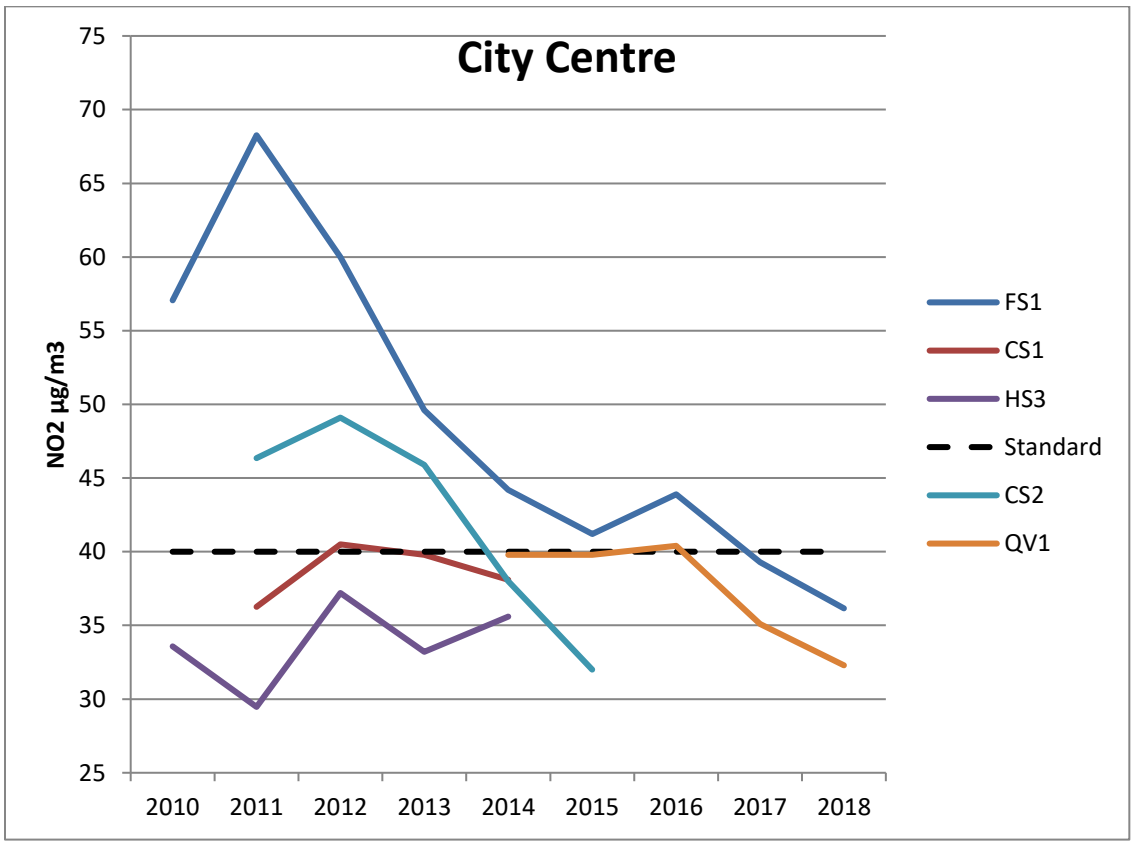
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

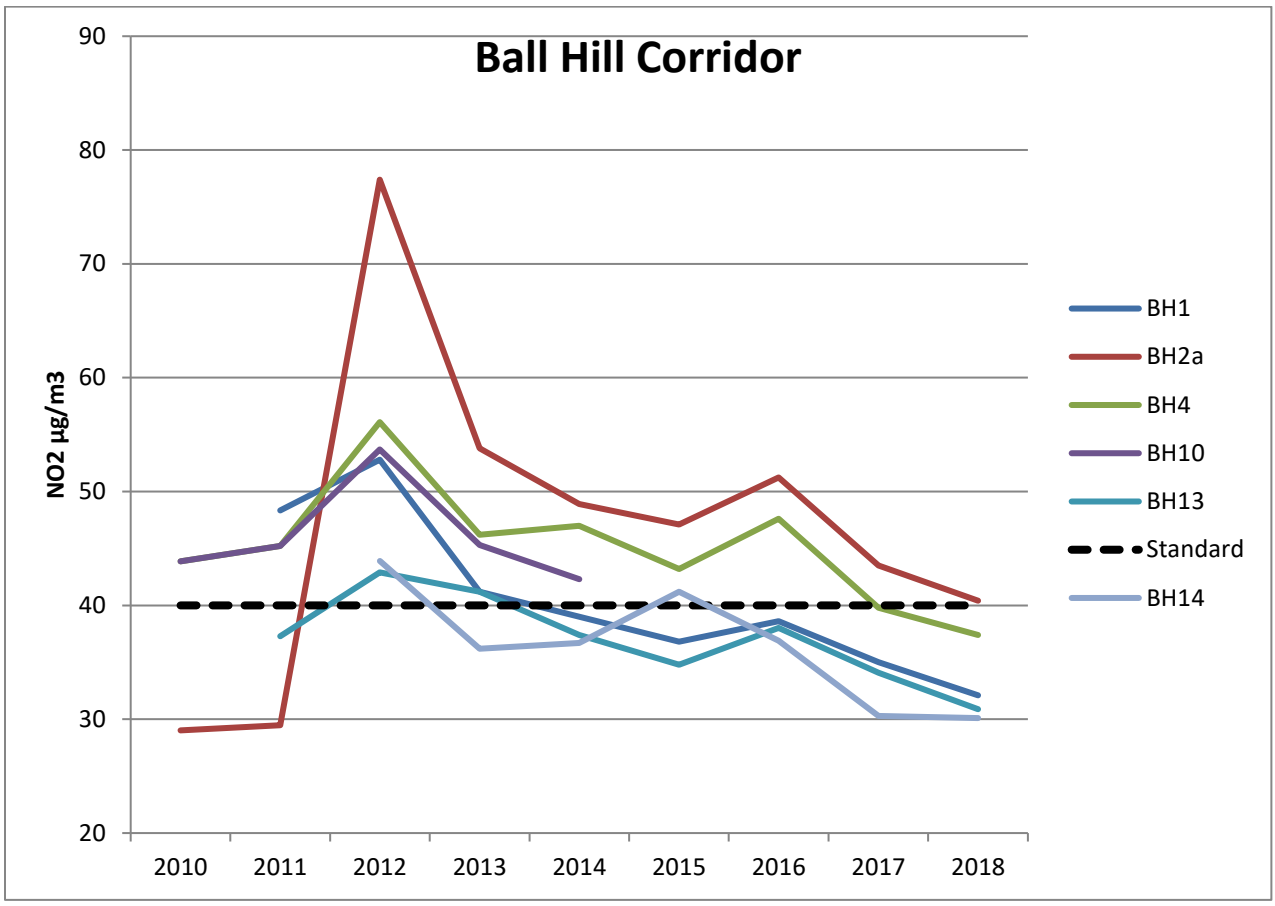
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

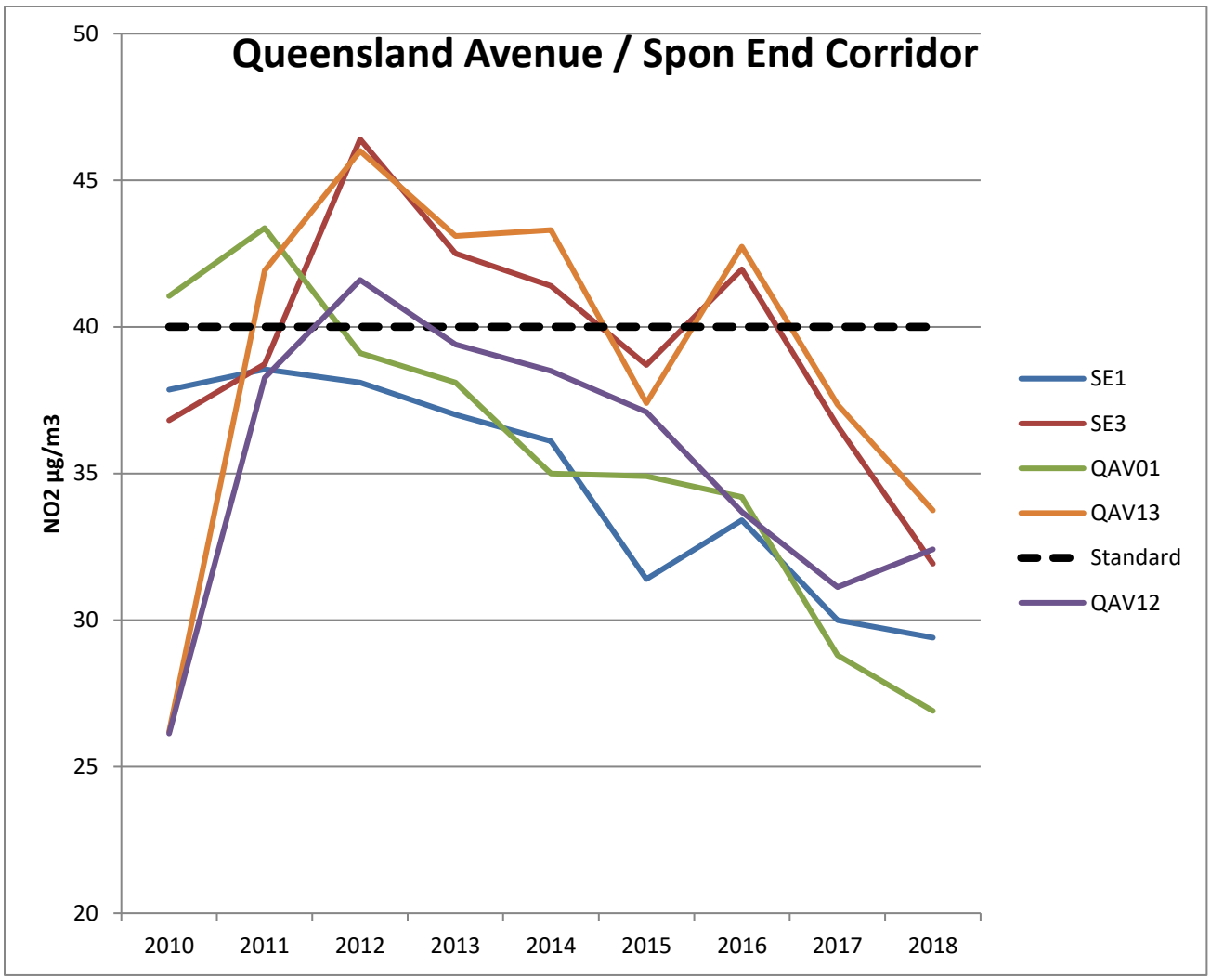
Figure A.1 – Trends in Annual Mean NO_2 Concentrations




Stoney Stanton Road
NO2 µg/m3
55
50
45
40
35
30
2010
2011
2012
2013
2014
2015
2016
2017
2018
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
2017
2018
FS1
CS1
HS3
Standard
CS2
QV1


Ball Hill Corridor
NO2 µg/m3
90
80
70
60
50
40
30
20
2010
2011
2012
2013
2014
2015
2016
2017
2018
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
2017
2018
SE1
SE3
QAV01
QAV13
Standard
QAV12

Appendix B: Full Monthly Diffusion Tube Results for 2017 & 2018

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2017

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.87) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
CC01*/1N	57.75	43.49	50.45	42.28	39.92	42.56	36.96	35.94	37.19	37.24	40.15	43.11	42.25	36.8	33.9
HR1	82.85	61.34	68.78	60.15	70.11	61.83	55.83	47.53	56.40	54.47	59.18	49.28	60.65	**52.8**	**52.8**
HR2c	52.21	34.73	36.74	32.63	37.25	22.87	27.37	23.35	30.13	27.81	15.36	/	30.95	26.9	26.9
HR1c	121.41	83.79	99.32	86.27	103.28	89.54	93.12	82.91	88.26	85.64	79.40	79.64	91.05	**79.2**	**63.9**
BH1a	61.37	43.11	47.87	46.83	40.60	40.1	39.82	37.29	41.16	37.72	41.26	41.00	43.18	37.6	35.0
BH2a	69.10	46.78	56.72	61.68	48.61	45.31	45.42	42.10	43.14	42.73	50.95	47.69	50.02	**43.5**	**43.5**
BH4	73.18	54.77	60.46	52.69	57.32	43.29	45.99	44.06	44.91	44.25	50.94	52.52	52.03	**45.3**	39.8
BH13	54.77	37.38	42.09	34.80	35.19	36.74	31.31	32.99	48.49	34.87	40.39	40.95	39.16	34.1	34.1
BH14	71.86	41.36	32.17	47.91	38.51	43.42	38.39	37.83	38.30	34.89	48.00	44.64	43.11	37.5	30.3
BH15i	68.17	46.17	51.73	60.56	53.98	46.62	48.78	41.28	7.72	40.69	50.94	/	46.97	**40.9**	34.4
FS1	73.55	50.44	56.48	59.52	53.67	47.65	50.06	42.43	48.97	43.53	58.47	48.54	52.78	**45.9**	39.3
QV1	68.23	44.16	50.41	49.02	37.19	/	37.63	34.62	38.53	41.94	/	42.53	44.43	38.7	35.1
GF1	/	/	/	/	/	22.64	/	/	/	37.06	43.01	42.34	36.26	25.5	25.5
GS1	58.16	38.85	44.58	41.76	39.18	32.83	41.21	34.79	39.09	39.14	39.52	37.81	40.58	35.3	35.3
STL1	/	/	/	/	/	39.94	28.22	33.14	37.48	37.42	42.13	42.09	37.20	35.2	31.2

LON8	/	/	/	/	/	31.08	27.35	28.38	31.78	30.81	40.62	31.73	31.68	30.0	30.0
LON12	74.55	45.99	57.61	/	/	61.06	55.28	47.84	50.97	48.37	69.37	50.11	56.11	**48.8**	**44.3**
SE1	61.96	43.26	45.08	39.65	40.40	37.33	33.23	32.78	35.22	38.95	43.10	36.67	40.64	35.4	30.0
SE3	63.97	44.25	49.01	42.08	/	/	32.50	/	35.52	35.01	40.84	35.65	42.09	36.6	36.6
QAV01	76.69	46.02	54.68	50.02	46.63	47.01	41.92	39.21	44.97	41.93	47.98	40.83	48.16	**41.9**	28.8
QAV12	/	/	/	37.79	36.26	35.26	31.12	30.84	37.87	35.76	39.30	37.78	35.78	31.1	31.1
QAV13	62.34	39.00	47.23	42.29	42.56	44.35	38.52	35.34	/	39.8	41.90	38.85	42.92	37.3	37.3
R5	65.14	40.52	49.35	55.19	48.75	43.73	49.52	37.43	42.81	40.43	41.27	39.31	46.12	**40.1**	**40.1**
R6	78.84	60.95	59.94	71.80	56.51	54.89	57.41	47.44	49.48	52.29	57.50	52.50	58.30	**50.7**	**45.7**
R8	83.41	39.54	47.54	47.18	38.59	35.91	35.39	34.92	40.21	33.29	39.06	38.89	42.83	37.3	37.3
R9	59.88	46.25	49.15	38.90	43.53	39.31	37.09	33.38	38.70	40.8	/	39.07	42.37	36.9	34.9
LR1	65.51	36.86	46.01	51.17	46.07	37.7	42.45	33.18	40.92	38.43	42.15	40.92	43.45	37.8	37.8
LR2	58.17	39.20	51.17	42.40	51.56	40.76	40.02	32.96	39.79	37.69	40.24	38.66	42.72	37.2	37.2
LR3	62.40	38.67	47.63	52.14	42.34	43.73	40.99	36.59	41.97	38.8	46.27	42.43	44.50	38.7	38.7
BRN2	59.59	38.74	46.62	41.14	39.97	39.42	35.70	32.50	39.21	38.76	43.78	40.80	41.35	36.0	36.0
BRN5	57.36	36.51	40.49	39.05	40.90	30.74	34.43	29.51	35.76	34.4	33.67	36.45	37.44	32.6	32.6
BA1	54.79	38.52	41.35	37.45	37.25	/	36.85	31.86	38.01	36.81	33.51	40.37	38.80	33.8	33.8
BA1c	45.69	28.36	32.85	27.98	27.94	26.49	23.76	21.96	27.01	27.05	/	/	28.91	25.2	25.2
SS1	54.98	39.32	43.87	44.51	39.98	35.43	36.15	30.47	36.13	35.77	39.92	35.90	39.37	34.3	34.3
SS2	55.66	41.03	42.50	33.38	19.11	36.71	32.26	29.26	33.79	34.82	35.69	37.10	35.94	32.6	32.6
SS3	58.60	42.01	45.50	42.97	44.87	40.81	34.22	32.38	41.61	39.35	37.34	38.12	41.48	36.1	36.1
SS5	69.12	48.59	56.10	57.94	51.09	54.23	48.39	41.85	48.64	49.05	59.83	46.89	52.64	**45.8**	**42.7**
BELL1	62.64	48.25	48.83	42.02	41.45	38.97	39.79	35.22	40.97	41.48	45.30	41.34	43.85	38.2	38.2
BELL2	52.55	38.39	43.67	42.04	38.82	40.83	34.06	33.12	40.96	39.66	42.64	38.83	40.46	35.2	35.2
FGS2	54.84	38.26	43.56	37.48	34.85	33	33.02	31.87	37.18	36.56	35.26	34.77	37.55	32.7	32.7
FGS3A	55.98	37.36	39.76	44.22	36.49	32.3	33.50	31.59	35.47	36.83	42.77	39.59	38.82	33.8	33.8
GR1	56.13	34.00	40.20	38.65	26.96	33.53	35.48	30.58	37.88	39.15	48.33	40.54	38.45	33.5	33.5

Grange2	54.12	44.24	47.04	45.33	31.98	39.34	/	/	/	/	/	/	43.67	35.7	32.5
Grange3	/	/	/	/	/	/	/	33.32	40.59	39.13	47.00	/	40.01	35.4	32.2
SHP1	/	/	/	/	/	/	/	/	/	/	31.77	33.35	32.56	/	/
SHP2	49.26	37.70	35.50	30.30	32.22	28.64	28.63	25.17	29.68	27.48	36.66	32.90	32.85	28.6	28.6
SHP3	56.65	39.57	40.39	/	33.71	35.39	35.44	29.95	36.48	38.2	42.71	41.20	39.06	34.0	31.2
BL1	53.23	40.89	42.30	35.23	36.29	35.07	30.32	26.88	32.65	33.13	33.54	/	36.32	31.6	26.4
DH1	52.66	43.43	45.46	32.24	37.83	24.51	25.30	23.10	29.01	30.65	/	/	34.42	29.9	25.6
RR1	/	/	/	/	/	/	/	/	39.71	34.24	45.95	38.22	39.53	/	/
RR2	/	/	/	/	/	/	/	/	40.16	36.63	/	41.28	39.36	/	/
RR3	/	/	/	/	/	/	/	/	/	56.96	65.94	/	61.45	/	/

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

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

☒ **Where applicable, 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) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

Table B.2 – NO_2 Monthly Diffusion Tube Results – 2018

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 (0.92) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
CC01/1*N	44.49	30.75	34.19	28.39	22.21	23.67	35.99	27.97	23.19	37.41	44.24	44.23	33.06	30.42	29.00
HR1	48.96	49.23	53.28	49.65	57.20	46.25	57.62	41.87	48.93	56.92	55.01	49.62	51.21	**47.11**	**47.11**
HR1C	88.80	71.06	81.34	98.67	82.22	72.24	79.46	61.15	74.68	74.52	80.07	67.67	77.66	**71.45**	**58.40**
HR2C	30.00	/	30.30	31.43	33.59	32.11	29.71	21.53	25.59	/	35.89	28.76	29.89	27.50	27.50
HR4	/	/	/	/	48.11	34.05	34.30	/	37.57	44.98	75.98	47.96	46.13	**46.27**	**46.27**
HR5	/	/	/	/	50.00	46.64	61.27	43.40	53.70	56.17	52.41	48.75	51.54	**53.88**	**46.90**
HR6	/	/	/	/	48.80	48.19	64.45	47.39	50.47	56.46	56.52	52.62	53.11	**55.53**	**55.53**
BH1a	42.80	41.43	36.87	39.00	35.36	34.10	35.60	28.65	36.70	/	/	37.69	36.82	33.87	32.10
BH2a	43.86	55.61	43.49	38.87	42.48	43.13	44.92	35.91	44.31	46.67	/	/	43.93	**40.42**	**40.42**
BH4	41.93	48.56	47.13	47.33	48.71	42.65	48.65	35.48	43.33	48.07	51.62	42.20	45.47	**41.83**	37.40
BH13	35.02	34.70	33.08	32.85	/	23.64	33.81	27.42	34.46	36.48	37.25	40.47	33.56	30.88	30.88
BH14	46.06	48.21	42.10	36.81	34.54	32.36	38.00	33.04	42.65	38.50	40.38	41.26	39.49	36.33	30.10
BH15i	42.13	47.43	43.45	41.33	47.48	42.32	47.97	34.17	41.94	45.83	42.51	46.60	43.60	**40.11**	34.20
FS1	50.41	47.31	55.78	47.80	51.57	46.36	46.54	34.02	43.63	47.68	53.14	46.33	47.55	**43.75**	**40.25**
QV1	34.75	39.21	34.23	33.24	30.20	24.00	36.53	33.28	40.04	44.53	39.64	40.35	35.83	32.96	30.32
GF1	33.11	42.21	37.64	33.17	30.57	25.93	25.93	22.85	32.67	43.14	47.06	68.55	36.90	33.95	31.23
GS1	37.86	41.03	40.39	35.80	35.64	26.76	36.84	28.78	29.78	35.80	40.51	40.36	35.80	32.94	30.30

STL1	44.17	34.61	33.72	32.60	28.35	20.85	31.91	28.17	34.56	39.51	40.95	39.18	34.05	31.33	28.40
LON8	32.39	31.36	25.91	27.14	25.52	20.22	25.68	21.86	28.62	34.35	29.04	27.94	27.50	25.30	25.30
LON12	49.46	53.18	42.89	44.99	40.85	35.79	46.14	39.81	53.49	54.41	54.76	46.73	46.88	**43.13**	39.80
SE1	38.02	37.30	41.14	38.07	35.97	30.18	/	26.49	34.36	39.10	46.97	39.21	36.98	34.02	29.40
SE3	37.19	37.63	40.00	31.92	32.06	31.50	32.97	23.16	32.41	39.26	41.19	37.08	34.70	31.92	31.92
QAV01	41.94	43.76	43.67	43.55	41.90	34.33	39.73	30.73	37.23	47.65	47.05	41.82	41.11	37.82	26.90
QAV12	35.70	40.22	39.47	35.07	34.06	26.61	32.98	25.36	32.15	38.27	43.12	39.72	35.23	32.41	32.41
QAV13	39.75	37.59	38.38	38.55	31.89	30.92	36.00	28.70	38.16	32.67	41.32	46.14	36.67	33.74	33.74
R5	38.23	46.19	37.77	40.67	47.20	38.90	45.18	33.41	36.82	47.05	58.89	44.57	42.91	39.48	39.48
R6	48.94	53.08	52.00	47.09	52.45	37.82	57.27	40.58	48.53	56.88	55.34	54.52	50.37	**46.34**	**42.10**
R8	34.16	40.81	40.28	38.81	37.70	34.44	39.58	/	/	/	/	/	37.97	35.48	35.48
R9	39.27	41.83	45.88	39.21	38.36	32.44	38.37	27.01	33.62	44.99	50.40	40.77	39.35	36.20	34.40
LR1	35.00	43.49	38.63	36.95	39.69	33.40	41.77	27.28	36.39	44.66	42.53	35.11	37.91	34.88	34.88
LR2	42.25	42.52	45.16	43.80	43.93	41.32	41.24	30.05	35.72	41.90	48.03	41.01	41.41	38.10	38.10
LR3	40.08	44.76	39.41	39.52	29.45	32.69	40.96	32.54	39.26	43.19	42.76	59.60	40.35	37.12	37.12
BRN2	48.66	39.30	40.04	40.52	35.08	29.54	34.88	28.02	34.09	35.21	45.61	37.80	37.40	34.41	34.41
BRN5	36.59	45.09	40.51	51.18	37.01	37.31	35.16	24.77	31.02	38.41	44.93	39.72	38.48	35.40	35.40
BA1	37.61	36.22	36.43	35.61	/	26.77	36.77	29.53	35.17	34.17	39.85	42.29	35.49	32.65	32.65
SS1	37.96	44.33	39.22	/	37.77	32.50	34.70	26.33	34.14	41.07	40.64	38.74	37.04	34.08	34.08
SS2	39.69	36.51	40.87	37.38	37.08	33.14	32.37	26.35	31.45	39.00	42.30	36.87	36.08	33.19	33.19
SS3	/	/	40.31	41.13	41.79	37.85	38.48	29.95	34.14	39.32	43.18	37.47	38.36	35.29	35.29
SS5	49.50	48.84	51.03	55.00	51.05	39.59	48.79	37.25	46.17	52.31	52.05	53.58	48.76	**44.86**	**41.90**
BELL1	40.07	41.23	43.36	40.57	38.76	31.10	36.10	30.03	35.16	40.71	49.69	46.15	39.41	36.26	36.26
BELL2	38.13	38.88	37.46	34.75	34.08	28.68	37.19	29.38	37.11	38.51	42.69	38.45	36.27	33.37	33.37
FGS2	40.09	37.29	35.38	33.99	35.17	32.59	34.70	28.88	36.20	36.19	33.70	37.81	35.17	32.36	32.36
FGS3a	37.61	41.35	41.18	30.81	37.14	36.72	35.98	26.49	33.71	41.52	33.27	32.95	35.73	32.87	32.87
FGS4	/	/	/	/	35.56	33.84	41.09	34.03	/	43.47	45.10	42.53	39.37	**40.75**	**40.75**

GR1	37.64	41.69	38.48	38.69	32.53	32.67	35.11	25.17	34.42	40.31	35.66	38.73	35.93	33.06	33.06
GR2a	/	/	/	/	/	/	/	/	/	53.82	41.68	56.69	50.73	39.29	37.80
Grange 3	41.55	38.50	37.49	37.00	29.63	22.92	32.39	31.81	36.58	40.33	40.12	43.14	35.95	33.07	30.90
SHP1	32.08	34.85	33.62	30.62	29.47	26.16	29.77	24.60	28.72	32.13	31.58	32.17	30.48	28.04	28.04
SHP2	32.22	37.22	34.62	33.89	31.35	31.72	30.18	21.60	27.06	36.91	37.67	30.62	32.09	29.52	29.52
SHP3	44.54	36.11	40.78	37.39	33.57	34.66	28.73	27.65	36.07	39.00	38.55	39.36	36.37	33.46	30.70
BL1	37.03	38.30	35.43	36.54	33.69	27.90	32.11	24.93	30.67	35.23	38.83	36.09	33.90	31.19	26.00
RR1	45.35	47.79	47.67	42.52	45.77	36.55	40.87	27.51	34.57	48.47	50.78	42.43	42.52	39.12	N/A
RR2	42.95	50.24	44.31	44.03	45.89	38.41	38.18	27.92	34.82	49.38	43.67	41.63	41.79	38.45	N/A
RR3	57.12	51.57	47.98	51.50	/	31.09	53.45	48.28	55.28	54.85	56.69	61.67	51.77	**47.63**	N/A
SA1	/	/	/	/	26.87	22.55	24.25	19.32	20.34	28.64	32.81	29.63	25.55	26.72	20.70
SA2	/	/	/	/	27.91	27.12	29.47	21.68	25.83	31.99	34.27	32.89	28.90	30.21	24.20
SA3	/	/	/	/	28.22	22.44	24.74	/	/	/	27.21	/	25.65	26.82	25.30
HL1	/	/	/	/	25.93	23.16	25.25	20.06	25.36	30.04	27.67	24.64	25.26	26.41	21.00
BS1	/	/	/	/	17.15	13.40	19.68	18.86	22.44	17.91	25.94	27.29	20.33	21.16	21.16
KG1	/	/	/	/	32.31	27.36	30.48	25.04	29.49	36.22	38.97	35.96	31.98	33.43	27.40
EB1	/	/	/	/	28.60	24.71	29.42	18.79	24.81	33.73	33.29	36.23	28.70	30.01	30.01
DT2	35.7	23.3	19.7	17.1	18.2	19.5	25.7	17.0	27.0	19.0	33.0	27.6	23.6	21.2	21.2

☐ Local bias adjustment factor used
☒ National bias adjustment factor used
☒ Annualisation has been conducted where data capture is <75%
☒ Where applicable, 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) 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 2017 was taken from the June 2018 version of the National Diffusion Tube Bias Adjustment Factor spreadsheet, as Coventry no longer has any automatic monitoring data. There were a total of 39 studies that contributed and therefore the adjustment factor of 0.87 is thought to be representative.

Diffusion Tube Bias Adjustment Factors 06/18 Issue of the Spreadsheet							
				New (06/18) Update			
Laboratory	Method	Year	Previous Number of Studies	No. Studies Added	Total No. of Studies	Factor	Change in Factor
Aberdeen Scientific Services	20% TEA in water	2017	7	0	7	0.79	0.01
Edinburgh Scientific Services	50% TEA in acetone	2017	2	4	6	0.81	-0.08
ESG Didcot	20% TEA in water	2017	2	3	5	0.74	0.03
ESG Didcot	50% TEA in acetone	2017	27	2	29	0.77	0.00
ESG Glasgow	20% TEA in water	2017	1	0	1	0.8	0.00
ESG Glasgow	50% TEA in acetone	2017	1	0	1	0.78	0.00
Glasgow Scientific Services	20% TEA in water	2017	6	4	10	0.9	-0.01
Gradko	20% TEA in water	2017	34	5	39	0.87	-0.02
Gradko	50% TEA in acetone	2017	22	3	25	0.96	-0.01
Lambeth Scientific Services	50% TEA in acetone	2017	1	4	5	0.93	0.03
Milton Keynes Council	20% TEA in water	2017	1	3	4	0.76	-0.13
Somerset County Council	20% TEA in water	2017	2	0	2	0.77	0.00
South Yorkshire Air Quality Samplers	50% TEA in acetone	2017	2	0	2	0.88	0.00
Staffordshire Scientific Services	20% TEA in water	2017	14	5	19	0.88	-0.01
Tayside Scientific Services	20% TEA in water	2017	5	0	5	0.72	0.00
West Yorkshire Analytical Services	50% TEA in acetone	2017	4	5	9	0.77	-0.01
	Number of Studies Included		131	38	169		

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

The bias adjustment figure for 2018 was taken from the June 2019 version of the National Diffusion Tube Bias Adjustment Factor spreadsheet, as Coventry no longer has any automatic monitoring data. There were a total of 37 studies that contributed and therefore the adjustment factor of 0.92 is thought to be representative.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/19

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 September 2019

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[2]

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 (to undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m[3])	Automatic Monitor Mean Conc. (Cm) (µg/m[3])	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2018	R	Ards and North Down Borough Council	11	36	29	27.4%	G	0.78
Gradko	20% TEA in water	2018	R	Gedling Borough Council	12	33	32	5.6%	G	0.95
Gradko	20% TEA in water	2018	R	Lisburn & Castlereagh City Council	12	32	24	32.1%	G	0.76
Gradko	20% TEA in water	2018	R	Monmouthshire County Council	12	38	36	4.7%	G	0.96
Gradko	20% TEA in water	2018	UB	Northampton Borough Council	12	16	13	26.8%	G	0.79
Gradko	20% TEA in water	2018	R	Bedford Borough Council	11	32	29	9.2%	G	0.92
Gradko	20% TEA in water	2018	R	Borough Council of King's Lynn and West Norfolk	12	26	24	6.0%	G	0.94
Gradko	20% TEA in water	2018	R	Cheshire West and Chester	12	36	37	-2.5%	G	1.03
Gradko	20% TEA in water	2018	R	Cheshire West and Chester	12	43	40	6.1%	G	0.94
Gradko	20% TEA in water	2018	R	Fareham Borough Council	12	28	34	-17.5%	G	1.21
Gradko	20% TEA in water	2018	R	Fareham Borough Council	12	37	34	8.9%	G	0.92
Gradko	20% TEA in water	2018	R	Fareham Borough Council	12	32	28	12.6%	G	0.89
Gradko	20% TEA in water	2018	R	NOTTINGHAM CITY COUNCIL	12	35	34	0.3%	G	1.00
Gradko	20% TEA in water	2018	R	Bracknell Forest Borough Council	12	44	37	19.4%	G	0.84
Gradko	20% TEA in water	2018	R	Brighton & Hove City Council	9	48	50	-3.7%	G	1.04
Gradko	20% TEA in water	2018	R	Eastleigh Borough Council	11	28	32	-12.0%	G	1.14
Gradko	20% TEA in water	2018	R	Eastleigh Borough Council	12	42	38	10.2%	G	0.91
Gradko	20% TEA in water	2018	UB	Eastleigh Borough Council	12	27	28	-4.4%	G	1.05
Gradko	20% TEA in water	2018	R	Gateshead Council	12	29	25	13.9%	G	0.88
Gradko	20% TEA in water	2018	R	Gateshead Council	12	32	29	10.8%	G	0.90
Gradko	20% TEA in water	2018	R	Gateshead Council	9	40	41	-1.8%	G	1.02
Gradko	20% TEA in water	2018	R	Wokingham Borough Council	12	38	33	13.2%	G	0.88
Gradko	20% TEA in water	2018	R	Bath & North East Somerset	12	40	39	4.0%	G	0.96
Gradko	20% TEA in water	2018	R	Bedford Borough Council	10	30	27	8.8%	G	0.92
Gradko	20% TEA in water	2018	KS	Marylebone Road Intercomparison	11	93	85	9.3%	G	0.91
Gradko	20% TEA in water	2018	R	South Gloucestershire Council	12	21	20	6.3%	G	0.94
Gradko	20% TEA in water	2018	R	Thurrock Borough Council	12	53	52	2.3%	S	0.98
Gradko	20% TEA in water	2018	R	Thurrock Borough Council	12	34	30	15.1%	G	0.87
Gradko	20% TEA in water	2018	R	Thurrock Borough Council	12	31	24	28.8%	G	0.78
Gradko	20% TEA in water	2018	UB	Thurrock Borough Council	12	27	25	9.2%	S	0.92
Gradko	20% TEA in water	2018	UC	Belfast City Council	12	32	27	16.4%	G	0.86
Gradko	20% TEA in water	2018	R	City of Lincoln Council	12	44	34	32.1%	G	0.76
Gradko	20% TEA in water	2018	R	Lancaster City Council	11	39	35	12.4%	G	0.89
Gradko	20% TEA in water	2018	R	Lancaster City Council	11	31	34	-8.5%	G	1.09
Gradko	20% TEA in water	2018	UB	Liverpool City Council	12	20	18	11.0%	G	0.90
Gradko	20% TEA in water	2018	R	Blackburn with Darwen Borogh Council	12	26	20	28.8%	G	0.78
Gradko	20% TEA in water	2018	R	Dartford Borough Council	11	50	48	4.3%	G	0.96
Gradko	20% TEA in water	2018		Overall Factor[3] (37 studies)				Use		0.92

Figure 2: A screenshot of the National Diffusion Tube Bias Adjustment Factor spreadsheet, showing the laboratory, preparation method and factor used

QA/QC of Diffusion Tube Monitoring

The test laboratory currently used by Coventry City Council is Gradko International Ltd. Gradko participates in the Workplace Analysis for proficiency (WASP) scheme managed by the Health and Safety Laboratory and the independent AIR-PT scheme operated by LGC Standards.

For the period April 2016 to February 2018 Gradko laboratory has had results which were determined to be 100% satisfactory and so has a good standard of performance with regard to WASP performance criteria. It also has a 100% satisfactory results for the period Jan 2017 to October 2018 Air NO_2 PT rounds.

The table below provides a summary of the performance from 2015 to 2017 for the WASP scheme:

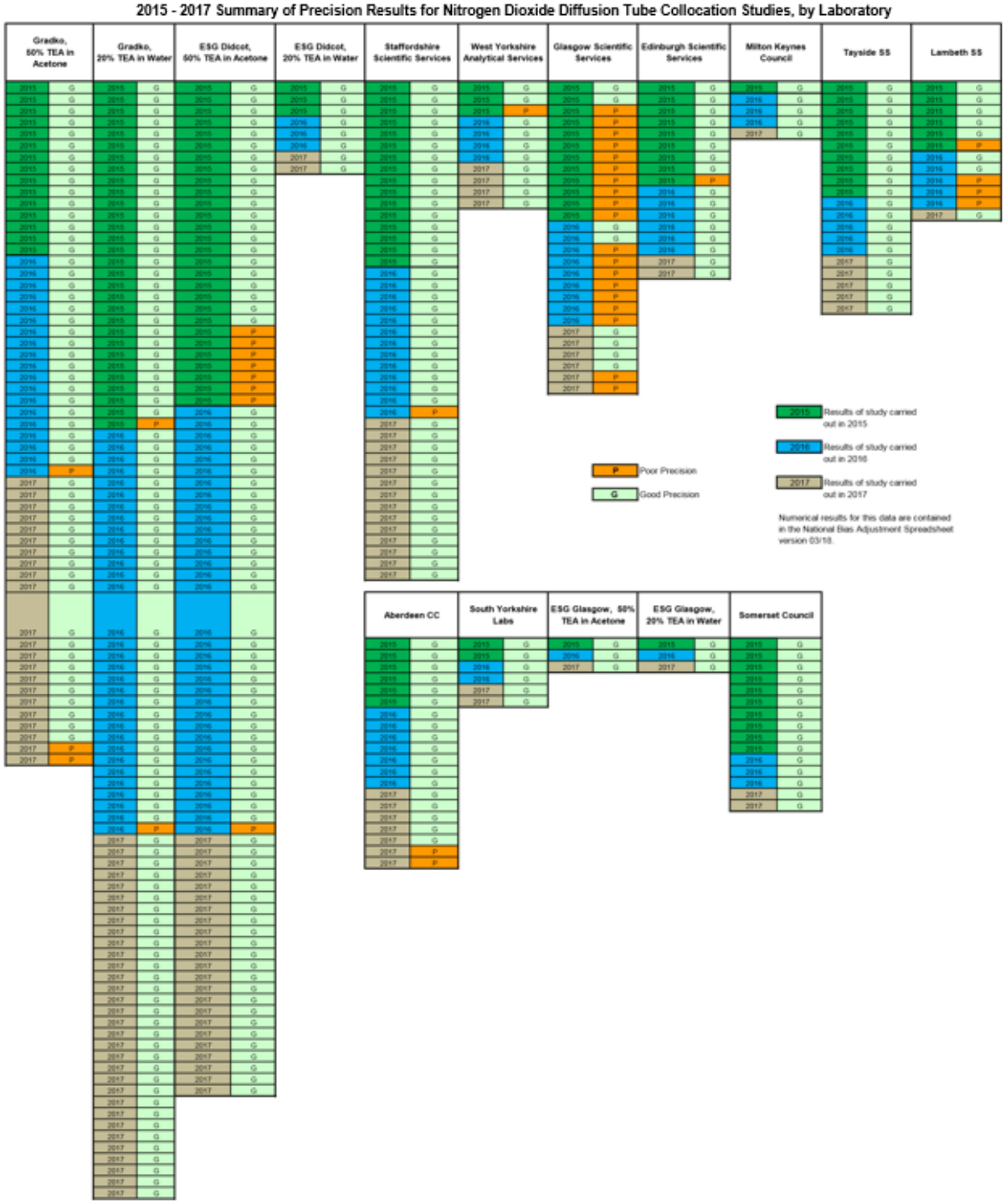


Figure 3: Table of Gradko Diffusion Tube performance from 2015 to 2017 in the WASP scheme:

The table below provides a summary of the performance from 2017 to 2018 for the AIR-PT scheme:

AIR PT Round	AIR PT AR018	AIR PT AR019	AIR PT AR021	AIR PT AR022	AIR PT AR024	AIR PT AR025	AIR PT AR027	AIR PT AR028
Round conducted in the period	January – February 2017	April – May 2017	July – August 2017	September – October 2017	January – February 2018	April – May 2018	July – August 2018	September – October 2018
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Environmental Services Group, Didcot	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	100 %	50 %	0 %	100 %	100 %	100 %	50 %	100 %
Gradko International [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 %	100 %	100 %
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Lambeth Scientific Services	100 %	NR [2]	NR [2]	100 %	NR [2]	NR [2]	NR [2]	25 %
Milton Keynes Council	100 %	75 %	0 %	75 %	100 %	75 %	100 %	100 %
Northampton Borough Council	0 %	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100 %	100 %	100 %	75 %	100 %	100 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Staffordshire County Council	100 %	100 %	100 %	100 %	50 %	100 %	100 %	100 %
Tayside Scientific Services (formerly Dundee CC)	100 %	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %	NR [2]
West Yorkshire Analytical Services	100 %	100 %	100 %	100 %	50 %	75 %	100 %	100 %

Figure 4: Summary of Gradko Diffusion Tube Performance from 2017 – 2018 in the AIR-PT scheme

Distance Correction

Diffusion tubes that are not representative of a relevant exposure have been distance corrected using the NO_2 fall-off with distance calculator available on the LAQM website in-line with the guidance in LAQM TG16.

Annualisation

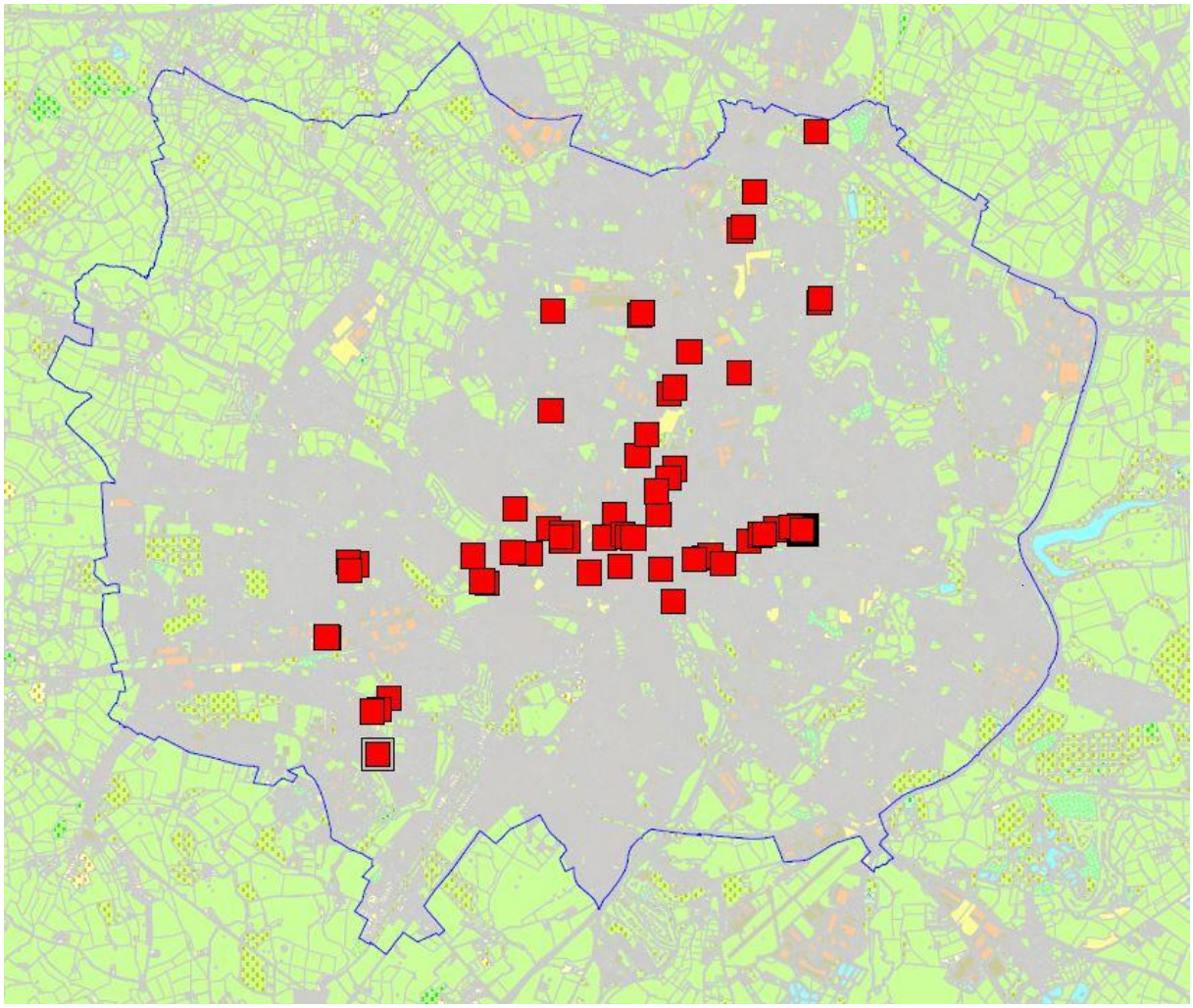
Diffusion tube results which have a capture rate of less than 75% but greater than 25% have been annualised following the guidance in LAQM TG16. Results from diffusion tubes with less than 25% capture rate have been recorded in table B1 as raw data but have been excluded from further processing or analysis.

2017			
Site	**Annual Mean (AM)**	**Period Mean (PM)**	**Ratio (AM/PM)**
Jan - June			
COV	22	22.8	0.96
LEAM	23	24.7	0.93
LEAM RUGBY RD	17	18	0.94
MKTH	9	9.8	0.92
		Average (Ra)	**0.94**
July – Dec			
COV	22	20	1.1
LEAM	23	21.1	1.08

LEAM RUGBY RD	17	15.3	1.11
MKTH	9	8.6	1.05
		Average (Ra)	**1.09**
Aug - Nov			
COV	22	21.5	1.02
LEAM	23	22.5	1.02
LEAM RUGBY RD	17	16.25	1.04
MKTH	9	9.25	0.97
		Average (Ra)	**1.02**
Oct - Dec			
COV	22	25.3	0.87
LEAM	23	28	0.82
LEAM RUGBY RD	17	21.3	0.79
MKTH	9	12	0.75
		Average (Ra)	**0.81**

2018			
Site	**Annual Mean (AM)**	**Period Mean (PM)**	**Ratio (AM/PM)**
May - July			
COV	20	14	1.43
LEAM	18	10	1.80
LEAM RUGBY RD	17	12	1.42
BM Acocks Green	18	14	1.29
		Average (Ra)	**1.48**
May – Dec			
COV	20	19	1.05
LEAM	18	14.38	1.25
LEAM RUGBY RD	17	15	1.13
BM Acocks Green	18	16.25	1.11
		Average (Ra)	**1.14**
Jan - July			
COV	20	19.43	1.03
LEAM	18	17.43	1.03
LEAM RUGBY RD	17	17	1
BM Acocks Green	18	18	1
		Average (Ra)	**1.02**
Oct - Dec			
COV	20	25.33	0.79
LEAM	18	20.33	0.89
LEAM RUGBY RD	17	20.33	0.84
BM Acocks Green	18	21	0.86
		Average (Ra)	**0.84**

Appendix D: Map(s) of Monitoring Locations and AQMAs



Alternatively see the interactive map which shows the locations of the tubes with monitoring results from 2011 to 2018. This is available at:

https://smarturl.it/CovAirMap

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 microgrammes 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'
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
AQEG	Air Quality Expert Group
ASR	Air quality 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_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 Guidance
WMCA	West Midlands Combined Authority